ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR SOCIAL INTERVENTIONS (LIVESTOCK, WATERPOINTS, HAND-PUMP BOREHOLES) IN KRIS AND HVIS

JANUARY 2024

DRAFT **FINAL** REPORT

Transforming Irrigation Management in Nigeria (TRIMING) Project
Federal Ministry of Water Resources

Table of Contents

List of Table

List of Figures

ABBREVIATION

ADPs:	Agricultural Developmental Projects
ATA:	Agricultural Transformation Agenda
CADA:	Commercial Agriculture Development Associations
CBD:	Conservation on Biological Diversity
CBO's:	Community Based Organizations
CMO:	Conservation of Migratory Species
EIA:	Environmental Impact Assessment
EPC:	Engineering, Procurement and Construction
ESIA:	Environmental and Social Impact Assessment
ESMF:	Environmental and Social Management Framework
ESMO:	Environmental and Social Management Organization
ESMP:	Environmental and Social Management Plan
FAO:	Food and Agriculture Organization
FEPA:	Federal Environmental Protection Agency
FGD:	Focus Group Discussion
FGN:	Federal Government of Nigeria
FMENV:	Federal Ministry of Environment
FMPWH:	Federal Ministry of Power, Works and Housing
FMWR:	Federal Ministry of Water Resources
FRSC:	Federal Road Safety Corps
FTOS:	Field Turnouts
GPS:	Global Positioning System
GRM:	Grievance Redress Mechanism
GSM:	Global Services for Mobile
HAP:	Health Action Plan
HEP:	Hydroelectric Power
HIV/AIDS:	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HJKYB:	Hadejia-Jama'are-Komadugu-Yobe basin
HNW:	Hadejia-Nguru Wetlands
HOD	Head of Department
HSE:	Health Safety and Environment
HVIS:	Hadejia Valley Irrigation Scheme
HVISO:	Hadejia Valley Irrigation Scheme Office
ILO-OHSMS:	International Labour Organization - Occupational Health and Safety Management Systems
ILO:	International Labour Organization
IPM:	Integrated Pest Management
IUCN:	International Union for Conservation of Nature
JISEPA:	Jigawa State Environmental Protection Agency
JSME:	Jigawa State Ministry of Environment
KEDCO:	Kano State Electricity Distribution Company
KNARDA:	Kano Agriculture and Rural Development Authority
KRIS:	Kano River Irrigation Scheme
KRISMO:	Kano River Irrigation Scheme Management Office
KRISO:	Kano River Irrigation Project
KSG:	Kano State Government
LGA:	Local Government Area
MC:	Main Canal
MDA's:	Ministries, Departments and Agencies
NCWR:	National Council on Water Resources
NEMSA:	Nigeria Electricity Management Service Agency
NERC:	*Nigerian Electricity Regulatory Commission*
NESREA:	National Environmental Standards and Regulations Enforcement Agency
NGO's:	Non-Governmental Organizations

NIMET:	Nigerian Meteorological Agency
NIPS:	National Irrigation Policy and Strategy
NIWA:	National Inland Waterways Authority
NIWRNC:	Nigeria Integrated Water Resources Commission
NPC:	National Population Commission
NTCWR:	National Technical Committee on Water Resources
NWRI:	National Water Resources Institute
NWRMP:	National Water Resource Master Plan
O&M:	Operation and Maintenance
OHS:	Operational Health and Safety
OHSMS:	Occupational Health and Safety Management Systems
OP:	Operational Policies
PAP's:	Project Affected Persons
PDO:	Project Development Objective
PHC	Primary Healthcare Facility
PM:	Project Manager
PMP:	Pest Management Plan
PMU:	Project Management Unit
PPP:	Public Private Partnership
RAP:	Resettlement Action Plan
RBDA:	River Basin Development Agency
REMASAB:	Refuse Management and Sanitation Board
RPF:	Resettlement Policy Framework
RUWASA:	Rural Water Supply and Sanitation
SEPA:	State Environmental Protection Agency
SHF	Secondary Healthcare Facility
SME:	State Ministry of Environment
SMS	Short Message Service
STD:	Sexually Transmitted Disease
STI:	Sexually Transmitted Infection
TBD:	To Be Discussed
TRIMING:	Transforming Irrigation Management in Nigeria Project
VES:	Vehicle Exhaust Screening
WRSSP:	Water supply Sector Support Programme
VET:	Vehicle Emission Testing
WBC:	West Branch Canal
WRPP:	Workers Respiratory Protection Program
WUA:	Water Users Association

EXECUTIVE SUMMARY

ES 1: Introduction

In its desire to achieve sustainable growth in agricultural production and productivity, the Federal Government obtained a credit of US$495.3 million from the International Development Association (IDA) towards the cost of the Transforming Irrigation Management in Nigeria (TRIMING) Project.

The Federal Ministry of Water Resources with support from the World Bank is implementing the TRIMING Project, a seven-year program. Part of the Project proceeds will be applied towards social intervention such as the provision of livestock crossings, watering points, and hand pump boreholes at Kano River Irrigation Scheme and Hadejia Valley Irrigation Scheme located in Kano and Jigawa states respectively. Both schemes are owned and managed by the FMWR through the Hadejia Jama'are River Basin Development Authority (HJRB DA) which is part of the Hadejia Jama'are Komadugu Yobe (HJKY) Basin.

Scope of the Assignment

In fulfilling the objectives of the ESMP, the purview of this assignment was mainly to identify site-specific risks and proffer corresponding mitigation measures using the hierarchy of controls; identify and sensitize the various stakeholders while developing a stakeholders mapping. The assignment also covered the following areas: review of all relevant document; describe and establish the environmental and social baseline; develop plans to mitigate environmental, social and occupational hazards; assist in getting the needed information to project affected persons while ensuring inclusion.

Overview of Project Activities

The social intervention works are located within KRIS and HVIS under management authority of the Hadejia-Jama'are-Komadugu-Yobe (HJKY) River Basin, North-Eastern part of Nigeria. The Basin has a total area of about 84,000 km^2 traversing six states namely Bauchi, Borno, Jigawa, Kano, Plateau and Yobe. The KRIS is situated in Kano State while HVIS is in Jigawa State.

Sub-activities in Project Commanding Area

Description of Works	Quantity
KRIS	
Construction of watering points-	8
Construction of Livestock crossing	12
Construction of hand-pump boreholes	4
HVIS	
Construction of watering points-	2
Construction of Livestock Crossing	4
Construction of hand-pump boreholes	7

ES 2: Policy, Legal and Institutional Framework

This ESMP is prepared in consonance with relevant Kano and Jigawa State and Federal Government environmental policies, laws, regulations, and the World Bank OP. This includes the National Policy on the Environment, Environmental Impact Assessment (EIA) Act, National Gender Policy, Kanoa

State Environmental Protection Laws, State social protection policies, World Bank Operational Policies applicable to the project amongst others as detailed in chapter 2 of this report.

ES 3: Description of Project Environment and Baseline Assessment

This Chapter provides summary description of the commanding areas: KRIS and HVIS, the physical environment including the biological and socio-economic environment of the project areas and also gives insight into the site specific areas of project influence. Furthermore, field sampling analysis are elucidated which are complimented with existing data from the project areas and environs.

ES 4: Summary of Potential Risks & Impacts

Positive Socio-Economic Impacts

Creation of Employment Opportunities: There are clear indications that construction of Cattle Crossing and Hand pump at the Hadeija Irrigation Scheme at Hadeija and Kura irrigation communities will have tremendous positive impacts on the lives and livelihood of people in the area as well as on the environment and ecosystem. For instance, increase in direct and indirect employment opportunities in compliance to a presidential directive allowing preference to local content in all employment opportunities. To avoid the negative impacts associated with labour influx to host or beneficiary communities, the TRIMING Project will promote local sources especially for unskilled and semi-skilled labour

Improved commercial activities: Business and trade at various scales will be enhanced during construction and operational phases of the work. As agricultural production improves, the area is likely to have a big agro-markets, agro allied and agro processing industries. There will be population increase and new business opportunities like hotels and real estate might come up in future.

Increased Gross domestic product and improved economy: The scheme will provide concomitant improvement in the GDP from the agricultural sector and the multiplier effect of this will be felt on the national economy. Several agro-processing firms will arise along the value chains of most of the products and importation of food items from foreign nations will reduce drastically.

Less conflict between herdsmen and settled crop farmers: With the irrigation scheme functioning properly, there is the likelihood of agriculture becoming organized, as the herds men becomes confined to specified locations as grazing routes and cattle colonies somewhere up-stream around the dam. The farmers and agro industries could be organized to take the downstream within the irrigation sectors. This will remove the risk of conflicts from resource use mainly water. Management of crises as a result of nomadic lifestyle of herders in search of water and greener pastures in the dry period of the year would be more effective.

Agricultural and food security in the nation: The development of the irrigation sectors is a positive impact of the project that will improve the food security situation of the country. This is because irrigation will aid all year-round production. Agricultural lands in the northern zone of the country receives less than 1000 mm of annual rainfall which is a big short coming for good crop yield. Intensive irrigation is therefore expected to boost the effort directed at meeting the food demands of 180 million hungry peoplein the land.

Potential Negative Impacts of the proposed project

Environmental Impacts		
Impacts	**Significance of Risk**	**Mitigation**
1. Temporary air pollution from	Low	1. Sprinkle earth roads with water to

particulate matter and gases due to the movement of vehicles and equipment on untarred access roads to proposed project sites within the communities.		reduce dust during movement of vehicles especially settlements and areas where public facilities are nearby.
2. Temporary air pollution and noise due to drilling of borehole. Generation of particulate matter from dust and emission of gases with noise from drilling machines.	Low	2. Schedule drilling activities during times when the impact on the local community is minimized, such as avoiding night time or early morning drilling sessions. Keep local communities informed about the drilling schedule and activities, providing advance notice of potentially noisy operations.
3. Temporary noise pollution from movement of vehicles and machineries/equipment operations	Medium	3. Install noise mufflers on heavy duty equipment
4. Waste generated from drilling like drilling mud and rock cuttings. Other waste materials from construction, including excess soil and concretes from excavation, plastic wrap, pallets, and cardboard boxes used for packaging construction materials, could lead to environmental nuisance and public health concerns if poorly managed.	Medium	4. Ensure proper sorting; storage and final disposal of waste, liaise with registered JISEPA waste disposal outfit. Soil and rock cuttings can be properly channelled to flood embankments.
5. Materials sourcing such as sand, clay, gravels may lead to impacts related to sand mining and extraction of gravel from unlicensed quarries	Medium	5. Ensure compliance with all relevant local, regional, and national regulations governing sand mining and quarry operations. Obtain necessary permits and licenses to operate legally and contractors should ensure all materials are sourced from registered vendors or quarries
Social Impacts	**Significance of Risk**	**Mitigation**
1. Labour influx especially from skilled workers may induce conflicts and SEA/SH risks, risk of STIs/STDs for community members, students, and staff. Influx of Camp Followers could also increase the presence of sex workers in the communities	Medium	1. Project managers must ensure that all engaged workers are sensitized and sign Code of Conduct (CoC); zero tolerance for sexual relation with community members; as much as possible workforce should be from the community; provide basic amenities for workers like water, health, toilets

2. Lack of understanding or disregard for local customs and traditions by the project workers can lead to cultural insensitivity. This may result in resistance from the local community and damage relationships.	Medium	2. Project team must provide project workers with comprehensive cultural awareness training before they engage with the local community. This training should include information about local customs, traditions, values, and etiquette. Establish open and regular communication channels between the project team and the local community.
3. The construction of live-stock crossings and watering points may temporarily alter traditional livelihood patterns, especially pastoral practices. This could disrupt the local economy and way of life	Low	3. Proper and adequate stakeholder consultation to address concerns around the project's impact on the livelihood of community people. Plan construction activities taking into account the seasonal patterns of pastoral practices. Avoid critical periods such as breeding or migration seasons. This can help minimize the impact on livestock and allow the community to continue their traditional practices without significant disruption
4. Community health and safety at risk due to movement of equipment and vehicle to project sites which could lead to accidents due to bad access roads, disturbance of farmers and herders activities and religious activities	Low	4. The project managers must ensure all drivers are trained on substance abuse and transport schedule plans. Vehicles should not be overloaded with materials, use of flagmen and safety cautions, in built up areas, avoid movement in market areas on market days, limit movement during religious activities, restrict access to be placed at work sites
5. Sourcing for unskilled labour may lead to risks of child labour and increase dropout during rehabilitation activities. This could further predispose children to health & safety risks, Violence Against Children (VAC) etc.	Medium	5. Project managers must comply with this ESMP especially the LMP in the Annex by implementing fair wages, provision of PPEs and safe work conditions as approved by the WUA vis-à-vis the CONTRACTOR'S
6. Poor labour and working conditions especially wages for community workers could lead to grievances	Medium	6. Establish transparent payment systems to ensure that workers understand how their wages are calculated. Establish a clear and accessible grievance mechanism for workers to voice their concerns.
7. Insecurity can worsen due to presence of strange workers including TRIMING, WUA, Consultants etc and		

they can become victims of kidnapping, banditry, insurgency, social conflicts etc.		7. Security Risk Assessment& Mitigation Measures can be seen in Annex 16. In addition, the WUA should work with the project security adviser to develop a robust security management plan for the project in conjunction with the state Government and the state security agencies including the police, Army, Nigerian Security and Civil Defence Corps (NSCDC)
Occupational Health & Safety (OHS)	**Significance of Risk**	**Mitigation**
1.OHS Risks from operation of equipment and civil works could lead to injuries, incidents and accidents for workers	Medium	1. Project management Units should implement the site specific Occupational Health and Safety Management Plan (see Annex 9) in this ESMP vis-à-vis the CONTRACTOR'S
2. Workers could be exposed to disease outbreaks such as COVID, monkey-pox and other communicable diseases	Low	2. Provision of First Aid and PPEs such as nose masks, hand washing facilities, hand sanitizers and implement IPC Protocols
3. Exposure of workers to security risks such as banditry, kidnapping etc.	Medium	3. Appropriate security measures as detailed in Annex 16 should be put in place
4. Poor labour and working conditions could lead to ill-health and grievances	Low	4. Project management units should provide a safe and conducive work environment including basic amenities like portable drinking water, food, WASH facilities, rest area for workers
5. Unfair recruitment procedures could cause grievances, discrimination etc. poor or discriminatory wages could also lead to grievances and legal action	Low	5. Recruitment processes should be fair, non-discriminatory and the terms and conditions of employment including wages, work hours, rest hours, benefits, sanctions should be clearly indicated in the conditions and understood by all parties

ES 5: Environmental and Social Management and Monitoring Plan

The total estimated cost to effectively implement the mitigation and monitoring measures recommended in the ESMP Matrix above including Capacity Building and others is Sixteen million, four hundred and ninety-four thousand, eight hundred and forty naira only. – **N16,494,840** as seen in the table below. The cost of mitigation is **N9,282,493** and should be included in the contract as part of the implementation cost by the Contractor

Cost for the Implementation of ESMP

Item	Responsibility	Cost Estimate in Naira (N)
Mitigation	Contractor	9,282,493
Monitoring	KRIS/HVIS E&S Team	3,391,197
Capacity Building	State Safeguard Team	**1,821,150**
GRM Operation	State Safeguard Team, WUAs	2,000,000
TOTAL		**16,494,840**

ES 6: Stakeholder Engagement and Public Consultation Plan

Identification and understanding of stakeholders relevant to the TRIMING project is fundamental to the invaluableness of their proper and adequate engagement throughout the life cycle of the project. Relevant to the ESMP, the TRIMING stakeholder opening consultation focused on understanding the structure of associations including interest groups and direct beneficiaries whose welfare the projects directly or indirectly underscores as this was crucial for increased project acceptance, effectiveness, and positive long-term impacts. The opening consultation in Kura, Bunkure, Garun Mallam and Auyo Local Government area, Kano and Jigawa states, were held between 17th – 19th October and 28th - 29th November, 2023 respectively. This platform served to elicit information, questions and concerns relevant to the project. It also provided the opportunity for project beneficiaries to contribute to both the design and implementation of the project activities and further ameliorate the likelihood for conflicts.

This elaborate consultation was preceded by the identification and understanding of the relevant stakeholders who were the most affected by the social intervention, namely, the Water Users Association, (Consisting of the Farmers Association, Women's Association) and Herders Association.

The public consultation strategy for the ESMP activities revolved around the provision of a full opportunity for involvement of all stakeholders, especially the beneficiaries. Concerns raised by the stakeholders are documented and incorporated in this report and used to develop mitigation and/or enhancement measures for the Grievance Redress Mechanism (GRM).

ES 7: GRM

The mechanism is developed as a multiple-level design (project location, state, and national levels) and will address diverse suggestions & complaints, and involve activities like logging, tracking, and resolving project related grievances. Chapter 7 provides the GRM which has been prepared in a manner that integrates both the formal and informal/traditional approach to grievance redress mechanism. This includes the use of Grievance Redress Committees (GRCs), complaint boxes, dedicated phone lines to channel and resolve grievances. The GRCs will be constituted at the project site level, SPIU level, State Steering Committee level and NTCU level. Complainants will also be informed of their right to seek judicial redress if they remain dissatisfied with the resolutions reached. A GBV-GRM protocol is also included to provide a process for channelling GBV related complaints which is handled different from the non-GBV related grievances due to the confidential nature of the complaints.

ES 8: Conclusion and Recommendation

The project is envisaged to have a largely positive impact on the benefitting farmers, herders and recipient communities. The potential negative environmental and social impacts which were identified can be mitigated with strict compliance to the mitigation measures stated in the ESMP Matrix. The ESMP and the mitigation costs will need to be embedded in the Engineering Plans to ensure implementation costs are adequately budgeted for by the KRIS and HVIS Project Offices

Recommendation

The following recommendations are provided for the effective implementation of this ESMP:

- ✓ The TA of the E&S UNIT should develop a School Mitigation Plan (an abridged version of the ESMP) and be embedded within the CONTRACTOR'S, provided to the KRIS/HVIS PROJECT OFFICE as most of the mitigation measures and specific annexes are to be implemented by them.
- ✓ The E&S UNIT/KRIS/HVIS PROJECT OFFICE/MDAs involved in monitoring of the ESMP implementation will need to be adequately trained in line with the capacity building plan in the report
- ✓ The E&S UNIT should endeavour to establish the GRM in all project locations timely to enable stakeholders channel enquiries to the project. This includes installing complaint boxes, setting up GRCs amongst others
- ✓ The E&S UNIT should sensitize the project schools and communities on the available grievance redress channels
- ✓ Considering the security situation across locations in the Country, it is advised that the KRIS/HVIS PROJECT OFFICE workers and any other team engaged by the project make adequate security arrangements for site work. The E&S UNIT should also keep abreast of the security situation in the various project LGAs and inform all relevant parties accordingly.
- ✓ With respect to GBV, it is important for the E&S UNIT to conduct sensitization program for the school staff, KRIS/HVIS PROJECT OFFICE, and community members especially women and girls on prevention strategies and the available reporting and response mechanisms, as well as the grievance redress mechanism in place for the TRIMING project in Kano state.
- ✓ In addition, the state should conduct mapping of GBV service providers and make the inventory available to the GBV focal persons in each project location
- ✓ As earlier stated, in the course of rehabilitation works, there would be moderate to severe likelihood of the occurrence of workplace hazards. Personnel will be predisposed to hazards. "Unsafe behaviours" and "unsafe conditions". Occupational disasters happen more due to "unsafe behaviours" compared to "unsafe conditions". Hence, project/site workers should be trained on unsafe behaviours and be provided with necessary equipment to practice safe behaviours. Further, the necessary facilities to facilitate safe conditions and discourage unsafe behaviours should be made available to workers
- ✓ For effective waste management on site, the KRIS/HVIS PROJECT OFFICE should sign an agreement with KSEPA. This would ensure control of proper collection and disposal of construction wastes Furthermore, the KRIS/HVIS PROJECT OFFICE should implement the waste management plan (see Annex 6) during the period of project implementation
- ✓ Construction Safety signs and boards should be installed to protect workers and the public around the construction sites

CHAPTER ONE: INTRODUCTION

1.1 Background

In its desire to achieve sustainable growth in agricultural production and productivity, the Federal Government obtained a credit of US$495.3 million from the International Development Association (IDA) towards the cost of the Transforming Irrigation Management in Nigeria (TRIMING) Project.

The Federal Ministry of Water Resources with support from the World Bank is implementing the TRIMING Project, a seven-year program. Part of the Project proceeds will be applied towards social intervention such as the provision of livestock crossings, watering points, and hand pump boreholes at Kano River Irrigation Scheme and Hadejia Valley Irrigation Scheme located in Kano and Jigawa states respectively. Both schemes are owned and managed by the FMWR through the Hadejia Jama'are River Basin Development Authority (HJRB DA) which is part of the Hadejia Jama'are Komadugu Yobe (HJKY) Basin.

1.2 Overview of TRIMING

The TRIMING Project is currently being implemented in five irrigation schemes located in three river basins in Northern Nigeria of which Kano River Irrigation Scheme (KRIS) and the Hadejia Valley Irrigation Scheme (HVIS). Both schemes are within the Hadejia River sub-basin, which is part of the Hadejia Jama'are Komadugu Yobe (HJKY) Basin. The main goal of the TRIMING Project is to rehabilitate the irrigation schemes to optimum potential, concomitant with all future of water demand and sustainably fulfilling overall environmental constraints.

1.2.1 Project Components

The Project Development Objective 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.

The project is structured into four main components which include

- Component 1: Water Resources Management and Dam Operation Improvement
  - Subcomponent 1.1: Support to Integrated Water Resources Management
  - Subcomponent 1.2: Dam Operations Improvement and Safety
- Component 2: Irrigation Development and Management
  - Subcomponent 2.1: Irrigation Infrastructure Investments
  - Subcomponent 2.2: Improving Irrigation Management
- Component 3: Enhancing Agricultural Productivity and Supply Chains
  - Subcomponent 3.1: Matching grants for improvement of productive water use in agricultural processing and mechanization

- Subcomponent 3.2: Support to Research and Development
- ❖ Component 4: Institutional Development and Project Management
  - Subcomponent 4.1: Project Management and Monitoring & Evaluation
  - Subcomponent 4.2: Institutional Development and Governance

This social intervention falls under component 3

1.3 Rationale and Objective of the ESMP

The environmental and social risk classification for the social interventions is placed as category B in accordance with with the Environmental Assessment Policy (OP 4.01) of the World Bank. It is assumed that no cumulative, unprecedented and large-scale adverse impacts are envisaged to result from the activities that will be financed under this project. However, some adverse impacts are expected in relation to construction of livestock crossing, water troughs, hand-pumps boreholes such as generation of non-hazardous waste, fugitive dust, soil compaction as well as construction wastes. Other impacts could arise from noise pollution, accident from movement of equipment and materials to site, occupational health & safety risks, risks associated with labour influx, Social Vices, Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) due to labour influx. It is envisaged that social risks would have significant impacts in areas such as: increase in STIs/STDs); community health and safety issues; grievance and disturbance to physical and cultural resources among others.

In compliance with the World Bank Safeguard Policy: Environmental Assessment (OP/BP 4.01), the less significant environmental and social impacts that are likely to occur, can be reduced or minimized through compliance with appropriate environmental and social mitigation measures. At this instance, the appropriate safeguard instrument to use here is the Environmental and Social Management Plan (ESMP)

1.3.1 Objective

The goal is to prepare an Environmental and Social Management Plan (ESMP) which will focus on identifying the risks and impacts associated with civil works while defining appropriate mitigation/enhancement measures to prevent minimize, mitigate, or compensate for adverse impacts including responsibilities and associated costs.

Other objectives are:

- To potentially screen out environmentally unsound activities
- Propose modified designs to reduce environmental and social impacts
- Identify feasible alternatives
- Engage and inform potentially affected communities and individuals

1.4 Scope of the Assignment

In fulfilling the objectives of the ESMP, the purview of this assignment was mainly to identify site-specific risks and proffer corresponding mitigation measures using the hierarchy of controls; identify and sensitize the various stakeholders while developing a stakeholders mapping. The assignment also covered the following areas: review of all relevant document; describe and establish the environmental and social baseline; develop plans to mitigate environmental, social and occupational hazards; assist in getting the needed information to project affected persons while ensuring inclusion.

1.5 Description of the Project Interventions

The social intervention works are located within KRIS and HVIS under management authority of the Hadejia-Jama'are-Komadugu-Yobe (HJKY) River Basin, North-Eastern part of Nigeria. The Basin has a total area of about 84,000 km^2 traversing six states namely Bauchi, Borno, Jigawa, Kano, Plateau and Yobe. The KRIS is situated in Kano State while HVIS is in Jigawa State.

The Kano River Irrigation Scheme is located about 30 km southwest of Kano, the capital city of Kano State. The scheme is operated by the Hadejia-Jama'are River Basin Development Authority with head office in Kano and zonal offices in Kura and Bunkure. The scheme is divided into two phases; Phase 1 was originally designed with a capacity of 22,000 ha of land, out of which 13,890 ha have been fully developed: Phase 2 was shelved after feasibility study established that irrigation water supply by pumping from the Hadejia River was not feasible. An additional 1,087 ha has also been developed covering only 42 sectors out of 50 sectors under Phase 1 with the incorporation and construction of livestock crossing along canals at maximum intervals of 2km. KRIS covers over three Local Government Areas (LGAs), namely Kura, Bunkure, and Garun Mallam and construction of water points and hand-held boreholes will be implemented across these areas.

The Hadejia Valley Irrigation Scheme (HVIS) is located about 150 km east of Kano City in Auyo LGA of Jigawa State and about 95km northeast of Dutse, the state capital. The scheme is operated by Hadejia-jama'are River Sub-Basin Development Authority with head office in Kano and zonal office in Hadejia. HVIS is divided into Phase 1 and 2: Phase 1 with an initial plan to develop 12,500 ha of which Stage 1 (the northern part) covers 6,175 ha and Stage 2 (the southern part) covers 6,325 ha. Only Stage 1 has been developed covering a total area of 5,286 ha with an additional area of 459 ha is being developed which covers the four sectors initially left uncompleted. The social intervention works include incorporation and construction of livestock crossing in fifteen sectors along the canals at maximum intervals of 2km in Auyo LGA only.

The project sites are 42 in total within KRIS and HVIS covering three Local Government Areas: Kura, Bunkure, and Garun Mallam LGA of Kano State and Auyo LGA of Jigawa State. (See Figure 1 below for project sites). The social intervention works fall under Component 3 and will act as stop gaps for herders, residents and help reduce possible conflicts around water usage and disruption to farm activities between farmers and herders. The Social Intervention works would be done in stages based on the engineering plans. The general works are summarized accordingly

- Site clearance
- Inspection & Material Testing such as geotechnical investigation to ascertain quality of foundation
- Earthworks
- Concrete and reinforcement survey.

The sub-activities are distributed in Table 1 as follows:

Table 1 Summary of Project Sites in KRIS and HVIS

Description of Works	Quantity
KRIS	
Construction of watering points-	8
Construction of Livestock crossing	12

Construction of hand-pump boreholes	4
HVIS	
Construction of watering points-	2
Construction of Livestock Crossing	4
Construction of hand-pump boreholes	7

1.5.1 Specific Project Intervention Sites

The intervention works will be done in stages as outlined in the engineering plans. Most of the specific intervention works would take place within KRIS (about 27 project sites) while only few (15 project sites) would be within HVIS. Table 2 below highlights twenty-four selected areas across both schemes.

Table 2: Site Specific Intervention Works

S/No	Name of Project Site	LGA	Type of Work	S/No	Name of Project Site	LGA	Type of Work
KRIS, Kano							
1	MUDAWA	Bunkure	Livestock Crossing	2	SHIYE TOWN	Bunkure	Livestock Crossing
3	LAUTAYE & AGALAWA LAUTAYE & AGALAWA	Bunkure	Livestock Crossing	4	KODE	Bunkure	Livestock Crossing
5	MAKUNTIRI	Bunkure	Livestock Crossing	6	KIRYA TOWN	Kura	Livestock Crossing
7	Karfi Kirya	Kura	Livestock Crossing	8	KORE DAMAWA	Kura	
9	RAKAUNA DALILI	Kura	Livestock Crossing	10	KORE BUGAU	Kura	Watering Points
11	KOSAWA KATSINAWA	Kura	Livestock Crossing	12	NEW DALILI GORI	Kura	
12	AGOLAS	Kura	Livestock Crossing	14	MAKWARO TSAUNI	Kura	
13	RAKAUNA DALILI	Kura	Livestock Crossing	16	BUGAU KORE	Kura	
15	KADAWA WATERING POINT	Kura	Watering Point	18	KIRYA TOWN	Kura	Watering Point
17	BUGAU KORE	Kura	Watering Point	20	MAKWARO TSAUNI	Kura	Watering Point
19	GWANJAWA	Kura	Hand-	22	KADAWA COMMUNITY	Kura	Borehole

S/No	Name of Project Site	LGA	Type of Work	S/No	Name of Project Site	LGA	Type of Work
			pump		MOSQUE		
HVIS, Jigawa							
S/No	**Project Site**	**LGA**	**Type of Work**	**S/No**	**Project Site**	**LGA**	**Type of Work**
1	Agumari	Auyo	Borehole	2	Sabuwar Auyo	Auyo	Borehole
3	Adaha		Borehole	4	Gamsarka		Borehole
5	Gamsarka		Livestock Crossing	6	Marina		Watering Point
7	Mado		Borehole	8	Furawa		Livestock Crossing
9	Marina		Borehole	10	Tsaka		Borehole
11	Mado		Livestock Crossing	12	Ganuwar Kuka		Livestock Crossing

1.5.2 Associated Project Activities

Other associated activities include site clearing, staging areas and campsites, material sourcing. Table 3 below shows the various proposed project activities and staffing at the pre-construction, construction and operation phases of the project.

Table 3 Associated Project Activities

S/No	Project Phase	Activates	Labour	Support Facilities	Duration
1.	Pre-Construction	• Site marking and pegging, • Site clearing • Mobilization of equipment and workers to site • Establishing of staging area and campsite	• Skilled labor (estimate of 1x20 sites = 20 nos) • Unskilled Labor (estimate of 2x20=40 nos)	• Staging Area for workers' equipment • Campsite (accommodation for workers) • Portable water and Sanitary Facilities including male and female toilets • Personal Protective Equipment (PPEs) • First Aid kits	2 weeks
2.	Construction	• Partial	• Skilled labor	• Staging area	2 months

		demolition • Installation of traffic signage and cautions on site • Repairs of facilities: classrooms, toilets, labs etc. • Demobilisation from site ✓ Removal of construction equipment; ✓ Disposal of construction waste in gene ✓ Dismantling of staging area and exit from campsite	(estimate of 2x20 = 40 nos) • Unskilled labor (estimate of 2 x 20=40 nos)	• Campsite • First aid kits (1 kit would serve 10 staff) • Construction water and materials • Sanitary Facilities (male and female toilets) • PPEs • Portable water for workers, food and security	
3.	Operation and Maintenance	• Clearing of overgrown-weeds •	• Unskilled labor (estimate 2 x 20 = 40 nos)	• Maintenance Workshop • Maintenance equipment	Routinely during operation phase

1.5.3 Beneficiaries of the Project

The project intervention was initiated based on the scarcity of water experienced during the civil works completion within the two schemes. It is believed that about fifty-seven thousand (57,000) registered farmers inclusive of over five thousand (5,000) women farmers, one thousand eight hundred and sixty-two (1,862) registered herders would benefit from cattle crossing and watering points. Sinking of borehole is targeted mostly for near-by communities around the schemes. Specifically, women who have animals within the communities will mostly utilize this proposed social interventions. It is worth to note that prior to the commencement of civil works within the schemes, the availability of water for farmers was mostly available.

CHAPTER TWO: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Introduction

This chapter makes reference to the Environmental and Social Impact Assessment prepared for KRIS and HVIS which highlighted all relevant Nigerian environmental regulations and legal instruments including sector-specific legislations as they apply to, water resources and agriculture, and the World Bank Operational Policies.

This assessment will be conducted in accordance with the relevant Federal Government, Kano and Jigawa State environmental policies, laws, regulations, guidelines including the applicable World Bank Operational Policies.

2.2 Applicable National Policies

An overview of relevant Ministries, Departments and Agencies (MDAs), responsible for Water, Environment, Social, Agriculture and Rural Developmental sectors at the Federal level are itemized below.

2.2.1 National Instruments on Water Resources

National Legal Framework on Water Resources

Water supply is on the concurrent legislative list, which poses a challenge to coordination and definition of roles between the different tiers of government. The three levels of government, Federal, State and Local, share responsibility for water resources management. This has often lead to fragmentation, duplication and lack of inter-sectoral coordination, with each level of government pursuing its independent water agenda. The institutional arrangements in Nigeria's water resources are as follows:

- Federal Government level- FMWR & FMARD (including 12 River Basin Development Authorities (RBDAs) and National Water Resources Institute (NWRI).
- State Government level - Responsible for potable water supply (through state Water Agencies (SWAs).
- Local Government level- responsible for provision of rural water supplies and sanitation facilities.
- Community level- participates in rural water supplies and sanitation.

Federal Ministry of Water Resources

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. The FMWR is the main national coordinating body in the water sector and the implementer of the National Water Policy and water-related sanitation. Its principal functions are to:

- Formulate and implement national irrigation policy;
- Develop and support irrigated agriculture;
- Coordinate the development and utilization of water resources for irrigation and other purposes;
- Update and implement the Water Resources Master Plan;
- Collect, store, analyze and disseminate hydro-meteorological, hydrological and other data;
- Support, monitor and evaluate programmes and performances of the RBDAs and the National Water Resources Institute (NWRI);
- Formulate appropriate water resources legislations;
- Undertake studies and investigations to allow the efficient use of Nigeria's water resources.

Other National Water Legal Instruments are:

The National Council of Water Resources (NCWR) - is the most important water resources policy formulating body.

The National Technical Committee on Water Resources (NTCWR) - is 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.

River Basin Development Authority

By Decree No 33 of 1973 the Federal Military Government of Nigeria created River Basin Development Authorities with broad based mandates to cover all major aspects of agricultural production. The situation more or less remained the same with the promulgation of Decree No_ 25 of 1976 except for the creation of additional River Basin Development Authorities. However, with the promulgation of Decree No. 35 of 1987, the River Basin and Rural Development Authorities were disengaged from all forms of agricultural and extension services as well as from direct agricultural production. Their core mandate thus focused on supply of water for irrigation, human and livestock consumption within their catchment areas.

Mandate and Responsibilities

There are currently 12 River Basin Development Authorities (RBDA's). They are responsible for implementing the ·Irrigation development policies of the Federal government. The initial mandate of the RBDAs was rather broad and has since been modified to reflect changing economic realities. Their main functions are as follows: ·

- To undertake comprehensive development of both surface and groundwater resources for multipurpose use, with particular emphasis on the provision of irrigation infrastructure, flood and erosion control, and water management;
- To construct, operate and maintain dams, lakes, polders, wells, irrigation and drainage systems for achievement of the RBDA's functions and to hand over all lands to be cultivated on irrigation schemes to farmers;
- To supply water from completed storage schemes to all users for a fee to be determined by the RBDA with approval of the Federal Ministry of Water Resources;

- ❖ To construct, operate and maintain infrastructural services such as roads and bridges linking project sites: and
- ❖ To develop and keep up-to-date, a comprehensive water resources master-plan, identifying all water resources requirements, through adequate collection and collation of water resources, water use, socio-economic and environmental data of the River Basins.

2.2.1.1 Hadejia Jama'are River Basin Development Authority (HJRBDA)

The Hadejia –Jama'are River Basin Development Authority is a RBDA under the Federal Ministry of Water Resources responsible for surface and underground water resources development in Kano, Jigawa and Bauchi states. The RBDA is primarily responsible for the management and supervision of activities associated with the Hadejia, Jama're and Katagum Rivers. With respect to the TRIMING Project, three dams under the RBDA have been identified for rehabilitation and expansion works; these include Tiga, Challawa Gorge, and the Hadejia Barrage.

2.2.2 The Federal Ministry of Environment

The Ministry of Environment is the highest policy making body responsible for addressing environmental issues in Nigeria. The act establishing the Ministry places on it the responsibility of ensuring that all development and industry activities, operations and emissions are within limits prescribed in National Guidelines and Standards and comply with relevant regulations for environmental protection management in Nigeria as these may be released by the Ministry. To fulfil this mandate, a number of regulations/instruments are available, however, the main instruments in ensuring that environmental and social issues are mainstreamed into development projects is the Environmental Impact Assessment (EIA) Decree No.86 of 1992, now EIA Act CAP E12 LFN 2004 has a procedural guideline which indicates the steps to be followed in the EIA process from project conception to commissioning, and ultimately decommissioning. The Act through the FMEnv. prohibits public and private sectors from embarking on major projects or activities without due consideration, at an early stage, of environmental and social impacts that may arise from the project implementation.

According to these guidelines:

- **Category I** projects will require a full Environmental Impact Assessment (EIA).
- **Category II** projects may require only a partial EIA, which will focus on mitigation and Environmental planning measures, unless the project is located near an environmentally sensitive area--in which case a full EIA is required.
- **Category III** projects are considered to have "essentially beneficial impacts" on the environment, for which the Federal Ministry of the Environment will prepare an Environmental Impact Statement.

This project is rated Category II according to FMEnv. EIA ACT

Table 4 Other Applicable Environmental Policies

Regulatory Framework	Description
Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004	The Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004 provides guidelines for activities of development projects for which EIA is mandatory in Nigeria. According to the act, category II projects such as the Social Intervention Project may require only a partial EIA/EMP, which will focus on mitigation and

Regulatory Framework	Description
	Environmental planning measures
National Environmental (Sanitation and Wastes Control) Regulations (2009)	The purpose of the Regulation is the adoption of sustainable and environment friendly practices in environmental sanitation and waste management to minimize pollution. The Instrument amongst others makes provisions for the control of solid wastes and hazardous wastes.
National Environmental (Soil Erosion & Flood Control) Regulations (S.I. 12) 2011	The purpose of these Regulations is to establish technically feasible and economically reasonable standards and procedures to achieve appropriate level of management and conservation practices to abate soil erosion, siltation, and sedimentation of the waters of Nigeria, due to soil erosion and flood aggravated by non-agricultural earth-disturbing activities.
National Environmental (Noise Standards and Control) Regulations, 2009	The objective of the Regulations is to ensure maintenance of a healthy environment for all people in Nigeria, the tranquillity of their surroundings and their psychological wellbeing by regulating noise levels. The Instrument prescribes maximum permissible noise levels for construction as 60dB (A) and 40dB(A) for day and night respectively
National Environmental (Construction Sector) Regulations (S.I No. 19), 2011	The purpose of these regulations is to prevent and minimize pollution from construction, decommissioning and demolition activities in the Nigerian environment. It stipulates that new projects in the construction sector shall apply cost-effective, up-to-date, efficient, best available technology, to minimize pollution to the barest degree practicable. In addition, every operator or facility shall carry out an EIA and submit an EMP for new projects or modification including expansion of existing ones before commencement of activity.
Nigerian Land Use Act of 1978	The law establishes the legal framework for government expropriation of land from individuals and communities, when it is required for "overriding public interest/good". It prescribes the circumstances under which the State can revoke rights of occupancy to the land and the compensation provisions that are required.
National Policy on Occupational Safety and Health, revised 2020	This policy was approved by the Federal Executive Council (FEC) in September 2020. It provides a guide for voluntary compliance and serves as a basis for occupational health and safety (OHS) programs for workers even under such development projects
Nigeria Labour Law (2004)	The Labour Act of 2004 set the standard for the minimum amount of naira a worker in Nigeria is supposed to make. In 2020, the National Minimum Wage was set to ₦30,000.00 per month
Workers Compensation Act	The Workmen's Compensation Act makes provisions for the payment of compensation to workmen for injuries

Regulatory Framework	Description
(2010)	suffered in the course of their employment

2.2.3 The Federal Ministry of Women Affairs and Social Development

The FMWASD was established by Decree No. 30 of 1989. The broad mandate of the Ministry is to advise the government on gender and children issues and issues affecting persons with disabilities and the elderlies. The Ministry also initiates policy guidelines and leads the process of ensuring gender equality and mainstreaming at both the national and international levels.

2.2.4 Federal Ministry of Labour & Employment

The Nigeria Ministry of Labour and Employment is the country's designated authority for labour-related matters. The ministry has the authority and capacity to ensure appropriate labour management in the country. The Ministry is structured into six Zonal labour offices, nine departments consisting of six professional and three service departments. It operates 36 State Labour Offices and the FCT, 23 District Labour Offices, Labour Desk Office, Geneva, Switzerland. Recently nine (9) Labour Desk were approved for nine ministries, department and agencies.

2.2.5 Gender and Social Related Policies

Child Rights Act (2003)

The Child's right Act provides a platform for protection of children against child labour, exploitation and other forms of social vices. It codifies the rights of children in Nigeria (a person below the age of 18 years), consolidates all laws relating to children into a single law and specifies the duties and obligations of government, parents and other authorities, organizations and bodies. More particularly, the Act gives full protection to privacy, honour, reputation, health and prevention from indecent and inhuman treatment through sexual exploitation, drug abuse, child labour, torture, maltreatment and neglect to a Nigerian Child.

The Convention on the Rights of Persons with Disabilities (CRPD) (2012)

Adopts a broad categorization of persons with disabilities and reaffirms that all persons with all types of disabilities must enjoy all human rights and fundamental freedoms. It clarifies and qualifies how all categories of rights apply to persons with disabilities and identifies areas where adaptations have to be made for persons with disabilities to effectively exercise their rights and areas where their rights have been violated, and where protection of rights must be reinforced.

National Gender Policy (2006)

Provides a framework for ensuring gender inclusion and sensitivity in developmental plans and programs at the national and sub-national levels. The goal includes the elimination of cultural/ religions gender-based biases and harmful cultural and religious practices which rise to inequalities in gender-role relations in the Nigerian society, by ensuring: ensure equal access to women, boys and girls to both formal and informal education; ensure that women have access to critical resources and invest in their human capital as a means of reducing extreme poverty in families; and eliminate the high risks linked to many harmful traditional cultural practices, which still put threaten the health of women.

The Violence Against Persons Prohibition (VAPP) ACT 2015)

Signed into law on 23rd May 2015. This act prohibits all forms of violence against private and public life and provides maximum protection and effective remedies for victims and punishment of offenders. Nigeria's national government has taken steps to penalize and address GBV and SEA, although a clear leadership with the leverage to garner multi sectoral support to address this complex problem seems absent. The institutional champion of women's and children's rights and

GBV issues within the government is the Federal Ministry of Women Affairs and Social Development (FMWASD). But it has limited influence on sectoral ministries who need to enforce policy, insufficient budgetary resources and insufficient institutional capacity to enact its mandate. In practice, the legal and judicial systems provide women and children with little protection against violence, and timely and adequate support services are scarce and often ill-equipped to respond to survivors' needs.

2.2.6 The Federal Ministry of Agriculture and Rural Development (FMARD)

The FMARD is involved in irrigation development in the past as it funded, with World Bank support, a series of state-run Agricultural Development Projects (ADPs), including the promotion of irrigation owned and managed by farmers, particularly in F*adama* areas, and the provision of extension services to the public sector irrigation schemes of the RBDAs and the State Irrigation Departments.

2.3 Applicable State Policies

2.3.1 Kano State

Kano State Ministry of Agriculture & Natural Resources: The Ministry of Agriculture and Natural Resources is one of the first generation Ministries set-ups in 1967. It's primarily responsible for planning, formulation, implementation and coordination of agricultural policies of the State.

Kano State Ministry of Water Resources: Kano State Ministry of Water Resources was created in the year 1990 after the defunct Water Resources and Engineering Construction Agency (WRECA) was dissolved to form three organizations namely: Ministry of Water Resources, Kano State Water Board and the new WRECA. The Kano State Ministry of Water Resources is responsible for provision of sustainable drinking water and irrigation facilities in the state through best practices and good governance which will reduce waterborne diseases, reduce poverty and increase productivity of the citizens.

Kano State Ministry of Environment (KSMEnv): is responsible for protecting, preserving and improving the state environs. This Ministry is in charge of executing State programmes relating to control of droughts, desertification, flood, erosion and management of forests estate.

Kano State Environmental Planning and Protection Agency (KASEPPA): a government agency under the KSME responsible for all environmental related issues in the state. Responsibilities include planning and development of urban centers, provision of amenities, infrastructures and other functions necessary for healthy and orderly urban growth.

Kano State Refuse Management and Sanitation Board (REMASAB)

REMASAB serves as the regulatory authority in Kano state charged with the responsibility for the protection and management of the environment. The following are the specific functions but are not limited to:

- Minimizing the impacts of physical development of the ecosystem
- Preserving, conserving and restoration to pre impact status of all ecological processes essential for the preservation of biological diversity.

- Enforcement of all environmental legislations and abatement of all forms of environmental degradation and nuisance.
- Protection and improvement in air, water, land, forest, and wildlife in the ecology of the federal capital territory.
- Municipal liquid and solid waste collection and disposal/sanitation management services including connection of plot to the central sewer line.
- Pollution control and environmental health fumigation and vector control services.

Kano State Rural Water Supply and Sanitation Agency (RUWASA)
The function of RUWASA is towards the development of water resources potentials of the states and to effectively and efficiently manage water resources by harnessing and conserving surface and underground water.

2.3.2 Jigawa State

Jigawa State Ministry of Agriculture and Natural Resources: The Jigawa State Ministry of Agriculture and Natural Resources is the state's apparatus for the development of Agriculture. It is concerned with the development of crops, livestock, fisheries, and Agro-processing in the State.

Jigawa State Ministry of Water Resources: Jigawa State Ministry of Water Resources is responsible for Water resource exploitation, provision of sustainable drinking water and irrigation facilities in the state.

Jigawa State Ministry of Environment (JSME): The objectives of the Ministry include:

- Ensuring sustainable development of the State environs;
- Ensuring qualitative and healthy environment thereby safeguarding the wellness of the indigenes of the State;
- Controlling and monitoring all forms of environmental degradation;
- Ensuring sustainable management of the State forest to meet economic, social and ecological needs of the people of Jigawa State; and
- Cooperating and collaborating with the Federal, Local Governments and Non-Governmental organizations, private sector and individuals on environmental matters.

Jigawa State Environmental Protection Agency (JISEPA): The functions of the agency include:

- Collection and disposal of wastes generated in the State capital, urban towns and institutions in the State;
- Inspection of government premises, institutions, factories etc. in order to ensure compliance with sanitary standards in the State; and
- Creation of public awareness campaign on environmental protection and improvement through mass media.

2.4 World Bank Safeguard Policies

The World Bank provides a number of operational and safeguards policies, which aim to prevent and mitigate undue harm to people and their environment in any development initiative involving the Bank. The Nigerian EIA Act and the World Bank safeguard policies are similar; designed to help

ensure that projects proposed for Bank financing are environmentally and socially sustainable, and thus improve decision-making.

The Bank has eleven safeguards policies and these are:

- OP 4.00 Use of Country Systems; OP 4.01 Environmental Assessment;
- OP 4.04 Natural Habitats; OP 4.09 Pest Management; OP 4.11 Physical Cultural Heritage;
- OP 4.12 Involuntary Resettlement; OP 4.10 Indigenous People; OP 4.36 Forests;
- OP 4.37 Safety of Dams; OP 7.50 Projects on International Waterways;
- OP 7.60 Projects in Disputed Areas

O.P 4.01 Environmental Assessment

This assessment is used in the World Bank to identify, avoid, and mitigate the potential negative environmental and social impacts associated with Bank's lending operations early on in the project cycle. In World Bank operations, the purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted and their concerns addressed. This policy is triggered if a project is likely to have potential adverse environmental and social risks and impacts in its area of influence. The EA has various tools that can be used, including amongst others Environmental Impact Assessment (EIA) or Environmental and Social Management Plan (ESMP).

The triggered safeguard policy OP 4.01 and its relevance to the project are summarized in table 3 below

Table 5: Applicable World Bank OP

Operational Policy	Reason for Application to the Project	How it will be Addressed
O.P 4.01	Proposed social intervention works will include construction works: Electrical works; Hoisting Operations; Scaffolding; Confined Spaces; Stacking and Storage of materials and equipment; Gas Cylinders Storage, handling and transportation; Pipe transportation, loading and unloading; Welding and grinding activities; Grit blasting etc. Potential environmental concerns associated with such construction works include pollution from waste generation, community health and safety, occupational health and safety of workers, noise, dust emissions etc. However, these impacts are limited, site specific and can be mitigated. The project also poses some potential social risks which is rated substantial, including risks associated with labour influx such as Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH) unwanted pregnancy, Sexually Transmitted Infections (STIs)/Sexually Transmitted Diseases (STDs), competition for resources, grievances,	This ESMP is a site-specific plan prepared to address the identified risks and includes other plans like waste management plan, OHS plan, community health & safety plan amongst others.

Operational Policy	Reason for Application to the Project	How it will be Addressed
	social conflicts and exclusion of vulnerable groups from participating in the project.	

CHAPTER THREE: DESCRIPTION OF PROJECT ENVIRONMENT & BASELINE STUDIES

3.1 Introduction

This Chapter provides summary description of the commanding areas: KRIS and HVIS, the physical environment including the biological and socio-economic environment of the project areas and also gives insight into the site specific areas of project influence. Furthermore, field sampling analysis are elucidated which are complimented with existing data from the project areas and environs.

3.2 Overview of KRIS and HVIS

Both the KRIS and HVIS are within the operational jurisdiction of the Hadejia-Jama'are Komadugu-Yobe River Basin (HJKYRB). The Basin has a total area of about 84,000 km^2, traverses six States namely Bauchi, Borno, Jigawa, Kano, Plateau and Yobe before discharging into Lake Chad. Over 15 million people are supported by the basin through agriculture, fishing, livestock keeping and water supply. The two major rivers of the basin are the Hadejia and the Jama'are, which meet in the Hadejia Nguru Wetlands (HNWs) to form the Yobe. The Hadejia River rises from the Kano highlands while the head-waters of the Jama'are River are in the Jos plateau. Within the Hadejia River system the natural pattern of runoff has been modified by the construction of dams and associated large-scale irrigation schemes, most notably Tiga and Challawa dams. The Hadejia-Nguru wetlands are on the List of Ramsar wetlands of international importance. Nguru Lake and the Marma Channel complex (58,100 ha) are designated a Ramsar Site.

Hadejia Jama'are River Sub-Basin (HJRB) has land mass that extends over an area of 45,000km2 and cut across the whole of Kano and Jigawa States and about two-thirds of Bauchi State as seen in figure 1 below. The population of people in Hadejia Jama'are River Sub-Basin is not less that 15million consisting of the population of people in Kano State (9,383,682), Jigawa State (4,348,549) and majority of the people in Bauchi State (4,676,465) respectively (UNFPA,2012). The major features of this basin are: Dams in the Hadejia river system (notably Tiga, Challawa dams, and the Hadejia Barrage) to serve two (2) large irrigation schemes KRIS in the upper reach of the basin, and the HVIS in the middle region of the basin.

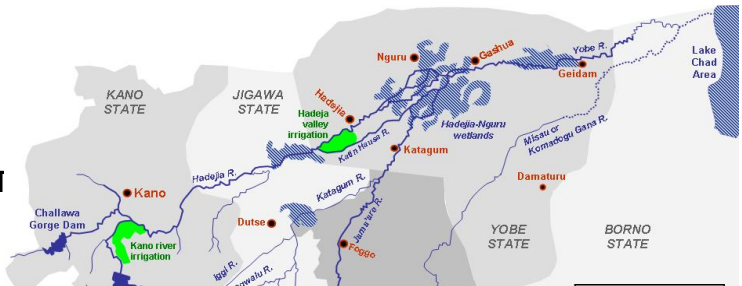


Figure 1 Hadejia Jama'are River Sub-Basin showing the KRIS and HVIS (Source: TRIMING PROJECT

3.2.1 Kano River Irrigation Scheme (KRIS)

KRIS is located about 30km southwest of Kano, the capital city of Kano State. KRIS is located within Beneji, Bunkure, Kura and Rano Local Government Areas of Kano State, with Project administrative Headquarters located at Kura (KRIS West branch) and Bunkure (KRIS East Branch). The Kano River Irrigation Scheme (KRIS) includes the Kano River, Phase I and Phase II,

The scheme is divided into two phases; Phase 1 was originally designed with a capacity of 22,000 ha of land, out of which 13,890 ha have been fully developed: Phase 2 was shelved after feasibility study established that irrigation water supply by pumping from the Hadejia River was not feasible. An additional 1,087 ha is being developed covering only 42 sectors out of 50 sectors under Phase 1.

The main source of water for the irrigation scheme/project is from the Tiga dam reservoir. The entire water distribution network operates on gravity. As water is conveyed from the Tiga Dam through the Ruwan Kanya reservoir, to the project area via an 18 km main canal. The canal is divided into two branches, the West and East branches. Each of the branch canals delivers water to its command area through a network of lateral and distributary canals, which delivers the water into field channels for use by farmers.

The main features of KRIS from upstream to downstream include:

- Tiga Dam and Reservoir;
- Main Canal system - including the Ruwan Kanya Dam and Reservoir – supplying water to 49 sectors (ultimately);
- East Branch Canal system, at present supplying water to 11 sectors and ultimately to 14 sectors;
- Gayare Branch Canal system supplying water to 3 sectors; and
- West Branch Canal system, at present supplying water to 27 sectors and ultimately to 29 sectors

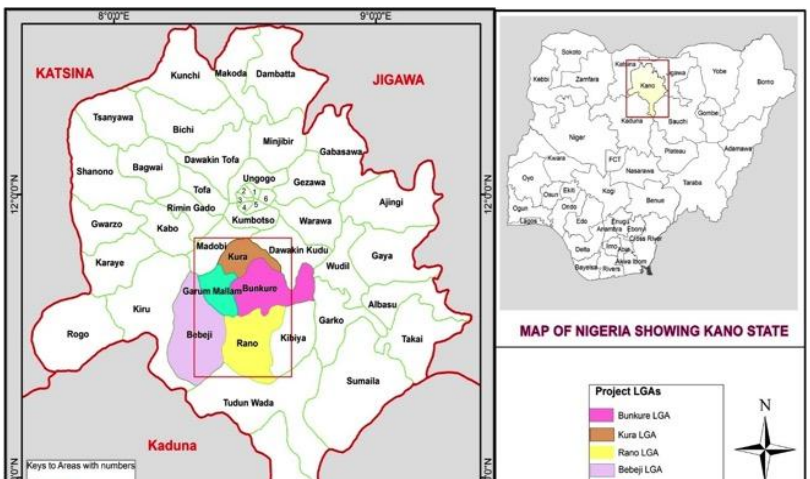


Figure 2: Map of Kano State showing the LGA in KRIS (Source,

3.2.2 Hadejia Valley Irrigation Scheme (HVIS)

The Hadejia Valley Irrigation Scheme (HVIS) is located about 150 km east of Kano City in Auyo LGA of Jigawa State and about 95km northeast of Dutse, the state capital. HVIS encompasses four LGAs in Jigawa state namely: Auyo; Guri; Hadejia; and Kiri-Kasamma area as seen in figure 2 below. The scheme is operated by Hadejia-jama'are River Sub-Basin Development Authority with head office in kano and zonal office in Hadejia. HVIS is divided into Phase 1 and 2: Phase 1 with an initial plan to develop 12,500 ha of which Stage 1 (the northern part) covers 6,175 ha and Stage 2 (the southern part) covers 6,325 ha. Only Stage 1 has been developed covering a total area of 5,286 ha with an additional area of 459 ha is being developed which covers the four sectors initially left uncompleted.

The main features of HVIS system comprise at present:

- Hadejia Barrage and headworks
- An irrigation network composed of clay-lined earth canals including:
- Feeder Canal (FC) runs for 2.8 km and ends at the main division works
- North Main Canal (NMC)with 19 sectors (15 constructed, 4 finished)
- South Main Canal (/SMC) with 25 sectors (not constructed), and,
- Main Drain and drainage buffer

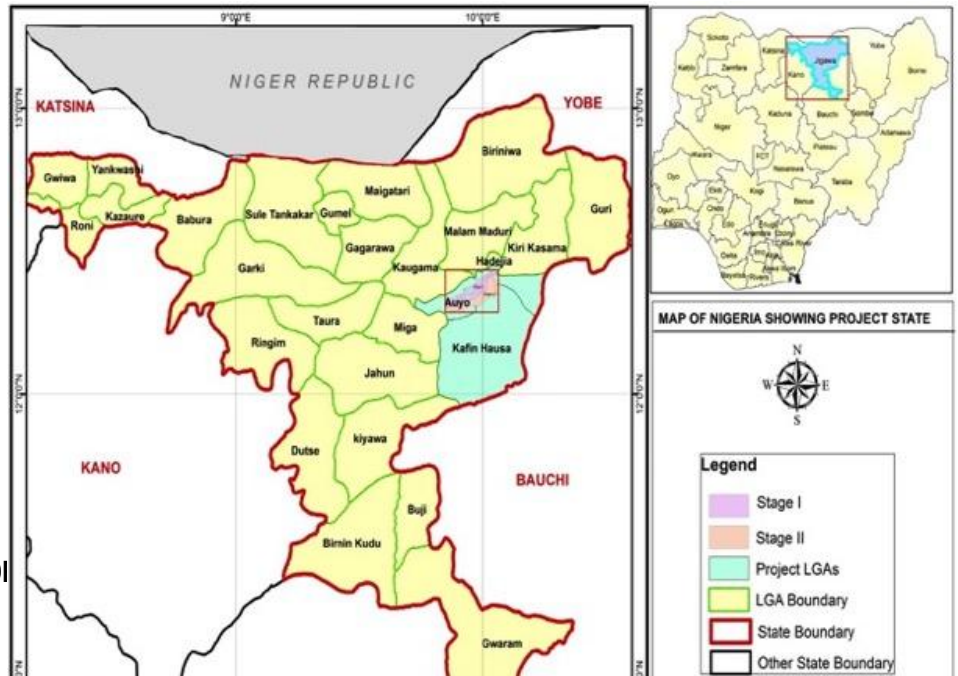


Figure 3 Map of Jigawa State showing the LGA under HVIS (Source, TRIMING Project

3.3 Description of the Project Environment – Kano State

The proposed project is in Kano State with a total population of 16,321,000 (NPC, 2021) and a population density of 458 persons per square meter. The state has three senatorial districts: Kano Central; Kano South and Kano North and 44 Local Government Areas (LGAs), in specifics only three LGA are covered for this assessment, see figure 4 below. Kano is the capital of Kano State which is located in the Northwest geopolitical region of Nigeria. It is known as the biggest commercial hub in northern Nigeria which was created from the former Northern region of Nigeria in 1967. Bordering the state by the northwest is Katsina State, Jigawa State by the northeast, Bauchi State by the southeast and Kaduna State by the southwest. Hausa and Fulani are the major ethnic groups with Islam being the predominant religion. The most spoken language is Hausa, but English language is commonly spoken as the country's official language. Communities employ traditional leadership.

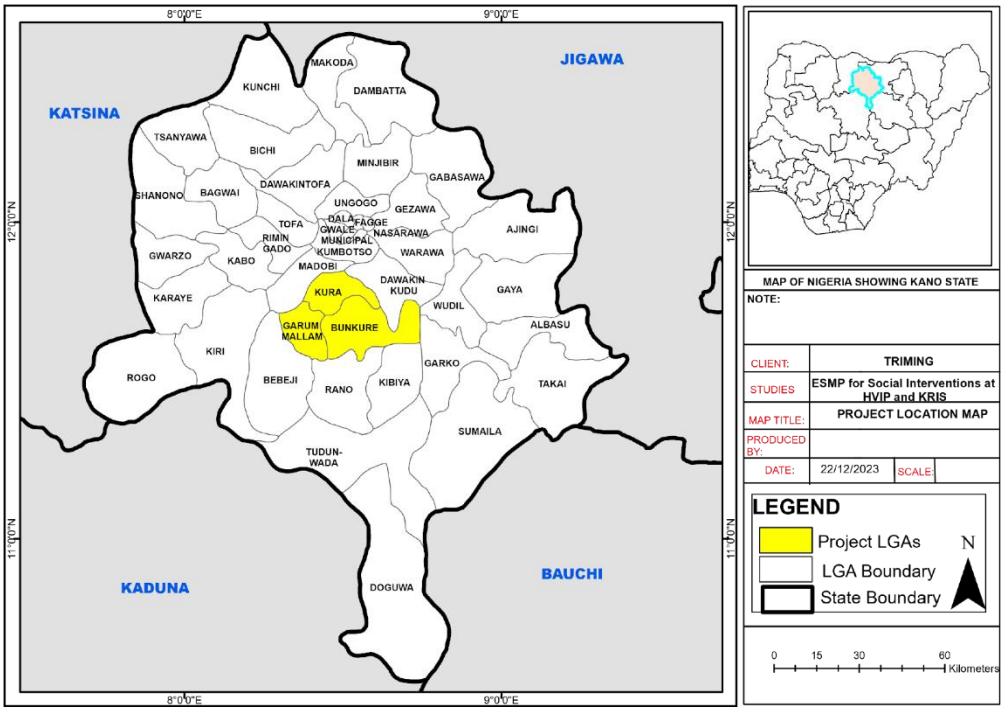


Figure 4 Map Showing Proposed Site Locations, Kano State

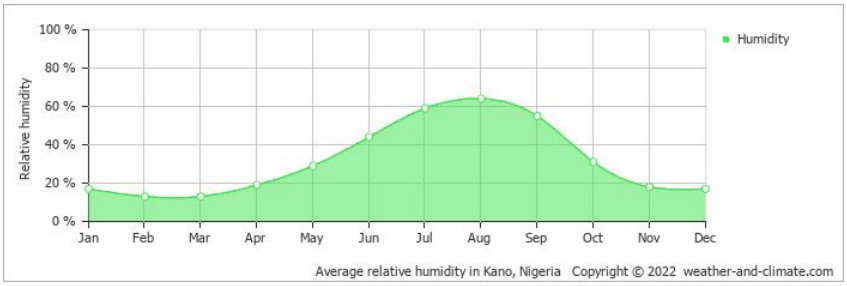
3.3.1 Baseline Description of Project Environment, Kano State

Table 6 highlights summary description of the biophysical and socio-economic setting of the project area, Kano State

Table 6: Baseline Description of Project Environment, Kano

Features	Description
Soil	Generally, the matured soils occupy the plains and the immature ones are found on hill slopes, foot slopes and valley-bottoms. The influence of topography and wind-drift materials from the desert is what shapes the aggregate of the soil structure in Kano Region, although, the matured soils are latosols of ferruginous type. The lower course contains more of loamy sand than heavy or light loamy soils.
Surface Water & Hydrology	The Northern Region of the country in which Kano falls under is divided into two hydrological zones, demarcated by the hydro-geological divide. To the west of the divide is the zone of high surface water discharge and retention which coincides with the zone of Basement Complex structure. To the east and north east of the divide is the zone of large accumulation of ground water which is part of upper aquifer of Chad Basin. Retention and flow of water on the surface are very limited in this zone. The climate of the region controls the amount of water that is available both on the surface and at sub-surface at any given time within a water year. The hydrogeology of the region is to a large extent controlled by geologic settings, climatic condition and human activities. The surface situation, which is directly governed by the underlying geology, has its infiltration, evaporation, runoff and other flow components as the major factors responsible for the groundwater recharge and development in the region's hydrologic environment. Groundwater occurrence within the basement complex areas is limited to fissures and weathered overburden.
Agriculture	Kano Region is one of Nigeria's most important agricultural regions and currently produces food and cash crops such as sorghum, rice, millet, groundnut, wheat, cowpeas, and vegetables under both rain-fed and irrigated farming. There has been rise in agricultural intensity, with expanded area of irrigated land and input-demanding row crops. Irrigation practices along the watersheds may increase run-off and drainage patterns which can result in surface water variation. Moreover, irrigated areas are often associated with increased agricultural inputs, such as fertilizer and pesticides which can affect water quality in receiving bodies due to excess nutrients and pesticides.
Vegetation	Vegetation of the region was originally defined as undisturbed Sudan savanna and guinea savanna. The normal vegetation has always been the dry Guinea in the southern fringe and the Sudan in the larger part of the region. The vegetation has now been subjected to destruction through fuel wood extraction, urban encroachment and population pressure (Dakata and Yelwa, 2012) hence eventuated the formation of four vegetation zones in the region namely: Sudano Sahelian Savanna, Sudan Savanna, Open Guinea Savanna and Protected Guinea Savanna (Dakata, 2012).
Rainfall	The mean annual rainfall is about 800 mm around metropolitan Kano. Great temporal variation occurs in the amount of rainfall received and no two consecutive years record the same amount. The amount receives vary between Kano metropolis and it southern and northern extremes based on the latitudinal and continentally factors.
Temperature	Temperature in the Kano is generally high throughout the year. In Kano there are seasonal changes, indicating a gradual increase from January to

Features	Description
	April where maximum value reaches as high as 43^0 C. There are three main seasons based on temperature element. A cool and dry season: It lasts from November to February. During which the mean monthly temperature is between 21 and 23^0 C with diurnal range of 12-14^0 C. The Hamattan winds prevail at this period. The period is followed by a hot and dry season which lasts from March to mid-May. The mean monthly temperature during this period is in excess of 30^0C and the daily range is up to 20^0 C. This is followed by the wet season which is warm, with mean monthly temperatures about 26^0 C and a diurnal range of about 10^0 C, rising to 13^0 C in September.
Humidity	The mean monthly relative humidity over the year in Kano.



- On average, August is with 64.0% the most humid.
- On average, February is with 13.0% the least humid month.
- The average annual percentage of humidity is: 32%

Temperature	Temperature in the region is generally high throughout the year. In Kano there are seasonal changes, indicating a gradual increase from January to April where maximum value reaches as high as 43^0 C. There are three main seasons based on temperature element. The first is the cool and dry season which lasts from November to February. During which the mean monthly temperature is between 21 and 23^0 C with diurnal range of 12-14^0 C. The Hamattan winds prevail at this period. This period is followed by a hot and dry season which lasts from March to mid-May. The mean monthly temperature during this period is in excess of 300C and the daily range is up to 20^0 C. This is followed by the wet season which is warm, with mean monthly temperatures about 26^0 C and a diurnal range of about 10^0 C, rising to 13^0 C in September.
Topography & geology	Jakara River is underlain by crystalline Basement complex of pre-cambrain origin which losses its identity by disappearing into the Chad Formation. The Basement complex consists of granite rocks extending up to Yadai towards the North and Gabasawa towards the East. The Granites are generally Gneissic and commonly developed in a mixture of Pegmatite of schist granite, Gneiss and irregular mass of pegmatite. The geological structure influences the relief as well as landforms which are relatively flat, with some undulation especially around upstream. The relief of the Region can be categorized into four types: South and south eastern highlands, the middle and western high plain, the central lowland and the Chad plain. The highlands occupy more than 50% of the surface area of the Kano Region and lie on the elevation ranging between 450 m to 650 m

3.4 Description of the Project Environment – Jigawa State

Jigawa is a Hausa word used to describe a vast loamy but non-marshy soil suitable for the cultivation of crops. The state has a total land area of approximately 22,410 sqkm across 26 LGAs of which Auyo LGA is of importance to this assessment, as highlighted in figure 5 below. Its topography is characterized by undulating land, with sand dunes of various sizes spanning several kilometres in parts of the State. The southern part of Jigawa comprises the Basement Complex while the northeast is made up of sedimentary rocks of the Chad Formation. The main rivers are Hadejia, Kafin Hausa and Iggi Rivers with a number of tributaries feeding extensive marshlands in north-eastern part of the State. Hadejia – Kafin Hausa River traverses the State from west to east through the Hadejia-Nguru wetlands and empties into the Lake Chad Basin.

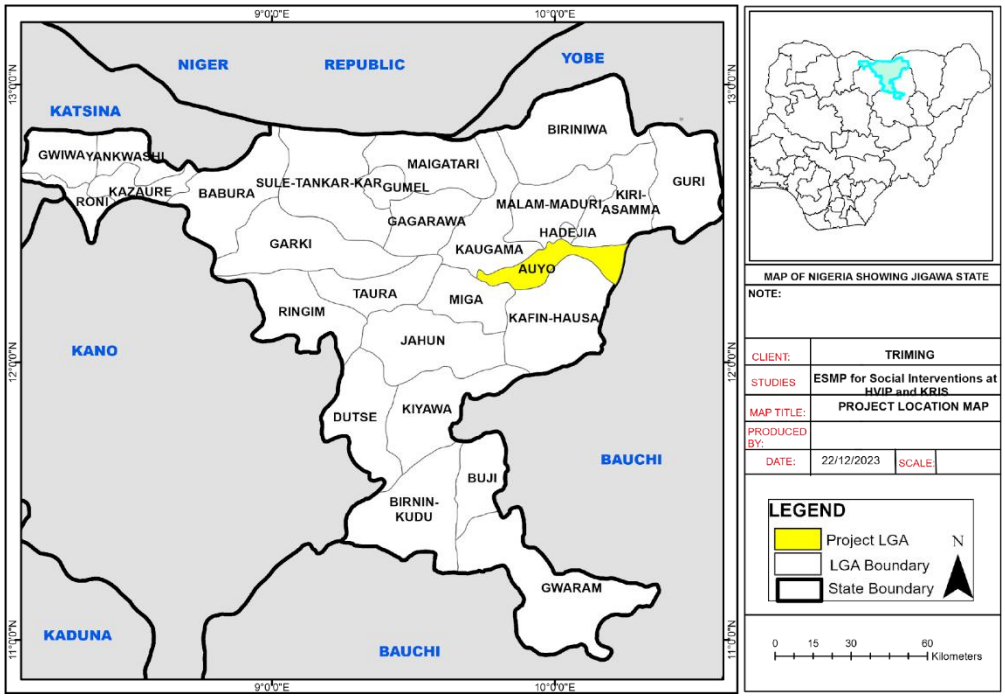


Figure 5 Map Showing Proposed Project Sites, Jigawa State

3.4.1 Baseline Description of Project Environment, JIgawa

The climate of Jigawa state is semi-arid, characterised by a long dry season and a short wet season. The climatic variables vary considerably over the year and are erratic. The mean annual temperature is about 25Â°C. Table 7 highlights summary of the project environment.

Table 7: Summary of Baseline Description of Project Environment, Jigawa

Features	Description
Rainfall	The total annual rainfall ranges from 600mm in the northern to 1000mm in

Features	Description
	the southern parts of the state. Wet season is roughly four months (June to September) and dry season is seven to eight months (October to May). The rainy season may start in May but early rains in April are not unusual. Violent dust storms, lightning and thunder usually herald the onset of the rains in May/June and their retreat in September or early October
Relief & Drainage	The relief is generally undulating, but rock outcrops are common in areas of Basement complex rocks. In the southern part of the state, the relief is about 500-600 metres above sea level. Some of the hill formations in the areas underlain by these old hard rocks consist of lateritic capped erosional survivals on deeply weathered soils. Surface outcrops are absent in the areas covered by sedimentary rocks of the Chad Formation and the relief is usually below 400 metres above sea level. Any undulations in the relief of such areas consist of fossils, dunes and dune ridges separated by depressions which contain water during the rainy season
Agriculture	Agriculture is the mainstay of the economy of Jigawa State as about two-third of the population of the state depend on it as source of income and subsistence. Cultivation of crops like groundnut, millet, guinea corn, cassava are possible with 70% of the total land area is cultivable while 10% constituting grazing reserve, 5% forest reserve and the remaining fifteen per cent are settlements and uncultivable areas. The state has 97 constituted forest reserves of 600sqkm, seventeen communal forest area of 20sqkm, in total and one game reserve (Baturiya game century) with 320sq. km. in total. To arrest the menace of desertification in the state, a total of 1,750 km of protective shelter belts were established and 250 km of sand dunes was fixed. To boost industrial development, the Forestry Department also established 1,350ha. of *Acacia nilotica* plantations for tannins and 350ha. of gum arabic plantations. For fisheries development on the other hand, the state is blessed with 303 natural/manmade water bodies located at Kazaure, Birnin Kudu and Hadejia.
Socio-economic	Jigawa State is richly endowed with natural resources. The state has vast agricultural land as well as abundant reserves of minerals. A major resource of significance in Jigawa State is the Hadejia-Nguru Wetlands, which covers an area of approximately 16sq. km. in Jigawa and Yobe states. The economy of the HadejiaNguru Wetlands which is based on agriculture, grazing and fishing, is a vital element in the productive resource base of both states (Barbier et al, 1991). The floodplain facilitates and supports the productive economy over a far larger area of both states than simply the floodplain. It has also been estimated that the returns from wetland agriculture, fishing and fuel wood is higher here than in the upland farming areas.

3.5 General Description of Commanding Areas

About 25 out of approximately 42 project sites were screened for possible environmental and social impacts and subsequent development of an Environmental and Social Management Plan (ESMP). The selection of 25 project sites visited during the assessment was based on factors such as: security; readiness of the WUAs and other stakeholders; and accessibility. Generally, the proposed interventions will be constructed in the existing schemes.

Water Supply

The Kano State Water Board abstracts raw water from both the Kano and Challawa Rivers along their courses. There are currently five (5) intake stations at different locations along the Kano River while one (1) station abstracts water from the Challawa River. The water board has an existing synergy with HJRBDA, as the latter is responsible for the management of the surface and underground water resources development the state and beyond. The board communicates to HJRBDA any intentions to install new intake stations along the course of rivers under the jurisdiction of the RBDA. This relationship needs to be sustained and even enhanced for effective water management within the river sub-basin as expansion of water abstraction stations is inevitable considering the increasing population of Kano metropolis and the growing commercial demands as well.

A. Wastewater and Drainage issues

The drainage network was designed to dispose of storm water runoff and irrigation surplus water. Runoff from the field were originally intended to be collected by the tertiary and field drains and passed into the secondary and main drains. Some of these drains are silted and quite a number are overgrown with aquatic weed and therefore, do not perform their function. However, it is customary that the project office carry out maintenance which was around the time of our assessment

B. Erosion Issues

Field visit shows that some areas experience erosion particularly within communities. Kano state constitutes of lateritic, clayey, and loamy closely-packed soil type, and comprises of flat and rolling terrains. The project sites are mostly lacking proper drainages which predispose some areas with slight uneven topography to minor to medium sized environmental issues. Since the state experiences a considerable amount of rainfall during the rainy season, areas with less compact (loose) soil formations may experience washing off topsoil along some sections. Although this is not prevalent in the proposed project area, issues of minor-medium erosion were identified.

C. Waste Management

Majority of the farmers and residents practice open dumping and burning of waste they generate. The assessment identified some communities with refuse dump within and around the project area as shown in Plate 1 below.

A B C

Plate 1 Waste Practise in some Communities

3.5.1 Site Specific Description of Selected Project Area

In order to have adequate and precise information, some project sites were selected and have been grouped according to LGAs. Selection was based on available and accurate information, the peculiarity (access road, environmental and social sensitivity, nearness to residential areas, security)

Table 8: Site Specific Description of Some Selected Project Areas

Name of Project Site	Site Description	Picture of Project Site

3.6 Environmental Baseline Studies

Baseline data was acquired during field visits within the boundaries of the different proposed project sites, in order to ensure project related activities do not have impacts on the environment and the people.

Sampling Methodology: An overall assessment of the study area was done through reconnaissance survey. During this survey, familiarization, boundaries, key features and mapping of hotspots were established. Air quality parameters were measured through a direct mechanism while Soil and Water Samples were collected based on random sampling, maps of hotspot areas and availability of water. The Sample size was intentionally spread across accessible and LGAs and potential hotspot sites (see Figure for Maps of Sampling locations).

A total number of eighteen (18) samples were analyzed, nine (9) samples for topsoil and nine (9) for groundwater (borehole water) were analyzed. These were subjected to composite analyses i.e in-situ sampling and ex-situ (Samples analysed by Ministry of Environment, Kano State). The method for determining the concentration of the specific pollutants is the direct reading method based on in-built gas sensors from the chosen equipment. The equipment was chosen based on simplicity, accuracy, specificity and stability. Soil and Water were taken at pre-identified spots at different sites across 4 LGAs as seen in Table 14 below.

Ground water samples were collected from Borehole using sterile dark coloured100ml bijou bottles. Samples for heavy metals and physico-chemical 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 physico-chemical parameters such as Temperature, pH, Dissolved Oxygen (DO), Conductivity, Total Dissolved Solids (TDS) etc. were measured in-situ using an in-situ water analyze.

3.6.1 Physio-chemical Analysis of Groundwater

Table 7 below highlights the results of the seven samples collected from 4 LGAs

Table 9 Physiochemical Properties of Groundwater

S/No	Parameters	S1 Kadage	S2 Boko	S3 Dalili	S4 Karfi	S5 Kurum simau	SP1 New Bunkure	SP2 New Bunkure	FMEnv Limits
1	Temperature	32.1	30.4	34.1	33.1	31.5	34.2	33.1	<40
2	pH	6.40	6.31	6.56	6.31	6.35	6.25	6.31	6.5-8.5
3	Conductivity (us/cm)	132.1	123.4	131.1	125.4	123.6	129.4	125.4	1000
4	Turbidity (NTU)	8	12.0	9.5	12.0	8	10.0	12.0	5
5	TDS	12.0	23.6	13.5	15.6	12.0	20.6	15.6	1000
6	TSS (mg/l)	2	6	3	5	2	4	5	37.3
7	Salinity (%)	154	216	145	151	154	165	151	0
8	Hardness	1.76	2.31	1.56	1.31	1.76	2.51	1.31	-
9	CO_3	143.0	105.5	108.0	140.5	143.0	115.5	140.5	-
10	Colour (TCU)	0.16	0.14	0.13	0.13	0.16	0.11	0.13	15
11	Chlorine (mg/l)	12	14.5	14	11.5	12	14.2	11.5	250
12	Nitrate (mg/l)	1.8	1.01	1.45	1.05	1.8	1.02	1.05	10
13	Sulphate (mg/l)	32.0	35.8	28.0	30.1	32.0	31.5	30.1	500
14	Phosphate(mg/l)	0.3	1.6	0.1	0.9	0.3	0.8	0.9	5
15	Calcium (mg/l)	13.1	18.3	12.5	14.1	13.1	14.6	14.1	150
16	Magnesium (mg/l)	1.5	2.4	1.8	2.0	1.5	2.2	2.0	50
17	Sodium	43.0	31.0	45.0	35.0	43.0	41.0	35.0	-
18	BOD (mg/l)	3	5.7	4	4.2	3	4.1	4.3	6
19	COD (mg/l)	0	0	0	0	0	0	0	30
20	DO (mg/l)	4.1	3.4	3.5	3.7	4.1	4.2	3.7	4
21	Cu	0	0	0	0	0	0	0	0.01
22	Fe	0.01	0.10	0.02	0.10	0.01	0.10	0.01	0.5
23	E. Coli	0	0	0	0	0	0	0	0
24	Coliform	3	1	4	2	1	6	0	0

Date:20-27/11/23

Time: 10;07am

3.6.1.1 Discussion on Groundwater Sample Analysis

Temperature

The temperatures of all the samples ranged between 30.6 -36.1 °C all within the FMEnv limit.

Conductivity

The high level of conductivity values of waters is a reflection of the chemical richness of the water body of the study area. The conductivity values of the water samples were high however, they were not above the FMEnv limits. This may be attributed to the mineral richness of the substratum of the project area. The conductivity values of the water body ranged from 123$_3$S/cm 321$_3$S/cm

Dissolved Oxygen

DO is the oxygen molecule present in water. Very low levels ranging from 0-2mg/l does not support life (aquatic flora and fauna). However, studies show that aquatic organisms survive in a DO range of 2-4mg. The samples collected had a range from 0.18 – 1.6mg/l. This simply confirms the water sample was collected from a tap water point, potable for consumption where flora and fauna is not meant to exist.

Turbidity

Turbidity is a measure of water clarity and an indicator of the quantity of suspended solids in the water. Turbidity is the scattering and adsorption of light within water, caused mainly by suspended sediment, dissolved organic matter and plankton. Anthropogenic activities and natural occurrences (such as rainfall) can lead to the suspension of sediments, which increases turbidity levels. The measured turbidity value for water ranged from 0.2 to 0.3 NTU which is below the WHO permissible limit of 5 NTU for drinking water.

Total Dissolved Solids

TDS content is a measure of turbidity and general polluting potentials in water. It is an index of the amounts of dissolved substances in water. The TDS concentration of were way below the FMEnv. limit of 1,000mg/l, ranging from 2.26-3.00mg/l. A TDS concentration over the recommended limit of 1,000mg/l may cause gastrointestinal problems in humans and animals. Dissolved solids in water may include organic matter and inorganic salts, calcium and magnesium carbonates, bicarbonates, chlorides, sulphates, with traces of iron, manganese and other substances. If TDS concentrations are high, it is wise to have further tests to determine specific contaminants.

Salinity: the salinity values were low and within range in all the sampling points.

Colour: the values were less than the 100TCU limits prescribed by FMEnv.

Chloride, Nitrate, Sulphate, Phosphate and Carbonate

These parameters were found within limits prescribed by the FMEnv for all water samples except Phosphate.

Chloride: concentration of Chlorine is within the acceptable limit for all samples collected ranging from 15.9 – 19.5 mg/l.

Nitrate: concentration of Nitrate is within the acceptable limit (20mg/l) for all samples collected which ranged between 7.70 – 9.1 mg/l. Nitrates can encourage the growth of algal blooms and aquatic weeds.

The levels for Sulphate (2.85-3.10mg/l) were below the WHO and FMEnv limits (500mg/l) while the levels for Phosphate were mostly above the FMEnv limits (5mg/l) which ranged from 11.2 -12.39mg/l. The elevated levels of Phosphate may be attributed to the cumulative residual application of water runoff from farms using fertilizers over numerous years. Phosphorous can

encourage the growth of algal blooms and aquatic weeds. This has to be monitored closely to avoid eutrophication.

Calcium and Magnesium Ca2+ and Mg2+ ions: when present in high concentrations can cause water hardness. Their levels were all within limit for all water samples. The most common source of calcium and magnesium in groundwater is through the erosion of rocks, such as limestone and dolomite, and minerals, such as calcite and magnetite.

Bicarbonates and Carbonates: the bicarbonate and carbonates levels were within limits. High bicarbonates and carbonates in water can cause calcium to precipitate.

Sodium: The values for sodium levels were within FMEnv limits.

Biochemical Oxygen Demand: BOD is a measure of the amount of oxygen utilized during a specific incubation (usually for 5 days) for the biochemical degradation of organic materials and also the oxygen utilized to oxidize inorganic material such as sulphate and ferrous ion. The BOD values for the water samples were all within the FMEnv range of 6 mg/l except for GGSS, Gwarzo, and GGSS, Rimin Gado with values 8.1 mg/l in both locations (less than 30 km apart). This might be traceable to the presence of highly weathered basement in the geology of these locations. The samples ranged from 3.0 – 8.1 mg/l.

3.6.2 Physio-chemical Properties of Soil

Nine topsoil samples were collected from 4 LGAs using soil auger into air-tight polythene bags and were taken to the laboratory for analysis. Chain of custody was maintained in transporting and delivering the samples to the laboratory to maintain sample integrity. Table 8 highlight the results of five samples taken from four LGAs, other results can be viewed in the annex

Table 10 Physiochemical & Microbial Analysis of Soil Samples

S/No	Parameters	S1 Lungunm/ Yalwa	S2 Mudawa	S3 Kadawa	S4 Kadage	S5 Shiye	FMEnv
1	Temperature	31.0	31.0	32.1	33.5	30.3	
2	pH	8.1	8.9	8.4	8.7	8.2	6.9
3	Conductivity	2110	2301.2	2108	1860	2510	N/A
4	Sulphate	32	61	65	28	34	N/A
5	Aluminium	0.12	0.19	0.21	0.11	0.28	N/A
6	Chloride	0	0	1	0	0	N/A
7.	Phosphate	42	31	30	28.1	28	N/A
8.	Nitrate	10.6	15.0	12.1	10.4	11.0	N/A
Heavy Metals							
9.	Chromium	0	0	1	1	0	1.0
10	Iron	3	2.10	1.67	1.01	1.07	N/A
11	Nickel	1.32	1.12	0	121	1.01	N/A
12	Copper	0.42	0.13	0.14	0.21	1.0	36.00

13	Manganese	0	0	0	0	0	N/A
14	Cadmium	0	0	0	0	1	N/A
Hydrocarbons							
15	THC	0	0	0	0	0	N/A
Microbiology							
16	Bacillus	0	0	0	0	0	N/A
17	E.Coli	0	0	0	0	0	N/A
18	Salmonella	0	0	0	0	0	N/A
19	Trichoderma	0	0	0	0	0	N/A
20	Pseudomonas	0	0	0	0	0	N/A

3.6.2.1 Discussion on Soil Analysis

Physio-chemical Properties

The physio-chemical properties of soils from the sample locations shown in table 8 above indicate that the pH of the soil, which depends on soil water ratio, ranged between 8.1-8.9. Colour of the soil sample range from brown to reddish orange, majority of the soils observed were of different shades of brown. The temperature measures were also within the FMEnv limits which correlates to the pH values of acidity

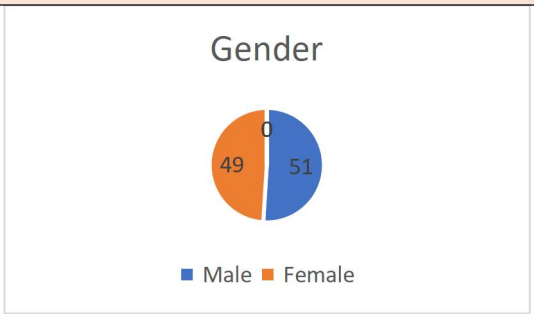
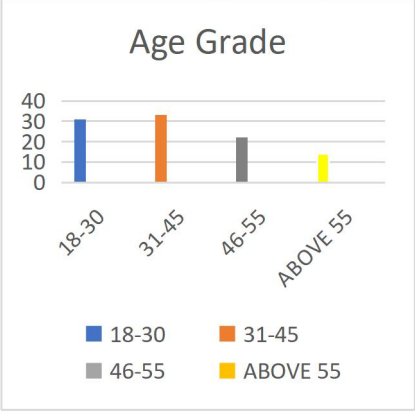
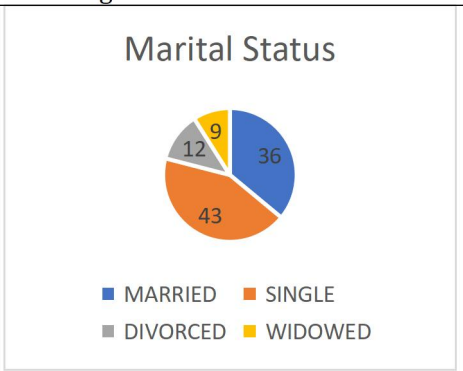
Microbial Analysis

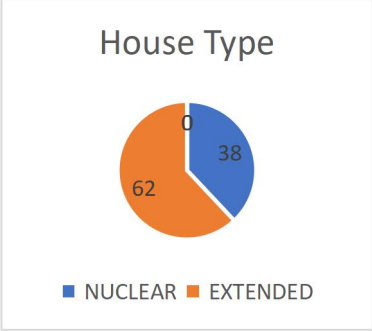
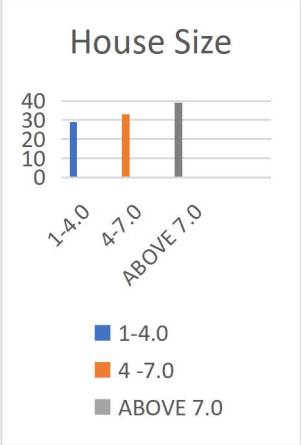
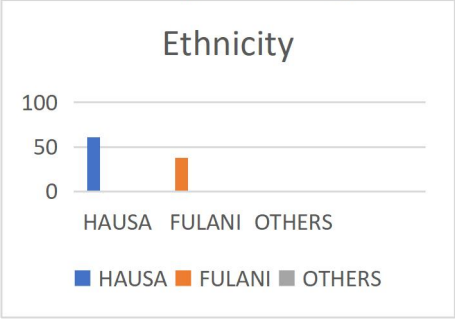
There is a uniform pattern of bacteria distribution in the soils. The distribution is however, closely linked with the occurrence of organic matter. At 0-15 cm depth, soil is rich in organic matter and this layer accordingly harbours the maximum bacterial population. The bacterial counts were higher than the fungal counts. Depending on soil structure and the various physicochemical parameters, the types of bacteria vary in different soils.

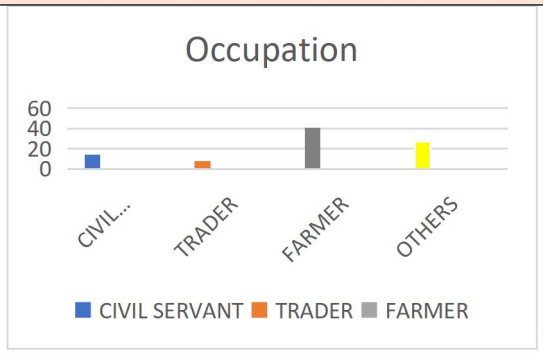
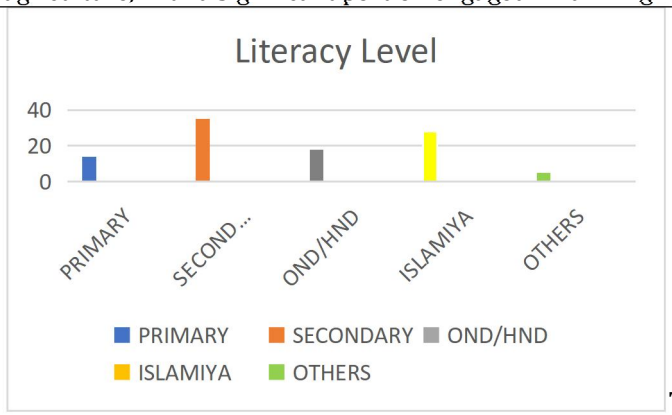
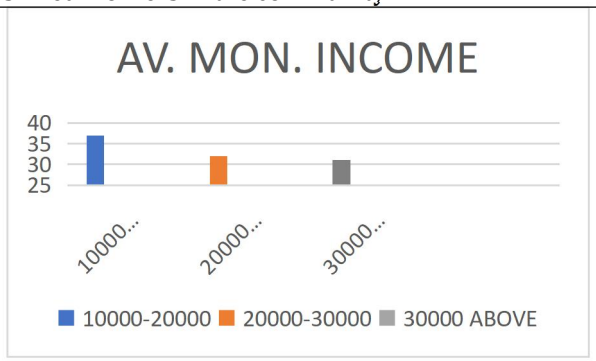
3.6.3 Baseline of Socio-economics

The methodology for collecting socioeconomic data was through primary source via questionnaires, interviews, discussions with community leaders, WUAs, Cattle – Herders Association members, Youths and other PAPs. The sample size was between 5-10 respondents per community, while the methodology was direct and random sampling. A total of 404 respondents were sampled across 23 communities across 4 LGAs. The summary of socioeconomic condition of the project area is presented in Table 9 below.

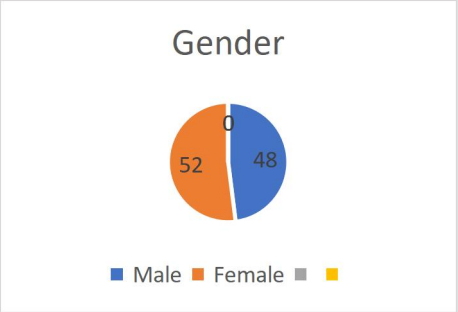
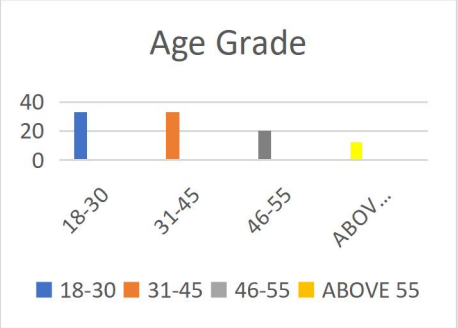
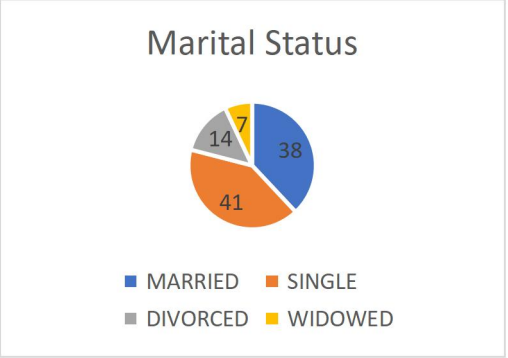
Table 11 Socio-economics across the 4 LGAs

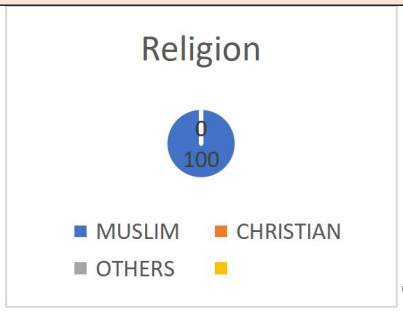
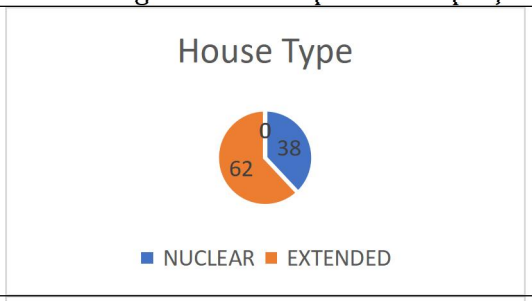
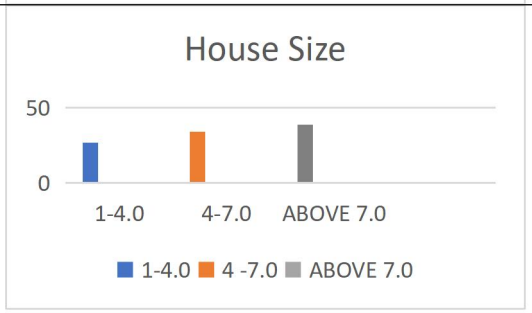
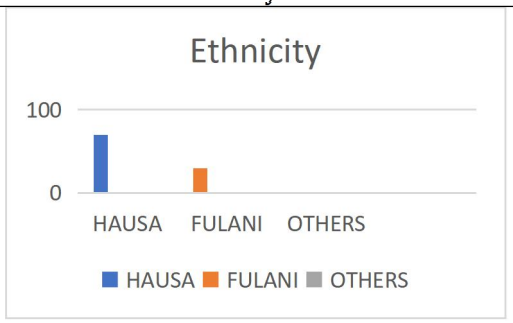
Community: Adaha			
No.	**Item**	**%**	**Remark**
1.	**Gender Distribution** Male Female	 51 49	 This gender distribution of 51% males and 49% females in Adaha community indicates a relatively balanced population in terms of gender. It suggests a potential for diverse participation in agricultural activities, with both men and women contributing to the agricultural sector.
2.	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 31 33 22 14	 The diversity in age groups can positively impact farming and herding by fostering a mix of local experience, energy, and innovation. The older age group can also contribute traditional knowledge
3.	**Marital Status** Married Single Divorced Widowed	 36 43 12 9	 This diverse marital status profile can impact farming and herding practices and foster a sense of stability.
4.	**Religion** Muslim Christian Others	 98 2 0	The religious composition is predominantly Muslim, with 98%, and a minority Christian population of 2%. This religious distribution can influence farming and herding practices through cultural and religious traditions.

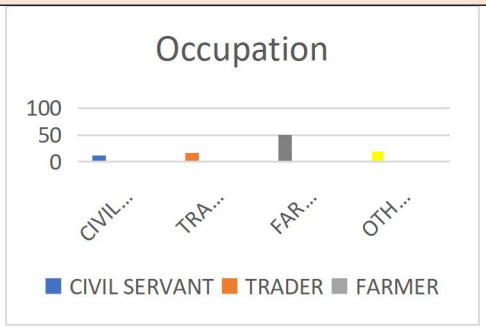
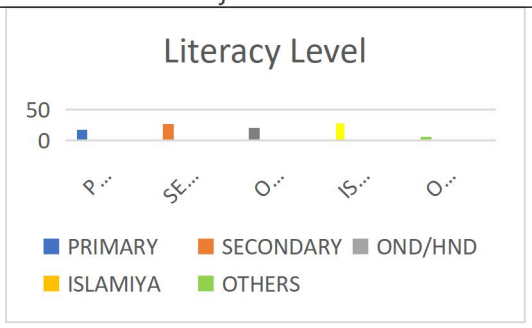
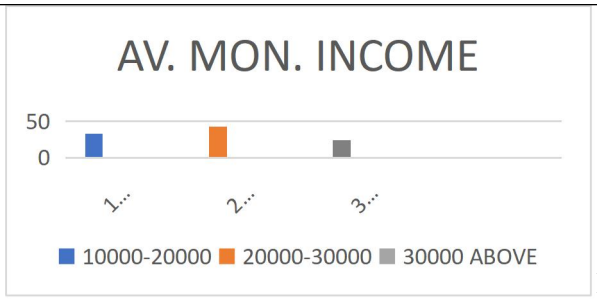
Community: Adaha			
No.	**Item**	**%**	**Remark**
5.	**House Type** Nuclear Extended	 41 59	 This distribution suggests a mix of family structures within the community. The prevalence of extended households may indicate strong familial and communal ties, potentially influencing collaborative efforts in farming and herding practices.
6.	**Household size** Small (1 – 4) Medium (5 – 7) Large (More than 7)	 29 33 38	 This demographic composition reflects a diverse range of household sizes within the community. The variation in household sizes may influence resource management, labor availability, and collaborative efforts in farming and herding practices.
7.	**Ethnicity (Languages)** Hausa Fulani Others	 61 38 1	 This demographic makeup highlights the dominance of the Hausa ethnic group, followed by the Fulani community, with a small representation from other ethnic backgrounds. Understanding the ethnic composition is crucial for promoting cultural sensitivity and tailored approaches in agricultural and herding practices, ensuring effective community engagement and development initiatives in the community

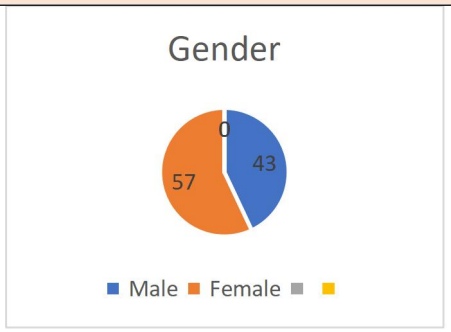
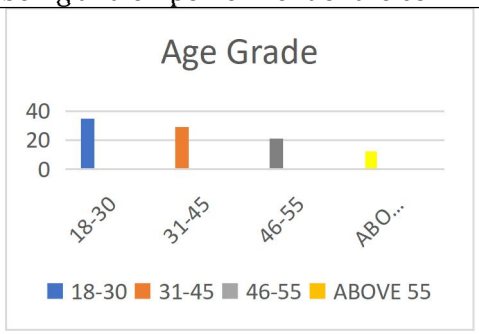
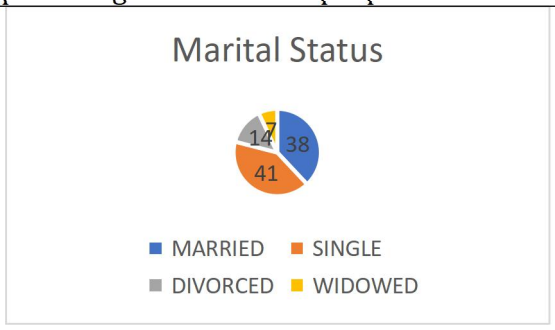
Community: Adaha			
No.	**Item**	**%**	**Remark**
8.	**Occupation** Civil Servant Trader Farmer Others	 14 18 41 27	 This diverse occupational profile suggests a strong reliance on agriculture, with a significant portion engaged in farming.
9.	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 14 35 18 28 5	 This shows the presence of significant number of literates within the community. This also reflects the availability of skilled workers in the community
10.	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 37 32 31	 Most of the respondents earn less than the minimum wage.

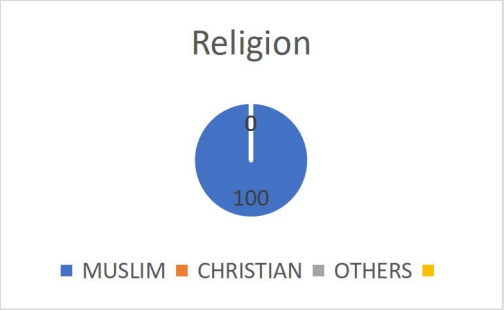
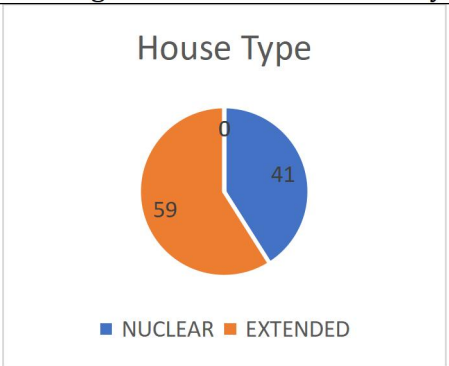
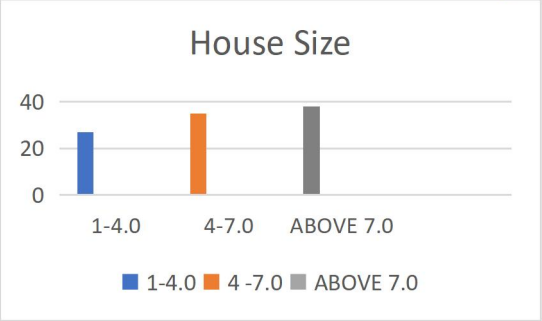
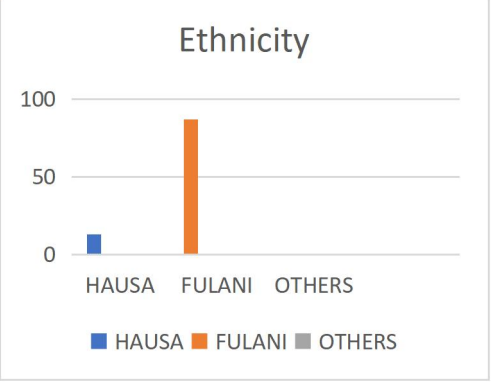
Community: Marina			
No.	**Item**	**%**	**Remark**

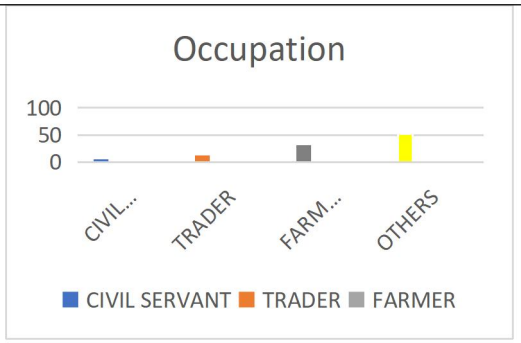
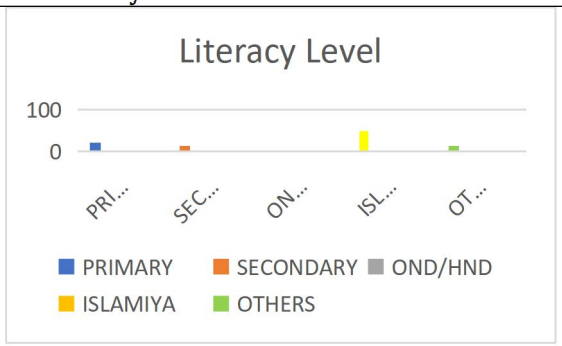
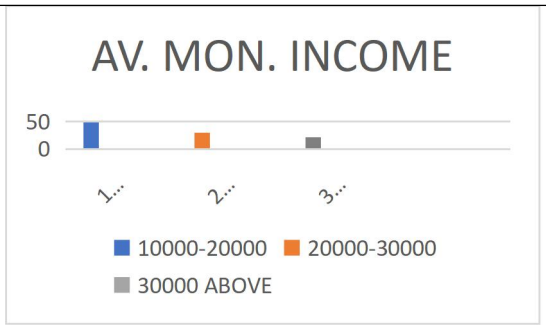
Community: Marina			
No.	**Item**	**%**	**Remark**
1.	**Gender Distribution** Male Female	 48 52	 This relatively balanced gender ratio suggests an inclusive community, where both men and women are likely to contribute to farming, herding, and other activities.
2.	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 33 34 20 13	 The diverse age profile suggests a mix of energy and experience which is beneficial to agriculture, herding and other economic activities identical to this community. It also suggests that tailored approaches considering this age diversity can enhance the effectiveness of development initiatives.
3.	**Marital Status** Married Single Divorced Widowed	 38 41 14 7	 This diverse marital status profile indicates a varied community structure, with implications for agricultural participation and support is critical to designing community-specific interventions

Community: Marina			
No.	**Item**	**%**	**Remark**
4.	**Religion** Muslim Christian Others	 100 0 0	 This indicates a homogeneous Muslim community. This is an important demographic to consider while considering the social impact of the project
5.	**House Type** Nuclear Extended	 38 62	
6.	**Household size** Small (1 – 7) Medium (5 – 7) Large (More than 7)	 27 34 39	 This distribution suggests a prevalent extended family structure, which may influence collaborative efforts and resource-sharing within the community.
7.	**Ethnicity (Languages)** Hausa Fulani Others	 70 30 0	 This demographic highlights the need to understand culturally sensitive aspects of the community since it is predominated by hausa-speaking population

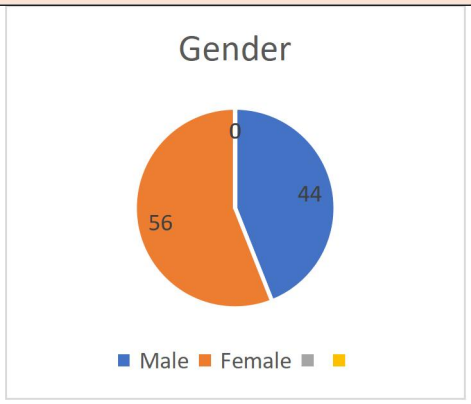
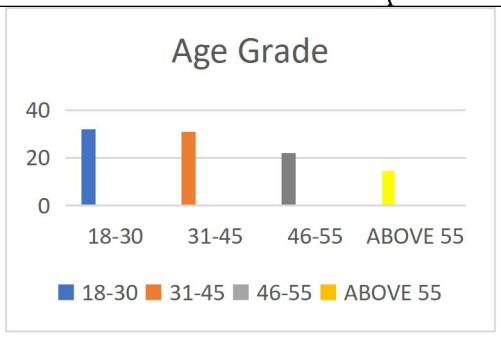
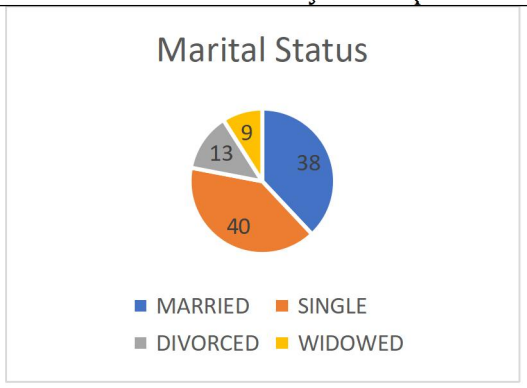
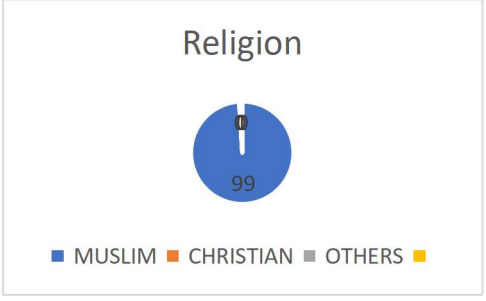
Community: Marina			
No.	**Item**	**%**	**Remark**
8.	**Occupation** Civil Servant Trader Farmer Others/herding	 12 17 50 21	 The significant percentage of individuals involved in farming highlights the agricultural reliance of the community.
9.	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 17 27 21` 29 6	 The educational distribution of this area suggests their capability to promote sustainable practices in farming, herding, and other activities in the area.
10.	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 33 43 24	 Income disparities may be determinant in ensuring equitable access and maximize impact on agriculture and livestock activities.

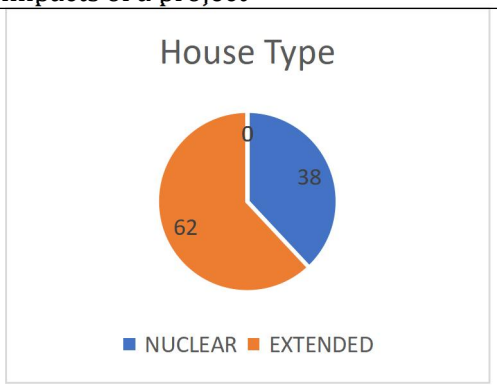
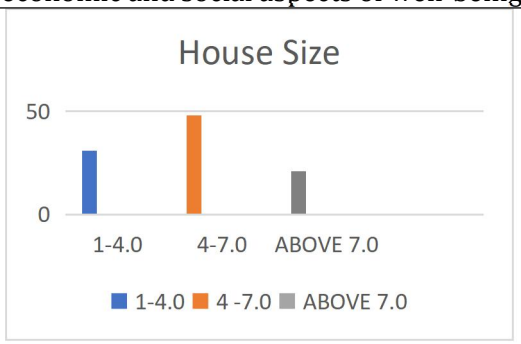
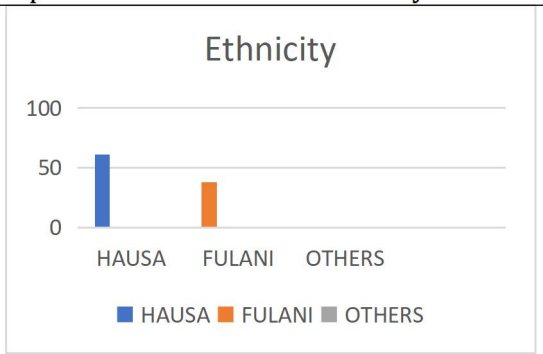
Community: Jama'ar Alkali			
No.	**Item**	**%**	**Remark**
1.	**Gender Distribution** Male Female	 43 57	 With a slightly higher ratio of women to men in this community, it is crucial to recognize and leverage the active participation of women in enhancing the effectiveness and sustainability of interventions, promoting the overall well-being and empowerment of the community.
2.	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 35 29 21 15	 This suggests a mix of skilled and unskilled workers which can readily be useful workforce for the social intervention. It also indicates a notable percentage of vulnerable people
3.	**Marital Status** Married Single Divorced Widowed	 38 41 14 7	 The importance of this project in promoting livelihood-supporting activities is suggested by the noteworthy ratio of vulnerable individuals and the significantly high proportion of married and single people in this community.

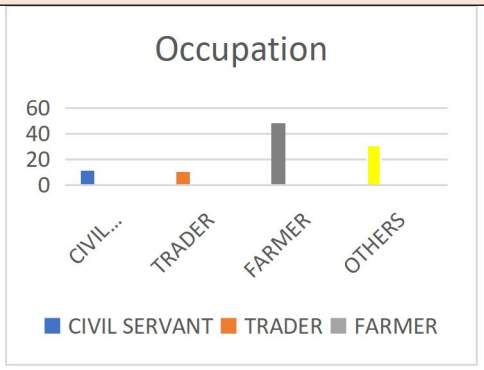
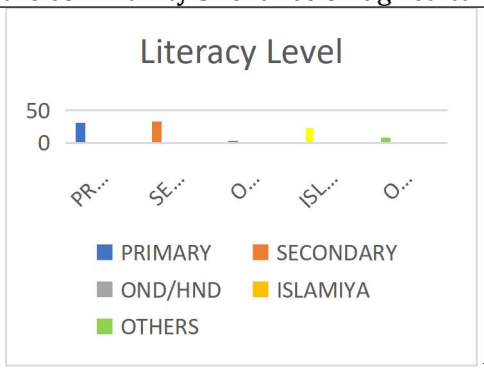
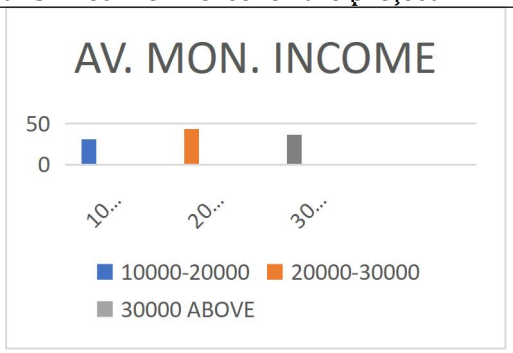
Community: Jama'ar Alkali			
No.	**Item**	**%**	**Remark**
4.	**Religion** Muslim Christian Others	 100 0 0	 This is a homogeneous Muslim community
5.	**House Type** Nuclear Extended	 41 59	 This distribution suggests a prevalent extended family structure which is effective in collaborative effort and resource-sharing.
6.	**Household size** Small (1 – 4) Medium (5 – 7) Large (More than 7)	 27 35 38	 This demographic breakdown suggests a diverse range of household sizes within the community. The variation in household sizes may influence resource management, labour availability, and collaborative efforts in farming and herding practices.
7	**Ethnicity (Languages)** Hausa Fulani Others	 13 87 0	 This demographic composition highlights a

Community: Jama'ar Alkali			
No.	**Item**	**%**	**Remark**
			predominantly Fulani-speaking population and suggests a high participation in herding activities
8.	**Occupation** Civil Servant Trader Farmer Others/herders	 5 12 31 52	 This community has a greater proportion of herders and farmers. This suggests the importance of the proposed social intervention in this community
9.	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 21 13 1 51 14	 A higher percentage of the population in this community have received Islamiya education. It is crucial to keep this in view while considering cultural and religious aspects of the social intervention
10.	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 48 30 22	 This income distribution suggests a profitable economic environment in this community and the potential for development through well targeted social intervention

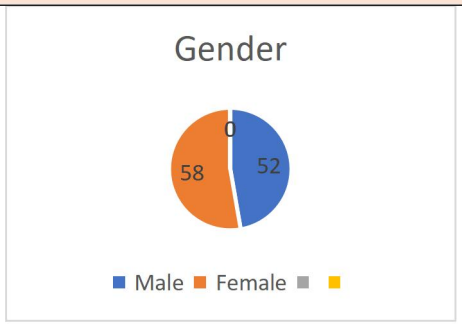
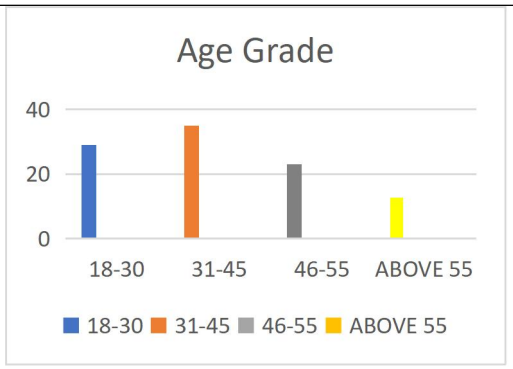
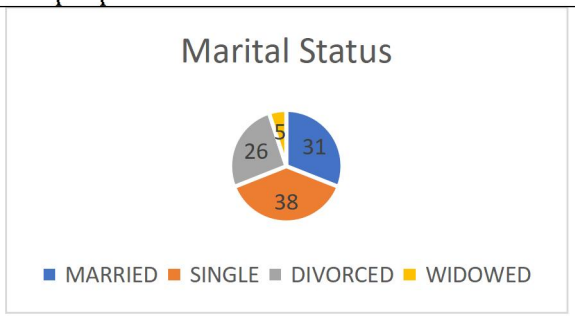
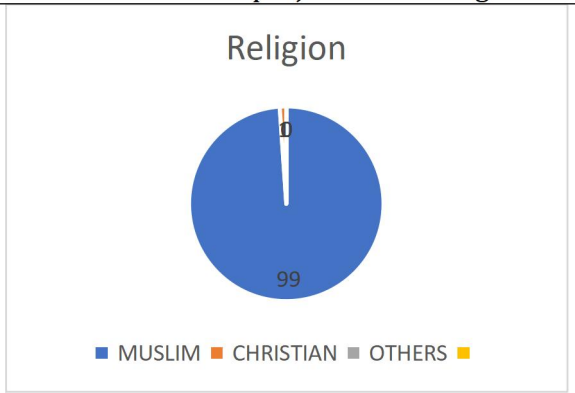
Community: Tsaka			
No.	**Item**	**%**	**Remark**

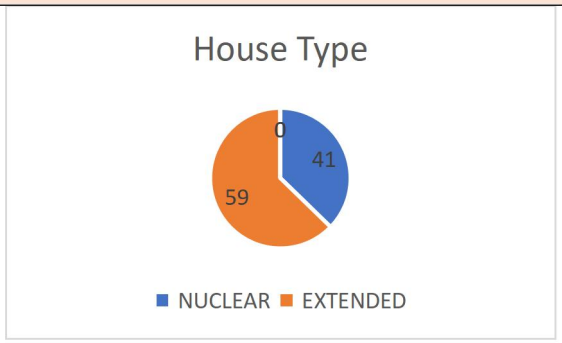
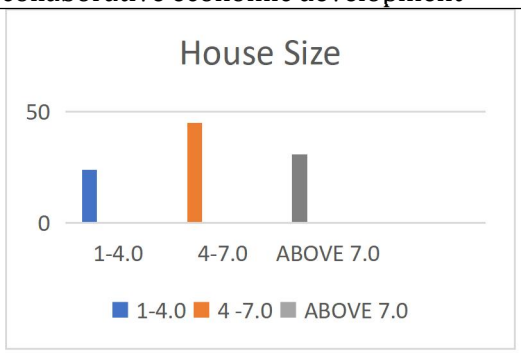
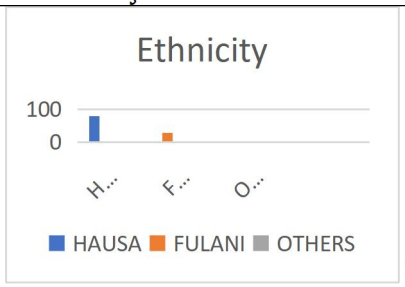
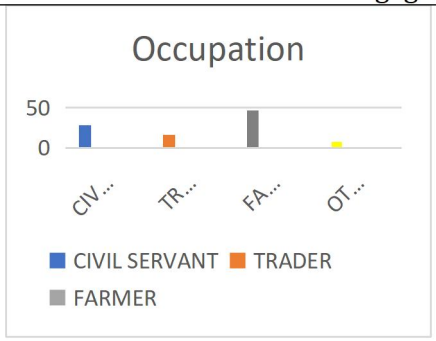
Community: Tsaka			
No.	**Item**	**%**	**Remark**
1.	**Gender Distribution** Male Female	 44 56	 The slightly higher proportion of females in this community underscores their prominence in domestic and economic development.
2.	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 32 31 22 15	 This indicates a substantial presence of young people in the community whose energy can be harnessed for community development
3	**Marital Status** Married Single Divorced Widowed	 38 40 13 9	 Under standing the family dynamics of a community can influence certain economic activities
4	**Religion** Muslim Christian Others	 99 0 1	 This community is mostly dominated by Muslims. Understanding the religious and cultural values

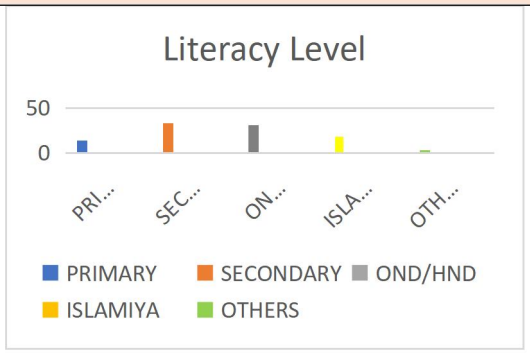
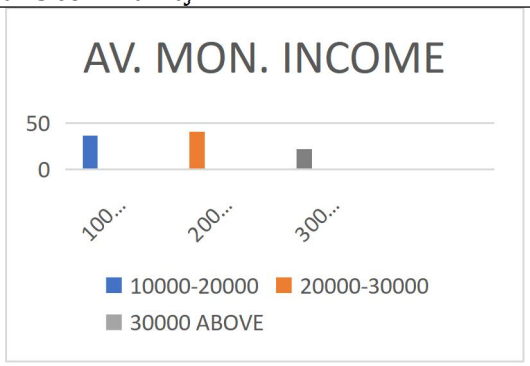
Community: Tsaka			
No.	**Item**	**%**	**Remark**
			of an area is vital managing negative social impacts of a project
5	**House Type** Nuclear Extended	 38 62	 The higher prevalence of extended family underscores the importance of community development strategies that consider both economic and social aspects of well-being.
6	**Household size** Small (1 – 4) Medium (4 – 7) Large (More than 7)	 31 48 21	 Households with moderate number of members is predominant in this community
7	**Ethnicity (Languages)** Hausa Fulani Others	 61 38 1	 This demographic composition highlights a predominantly Hausa-speaking population with a significant presence of the Fulani community.

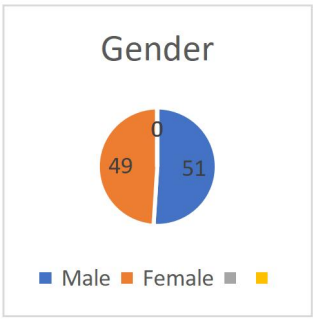
Community: Tsaka			
No.	**Item**	**%**	**Remark**
8	**Occupation** Civil Servant Trader Farmer Others/herder	 11 10 48 31	 A higher percentage of farmers and herders underscores the community's reliance on agriculture
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 31 33 3 25 8	 A greater percentage of the population have received basic education and can fit in a skilled and unskilled workforce for the project
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 31 43 36	 The evenly distributed average income is suggestive of a mix of skilled and unskilled workers in the community

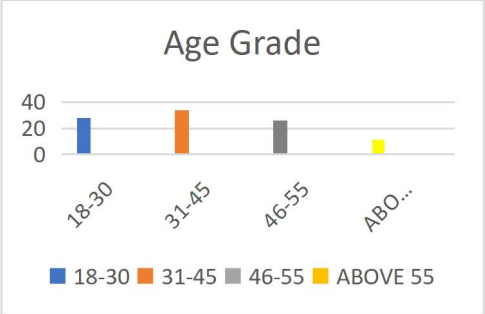
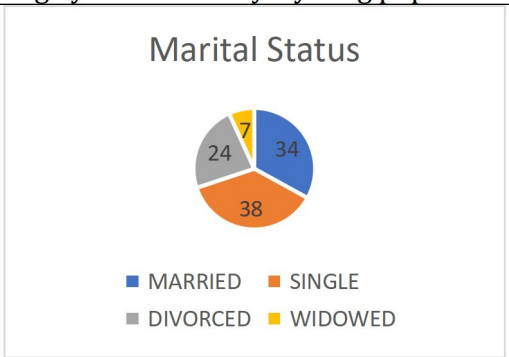
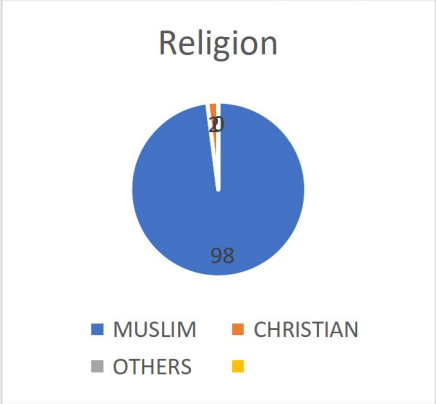
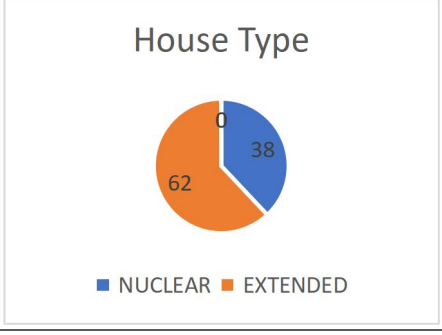
Community: Sabuwar Auyo			
No.	**Item**	**%**	**Remark**

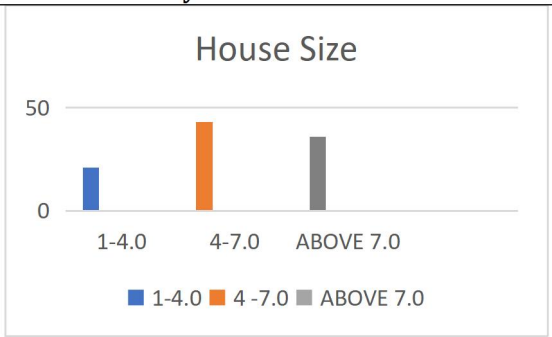
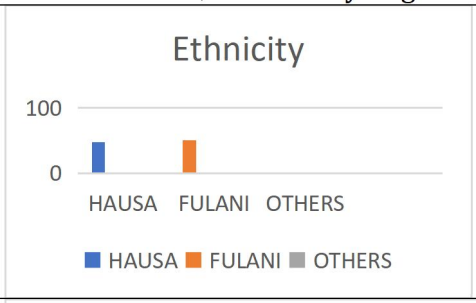
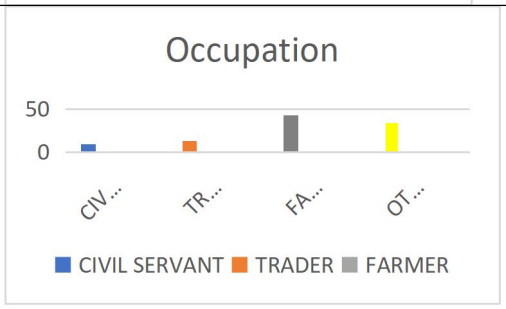
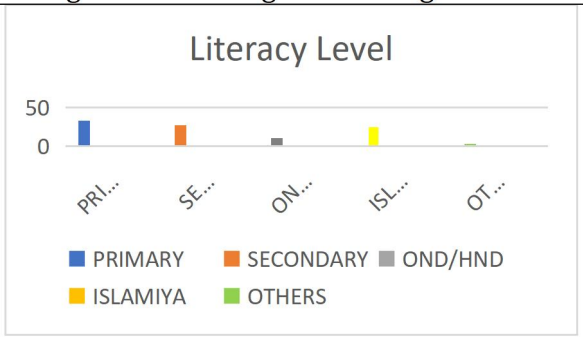
Community: Sabuwar Auyo			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 52 48	 This is indicative of a balanced population with availability of women contributing to labour force
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 29 35 23 13	 A wide variety of young population is significantly higher in this community with a considerably low proportion of vulnerable
3	**Marital Status** Married Single Divorced Widowed	 31 38 26 5	 A mix of family, single and divorced population. Knowing the family structure of the community will be beneficial to project structuring
4	**Religion** Muslim Christian Others	 99 1 0	 H omogeneous Muslim community, with an insignificant portion of other religion

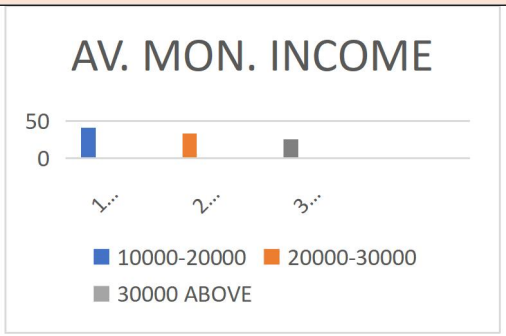
Community: Sabuwar Auyo			
No.	**Item**	**%**	**Remark**
5	**House Type** Nuclear Extended	 41 59	 Extended family structure can enhance collaborative economic development
6	**Household size** Small (1 – 4) Medium (4 – 7) Large (More than 7)	 24 45 31	 This diverse range of household sizes reflects variations in family structures within the community.
7	**Ethnicity (Languages)** Hausa Fulani Others	 79 29 2	 The community is predominated by Hausa and Fulani, suggestive that the social intervention project will benefit their economic engagements
8	**Occupation** Civil Servant Trader Farmer Others/Herders	 28 16 47 9	 This distribution indicates a blend of skilled and unskilled workforce

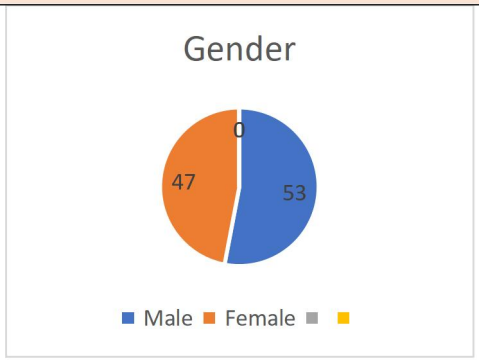
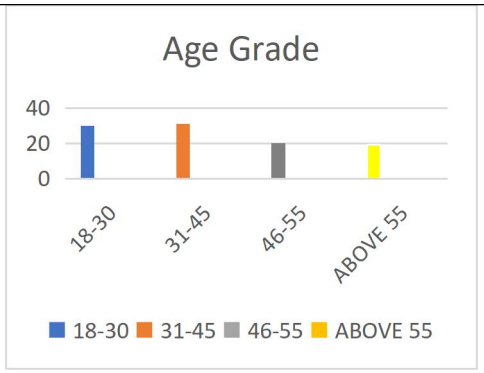
Community: Sabuwar Auyo			
No.	**Item**	**%**	**Remark**
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 14 33 31 19 3	 This shows a good exposure to basic education in this community
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 37 41 22	 Most of the respondents earn below the minimum wage and

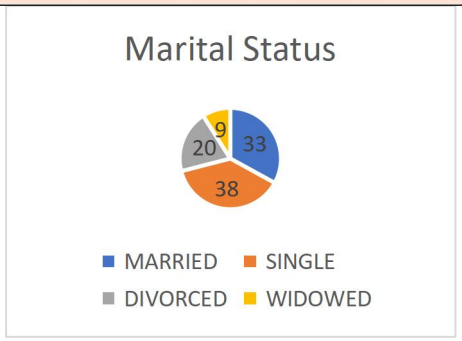
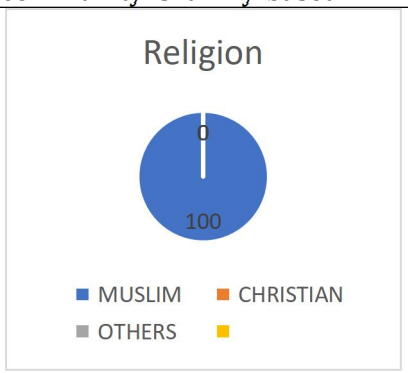
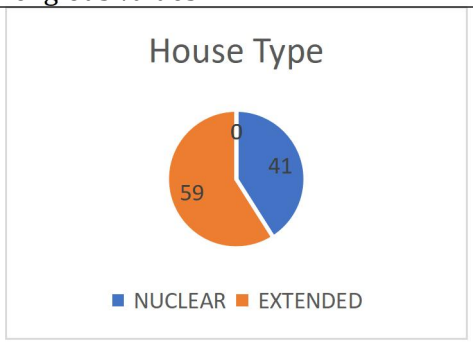
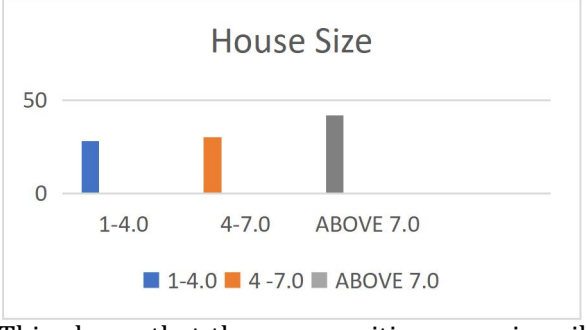
Community: Akubushin			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 51 49	 A balanced gender distribution with a slightly higher proportion of males.

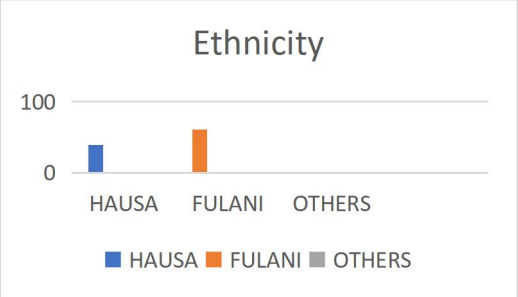
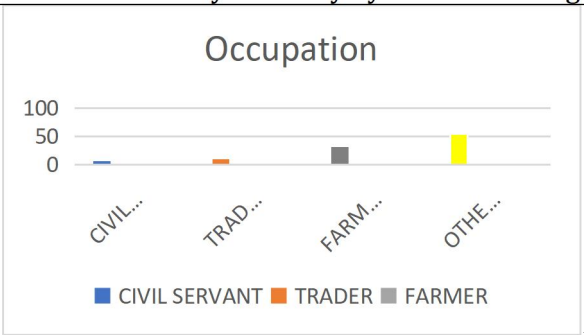
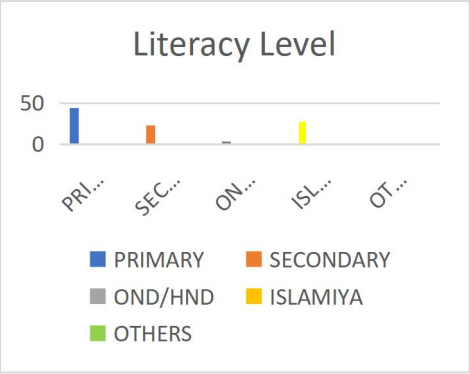
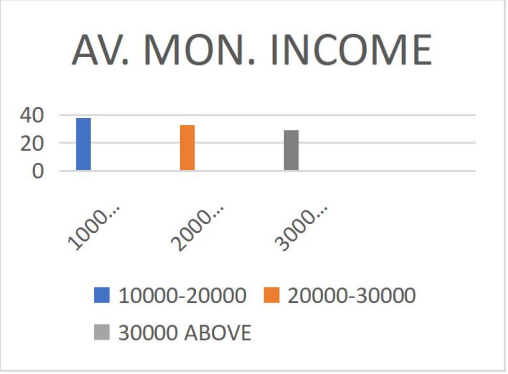
Community: Akubushin			
No.	**Item**	**%**	**Remark**
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 28 34 26 12	 The age distribution reflects a low proportion of vulnerable persons in this community and largely dominated by a young population
3	**Marital Status** Married Single Divorced Widowed	 34 38 21 7	 The greater proportion of single and married suggests a family oriented community which encourages collective participation
4	**Religion** Muslim Christian Others	 98 2 0	 This community demonstrates a homogeneous religious and cultural inclination, evident in the significant dominance of Muslims over other religions
5	**House Type** Nuclear Extended	 38 62	 Family

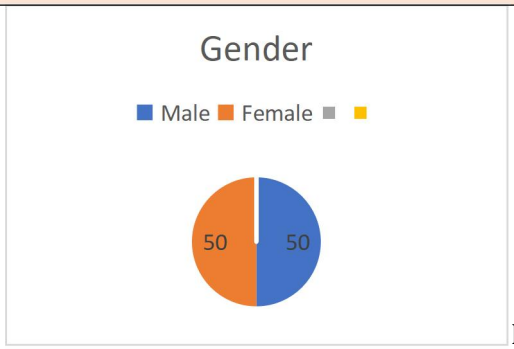
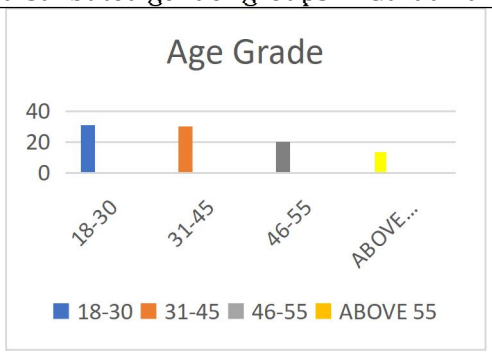
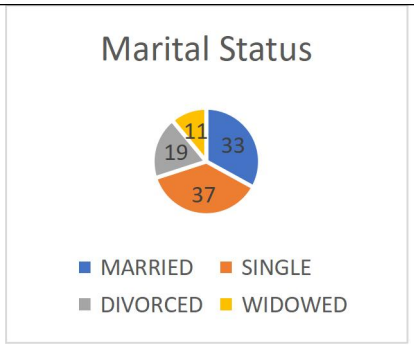
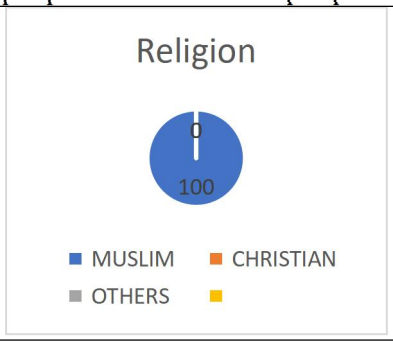
Community: Akubushin			
No.	**Item**	**%**	**Remark**
			collaboration encouraged by extended family ties can be essential in agricultural practices in this community
6	**Household size** Small (1 – 4) Medium (4 – 7) Large (More than 7)	 21 43 36	 This community is characterised by medium size households, followed by large households
7	**Ethnicity (Languages)** Hausa Fulani Others	 48 51 1	
8	**Occupation** Civil Servant Trader Farmer Others/herders	 9 13 43 35	 This community is characterised by their indulgence in farming and herding
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 33 27 11 26 3	 Primary education and Islamic school are the dominant literacy level attained by members of this community as farmers and herders

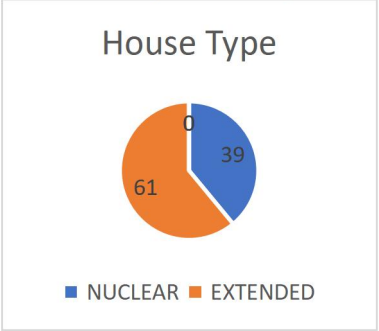
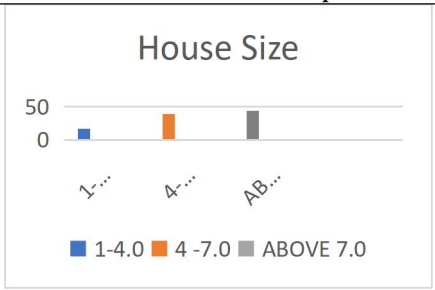
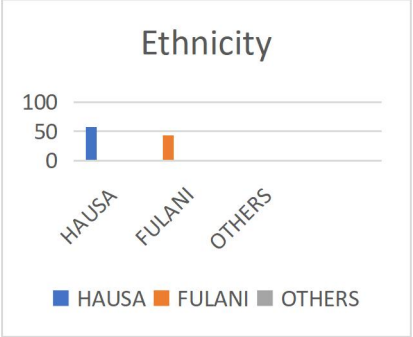
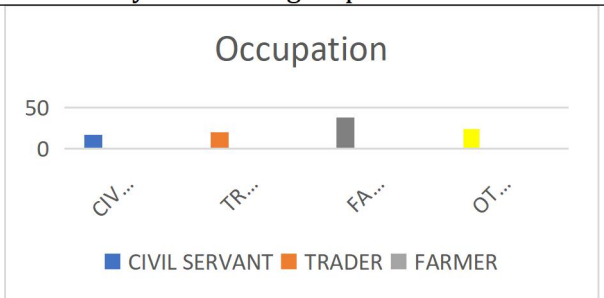
Community: Akubushin			
No.	**Item**	**%**	**Remark**
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 31 43 36	 A greater population mix of individuals who earn lesser than the minimum wage

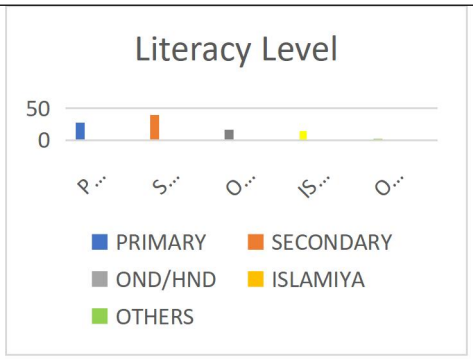
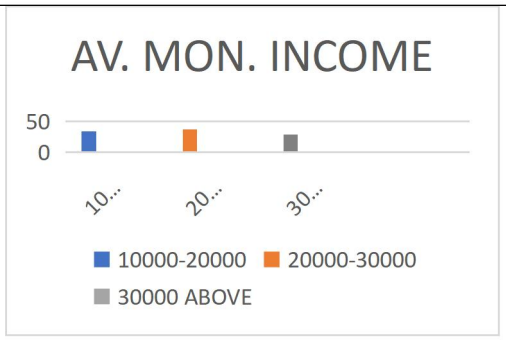
Community: Mado			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 53 47	 This community boasts of a balanced mix of males and females
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 30 31 20 19	 A significant proportion of the population in the community are below 55 years old, with about 19% of the population above 55 years old

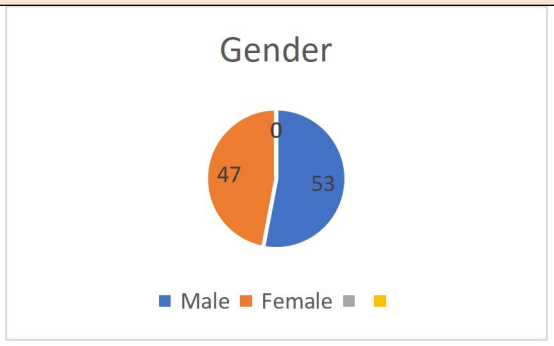
Community: Mado			
No.	**Item**	**%**	**Remark**
3	**Marital Status** Married Single Divorced Widowed	 33 38 20 9	 With a greater proportion of single person being children of the married population, this community is family-based.
4	**Religion** Muslim Christian Others	 100 0 0	 Understanding that this community is Muslim is essential for social intervention because it helps project workers respect the community's cultural and religious values.
5	**House Type** Nuclear Extended	 41 59	 The dominance of extended family types in this community signifies family collaboration which is instrumental to economic development
6	**Household size** Small (1 – 4) Medium (5 – 7) Large (More than 7)	 28 30 42	 This shows that the communities are primarily characterized by large family sizes

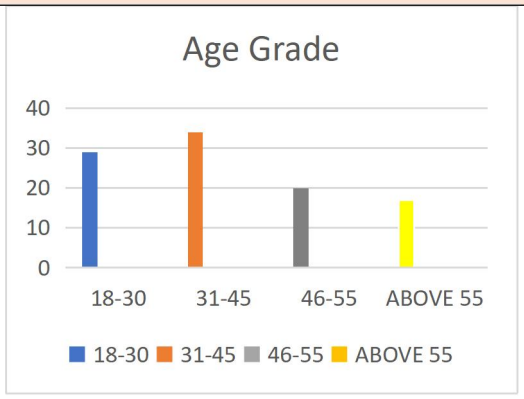
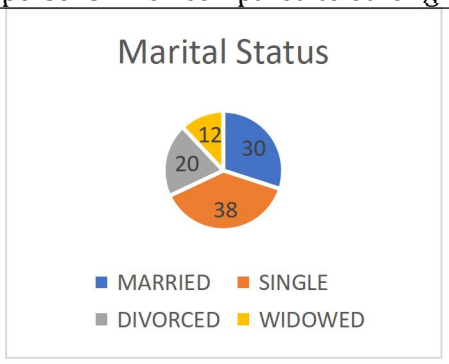
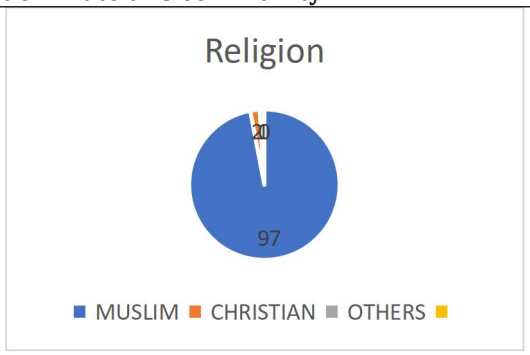
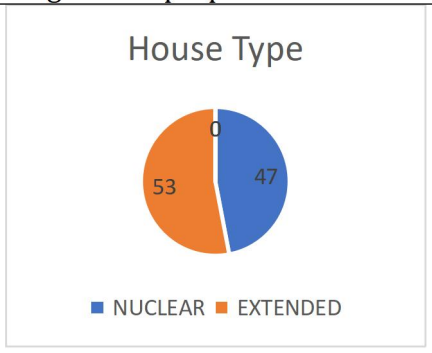
Community: Mado			
No.	**Item**	**%**	**Remark**
			(dependents), mostly school age children. The positive impacts of the proposed social intervention will also be enjoyed by this group
7	**Ethnicity (Languages)** Hausa Fulani Others	 39 61 0	 Largely dominated by Fulani, the source of livelihood in this community is mostly by cattled herding.
8	**Occupation** Civil Servant Trader Farmer Others/Herder	 6 9 31 54	 As expected, this is because this community is largely dominated by herders
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 44 23 3 29 1	 The dominant literacy level for people living in this community are primary and Islamic school
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 38 33 29	 A larger proportion of this community earn below the minimum wage.

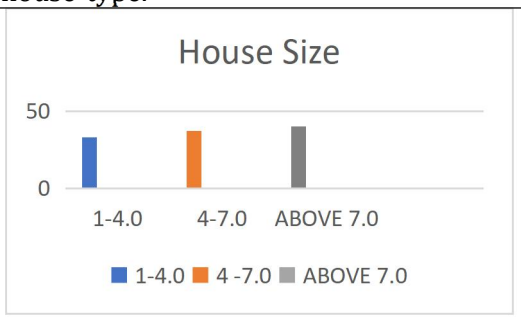
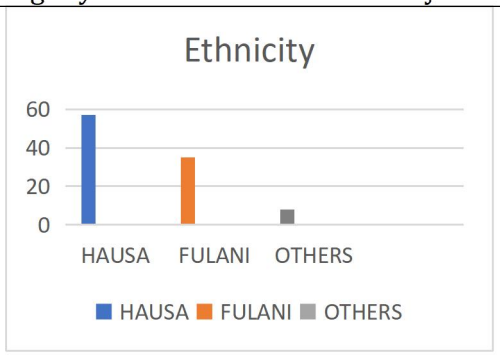
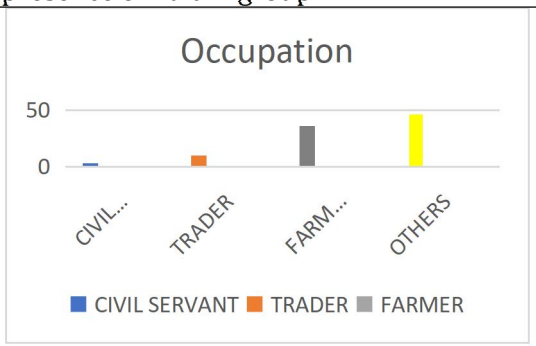
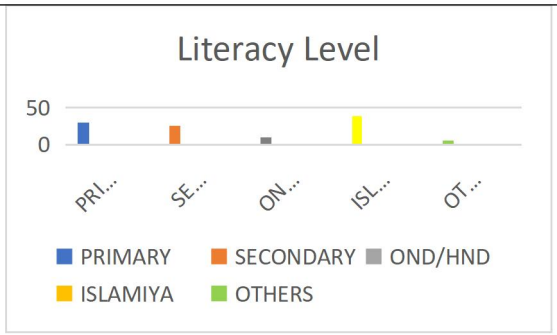
Community: Guradawa			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 50 50	 Equally distributed gender groups in Guradwa.
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 31 30 25 14	 A lesser proportion of this community are vulnerable persons (above 55 years old) and, therefore, will benefit from the proposed social interventions, especially the hand pump boreholes
3	**Marital Status** Married Single Divorced Widowed	 33 37 19 11	 A family-oriented community, evident in greater proportion of married people than divorced.
4	**Religion** Muslim Christian Others	 100 0 0	 A Muslim-based

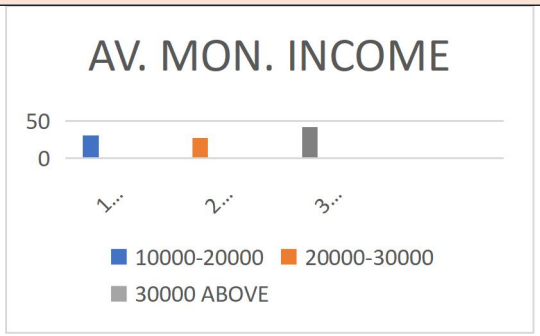
Community: Guradawa			
No.	**Item**	**%**	**Remark**
			community. The cultural values of this community is most likely to be highly influenced by their religion
5	**House Type** Nuclear Extended	 39 61	 The extended family system which dominates this community translates to collective and collaborative drive towards economic development
6	**Household size** Small (1 – 4) Medium (5 – 7) Large (More than 7)	 17 39 44	 This shows that the communities are primarily characterized by large family sizes (dependents), mostly school age children. The social intervention will help improve the livelihood of these children
7	**Ethnicity (Languages)** Hausa Fulani Others	 57 43 0	 The lingua franca of the communities is Hausa language, and constitute the major group in the state, followed by the Fulani group.
8	**Occupation** Civil Servant Trader Farmer Others	 17 20 38 25	

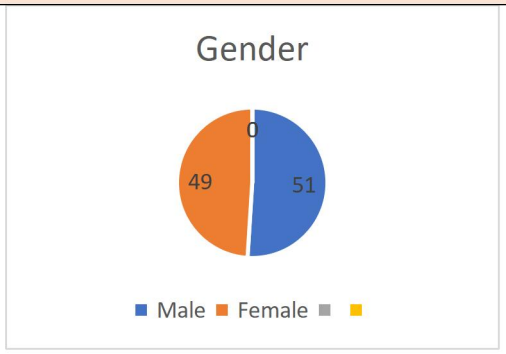
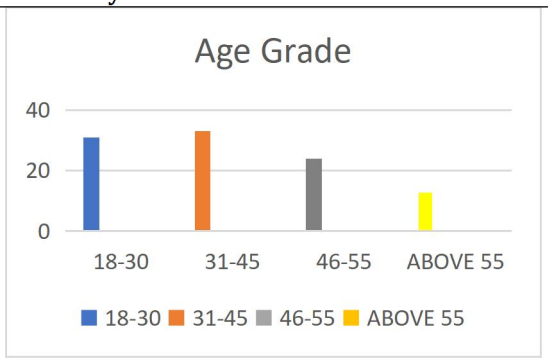
Community: Guradawa			
No.	**Item**	**%**	**Remark**
			There are more unskilled workers than skilled workers in this community
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 27 39 16 16 2	 A greater proportion of this community have attained secondary education. This ensures a mix of skilled and unskilled workforce
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 34 37 29	 Most members of this community earn lower than the minimum wage. This suggests that social interventions will benefit them greatly.

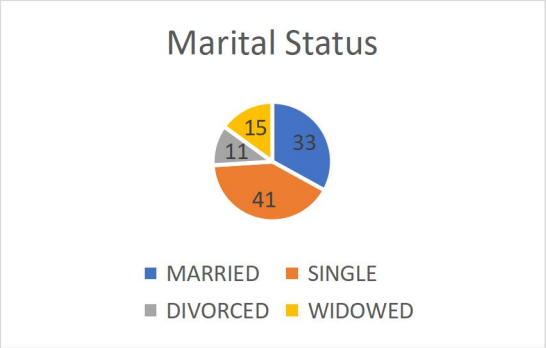
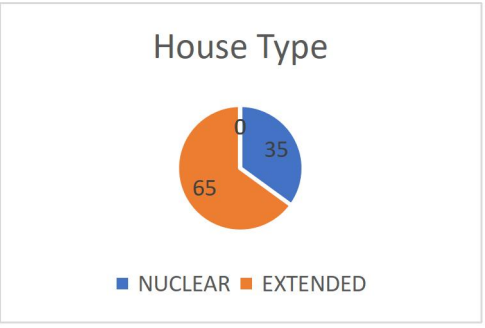
Community: Ganuwar Kukar			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 53 47	 A nearly balanced gender distribution with a slightly higher proportion of male group.

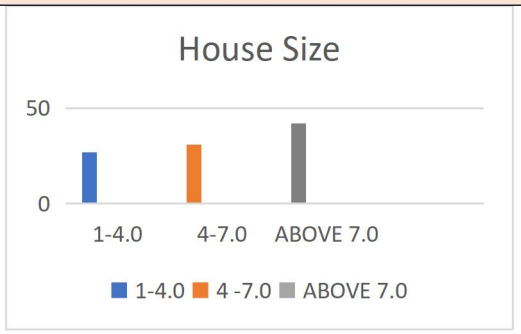
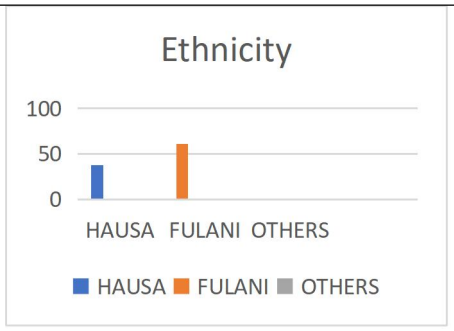
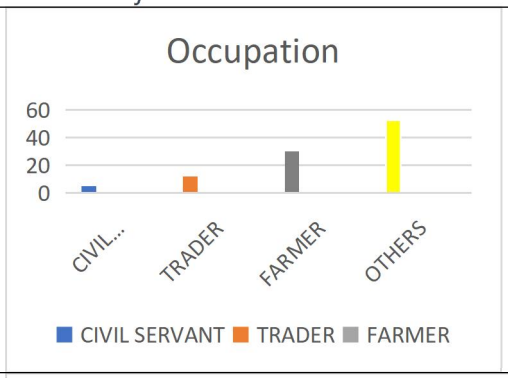
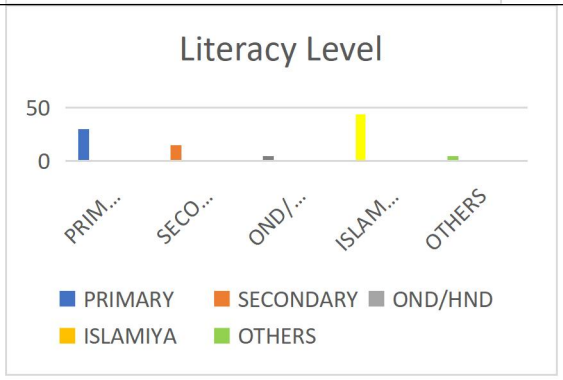
Community: Ganuwar Kukar			
No.	**Item**	**%**	**Remark**
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 29 34 20 17	 A low but slightly notable percentage of vulnerable persons when compared to other groups.
3	**Marital Status** Married Single Divorced Widowed	 30 38 20 12	 A greater percentage of single and married persons dominate this community.
4	**Religion** Muslim Christian Others	 97 2 1	 Like neighbouring communities, this community is largely dominated by Muslims and an insignificant proportion of Christians.
5	**House Type** Nuclear Extended	 47 53	 Although having a slightly higher extended family system, this community demonstrates a balanced

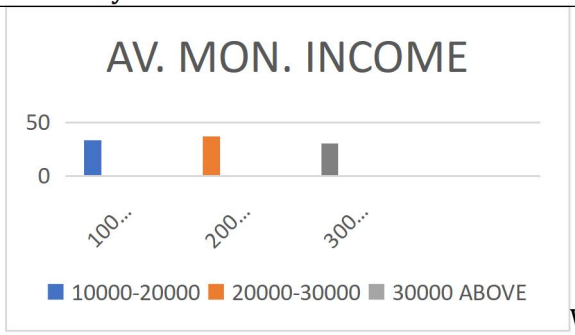
Community: Ganuwar Kukar			
No.	**Item**	**%**	**Remark**
			house-type.
6	**Household size** Small (1 – 4) Medium (5 – 7) Large (More than 7)	 33 37 40	 A slightly balanced household size system.
7	**Ethnicity (Languages)** Hausa Fulani Others	 57 35 8	 An Hausa speaking community, with a notable presence of Fulani group.
8	**Occupation** Civil Servant Trader Farmer Others/Herders	 3 14 36 47	 A population largely dominated by Herders and farmers
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 30 25 10 40 5	 A greater percentage of the population have either received Islamiya education or primary school education

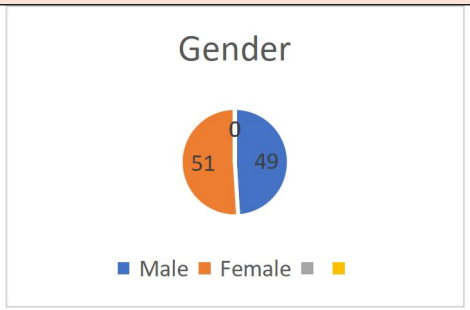
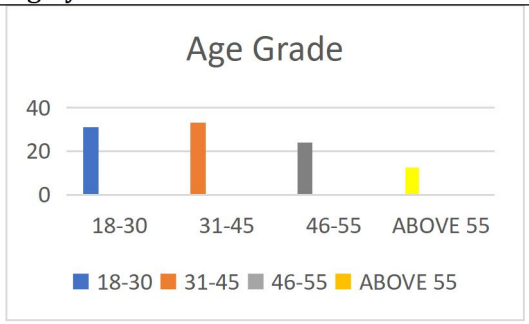
Community: Ganuwar Kukar			
No.	**Item**	**%**	**Remark**
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 31 27 42	 The average monthly income of a greater proportion of this community is higher than the minimum wage, suggesting a high income returns from farming and herding business here

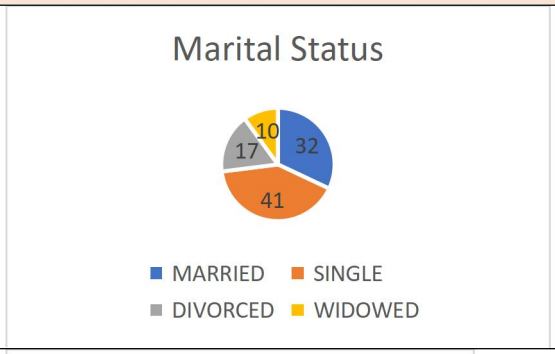
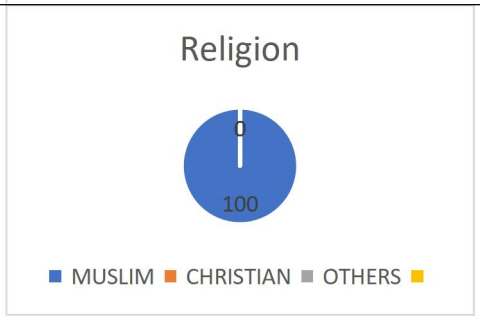
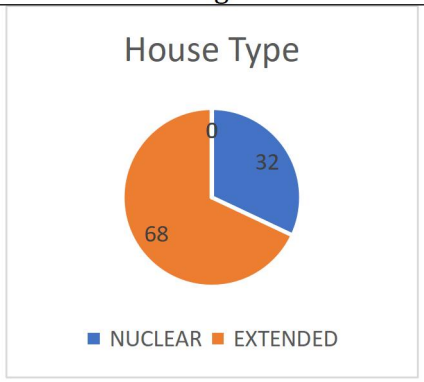
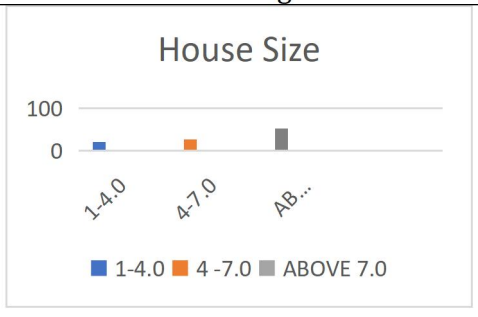
Community: Furawa			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 51 49	 The balanced gender distribution in Fuwara indicates the importance of inclusive strategies for family livelihood.
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 31 33 24 12	 This age group profile of Fuwara provides a diverse workforce for potential farming and herding initiatives.

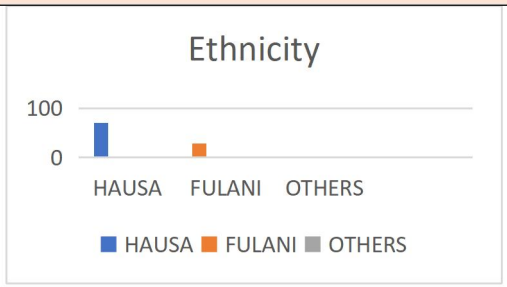
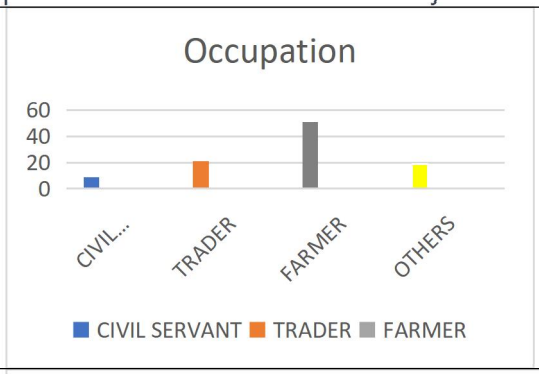
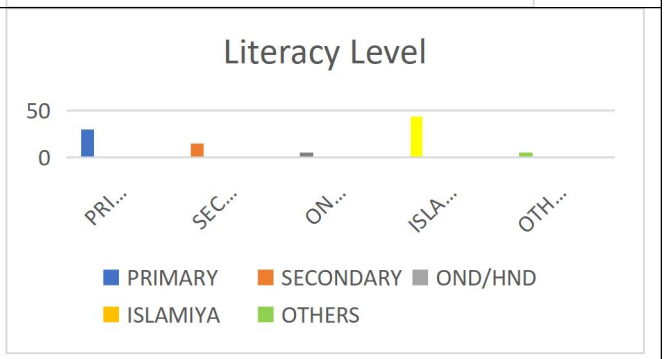
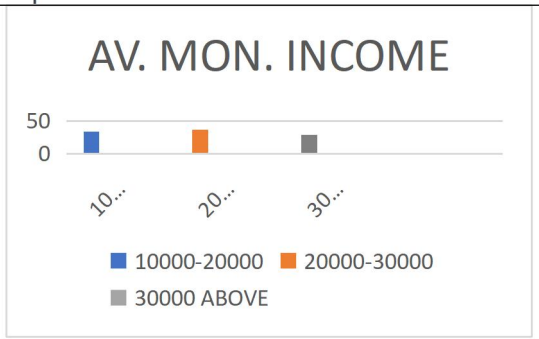
Community: Furawa			
No.	**Item**	**%**	**Remark**
3	**Marital Status** Married Single Divorced Widowed	 33 41 11 15	 This diverse marital status profile indicates various family structures within the community, influencing social dynamics and support systems.
4	**Religion** Muslim Christian Others	 99 1 0	 The religious composition of Fuwara is predominantly Muslim, with 99%, indicating a homogeneous Muslim population. Understanding the religious demographics is essential for implementing culturally sensitive and community-specific initiatives, including those related to farming, herding, and overall community development.
5	**House Type** Nuclear Extended	 35 65	 This distribution suggests a prevalent extended family structure which might be a useful resource for agricultural practices

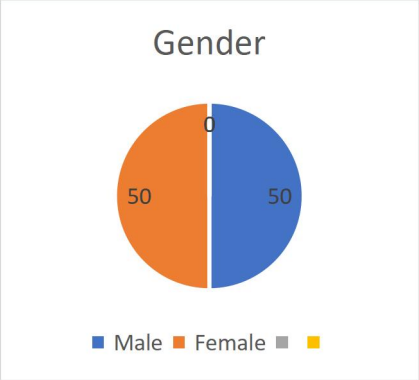
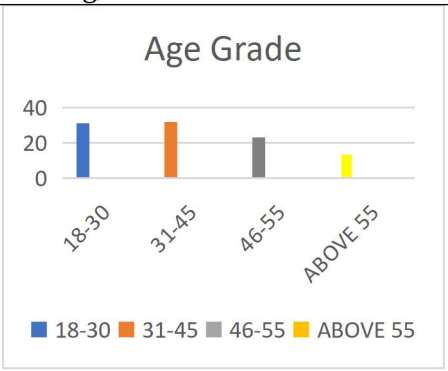
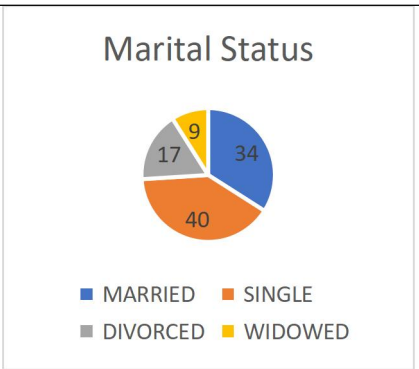
Community: Furawa			
No.	**Item**	**%**	**Remark**
6	**Household size** Small (1 – 4) Medium (4 – 7) Large (More than 7)	 27 41 32	 This diverse range of household sizes reflects variations in family structures within the community and is notable in considering the potential impacts of resource management and collaborative efforts.
7	**Ethnicity (Languages)** Hausa Fulani Others	 38 61 1	 This demographic composition highlights a predominantly Fulani-speaking population with a significant presence of the Hausa community.
8	**Occupation** Civil Servant Trader Farmer Others/Herder	 5 12 30 53	
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 30 15 5 45 5	 Th e literacy levels suggest that a dominant

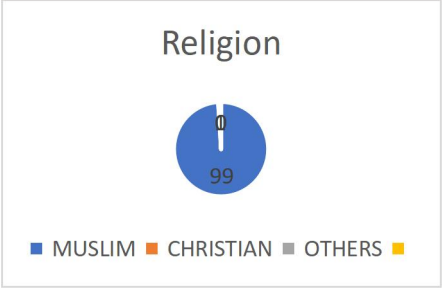
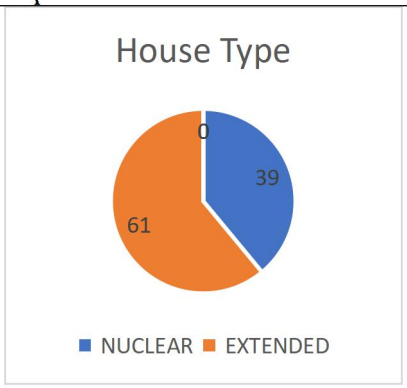
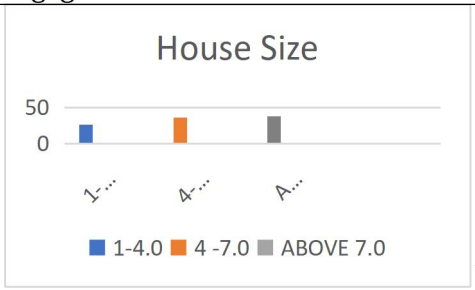
Community: Furawa			
No.	**Item**	**%**	**Remark**
			proportion of the population have had primary or islamiya education
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 33 37 30	 With a higher percentage of the population earning below the minimum wage, recommended social interventions should encourage economic growth in this community

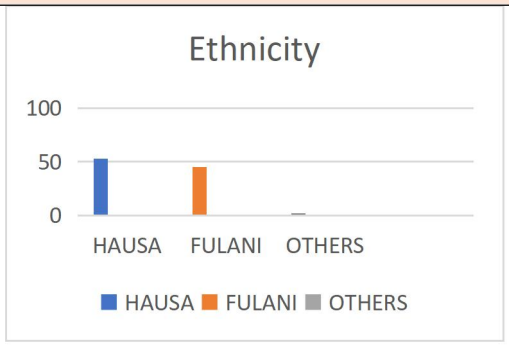
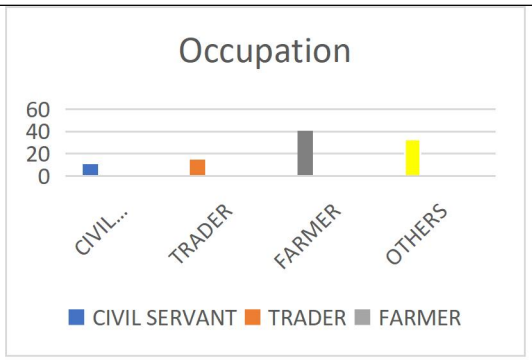
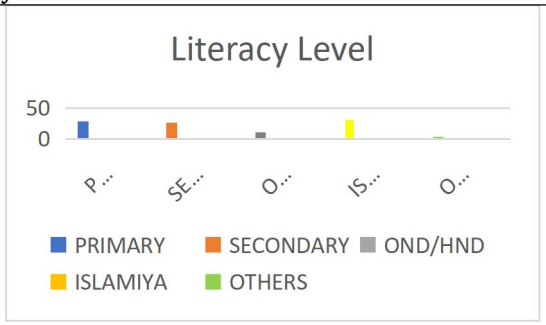
Community: Gamsarka			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 49 51	 The balanced gender distribution in this community promises great economic output and gender inclusiveness is highly recommended
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 31 33 24 12	 This demographic composition suggests a community with a significant working-age population, which could positively influence productivity in farming, herding, and other economic activities.

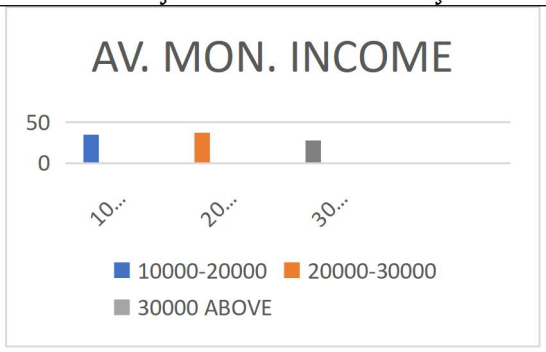
Community: Gamsarka			
No.	**Item**	**%**	**Remark**
3	**Marital Status** Married Single Divorced Widowed	 32 41 17 10	
4	**Religion** Muslim Christian Others	 100 0 0	 The diverse marital group is crucial for designing community-specific initiatives related to farming, herding, and overall well-being.
5	**House Type** Nuclear Extended	 32 68	 Extended family structure is dominant in this community as is notable in surrounding communities too
6	**Household size** Small (1 – 4) Medium (5 – 7) Large (More than 7)	 21 27 52	 Large family size is predominant in this community. Recognizing this prevalence is essential for planning community development initiatives, including those related to farming and herding, as larger families may have distinct needs, resource management considerations, and collaborative dynamics.

Community: Gamsarka			
No.	**Item**	**%**	**Remark**
7	**Ethnicity (Languages)** Hausa Fulani Others	 79 21 0	 This distribution indicates a dominant presence of Hausa individuals, followed by Fulani. Recognizing this ethnic composition is vital for understanding the cultural context and preferences within the community.
8	**Occupation** Civil Servant Trader Farmer Others	 9 21 51 19	
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 30 15 5 45 5	 This diverse educational background within the community suggests a range of educational experiences.
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 34 37 29	 High economic diversity which could also be critical to agricultural inputs and practices

Community: Project communities in Auyo			
No.	**Item**	**%**	**Remark**
1	**Gender Distribution** Male Female	 50 50	 In the project communities, the gender distribution indicates an equal split with 50% males and 50% females. This balanced gender ratio suggests an equitable community, where both men and women are likely to contribute to farming, herding, and other activities.
2	**Age Distribution** 18 - 30 31 – 45 46 - 55 Above 55	 31 32 23 14	 A wide age range that reflects both youth and experience allows the project communities to prosper in a variety of farming, herding, and community-related activities.
3	**Marital Status** Married Single Divorced Widowed	 34 40 17 9	 The presence of a significant number of single individuals could influence community dynamics, potentially fostering a more dynamic and socially active environment. Single individuals may have more flexibility in terms of labor mobility and they can easily be mobilized as skilled and unskilled workforce

Community: Project communities in Auyo			
No.	**Item**	**%**	**Remark**
4	**Religion** Muslim Christian Others	 99 1 0	 The project communities are largely Muslim dominated. Understanding the relevance of religious values is a vital aspect of successful project implementation.
5	**House Type** Nuclear Extended	 39 61	 This distribution points to the presence of an extended family structure within the project communities as well as an extended business engagement that is derived from teamwork.
6	**Household size** Small (1 – 4) Medium (5 – 7) Large (More than 7)	 26 36 38	 With 38% of households classified as large (more than 7 members), it indicates that larger household sizes are predominant in Auyo, Jigawa. Recognizing this prevalence is crucial for planning community development initiatives, including those related to farming and herding, as larger families may have distinct needs, resource management considerations, and collaborative dynamics.

Community: Project communities in Auyo			
No.	**Item**	**%**	**Remark**
7	**Ethnicity (Languages)** Hausa Fulani Others	 53 45 2	 Project communications should be conducted in languages understood by both Hausa and Fulani speakers. This ensures effective dissemination of information, fostering community participation and ownership. Understanding potential inter-ethnic dynamics allows for proactive conflict resolution strategies. Addressing any existing tensions or disparities promotes a harmonious project environment.
8	**Occupation** Civil Servant Trader Farmer Others/Herder	 11 15 41 33	 This suggests that the prevalent economic activities in the proposed project communities are farming and herding. Intervention projects should recognize the reliance on farming and herding, initiatives should incorporate environmentally sustainable practices to ensure the preservation of grazing lands, the well-being of livestock and maximization of crop yield.
9	**Literacy level** Primary School Secondary School OND/HND Islamiya (Islamic School) Others	 28 26 11 32 3	 The foundation for the development of life skills is

Community: Project communities in Auyo			
No.	**Item**	**%**	**Remark**
			laid by primary and Islamiya education in the project communities. Islamiya education is crucial for guaranteeing cultural sensitivity in educational and developmental programs, while a primary school education provides a foundation in fundamental literacy and numeracy skills. The project communities are dominated by both levels of literacy.
10	**Average Monthly Income** N10,000 - 20,000 N20,000 – N30,000 N30,000 and above	 35 37 28	 This suggests that most people living in the project communities earn below the minimum wage. Special intervention programs are needed in this area to drive sustainable economic growth in this area.

CHAPTER FOUR: POTENTIAL ENVIRONMENTAL & SOCIAL IMPACTS

4.1 Introduction

The assessment process was conducted through the use of an environmental and social risk assessment checklist. (Annex 2 &3). The checklist was administered per site through observation and consultations. This was used to identified site-specific issues and potential impact of the proposed intervention works. To gain an understanding of the potential risks and impacts of the proposed works, rating of identified risks was conducted into high, substantial, medium and low risks as shown below. The project generally, is a medium to low-risk project, involving rehabilitation of existing learning structures in existing schools, as well as procurement of learning materials and furniture. Broadly, the methodology adopted for the identification and rating of the potential impacts of the proposed works is presented in figure 4 below and discussed in detailed.

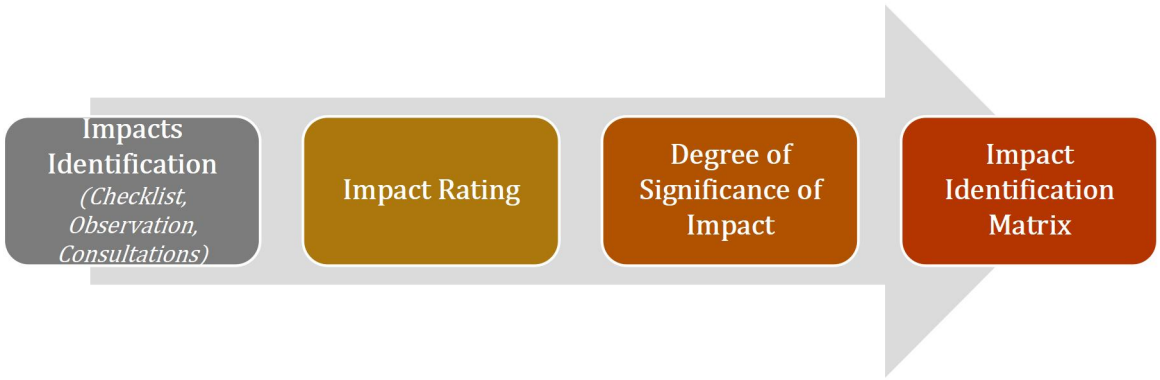


Figure 6 Impact Assessment Methodology

4.2 Impact Identification

The process involved the administration of developed checklist, site visits, observations, and consultations with stakeholders. The environmental and social sensitivities that may be impacted during the project works are presented below in Table 12.

Table 12 E&S Sensitivities

Environmental Sensitivities	Social Sensitivities
• Air • Noise (Vibrations and sound waves) • Surface water • Soil • Topography ad Landscape • Erosion Sites	• Air (Odor) • Noise Nuisance • Visual Sensitivity • School and learning activities • Economic and Agricultural activities • Employment • Public Health • Occupational Health and Safety • Transport and Traffic • Religious Activities • Leisure and social activities

	• Community affairs and Grievance redress

4.2.1 Impacts Rating

In order to understand the magnitude or severity of the potential impacts of the proposed works, rating of identified potential impacts was conducted. Table 13 below presents the magnitude or severity of the effect to the physical and social environment caused by the potential impact of an activity, and the level of sensitivity of the receiving environmental and/or social receptor. The rating was done using a Leopold Matrix.

Table 13: Potential Consequence Classification Matrix

	Magnitude of Effect		
Receptor Sensitivity	**Low change**	**Medium change**	**High change**
Low receptor sensitivity	Low	Medium	Substantial
Medium receptor sensitivity	Low	Medium	Substantial
High receptor sensitivity	Medium	Substantial	High

Degree of Significance

Table 14 below shows the impact significance with associated impact ratings.

Table 14: Degree of Impact Significance

Impact Significance	Impact Ratings
High significance	High Impact
Medium Significance	Medium Impact
Low Significance	Low Impact
Negligible Significance	Negligible Impact

Impact Table

The impact assessment matrix (Table 15) shows the magnitude or severity of the potential consequences. Only low - high impacts were considered for impact mitigation. Continuous improvement practices are expected address low impacts. Furthermore, the positive impacts shall be monitored and enhanced when expedient.

Table 15 Impact Assessment Matrix

Nature of likely Impacts										
	Adverse						Beneficial			
Items	ST	LT	R	IR	L	W	ST	LT	SI	N
Air Quality										
Soil										
Groundwater										
Surface Water Quality										
Transportation										

Agriculture										
Forest										
Fisheries										
Aquatic Life										
Socioeconomics										

4.2.2 Impact Identification Matrix

The proposed project is expected to be largely beneficial to cattle owners, farmers, communities and the state at large. The construction activities will largely take place within the two existing schemes, however, the nature of civil work activities entailing the use of heavy equipment, vehicles and labour influx will inevitably predispose the bio-physical and social components of the environment to varying degrees of negative impacts which range between minor and moderate.

Positive Socio-Economic Impacts

Creation of Employment Opportunities: There are clear indications that construction of Cattle Crossing and Hand pump at the Haideja Irrigation Scheme at Hadeija and Kura irrigation communities will have tremendous positive impacts on the lives and livelihood of people in the area as well as on the environment and ecosystem. For instance, increase in direct and indirect employment opportunities in compliance to a presidential directive allowing preference to local content in all employment opportunities. To avoid the negative impacts associated with labour influx to host or beneficiary communities, the TRIMING Project will promote local sources especially for unskilled and semi-skilled labour

Improved commercial activities: Business and trade at various scales will be enhanced during construction and operational phases of the work. As agricultural production improves, the area is likely to have a big agro-markets, agro allied and agro processing industries. There will be population increase and new business opportunities like hotels and real estate might come up in future.

Increased Gross domestic product and improved economy: The scheme will provide concomitant improvement in the GDP from the agricultural sector and the multiplier effect of this will be felt on the national economy. Several agro-processing firms will arise along the value chains of most of the products and importation of food items from foreign nations will reduce drastically.

Less conflict between herdsmen and settled crop farmers: With the irrigation scheme functioning properly, there is the likelihood of agriculture becoming organized, as the herds men becomes confined to specified locations as grazing routes and cattle colonies somewhere up-stream around the dam. The farmers and agro industries could be organized to take the downstream within the irrigation sectors. This will remove the risk of conflicts from resource use mainly water. Management of crises as a result of nomadic lifestyleof herders in search of water and greener pastures in the dry period of the year would be more effective.

Agricultural and food security in the nation: The development of the irrigation sectors is a positive impact of the project that will improve the food security situation of the country. This is because irrigation will aid all year-round production. Agricultural lands in the northern zone of the country receives less than 1000 mm of annual rainfall which is a big short coming for good crop yield. Intensive irrigation is therefore expected to boost the effort directed at meeting the

food demands of 180 million hungry peoplein the land.

Potential Negative Impacts of the proposed project

Table 16 Summary of Potential Negative Impacts

Environmental Impacts		
Impacts	**Significance of Risk**	**Mitigation**
1. Temporary air pollution from particulate matter and gases due to the movement of vehicles and equipment on untarred access roads to proposed project sites within the communities.	Low	1. Sprinkle earth roads with water to reduce dust during movement of vehicles especially settlements and areas where public facilities are nearby.
2. Temporary air pollution and noise due to drilling of borehole. Generation of particulate matter from dust and emission of gases with noise from drilling machines.	Low	2. Schedule drilling activities during times when the impact on the local community is minimized, such as avoiding night time or early morning drilling sessions. Keep local communities informed about the drilling schedule and activities, providing advance notice of potentially noisy operations.
3. Temporary noise pollution from movement of vehicles and machineries/equipment operations	Medium	3. Install noise mufflers on heavy duty equipment
4. Waste generated from drilling like drilling mud and rock cuttings. Other waste materials from construction, including excess soil and concretes from excavation, plastic wrap, pallets, and cardboard boxes used for packaging construction materials, could lead to environmental nuisance and public health concerns if poorly managed.	Medium	4. Ensure proper sorting; storage and final disposal of waste, liaise with registered JISEPA waste disposal outfit. Soil and rock cuttings can be properly channelled to flood embankments.
5. Materials sourcing such as sand, clay, gravels may lead to impacts related to sand mining and extraction of gravel from unlicensed quarries	Medium	5. Ensure compliance with all relevant local, regional, and national regulations governing sand mining and quarry operations. Obtain necessary permits and licenses to operate legally and contractors should ensure all materials are sourced from registered vendors or quarries
Social Impacts	**Significance of Risk**	**Mitigation**
1. Labour influx especially from skilled workers may induce conflicts and SEA/SH risks, risk of STIs/STDs for community members, students, and staff. Influx of Camp Followers could also increase the presence of sex workers in the communities	Medium	1. Project managers must ensure that all engaged workers are sensitized and sign Code of Conduct (CoC); zero tolerance for sexual relation with community members; as much as possible workforce should be from the community; provide basic amenities for workers like water, health, toilets

2. Lack of understanding or disregard for local customs and traditions by the project workers can lead to cultural insensitivity. This may result in resistance from the local community and damage relationships.	Medium	2. Project team must provide project workers with comprehensive cultural awareness training before they engage with the local community. This training should include information about local customs, traditions, values, and etiquette. Establish open and regular communication channels between the project team and the local community.
3. The construction of live-stock crossings and watering points may temporarily alter traditional livelihood patterns, especially pastoral practices. This could disrupt the local economy and way of life	Low	3. Proper and adequate stakeholder consultation to address concerns around the project's impact on the livelihood of community people. Plan construction activities taking into account the seasonal patterns of pastoral practices. Avoid critical periods such as breeding or migration seasons. This can help minimize the impact on livestock and allow the community to continue their traditional practices without significant disruption
4. Community health and safety at risk due to movement of equipment and vehicle to project sites which could lead to accidents due to bad access roads, disturbance of farmers and herders activities and religious activities	Low	4. The project managers must ensure all drivers are trained on substance abuse and transport schedule plans. Vehicles should not be overloaded with materials, use of flagmen and safety cautions, in built up areas, avoid movement in market areas on market days, limit movement during religious activities, restrict access to be placed at work sites
5. Sourcing for unskilled labour may lead to risks of child labour and increase dropout during rehabilitation activities. This could further predispose children to health & safety risks, Violence Against Children (VAC) etc.	Medium	5. Project managers must comply with this ESMP especially the LMP in the Annex by implementing fair wages, provision of PPEs and safe work conditions as approved by the WUA vis-à-vis the CONTRACTOR'S
6. Poor labour and working conditions especially wages for community workers could lead to grievances	Medium	6. Establish transparent payment systems to ensure that workers understand how their wages are calculated. Establish a clear and accessible grievance mechanism for workers to voice their concerns.
7. Insecurity can worsen due to presence of strange workers including TRIMING, WUA, Consultants etc and they can become victims of kidnapping, banditry, insurgency, social conflicts etc.	Medium	7. Security Risk Assessment& Mitigation Measures can be seen in Annex 16. In addition, the WUA should work with the project security adviser to develop a robust security management plan for the project in conjunction with the state Government and the state security agencies including the police, Army, Nigerian Security and Civil Defence Corps

		(NSCDC)
Occupational Health & Safety (OHS)	**Significance of Risk**	**Mitigation**
1.OHS Risks from operation of equipment and civil works could lead to injuries, incidents and accidents for workers	Medium	1. Project management Units should implement the site specific Occupational Health and Safety Management Plan (see Annex 9) in this ESMP vis-à-vis the CONTRACTOR'S
2. Workers could be exposed to disease outbreaks such as COVID, monkey-pox and other communicable diseases	Low	2. Provision of First Aid and PPEs such as nose masks, hand washing facilities, hand sanitizers and implement IPC Protocols
3. Exposure of workers to security risks such as banditry, kidnapping etc.	Medium	3. Appropriate security measures as detailed in Annex 16 should be put in place
4. Poor labour and working conditions could lead to ill-health and grievances	Low	4. Project management units should provide a safe and conducive work environment including basic amenities like portable drinking water, food, WASH facilities, rest area for workers
5. Unfair recruitment procedures could cause grievances, discrimination etc. poor or discriminatory wages could also lead to grievances and legal action	Low	5. Recruitment processes should be fair, non-discriminatory and the terms and conditions of employment including wages, work hours, rest hours, benefits, sanctions should be clearly indicated in the conditions and understood by all parties

4.3 Labour Influx, GBV Risks and Management Measures

Labour Influx Risks

The project will involve at least 85 skilled and unskilled workers for the civil works as it may be difficult to source especially skilled workers from the communities due to lack of technical skills and capacity. The influx of workers and followers can lead to adverse social and environmental impacts which may include increased demand and competition for local social and health services, as well as for goods and services, which can lead to price hikes and crowding out of local consumers, increased volume of traffic and higher risk of accidents, increased demands on the ecosystem and natural resources, social conflicts within and between communities, increased risk of spread of communicable diseases such as HIV/AIDS, COVID-19, increased rates of illicit behaviour and crime and risks of GBV/SEA/SH. See Annex 13 for Labour Influx Plan.

Actions to be taken:

- Harness local labour, such as through the WUAs
- Create awareness in communities on GBV/SEA
- Train project workers on Code of Conduct, and ensure workers understand and sign the code of conduct as part of engagement process for the workers.

- Establish structures such as work leave and holidays for workers to be with the family at intervals during the implementation duration of the proposed works.
- Install signage around the project areas to discourage such illicit practices.

Gender Based Violence (GBV) Risks

Gender-Based Violence (GBV) is an expression of unequal gender relations in any society. It is first a violation of human rights, then, a global issue that cuts across boundaries of economic wealth, culture, religion, age, and sexual orientation. While GBV disproportionately affects women and girls, it also affects men and boys. In social and infrastructural projects such as the Kano State TRIMING Project, GBV can easily result from, or existing GBV issues within the communities can further be exacerbated as a result of labour influx into the project corridor (communities) during civil works. This can predispose female students and staff of the schools selected for the interventions to various forms of GBV including Sexual Exploitation and Abuse (SEA), rape, sexual assaults, among others. To address these issues, the following measures can be followed.

Existing Structures and Measures to Mitigate GBV/SEA/SH Risks by the TRIMING Project

The Kano State Ministry of Women Affairs and Social Development is the body responsible for the overall coordination of welfare and support for women and children in the state. It also champions/oversees from the state level, the interventions and efforts to address GBV related issues. Furthermore, Kano State have laws and policies in place to address GBV issues. These are presented in Table 171 below.

Table 17 Kano State laws & policies for GBV response

No.	Laws/Policies	Provisions
1	Kano State Fostering Edict of 1983 (as review in 2000 and 2013)	The Edict was established in 1983 and reviewed in the years 2000 and 2013, the edict bothers on the welfare of children and the process and procedures towards the adoption and fostering of children in Kano State.
2	Kano State Children and Young Persons Law	The law defines who a child is and who a young person is. It also states the welfare and care of a child, and also bothers on treatment and custody of a child when he commits a criminal offence.
3	Kano State Penal Code Law	The Penal Code of Kano State has considerable sections that bothers on a child in Kano State with provisions on offences committed against a child. The law criminalizes miscarriage of an unborn child, exposure of infants, cruelty to children, assault, force labour, unnatural offence, rape, and indecent assault.
4	Kano State Petty Trading Prohibitions of Females and Juvenile Law, 1984	The law prohibits street hawking, setting up of stalls, tables, and kiosk by female juveniles below the age of 16. Where a female juvenile is subjected to street hawking, setting up of stalls, tables and kiosk by a parent or guardian such juvenile shall be committed to the care of any other person fit to care for the juvenile whether a relative or not.
5	Quranic Schools Movement Law	The law focuses on tsangaya schools (Quranic Schools); it stipulates how the schools should be governed and how the Malams (teachers) are to cater and care for their pupils.
6	Kano State Shariah Penal Code Law	The law has considerable sections bothering on offences against a child in Kano State such as the offence of rape.

1 Source: **Laws Protecting Children against Gender-Based Violence (GBV) in Kano State** published by: Rule of Law & Empowerment Initiative –Partners West Africa-Nigeria

No.	Laws/Policies	Provisions
7	Kano State Prohibition of Child Labour and Street Begging Law	The law prohibits subjecting a child to child labour and street begging either by parents, guardians, relatives, or Quranic School teachers.

Measures/Actions to be taken

- Domestication of the Violence Against Persons Prohibition (VAPP) Act in Kano State by the state government.
- Implement activities provided in the GBV action plan.
- Prioritize community engagements and integrate outcomes into the GBV Action Plan.
- Conduct community training on sexual exploitation and abuse (SEA) and sexual harassment, reporting and accountability mechanisms
- Include information on SEA/SH prevention and mitigation considerations in all relevant documents such as ESMPs, ToRs, CONTRACTOR'S
- Ensure the inclusion of qualified GBV Officer on the supervision consultant team and KRIS/HVIS PROJECT OFFICE's team respectively
- Production and provision of GBV Code of Conducts for all teachers and conduct training, GBV referral manuals will also be produced and distributed to all GBV focal persons in the schools/communities.
- Liaise with the NPMU/World Bank on providing Third Party Monitors (TPM) for the project with experienced GBV staff to monitor implementation of the SEA/SH Prevention and Response Action Plan and ensure all parties are meeting their responsibilities.

CHAPTER FIVE: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

5.1 Introduction

The overarching objective of the Environmental and Social Management Plan (ESMP) is to ensure that all impacts of the project are contained and brought to an acceptable level to guarantee economic, environmental and social sustainability of the project. The ESMP Matrix has been developed to meet international and national standards on E&S performance. It details the mitigation measures the E&S Unit and Contractors will be committed to implement throughout project implementation including timing for actions, monitoring and responsibilities.

The negative impacts identified in the previous chapter will be outlined in this section with adequate details on mitigation measures and its respective plans. These impacts consist of environmental, social and occupational health and safety issues associated with the rehabilitation works and are described in the matrix table below. The matrix table 20 is the E&S Management and Monitoring Plan which outlines action plans with well-defined desired outcomes, mitigation measures to address all potential impacts identified with parameters to be measured, methods of measurement, location of measurement, performance indicators (targets or acceptance criteria) that can be tracked over defined time periods, and with estimates of the resources. The table also includes a column for Monitoring Indicators and Monitoring Frequencies with the different phases of the project (Pre-construction, Construction and Operation Phases). Based on assessment, most of the potential adverse impacts are likely to arise during the construction phase of the project

5.2 ESMP Matrix

PRE-CONSTRUCTION PHASE

Table 18 ESMP & Monitoring Plan

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
ENVIRONMENTAL & OHS IMPACTS												
1A	**Movement of materials, vehicles and equipment to site**	Dust generation from untarred road; exhaust fumes of vehicles, equipment Worsen road condition	Ensure that all vehicles are serviced; undergo vehicle emission testing (VET) and vehicle exhaust screening (VES). Limit number of vehicles and equipment to one or two Mark out access route within the school premises	HSE Personnel of CONTRACTOR	450,000	SO2, NO_X, CO, VOC, $PM_{2.5}$, PM_{10} Number of vehicles/sites Access route marked out	In-situ measurement Site inspection	Air Quality Parameters are within permissible limits Evidence of VET and VES Evidence of compliance	Project area and within 1km Project area	Bi-monthly Weekly Before movement of vehicles	E&S UNIT E&S, Kano State Environmental & Protection Agency (KSEPA)	80,000
2A	**Site clearing, staging area and workers camp**	Removal of vegetation and shrubs Restriction of access road within school Waste Generation	Limit land clearing to specific zone. Protect all vegetation not required to be removed against damage. Replant or revegetate trees/shrubs through tree planting Liaise with REMASAB or licenced private waste collectors	HSE Personnel of CONTRACTOR	250,000	Amounts of vegetation cleared Area of Land Presence of seedlings Waste generation Sites	Site inspection No of complaints	CONTRACTOR compliance Presence of seedlings Evidence of waste manifest	Project site and area	Before and during land clearing	E&S UNIT E&S, KSEPA, Refuse Management and Sanitation Board (REMASAB)	120,000
		Predisposition to soil erosion	Avoid eroded area Backfill eroded	HSE Personnel of CONTRACTOR	184,000	No of eroded spots	Site inspection	Backfilled spots	Project site	Before and after project completions	E&S UNIT E&S, KSEPA	

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			spots with construction waste and cover with rip-rap materials and available soil type									
3A	**Mobilization of workers and equipment**	Temporary removal of topsoil, Oil leakages from stacked equipment and dis-colouration of topsoil	Segment a safe and specific area for equipment Service equipment and install a temporary container for collection	HSE Personnel of CONTRACTOR	385,000	Soil Quality	Visual observation	Soil Quality parameters are within permissible limits	Equipment Storage Area	Bi-monthly	E&S UNIT E&S, KSEPA	90,000
		Minimal noise impacts	Retrofit vehicle exhausts with sound-control or sound -proofing devices Carry out activities during school out or off-peak periods Provide PPEs for workers	HSE Personnel of CONTRACTOR	310,000	No of Complaints from affected communities No of retrofitted vehicles; Vehicle movement frequency Usage of ear plugs/ muffs	Noise measurement	Evidence of Compliance	Project Area	Weekly	E&S UNIT E&S, KSEPA	30,000
4A	**Same as 1-3A**	Risk of accidents and injuries Respiratory diseases to Workers due to inhalation of exhaust fumes and dusts Noise Pollution Community Health and Safety both to pupils and residents	Implement site specific Occupational Health and Safety Management Plan (OHSMP) The OHSMP will entail: - Provision of Hazard Communication Procedures (HAZCOM); Job Hazard Analysis (JHA); OHS Training program; Accident Provision of adequate first aid,	HSE Personnel of CONTRACTOR	750,000	Compliance with OHSMP No of workers Trained No of accidents, incidents or injuries Noise level	Site inspection Consultation	Numbers and Minutes of OHS training /tool box meeting Evidence of Compliance through minutes of meetings	Project area	Weekly	E&S UNIT E&S Team& Component Lead 1.2	100,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			first aiders, use of PPE, signage (Hausa and English languages). Cordon off unauthorized areas such as staging area, work area etc Provision of specific personnel training on worksite OHS management Workers should get a daily induction/toolbox before work commences Use reflective tapes and signage integrated in all worksites for safety at night Appropriate security measures in place to prevent harassment or kidnapping of workers									
	Sub-total				**2,329,000**							420,000
SOCIAL IMPACTS												
1B	**Movement of materials and equipment to staging area**	Obstruction to access route for students and teachers Grievances from locals over movement of equipment and vehicles	Movement of equipment and materials should be done when schools have closed for the day Find alternative access route and cordon it off	HSE Personnel of CONTRACTOR	135,200	Evidence of cordoned area off access route	Site inspection	No. of complaints	Project site	Weekly	E&S UNIT E&S Team	120,500

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
		Conflicts between locals and workers	Ensure CONTRACTORs employ locals Provide adequate sensitization		303,220	No of locals recruited	Recruitment records	CONTRACTOR's compliance		Monthly		
		Increase in noise level above permissible noise level, (90dB) during vehicular movement may create nuisance for locals & students	Ensure all vehicles and machines are serviced before being brought to site Select and use vehicles/ equipment with lower sound power levels. Ensure vehicles/ equipment not in use are turned off	HSE Personnel of CONTRACTOR	See 3A	Noise level Number and frequency of complaints in project area	In-situ measurement of noise level	Noise level (Not to exceed 90dB(A) for 8 hours working period	School area	Daily	E&S Team E&S UNIT	50,000
2B	**Site clearing, staging area and workers camp**	Grievances from residents, students/ staff over movement of equipment, flying materials from moving vehicles and if equipment is not parked at designated location. Grievance from non-payment, unpaid or overdue land lease for setting up of workers camp.	Mobilization of equipment and machinery should be done at off-peak period Ensure caution signs at strategic locations in both English and Hausa languages to warn PAPs. Ensure vehicles and equipment are parked at Camp site and designated areas ONLY. Any incident/ accidents should be reported immediately to the CONTRACTOR & E&S UNIT	HSE Personnel of CONTRACTOR	200,000	Appropriate signages in local languages Incident/ Accident Report	Visual observation Interview	No. of complaints received within the project area. Zero incident/accident report	Project Area	Weekly	E&S UNIT E&S Team	60,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			Cover truck conveying materials to site to prevent materials falling and causing injuries to pedestrians & motorists Ensure payment of land lease for workers camp in due time.									
3B	**Presence of foreign workers**	Anxiety from locals in terms of insecurity, competing for scarce resources may induce threats to life and safety	Provide sensitization training to improve awareness and sensitivity of workers Engage competent security personnel and train them regularly Implement GRM.	CONTRACTOR with support from TA E&S UNIT	218,102	Number of trained Personnel	Attendance list / training report	Compliance to SEA/SH Accountability and Response Plan	Project Area	Prior to project implementation	E&S UNIT Gender/GBV Officer	150,000
		Labour Influx which could lead to Increase in sexual activities and potential spread of STDs/STIs within the project area May induce SEA/SH and other GBV Issues	Limit the number of migrant workers by engaging local workers. Awareness campaign on sexual diseases, and distribution of male and female condoms. Develop an induction program including a code of conduct for all workers. Code of conduct to address the	HSE Personnel of CONTRACTOR	741,000	No of reported. cases Stakeholders concerns on risk of GBV. Workers manual, employment codes etc Level of awareness of local culture by migrant workers. Grievance Redress System	Visual observation and interviews Rapid health survey Consultations GBV Incident Report	Community perception and level of satisfaction. Level of awareness and knowledge of preventive measures. Signed CoCs with the PCU Conduct of sensitization campaigns	Project area	Once during pre-rehabilitation Once during rehabilitation	SSO, Gender & GBV Officers of the E&S UNIT	175,000

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			following: Respect for local residents. Zero tolerance of illegal activities such as child sexual exploitation and underage sex, prostitution, harassment of women, GBV, purchase or use of illegal drugs, Disciplinary measures and sanctions (e.g. dismissal) for infringement of the code of conduct and/or company rules; Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence.		2,000,000 for the operationalization of GRM.	Ratio of migrant to local workers Presence of security personnel Level of Awareness and Education						
	Sub-total				**3,597,522**							**555,500**

CONSTRUCTION PHASE

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
ENVIRONMENT & OHS IMPACTS												
1A	Civil works at	Increase in	Implement activities	Contractor's HSE	200,610	Period of	Site inspection	Reduction in onsite/work	Project	Weekly	KRIS E&S Team,	100,510

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
	farm sites and residential communities	cement and fugitive dusts from untarred routes	after farming activities or low activities Use PPEs Ensure watering where applicable prior to and during civil works in order to reduce the release of dusts Implement Waste Management Plan (See Annex 9)			implementation		area dust levels	facilities; specifically work areas		KSEPA	
		Indiscriminate defecation or open defecation by construction workers	Provision of mobile toilets	Contractor's HSE	430,650	Evidence of useable toilets	Site Inspection	Contractor's compliance	Project Area	Weekly	KRIS E&S Team	100,210
	Civil works, movement of vehicles, materials and equipment	Noise disturbance in a serene environment Dust due to movement of vehicles on untarred roads Flying objects/materials may get into eyes, lungs of locals or residents	Hire and use only good vehicles; retrofit with sound proofing devices Implement activities during schools out or close out Cover vehicles with tarpaulin	Contractor's HSE	210,400	Noise level and air quality No of complaints as regard farming and community disruptions Vehicle Movement Manifest Number of vehicles using tarpaulin	Site inspection Vehicle inspection	Number of complaints Contractor's compliance and document verification	Project Area	Weekly	KRIS E&S Team, KSEPA	95,100
		Land degradation and increased susceptibility to erosion due to excavation of earth materials around and in burrow pits	Reuse excess stockpile to back fill pits during grading Revegetate with appropriate plant species Ensure sourcing of earth materials from registered quarries and licensed construction	Contractor's HSE	668,500	Quarry Lease of quarry sites List of licensed vendors Developed site Reclamation Plan	Site inspection Pictures	Compliance Evidence of spoil management/ Spoil stockpiling for reclamation	Project site	Monthly	KRIS E&S Team KSEPA	250,100

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			vendors with appropriate quarry lease to prevent illegal sand mining.									
2A	Civil works, Earthworks Concrete and reinforcement survey	Accidental spillage of lubricants and paints chemical	Buy and use only required quantity Collect slurry into labelled container	Contractor's HSE	185,071	Number of waste collection containers	Site inspection	Contractor's compliance	Project Site	Weekly	KRIS E&S Team	100,103
		Accumulation of solid wastes including construction waste and debris	Ensure proper sorting; storage and final disposal by a licensed waste disposal agency Implement Waste Management Plan (see annex 9) Ensure recycling of removed materials through approved recycling facilities to conserve resources. Ensure no waste is left behind on the farm after construction	Contractor's HSE	325,500	Waste Manifest Manifest for waste reuse	Site inspection Verification of documents	Reduction in visible waste site or debris	Project Area	Weekly	KRIS E&S Team, REMASAB	150,100
3A	Operation of equipment used during the construction phase	GHG Emission	Turn off engine when not in use Use or hire vehicles or equipment that are in good condition generally less than 5 years old.	Contractor's HSE	125,350	GHG Emissions	Air quality assessment	Compliance Card Report	Project Area	Weekly	KRIS E&S Team,	100,550
4A	Electrical works	Generation of hazardous waste, e-wastes from removal and replacement of electric wires, switches, sockets etc.	Collection, segregation and sorting; Implement WMP; Sign agreement with a licensed waste	Contractor's HSE	61,920	Waste Manifest	Site inspection	Absence of e-waste on site	Project Area	Bi-monthly	SPIU E&S, REMASAB	97,200
5A	**Same as 1-4A**	Accidents such as	OHS training and	Contractor's HSE	395,850	No of workers	Consultation	Number of	Project	Weekly	KRIS E&S Team	102,450

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
		Injuries, explosions, electrical fires, leakages, falls, slips, release of hazardous energy, deaths etc	education i.e Conduct routine JHA Use of PPE;			trained OHS Plan Compliance	with workers Site Observation	accidents/incidents Minutes of Training /tool box talk	Area			
		Community health and safety	Implement the OHS within this report &: Develop SOP for all tasks	Contractor's HSE	450,830	Evidence of CONTRACTOR'S	Documentation	No of Complaints from Community/WUAs/Youths	Project Area	Bi-monthly	KRIS E&S Team	120,000
		Soil contamination from spillages of oil and other petroleum products from leakages and/or improper handling during maintenance of vehicles and equipment	Ensure fuel storage tanks are installed in a bunded area and checked daily. Ensure all vehicles and machines are serviced before being brought to siteto avoid leaks of oil. Prevent unregulated dumping of fuel waste. Install impermeable surface at fuel storage areas, vehicle servicing & limit zone to contain potential leakages.	Contractor's HSE	410,000	Installation of impermeable platform at limit zone.	Visual observation	Soil quality	Project camp sites and equipment packing zones	Monthly	KRIS E&S Team, KSEPA	150,450
		Generation of spoils and other excavated materials	Ensure stockpile and disposal areas are stable and protected against erosion and not interfere with run off or subsequent Construction activities. Stockpile to be covered and stored in a sealed and bonded area in order to divert storm water away.	Contractor's HSE		Evidence of stockpile protection Evidence of spoil reuse	Visual observation	Compliance with Mitigation	Bridge location, along realigned section of the approach road	Monthly		201,500

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			Reuse stockpile as fill materials									
	Sub-total				**3,364,681**							**1,568,273**
SOCIAL IMPACTS												
1B	Civil works, Earthworks Concrete and reinforcement survey	Risk of Child Labour which can lead to Violence Against Children	Ensure that children and minors are not employed directly or indirectly on the project Implement sensitization campaign against child labour Good work enforcement procedures Regular stakeholders' meetings All employees must sign code of conduct that stipulate zero tolerance to child labour either directly or indirectly Implement the LMP which addresses Child labour	Social Officer (KRIS & HVIS) Gender/GBV Officer, NGO	278,300	Categories of employees Number and reports of campaigns and meetings Signed Code of Conduct Compliance to LMP	Documentation Consultations	CONTRACTOR'S Compliance Absence of under-aged children Number of complaints	Project Corridor	Bi-monthly	State Ministry of Women Affairs and Social development KRIS E&S Team	104,900
2B	**Staging Area**	Obstruction to movement of farmers, residents and herders	Select and cordon-off areas off access route	Contractor's HSE TRIMING E&S Team SPIU	103,500	Area selected In-school access route	Site inspection	Contractor's Compliance No of complaints	Project site	Bi-monthly	KRIS E&S Team Community actors	
3B	**Movement of vehicles, materials and equipment** **Same as 1-2B**	Fugitive Dust may likely affect the community health & safety especially areas with earth-based roads	Works should be done during off-seasons or less farming activities Vehicles conveying materials should be covered with tarpaulin	Contractor's HSE	259,850	Air quality Vehicles with tarpaulin Water is sprinkled daily	In-situ measurement Vehicle inspection Inspection	Air quality is within permissible limits Contractor's compliance Compliance	Project Area and its corridor	Weekly Daily	KRIS E&S Team, KSEPA	295,102

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
		Noise: disturbance in a serene environment may affect their daily work schedule, psychology and peace of mind of both residents and workers	Wet earth roads and civil works areas daily Minimize speed of movement of vehicles on earth roads to reduce the amount of dust released Ensure all vehicles and machines undergo service before being brought to site with continuous regular maintenance. Select and use vehicles/ equipment with lower sound power levels. Ensure vehicles/ equipment not in use are turned off Fit vehicles with sound proof devices and use good vehicles Provide PPEs for workers			Speed limit Noise level	Inspection Consultation with residents	Compliance Number of complaints		Daily Daily		
4B	**Civil works**	Labour Influx; which may lead to conflicts amongst locals and employees; competition for limited resources such as water, light, materials etc.	Engage local workforce in the appropriate skills Incorporate social environmental measures into the civil works contract Implement the LMP within this report	Contractor's HSE	218,400	Number of local work-force Evidence of social and environmental measures in civil works contract Compliance to LMP	Contract Verification Site inspection Document verification	Contractor's compliance to E&S Measures Number of local employees	Project Corridor	One-off Monthly	WUA, Component Lead KRIS E&S Team	240,100
5B	**Ongoing civil works**	Occurrence of onsite/off-site, social vices	Mandatory and regular training for workers on	Contractor's HSE	650,500	No of Training Conducted and attendance list	Consultation Records	Contractor's Compliance Level of awareness	Project Area	Monthly	KRIS E&S Team	350,102

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
		(Fights, rape, harassments, theft, vandalization, drug use etc.) Threat to health and safety of locals Increase in SH/SEA due to presence of foreign workers near local residents Abuse of cultural norms	required lawful conduct in host community and legal consequences for failure to comply with laws. Sensitization on the working GRM to receive complaints Engage local residents as part of employees and train them on code of conduct, GBV (SEA/SH) Training program for project personnel to include GBV(SEA/SH) issues. Project workers should enjoy the privilege of retreating to visit their families before returning to site. Provision of gender-based awareness campaign within the communities. Partnering with NGOs/CBOs in the project area who are actively involved in gender-based issues. Develop an induction program including a code of conduct for all workers. Code of conduct to address the following:				Site inspection and observation					

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			Respect for local residents; No hunting or unauthorized taking of products or livestock. Provide cultural sensitization training to improve awareness of and sensitivity of workers to local cultures, traditions, and lifestyles.									
6B	**Movement of vehicles, materials and equipment** **On-going civil works**	Temporary disruption of farming activities and social changes	Construction should be done during off-peal periods	Contractor's HSE	103,650	Construction period Staff time-in and time out	Site inspection	No of complaint	Project Area	Weekly	KRIS E&S Team	250,980
		Risk of communicable diseases such as sexually transmitted diseases (STDs) including HIV/AIDS from interaction among construction workers Increase risk of transmission of COVID-19 , Lassa Fever	Provide opportunities for workers to regularly return to their families. Institute HIV prevention programs (peer education etc.) Liaise with appropriate health focused NGOs to undertaking health awareness and education initiatives on STDs amongst workers and in nearby communities. Sensitization and awareness for employees on COVID-19, Lassa Fever and the use of	Contractor's HSE	475,650	Number of trainings, awareness and attendance list Sensitization record sheets COVID-19 Sensitization reporting	Consultations Interviews	Number of complaints/incidents	Project Area	Monthly		

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			non-pharmaceutical preventive measures Ensure compliance to guidelines prepared by the NCDC and WHO									
7B	**Ongoing civil works**	Grievances from non-payment of staff which can lead to delay in job completion, social vices and other conflicts	Engage only personnel you can adequately pay Engage more casual workers to reduce financial cost Prepare payment schedule alongside materials BOQ	Contractor's HSE	Nil	Record of payment schedule Number of permanent/casual workers	Document Inspection	No of complaints	Project Site	Monthly	KRIS E&S Team, CONTRACTOR'S	
		Use of illicit drugs	Prohibition of drug and alcohol use by workers while on the job through awareness & sensitization on side effects of drug abuse	Contractor's HSE	Nil	Records of awareness	Visual and random observation Discussions	Number of workers fully educated on the side effects	Project Area	Bi-monthly	KRIS E&S Team	
8B	**Conveying and lifting heavy equipment** **Same as 1-3B**	Collapse, injuries, falls, cuts, abrasions, deaths which can lead to delay in completion of daily tasks and project timeline	Develop and implement site specific Occupational Health and Safety Plan which will include JHA/PHA, Safe work Practice, Use of PPE Provision of adequate first aid, first aiders, PPE, signages (English and Hausa languages), engineering barriers Restrict unauthorized access to all areas of high-risk activities.	Contractor's HSE	731,670	No of trained workers, first Aiders Usage of appropriate PPE Usage of signages and demarcations Accident/ Incident Report	Visual observation Records	Zero incident/accident report	Project Site	Weekly	KRIS E&S Team	200,320

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			Implementation of specific personnel training on worksite OHS management. Ensure that staging areas for equipment are adequately delineated and cordoned off with reflective tapes and barriers. Any uncovered work pits should have appropriate signage and protection around them. Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before. Adequate safety signage within construction sites should be installed to alert community/ drivers/pedestrians. Lighting and reflective tapes and signages should be worn by all workers.									
		Security risks to workers. kidnapping, hostage taking and armed attacks in view of the prevailing insecurity in the country	Appropriate security measures in place to prevent harassment or kidnapping. Consult the local residents on present security measures	WUA's	421,750	Security personnel engaged. Level of SRMP implementation	Records of consultation and Interviews	No of security incidents	Project Area	Bi-monthly	Supervision Consultant KRIS E&S Team WUA's Police	450,100

S/No	Activities	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (N)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Monitoring Frequency	Institutional Responsibility (Monitoring)	Cost (N)
			Employ local vigilantes as security personnel and inform Police and Civil Defence about the project work. Reduce working hours, road travel and exposure to security threats. Engage local workers to reduce the number of migrant workers. Implement project security risk management plan									
	Sub-total				**N3,238,270**							**N1,892,604**

5.3 Contractual Measures

As seen in Table 18 above (ESMP Matrix) majority of the mitigation measures are the obligation of the Contractor's HSEBMC during the pre-construction and construction phases of the project. Consequently, the potential Contractor will have to prepare Contractor's ESMP taking into account the measures in Table 19 below and the detailed general environmental management conditions for construction contracts (see Annex 8)

Table 19 Work Agreement Measures

S/No	Actions	Response
1.	All measures as described in the ESMP Matrix shall be included in the work agreement & CONTRACTOR'S documents with appropriate flexibility to adjust these measures to site circumstances, and that the potential CONTRACTOR'S will have to prepare their proposals taking into account these measures.	The non-inclusion of these measures in the proposal will lead to a disqualification of the proponent. The C-ESMP should contain these environmental and social management measures as work agreement conditions to be complied with.
2.	Specifically, the measures should be translated into a suite of environmental 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 C-ESMP and are presented in a familiar form to the accountable member of the CONTRACTOR'S
3	The cost for mitigation measures should only be added into the cost of the contractual document as provisional sum	The CONTRACTOR'S must consider and put the cost for the environmental and social mitigation requirements specified in the ESMP.
4	The Contractor expected to prepare a Contractor's ESMP which should emphasize specifically, their approach to minimizing environmental and social impacts during implementation of activities. The C-ESMP should have a section titled Civil Works Mitigation Plan by taking guidance from this ESMP mitigation responsibilities as presented herein. It is important to note that the C-ESMP must be submitted by the Contractor and approved by the E&S Team of the SPIU before civil works commence	The SPIU must verify and ensure consistency of the ESMP and the implementation of the C-ESMP while the Bank's task team will confirm such verification. If issues emerge during implementation, of which the C-ESMP does not contain appropriate mitigation measures, the SPIU will need to have the C-ESMP updated by the CONTRACTOR'S
5	**Contractor;s Code of Conduct – Preventing GBV and Violence Against Child (VAC):** A CONTRACTOR'S's Code of Conduct should be prepared by the CONTRACTOR'S, and signed; and forms part of the bids/contract agreement. To a minimum, the Code of Conduct should address: Standards of Conduct such as (i) Conflicts of interest (ii) quality of products and services, (iii) health and safety- reporting injuries and unsafe conditions (iv) workplace violence, labour and human rights, ethics, customer relations, reporting violations, (v) sex with anu person under 18 is prohibited etc	The CONTRACTOR'Ss Code of Conduct indicates the CONTRACTOR'Ss' commitment to be of best behaviour and comply professionally with the requirements of its contract and World Bank's safeguards standards
6	**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	The Individual Code of Conduct indicates the employee's commitment to be of best behaviour and comply professionally with the requirements of his/her contract with the CONTRACTOR'S

S/No	Actions	Response
	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.	
7	**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 a) worker's compensation plan, b) resolution of conflict among workers (c) obligations to payment of workers' salaries (d) workers' health care (e) general communication protocol (f) disciplinary procedures (g) procurement recruitment and termination procedures, etc.	The Manager's Code of Conduct indicates the Manager's commitment to employee welfare and work procedures and ethics

5.4 ESMP Implementation Schedule

It is expected that the activities related to the ESMP Matrix as seen above should be integrated into the overall Contract Agreement. The project implementation phase is estimated to be completed in 4 months. The ESMP implementation schedule is presented in Table 20 below.

Table 20 ESMP Implementation Schedule

S/No	Activity	Responsibility	Pre-construction (Weeks)				Construction								Operation Phase			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Clearance and Formal Disclosure of ESMP	TRIMING E&S Team																
2	Inclusion of Environmental & Social Requirements into the Bidding document	TRIMING E&S Team																
3	Finalization of Engineering Designs	In-house Engineer and Procurement																
4	Review and Approval of Contractor's ESMP	TRIMING E&S Team																
5	Environmental and Social Training for Contractor workers	Technical Consultant																
6	Mobilization to site	Contractor																
7	Site Clearing																	
8	Construction Activities																	

S/No	Activity	Responsibility	Pre-construction (Weeks)				Construction								Operation Phase			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9	Implementation of E & Mitigation	Contractor																
10	Supervising ESMP Implementation	Supervising Consultant																
11	Monitoring & Reporting on ESMP Implementation Post Rehabilitation	KRIS/HVIS E&S Team /Relevant MDAs																
12	Environmental & Social Auditing	E&S Consultant																

5.5 Monitoring and Evaluation Plan

The monitoring and evaluation plan will be the responsibility of the KRIS/HIVS Safeguard Team for all measures outlined in the ESMP matrix but will delegate certain responsibilities to the Contractor (in this case is responsible for the civil works) and Supervising Consultant. Such delegation of responsibility shall be documented as part of contractual agreements to guarantee compliance and commitment on the part of the supervising consultant to supervise and on the part of the contractors to implement the ESMP. As most of the mitigation measures are the obligations of the Contractor during project implementation, the contractor shall prepare the Contractor's ESMP (C-ESMP) considering the measures in this ESMP and other E&S Plans including the GBV Action Plan, Labour Management Plan, GRM.

The monitoring plan (Internal and External Monitoring) for the ESMP is presented in Table 21 below. Monitoring results shall be documented with preventive/corrective actions to be implemented.

Table 21 Monitoring Plan

Monitoring	Action	Responsibility	Period	Performance Indicator
Internal Monitoring	Regular site visit to ensure that the mitigation measures and actions specified in the ESMP Matrix are implemented and as bound by the contract is satisfactorily implemented.	Supervising Contractor, Contractor's HSE, KRIS/HVIS Safeguard Team	During Pre-construction, construction and Operation Phases	Monitoring Reports and documentation as described below
	Site visit for monitoring and inspection to ensure CONTRACTOR adhere strictly to the engineering designs and specifications for the project		During construction Phase	Observations and Monitoring Reports presented to the SPIU.
External Monitoring	Regular site visit to	KSEPA, FMEnv and	During Pre-	Inspect monitoring

Monitoring	Action	Responsibility	Period	Performance Indicator
	ensure project is implemented in an environmentally & socially sustainable manner using the monitoring indicators specified in the ESMP Matrix and other national and international environmental & social requirements	other relevant MDAs.	rehabilitation, Rehabilitation and Operation Phases	reports from Safeguard units Provide feedback on observations. Enforce corrective actions where necessary.

5.5.1 Reporting Plan

The reporting procedures presented in Table 22 below have been developed in order to ensure that KRIS/HVIS Safeguard Team is able to receive feedback from the implementation of the ESMP on an on-going basis and to take rapid corrective actions if there are issues of non-conformance.

Table 22 Reporting Plan

Phase	Responsibility	Deliverables	Frequency	Accountability
Preconstruction	E&S Unit	Report of monitoring activities including any specific events	Bi-weekly	Project Manager of the KRIS/HVIS, TRIMING, KSEPA on request
Construction	E&S Unit Supervision Consultant WUA	Monitoring Reports of E&S Compliance from all project sites Quarterly, half-yearly and annual reports for the attention of the TRIMING Safeguard/WB	Monthly/ Quarterly/ Half yearly/ annual	Project Manager of the KRIS/HVIS, TRIMING, State MDAs including KSEPA, Water Resources, Women Affairs, World Bank
	E&S Unit Supervision Consultant Contractor	Additional Reports according to specific conditions e.g. Accidents, serious environmental/social impacts, grievances	As required	Project Manager of the KRIS/HVIS, National TRIMING, World Bank
	Third Party Monitors	Reports on effective implementation of E&S activities	Quarterly/ Annual	Project Manager of the KRIS/HVIS, National TRIMING, World Bank
Operation	E&S Unit WUA	Monitoring Report including all monitoring activities throughout project implementation	Once	Chairman WUA, Project Manager of the KRIS/HVIS, National TRIMING, Ministry of Water Resources. Report to be archived and made available on request

5.5.2 Record Keeping

The contractor is required to keep records providing evidence of ongoing mitigation activities. Such records may include site monitoring plan, Site Specific HSE Plan, Waste Management Plan, Traffic Control Plan, signed Code of Conducts, Emergency response and preparedness procedures, site instructions, training records, complaints records, incident report, Inspection, maintenance and equipment calibration records. These documents should be made available to the E&S Team of the SPIU upon request.

The supervision consultants E&S team are required to keep records of non-compliance and corrective actions taken. These documents should be made available to the supervision consultants and E&S Team of KRIS/HVISU upon request.

The E&S team of KRIS/HVIS is also required to keep records to provide evidence of monitoring activities and effectiveness of the monitoring plan. The site monitoring plan will identify problems/corrective actions and monitoring reports. These documents shall be made available to the National TRIMING, World Bank and other relevant regulators upon request. In addition, all significant communications with MDAs should be documented and kept. These documents are required to track performance in order to achieve and demonstrate compliance with the monitoring plan and applicable regulatory requirements

The CONTRACTOR is required to keep records providing evidence of ongoing mitigation activities. Such records may include site monitoring plan, HSE Policy, Site Specific HSE Plan, Waste Management Plan, Traffic Control Plan, Emergency response and preparedness procedures, site instructions, training records, complaints records, incident report, Inspection, maintenance and equipment calibration records. These documents should be made available to the E&S Team of the SPIU upon request.

The Safeguard Team, SPIU 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 highlighted above are to be kept by the Safeguard unit and be made available to the Safeguard Unit of the NPCU, World Bank and other relevant regulators upon request. In addition, all significant communications with FMEnv, KSEPA and other relevant authorities should be documented and kept. These documents are required to track performance in order to achieve and demonstrate compliance with the monitoring plan and applicable regulatory requirements.

5.6 Institutional Responsibilities

The successful implementation of the ESMP will depend on the commitment and capacity of the KRIS/HVIS Safeguard Team, E&S unit, technical consultants, National TRIMING Safeguard Team and other third parties/institutions to implement the program effectively. The specific roles and responsibilities of those that will be involved in the implementation and monitoring of this ESMP are highlighted in table 23 below

Table 23 Institutional Roles & Responsibilities for ESMP Implementation

S/No	Category	Responsibilities
1	KRIS/HVIS E&S Team (environmental, social, GRM, gender officers)	Assists the Project Office to comply with and fully implement World Bank O.Pand other relevant laws in Nigeria. • Ensure adequate review of all safeguard reports before sending to the National TRIMING. • Supervision of the contractors, supervisors, training of contractors and workers, monitoring of the implementation of the ESMP, CESMP and other safeguard instruments. • Review of ESMP performance and implementation of correction actions if any. Specifically; **Environmental Officer** • Analyse potential environmental risks and impacts. • Ensure that project activities are implemented in accordance to best practices and guidelines • 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. • Ensure that the project design and specifications adequately reflect the recommendations of the ESMP **Social Officer** • Develop, coordinate and ensures the implementation of the social aspects of the proposed project. • Identify and liaise with all stakeholders involved in social related issues during the proposed road rehabilitation. • Ensure that project activities that are implemented will be in accordance with best practices and guidelines itemized in the ESMP. **GRM Officer** • Ensure the development and operationalisation of Grievance Redress Mechanism • Ensure project beneficiaries and host communities are sensitised about the available reporting channels and how to access them • Periodically monitor the GRM to ensure it is effective and fit for purpose • Ensure periodic reporting on project grievances to the NPCU/World Bank **Gender/GBV Officer** • Plan and implement all GBV related activities for the project • Development of GBV Grievance Redress

S/No	Category	Responsibilities
		Mechanism • Support the Project Office, in the identification, mitigation and management of the sexual exploitation and abuse (SEA), child abuse, and other forms of GBV related risks identified in the projects. • Ensure that all measures outlined in the GBV Action Plans are implemented for all SPIU programmes. • Monitor to ensure service providers are effective
2	KRIS/HVIS Project Office	• Overall responsibility for the implementation and monitoring of the implementation of the ESMP. • Monitoring of project/contractor performance and taking appropriate action to ensure ESMP provisions are met. • Inclusion of relevant provisions in the bidding document for contractors. • Liaise with other relevant State Government MDAs such as Kano/Jigawa State Ministry of Water Resources, Women Affairs, KSEPA, WUAs, Federal Government MDAs ,LGAs, Host/Affected Communities, Community Based Organisations (CBOs) and Non-Governmental Organisations (NGOs) for effective implementation of the ESMP
3	E&S Unit National TRIMING	• Support the state to ensure compliance with World Bank O.P and other relevant laws in Nigeria • Oversight functions of E&S coordination and reviewing E&S reports prior to sending to the World Bank • Ensure the state sends in monthly and quarterly E&S compliance report and collate for the attention of the World Bank • Conduct periodic monitoring and supervisory visits to the sites • Support the states in articulating corrective E&S action plans
4	WUA	The Chairman and the secretary of the Association with its members will supervise the implementation of the project during the operation phase Other tasks include: • Provide comments, advice and/or complaints on issues of nonconformity. • Attend public meetings organized by the Safeguard Team to disseminate information and receive feedback • Provide reports on the progress of the project activities
5	Contractor	• Compliance to BOQ specification in

S/No	Category	Responsibilities
		procurement including the provisions in the ESMP • Prepare and implement C-ESMP in line with the project ESMP • Ensure all contractor management and workers sign the Code of Conduct (CoC) and are routinely trained on the contents of the CoC • Prepare C-ESMP for approval of ESSU-SPIU • Implement C-ESMP during project implementation • Ensure that all construction personnel and subcontractors are trained on the content of the CESMP and are made aware of the required measures for environmental and social compliance and performance • Provide adequate basic amenities and PPEs to workers and ensure that the PPEs are worn by workers during work. • Prepare and maintain records and all required reporting data as stipulated by the ESMP, for submission to the Supervising Consultant
6	Supervising Engineer Team	• Preparation of the engineering designs for the project and update of design based on the ESMP recommendations • Provides an independent oversight to ensure contractors adhere strictly to the engineering specifications • Ensure contractors prepare their C-ESMPs • Ensure compliance with signing of code of conduct for all workers • Prepare and implement Environmental Monitoring Plan during construction • Supervise contractor performance of implementation of the ESMP/C-ESMP • Serve as part of the GRM to ensure timely receipt and resolution of complaints against the project • Report any incidents or non-compliance with the C-ESMP and other plans including the GBV Action Plan to KRIS/HVIS Safeguard • Prepare monthly E&S report including recommendations to the SPIU regarding ESMP performance as part of an overall commitment to continuous improvement
7	Kano/JIgawa State Ministry of Water Resources	• Overall responsibility for project planning and implementation • Provide oversight function and support to the ground team • Provide counterpart funding to support the project and project staff • Coordinates state-wide awareness on the operation of the new constructed facilities. • Support the Project in the operation and maintenance of the new facilities.
8	Kano State Environmental Protection	• Liaise with contractors to support the

S/No	Category	Responsibilities
	Agency (KSEPA)	collection/evacuation of waste from the project sites • Ensure management of project waste in line with best environmental practices as not to degrade or pollute the environment. • Conduct periodic monitoring of environmental parameters to ensure compliance with environmental regulations
9	State Government MDAs	• Other MDAs come in as and when relevant areas or resources under their jurisdiction are likely to be affected by projects. • Participate in the EA processes and project decision-making that helps prevent or minimize impacts and to mitigate them. • MDAs may also be required to issue a consent/approval for an aspect of a project; allow an area to be included; or allow impact to a certain extent or impose restrictions/conditions, monitoring responsibility or supervisory oversight.
10	Federal Ministry of Environment	• Review of Draft ESMP report, provide disclosure letter, receive comments from stakeholders. • Disclose the ESMP in the FMEnv corporate site
11	4 LGAs for Construction Works	• Provision of oversight function across project within its jurisdiction for ESMP compliance. • Monitoring of activities related to public health, sanitation, waste management amongst others.
12	Host/Affected Communities.	• Promote environmental and social awareness including GBV prevention measures • Review environmental and social performance report made available by KRIS/HVIS Safeguard Team. • Provide comments, advice and/or complaints on issues of nonconformity. • Attend public meetings organized by the SPIU to disseminate information and receive feedback.
13	Non-Governmental Organisations (NGOs)/Civil Society Organisations (CSOs)	• Assisting in their respective ways to ensure effective response actions, conducting scientific researches alongside government groups to evolve and devise sustainable environmental strategies/techniques.
14	World Bank	• Overall supervision and provision of technical support and guidance. • Recommend additional measures for strengthening management framework and implementation performance;

5.7 Cost of Implementing the ESMP

The total estimated cost to effectively implement the mitigation and monitoring measures recommended in the ESMP Matrix above including Capacity Building and others is Sixteen million, four hundred and ninety-four thousand, eight hundred and forty naira only. – **N16,494,840** as seen in Table 24 below. The cost of mitigation is **N9,282,493** and should be included in the contract as part of the implementation cost by the Contractor

Table 24 Cost for the Implementation of ESMP

Item	Responsibility	Cost Estimate in Naira (N)
Mitigation	Contractor	9,282,493
Monitoring	KRIS/HVIS E&S Team	3,391,197
Capacity Building	State Safeguard Team	**1,821,150**
GRM Operation	State Safeguard Team, WUAs	2,000,000
TOTAL		**16,494,840**

CHAPTER SIX: STAKEHOLDERS CONS ULTATION

6.1 Introduction

Identification and understanding of stakeholders relevant to the TRIMING project is fundamental to the invaluableness of their proper and adequate engagement throughout the life cycle of the project. Relevant to the ESMP, the TRIMING stakeholder opening consultation focused on understanding the structure of associations including interest groups and direct beneficiaries whose welfare the projects directly or indirectly underscores as this was crucial for increased project acceptance, effectiveness, and positive long-term impacts. The opening consultation in Kura, Bunkure, Garun Mallam and Auyo Local Government area, Kano and Jigawa states, were held between 17th – 19th October and 28th - 29th November, 2023 respectively. This platform served to elicit information, questions and concerns relevant to the project. It also provided the opportunity for project beneficiaries to contribute to both the design and implementation of the project activities and further ameliorate the likelihood for conflicts.

This elaborate consultation was preceded by the identification and understanding of the relevant stakeholders who were the most affected by the social intervention, namely, the Water Users Association, (Consisting of the Farmers Association, Women's Association) and Herders Association.

The public consultation strategy for the ESMP activities revolved around the provision of a full opportunity for involvement of all stakeholders, especially the beneficiaries. Concerns raised by the stakeholders are documented and incorporated in this report and used to develop mitigation and/or enhancement measures for the Grievance Redress Mechanism (GRM).

The following noteworthy submissions were documented.

1. The project will have foreseeable environmental and social impacts, especially on the community water users and also mitigate farmer-herdsmen disputes.
2. The social intervention aims at impacting more positively to the environment and social conditions, and will devise suitable, practicable mitigation measures through the ESMP to avoid, reduce or eliminate negative impacts.
3. The priority concerns raised by the beneficiaries and other relevant stakeholders will be put into account and incorporated in the project planning.

6.1.1 Objective of Community Consultation

The aims of the public participation and consultation process are:

- Solicit inputs, views and concerns from the Water Users Association (WUA) in the TRIMING project. Their views at this point is relevant for decision-making;
- Facilitate consideration of alternatives, mitigation measures and trade-offs, and ensure that important impacts are not overlooked and that benefits are maximized;
- Reduce conflict through the early identification of contentious issues; and increase public confidence in the project; as it related to the installation of Installation of Cattle Crossing Points and Watering points for the Cattle Crossing points too.
- Provide opportunity for the members of the Water Users to influence the project designs and implementation.

6.1.2 Public Consultation Methodology

The methodology adopted in this ESMP for carrying out the consultation process include a qualitative and quantitative mixed method that offers an effective means to interact with the project communities and stakeholder groups. Essentially, the approach is based on a

participatory approach that included meetings with the WUA, public discussions as well as discussions with key informants (Executive members of the Herders Association and the leaders of the Women group, among others). A brief description of these methods is as follows:

1. Rapid Assessment Technique:
   This involved a quick professional assessment of the project potential impacts based on nearness of residential/commercial assets to the dam and irrigation areas, anticipated nature and intensity of impacts, and the significance of the impacts within the proposed project areas. Potential benefits of the proposed intervention; their view and envisaged challenges of the proposed interventions; were part of the encapsulated questions that got clarity in the direct engagement and discussions, to create and gain better understanding between all the parties.

2. Socioeconomic Survey:
   This involved the administration of structured questionnaire designed to provide socioeconomic profile of WUA members doing business within the Dam project area as well as formal and informal discussions with focus groups including the executive members of the herders group.

3. Public Meetings:
   This was conducted as part of the participatory approach aimed at gaining good knowledge of the social issues/risks associated with the project as perceived by the WUA members. Public meetings were held at different locations within the project immediate impact areas.

6.2 Stakeholders Identification & Categorization

Generally, three (3) broad categories of stakeholders were identified by the study based on the degree to which the project activities affected or involved such persons or group of persons. These stakeholders are grouped as shown in Table 16.

The adopted process consists of:

i) Identification of any parties whose line of duties whether officially, socially, economically or culturally have direct or indirect bearing on any aspects of project activities. These parties may include individuals, groups, institutions or organizations that may be affected by the dam rehabilitation activities;
ii) Establishment of the stakeholders list and identification of specific stakeholder interests in relation to the project. The issues considered include: (a) the project's benefit(s) to the stakeholders; (b) potential changes to the routine activities of the stakeholders that may occur due to the project; and, (c) the project activities that may cause damage or conflict for the stakeholder;

Table 25 Stakeholders Identification & Description

GROUP	DESCRIPTION	ROLE(S) IN COMMUNITY PROCESS
Group-1	Water Users Association	The is a broad group of farmers which include both arranged both section and comprising of farmer planting different crops.
Group-2	Fulani Cattle Farmer Association	These are group of Cattle headers some group of headers who were part of MIYETTI ALLAH Cattle Breeders Association. However, they felt that their interest would be better protected under the new Association.
Group-3	CBOs, FBOs and NGOs who provide frequent interface with	This group of organizations essentially provides on a continuous basis spiritual and physical welfare as well as

	the community members who may be directly or indirectly affected by the project activities.	social health of the communities.

6.2.1 Stakeholder Categorization

Table 17 below highlights the two major categories of stakeholders for this social intervention

Table 26 Stakeholders Categorization

Stakeholder Categorization	
Primary (Beneficiaries/Impacts)	**Secondary** (Influence/Interest)
Communities in Kura, Bunkure, Auyo LGA and the proposed project sites	KRIS & HVIS TRIMING
Water Users Association	River Basin Development Authority
Farmers Association	Kano State Ministry of Environment
Women Association	Federal Government of Nigeria through TRIMING
Herders Association	State Ministry of Environment
	Auyo Local Government Area
	Kano & Jigawa State Ministry of Women Affairs & Social Development

Public Consultation Plan

Table 27 Public Consultation Plan

Project Phase	Project Activities	Target Group	Method
Pre-construction	▪ Disclosure of relevant project information ▪ Identification of proposed project location and area of influence ▪ Scoping and screening	▪ Water Users association (WUA) ▪ Farmers Association ▪ Herders Association ▪ Women association ▪ Affected/Benefitting communities ▪ Youth group ▪ River basin development authority	▪ Consultations with farmers, herders, women and local river basin development authority ▪ Invitation through Water users association leadership ▪ Disclosure of ESMP at community level, LGA, SME, WUA, National & Local Dailies
Construction	▪ Construction – Civil Works ▪ ESMP Implementation ▪ ESMP Monitoring	▪ River basin development authority ▪ Water users association ▪ Jigawa state ministry of environment ▪ JISEPA ▪ Jigawa state ministry of Environment ▪ Religious leaders ▪ Affected/Benefitting communities	▪ Consultation with farmers, herders, communities, village heads, youth leaders, women groups, vulnerable groups Information via water users association leadership ▪ Distribution of fliers to the locals printed in English and Hausa languages, local radio and Imams ▪ Arrangement of monitoring responsibilities to stakeholder Agencies

Project Phase	Project Activities	Target Group	Method
Operation	▪ De-mobilization ▪ Audit/ Post construction evaluation ▪ Project Maintenance	▪ Traditional rulers ▪ Water users association ▪ Religious leaders ▪ Affected/Benefitting communities ▪ RBDA	▪ Consultation with WUA leaders, communities, village heads, youth leaders, women groups, vulnerable persons. ▪ Information via WUA ▪ Distribution of fliers to the locals printed in English and Hausa languages, local radio and Imams ▪ Arrangement of monitoring responsibilities to stakeholder Agencies

6.3 Summary of Stakeholders Consultation

6.3.1 Consultations with the Water Users Association (WUAs)

In all the communities consulted (see Annex 3), the estimated age distribution during the FGDs indicated that majority of the people (over 60%) were in the active age categories and can therefore participate productively in any economic and development activities. In terms of population distribution, the results indicated the dominance of Males in WUA with about 70% to 30% as males' to females' ratio. Despite the largeproportion of men and in WUA they allow women to participate actively in the deliberations that concern them, especially in economic activities and overall decision making. The Vulnerable groups are not noticed amongst them.

In terms of engagement in economic activities and occupations, majority of the people in the rural communities are crop farmers (80%) with sorghum, millet, rice, maize, tomato, onion and wheat as the major crops produced. Other economic activities mentioned include; livestock rearing and provision of farm labour.

During the consultations environmental issues were discussed of which the general assessments indicated good condition in terms of sanitation, air and water quality in all the rural communities interviewed. In the urban communities' people generally complained about poor state of sanitation and poor quality of air and water due to pollution caused by industrial, traffic and other human activities.

Social issues such as Gender Based Violence (GBV) and conflicts were also discussed with the Association members present. However, FGD was held with the Women group to obtain GBV issue within the WUA. In theWater Users Association (WUA) and Fulani Herders Association, the incidence of gender based violence is not common.

In extreme cases where violence against women or harassment had occurred, the community Head and Women leaders are used for these GBV cases. The Police could be invited in situations where injuries occur.

The occurrence of resource conflicts especially between farmers and pastoralists during the rainy and dry seasons were discussed in some of the rural communities interviewed. Such conflicts (crop damages) when they occur are settled amicably without violence through the traditional leaders and compensations are usually paid to the party affected.

The health conditions and status of the people in the communities consulted were generally good. The available health facilities in the rural communities usually include Local Primary Health Care Units, dispensaries and Private Patent Medicine Stores. Major diseases commonly occurring in the communities were generally, Malaria Fever, Typhoid Fever, Ulcer and some

Urinary Tract infections. The people are also aware about other diseases such as HIV/AIDS, Avian Influenza and COVID-19.

6.3.1.1 Participants' Feedback and Comments

During the community meetings, several participants (WUA members) expressed their views, and made comments and suggestions relative to the project. All the speakers expressed the appreciation and gratitude of WUA to TRIMING, the Kano State Government, the Federal Government and the World Bank for the activities of TRIMING in the past years, as this has improved their socioeconomic wellbeing. They promised to give full cooperation and support to the activities of the Consultant assigned to carry out the ESMP for the Watering Points and Cattle-Crossing activities.

Consultations and stakeholders were carried out with the Water Users Association (WUA). This engagement provided opportunity to make contributions aimed at strengthening the development project while avoiding negative impacts as well as reducing possible conflicts. The consultations will also remain an ongoing exercise throughout the entire project.

Information and data gathering involved a broad spectrum of activities that included interviews and discussions with WUA members who have historical knowledge of the irrigation facilities and the history of farming activities in the dam.

GBV ISSUES

The issue of Gender Based Violence (GBV) as cross cutting was also discussed at the community level and with stakeholders directly involved to obtain abroad picture. On very few occasions especially in female headed households, women are at liberty to plough fields; usually at very peasant levels. There is no documented account on the pattern and magnitude of gender-based violence in the area however, the TRIMING has developed a project based GBV Pathway and this should form the basis for Implementation of GBV cases. The communities are sensitized on GBV issues. The women already know what to do in the case of incidences. Gender based violence in Northern Nigeria appears to be very sensitive and controversial issue. This is because the issue is covered with cultural colorations. Thus, perception and identification of gender violence depends largely onthe person's cultural background.

6.3.2 Consultation with Affected LGAs

The consultation was conducted with the leadership of the Water users associations (WUAs), women groups, farmers and herders from different communities of the proposed TRIMING social intervention.

Table 28 : Consultation with Benefitting Communities

Overview
Date: 29th November, 2023. Venue: CGC camp, Auyo L.G.A, Jigawa state Participants: Water users association representatives, Miyetti Allah, Women's group and E&S consultants of TRIMING.
The stakeholder consultation, which was held in CGC, Auyo was attended by the leadership of Apex Water Users Association (WUA), Auyo, unit heads of WUA in benefitting communities, block leaders, farmers, Miyetti Allah, Kautal Haure, leaders of the women groups and theE&S Consultants from TRIMING. After the introductions, the E&S Consultants gave the stakeholders in attendance an overview of the ESMP process and goals as well as the TRIMING project. In order to mitigate potential environmental and social risks and impacts that the project activities may cause, the consultants stressed the need for the stakeholders to participate fully in the consultation process. They also emphasized the stakeholders' roles during the project activities. The summary of the key concerns/questions/issues raised during the consultation are presented below, including the consultant's responses/remarks

No.	Agenda	Concerns/Questions	Consultant's Response/Remark
1.	Perception of the project	a. Watering Points: The consultation began with a request from the Chairman of Miyetti Allah that the watering points should be designed in such a way that they would serve their intended purpose effectively. He further explained that from the design of the watering points, the construction processes and completion, the area should be wide enough to accommodate at least 100 cows at a time as anything lesser would not resolve the issues between farmers and herders, but might even escalate the issues. • Stakeholder engagement patterns: He further advised that for the project to successfully accomplish its purpose, the project management team should ensure to work hands in glove with the stakeholders, especially the herders and the farmers, through regular proper and adequate stakeholder engagements. The Apex chairman of the water users association supported the above submission with the following expectations from the project construction. • Notable expected outcomes of the watering points' construction include: i. adequately constructed inlet and outlet system for proper drainage; flushing and recycling of the water from grazing residues and smooth operation of the watering points and a wide area to contain, at least, one hundred cattle at a time. ii. Proper testing of the watering point project after construction and official handover of the completed projects to the WUA leadership as this would help in preserving the social interventions by instilling a sense responsibility for this purpose.	The consultant responded that the project management team is determined to strictly adhere to the documents supporting adequate project implementation and reassured the stakeholders of the provisions of the project implementation manual, which will address all issues raised by them. Additionally, he assured the stakeholders that the project management team would monitor the activities of the contractors to ensure that completed projects are duly tested and handed over to the stakeholders

		• Expected positive environmental and social impacts from a properly constructed watering point in the proposed sites: The issue of farmers-herders unrest which is a security threat to the groups and the community at large will be properly addressed if the intervention's PIM is adhered to. This includes reduced competition for resources, community stability and security, increased agricultural productivity, livestock health and productivity and reduced degradation of crops in farms. • Expected negative environmental and social impacts from a poorly constructed watering point in the proposed sites: The lingering tensions between farmers and herders due to intrusion of cattle and overgrazing at a particular area which results in depletion of crops may escalate if the watering points are poorly constructed. According to the herders, other issues accrued to poorly constructed water points include endangerment of livestock health due to contaminated water as well as operational and management challenges arising from failure of the watering point infrastructure, necessitating frequent repairs and compromising its effectiveness. b. Hand-pump Borehole: The leadership of the women group present in the consultation emphasized the need for proper drilling of the borehole in order to fulfil its purpose of providing access to clean and healthy water for the community.	

		Other expected positive environmental and social impacts highlighted by the stakeholders are as follows. • Reduced conflicts arising from competitions caused by scarcity of clean and healthy source of water in the community. • Reduced vulnerability to water borne diseases and reduced vulnerability to water scarcity, even during dry seasons. However, she highlighted that the following negative impacts may arise if the boreholes are not properly drilled or malfunctioning after construction. • Lack of trust for other proposed projects as this project has raised their hopes of reducing the burdens related to water scarcity in the community, especially, among women who mainly fetch this water for domestic purposes. The representative of the community WUA also emphasized the need to preserve the boreholes by properly handing over the projects upon completion. c. Livestock Crossing: The farmers and the herders expressed that they expect the crossings to be wide enough, constructed in such a way that it can accommodate two carts at the same time and still have enough space. • Positive environmental and social impacts of the cattle crossings: Also, they highlighted the positive environmental and social impacts of the crossings in preserving hydraulic structures and allowing for smooth movement of goods, agricultural produce, and livestock. • Negative social impact of	

		poorly constructed cattle crossings: This will contribute to the already existing tension between herders and farmers as these crossing are meant to serve as mitigation for movement of cattle across farm areas to their destinations. Poorly constructed crossing may also contribute to damaging hydraulic structures. This may pose a serious security issue in the community.	
2.	Potential Adverse impacts	• The end-user inquired if there would be any risks such as OHS associated with the construction works. • They are also sceptical about having strangers/foreigners within the community. • Also, they were apprehensive of some negative social impacts associated with such projects like sexual abuse, cultural and religious concerns.	• The consultant alleviated their fears of possible risks, as the ESMP Matrix is well detailed with mitigation measures, responsibilities and monitoring principles to reduce such risks to the barest minimum. • There will be adequate sensitization through WUA leadership, religious leaders on ways to avoid being exposed to SEA/SH. • In addition, the project contractors will sign Code of Conducts against GBV/SEA/SH.
3.	Concerns raised by other stakeholders	• They expressed their fears on project duration demanding to know if the project would disrupt the activities of farmers and herders for so long	• The consultant assured them that contractors will work with deadlines in order to complete projects promptly .

CHAPTER SEVEN: GRIEVANCE REDRESS MECHANISM

7.1 Introduction

This section provides a mechanism for the receipt, processing and resolution of complaints under the TRIMING Project. A grievance is a concern or complaint raised by an individual or a group within communities affected by project operations. Both concerns and complaints can result from either real or perceived impacts of a project. Based on the impacts identified in chapter 5 of this ESMP, there are potentials for conflicts and grievances to arise as a result of project activities, thus it is important to have a pathway for addressing such conflicts when they arise.

TRIMING project has prepared a detailed GRM Manual which is being operationalized by the various states. Therefore, the following sections only provide a summary of key areas relevant to the rehabilitation subproject.

7.1.1 Objectives of the GRM

The Grievance Redress Mechanisms was designed to achieve the following Objectives:

- ✓ Provide clear procedures for resolving grievances and disputes in the communities where the sub-projects will be implemented
- ✓ Resolve grievances when they occur, and mitigate their consequences, as well as preventing them from escalating
- ✓ Allow communities to express views, on project activities (for example, civil work quality and malpractices)
- ✓ Improve stakeholder participation and decision making through dialogues and registration of grievances and conflicts

7.1.2 Approach to Development of the GRM

There are several steps which lead to the development of a concrete GRM, which includes the following:

- ✓ Appraising the nature of the rehabilitation/renovation component to consider areas of likely grievances or friction
- ✓ Field consultations to appraise the prevalent situation around the project areas of influence, as well as to get understanding of the operational environment of the project and the issues that may emerge.
- ✓ Reviewing the current situation of handling grievance in the project locations through consultations with stakeholders in the school and project communities
- ✓ Consulting already prepared policy documents for the Project, as well as laws, conventions and policies as they relate to development, especially World Bank projects.

7.1.3 Potential Areas for Grievances under the Construction Works

- ✓ Delay in execution of project leading to breakdown of trust
- ✓ Disturbance to communities and school activities due to noise, dust emission, movement of vehicles and equipment to site etc.
- ✓ Community health and safety issues such as accidents, parking vehicles in children play areas, pollution from poor waste management practices may lead to grievances
- ✓ Potential increase in STDs, sexual exploitation and abuse/sexual harassment (SEA/SH), unwanted behaviour due to labour influx
- ✓ Lack of employment of the community youths as unskilled labor may lead to lack of cooperation and also complaints from the communities
- ✓ Non-compliance of the ESIA to the agreement reached with TRIMING or the community on project timelines, quality, and general expectations
- ✓ Competition for local resources such as water, health facilities, recreational facilities from WUAs may lead to grievances

7.2 Grievance Redress Process

The following are the steps in the GRM

i. Channelling and receiving the grievance
ii. Recording the grievance
iii. Screening of the grievance
iv. Investigation of the grievance
v. Resolving the conflict/ escalating the grievance to higher level
vi. Conclusion and feedback process
vii. Reporting, monitoring and evaluation

7.2.1 Channels for Receiving Complaints

As explained in the TRIMING GRM there are several channels for stakeholders to report their grievances to the project which includes the following:

1. Compliant boxes – which will be mounted in all the project impact locations including within the school and in the community (near the house of the village head as decided by stakeholders during consultations). The GRM focal persons will retrieve the contents of the complaint boxes periodically (at least every 48hrs) and channel to the Grievance Redress Committee (GRC) for investigation and resolution.
2. Grievance Redress Committee (GRC)- GRCs will be set up in the project locations which will have members from the school management, community leadership, women representative amongst others as described in the GRM manual. Stakeholders can channel their grievances to/through any member of the committee
3. Oral reports/meetings/consultations – grievances can be reported at meetings, consultations or to any leader or representatives in the community/school. In all cases, this should be escalated to the GRM focal person or any member of the GRC for proper handling.
4. GRM Phone lines – stakeholders can utilize the toll-free phone lines that will be provided to the GRCs by the WUA

In all cases the grievance received will be channeled to the GRM focal person in the project location to be properly handled in line with the TRIMING grievance redress procedures

7.2.2 Structure of Grievance Redress Committees

The grievance redress committee is planned in three-levels: community level, SPCU level and National level

First level GRC – Project Site/Community Level

This GRC is easily accessible to complainants in the project area (KRIS/HVIS/community people), without any costs.

Members of the 1st level GRC should include:

- ✓ A Representative of community leadership
- ✓ Chairman WUA
- ✓ Guidance Counsellor of the school
- ✓ Gender Officer
- ✓ Community representative

With the support of the WUA Social and GRM Officers, the GRC will sensitise student, staff, community members on how to channel complaints to the committee through any of its members or other available channels such as complaint boxes, phone lines etc.

Second level GRC – WUA Level

This GRC is formed at the WUA level and can receive complaints from the 1st level GRC or directly from complainants through phone calls or in-person during visit to the communities.

Members of the 2nd level GRC include:

- ✓ Kano State Project Coordinator
- ✓ GRM Officer at the WUA
- ✓ Social Development Officer at the WUA
- ✓ Environmental Officer at the WUA
- ✓ Communication Officer at the WUA
- ✓ GBV Officer at the WUA

Third level GRC – TRIMING Level

This GRC is formed at the National office level and can receive complaints from the 2nd level GRC or directly from complainants.

Members of the 3rd level GRC include:

- ✓ National Coordinator
- ✓ GRM Officer
- ✓ Social Development Officer
- ✓ Environmental Officer
- ✓ Communication Officer
- ✓ GBV Officer

7.3 Processing of Complaints

Complaints received will pass through major processes as follows:

1. Registration of complaints
2. Verification and investigation of complaints
3. Escalation/ resolution and closure
4. Feedback

7.3.1 Registration of Complaints

The secretary (GRM focal person) of the committee will register the compliant in the grievance logbook and acknowledge receipt of complaints grievance to the grievant within 1 day. The registration will capture the name of the complainant, date of the grievance, category of the grievance, persons involved, and impacts on complainant life, proofs, and witnesses. (Please note that for GBV related complaints it will follow a different process as stated in section 6.5, owing to the sensitive nature of the complaints)

7.3.2 Verification and Investigation of Complaints

This involves the verification of grievance to determine among other things whether the matter is related with TRIMING project activities, and whether the matter can be handled/resolved at the level where it is presented. The compliant will be investigated: this involves options and approach taken to resolve the case. This may involve site visit for physical inspection and determination of the claim, negotiation with the aggrieved PAP and feed back to the parties involved. Part of the investigations may also be to assess the cost of lost or risk involved in the

grievance. Where the compliant is not related to TRIMING, it will be referred to the appropriate authorities and the complainant informed.

7.3.3 Escalation/ resolution and closure

Where the case is resolved and all parties are in agreement, the case will be closed and documented in the grievance logbook. However, where the case is unresolved it will be escalated to the next level GRC. All responses to the complainant in a grievance redress process that moves beyond a unit level must be communicated in writing and/or by verbal presentation to the complainant. This will include a follow up on the corresponding authority where cases are referred, to ascertain the status of reported cases.

7.3.4 Feedback

Feedback on outcome of each case should get to the complainant through the secretary of committee or GRM officer as the case may be. It is expected that reported complaints are treated within the timelines stipulated in table 20 below

7.4 Time Frame for Processing Grievances

Table 20 outlines the timeframe, process, task and responsibility for reporting grievances

Table 29: Timeframe for Grievance Process

PROCESS	DESCRIPTION	COMPLETION TIME FRAME	RESPONSIBLE AGENCY/PERSON
Receipt of complaint	Document date of receipt, name of complainant, location, nature of complaint etc.	1 day	Secretary to GRC at project level
Acknowledgement of grievance to the complainant	By letter, email, phone	1 day	Secretary to GRC at project level
Screen and Establish the Merit of the Grievance	Review the complaint/ Listen to the complainant and assess the merit	2 days	Project level GRC Secretary & the aggrieved PAP or his/her representative
Refer unrelated project grievances	Where complaint is not related to TRIMING refer to appropriate authority and inform complainant	2 days	Project level GRC Secretary & the aggrieved PAP or his/her representative
Investigate the grievance	Visit the site, conduct investigations and interviews	1 – 3 days	Project level GRC members
Implement a redressal action	Discuss and agree on the grievance resolution	1 – 7 days	Project level GRC members & the aggrieved PAP or his/her representative
Escalate to WUA for a dissatisfied scenario	Refer the complainant to the WUA GRC	3 – 10 days	Project level GRC Chairman
Receipt and record of complaint at WUA GRC	Document date of receipt, name of complainant, location, nature of complaint etc.	1 day	WUA GRM Officer
Investigate/ Implement a redressal action	Review the previous action by the project level GRC/ conduct investigations and interviews. Recommend grievance resolution	2 – 7 days	WUA GRC
Escalate to TRIMING for a dissatisfied scenario	Refer the complainant to the TRIMING GRC	3 – 10 days	State Project Coordinator
Receipt and record of complaint at TRIMING	Document date of receipt, name of complainant, location, nature of	1 day	TRIMING GRM Officer

PROCESS	DESCRIPTION	COMPLETION TIME FRAME	RESPONSIBLE AGENCY/PERSON
GRC	complaint etc.		
Investigate/ Implement a redressal action	Review the previous action by the GRCs/ conduct investigations and interviews. Recommend grievance resolution	2 – 5 days	TRIMING GRC
Last resort - Advice complainant of option to seek judicial redress	Where resolution is not reached, complainant is free to seek judicial redress. TRIMING to document the case including all attempts at resolution and send a report to the TTL	7days 5days	National Coordinator
Close the case	Follow up to obtain feedback and document resolution in logbook	As required	GRM officers

7.5 GBV-GRM

The GBV GRM will have special procedures for responding to allegations of sexual exploitation and abuse (SEA) and sexual harassment (SH) that are made against a project actor. However, for any complaint that is reported to the GRM (including complaints involving other forms of GBV that are not related to the project), the GRM will also have procedures in place to refer the individual to GBV service providers.

To fulfil the role of addressing GBV, all staff and volunteers at all levels of TRIMING Project should be trained (and/or have previous knowledge and experience) on the GBV Guiding Principles and the specialized procedures for receiving and referring GBV-related complaints. This set of skills will help GRM staff and volunteers to support the quality of the complaint mechanism, while at the same time ensuring the adherence to these Guiding Principles and a survivor-centered approach, including right to safety, respect, and confidentiality, of the complaint intake and management. Hotline operators in particular should receive training on the handling of GBV-related complaints in line with the principles of confidentiality and the specialized procedures.

When receiving a grievance/during the intake process, the person receiving the complaint shall respect the wishes, choices, rights and dignity of the complainant. In order for the survivor/complainant to make informed decisions about whether to seek services and whether to file a complaint with the project (where the complaint involves SEA or SH), she/he needs to be provided with clear and simple information on the functioning of the system, on the possible outcomes, likely timelines, and the types of support that can be provided. The survivor/complainant must also give their consent for the sharing of basic, anonymous, non-identifiable monitoring data about the incident with the SPCU/TRIMING and with the World Bank. If a complainant chooses not to be referred to GBV service providers or have the project take further action, then the case will be closed. The officer or volunteer must seek the survivor/complainant's consent to share basic monitoring data, and if no consent is given, no data will be recorded. For GBV cases, it is important to ensure that access to the complaints processes is as easy and as safe as possible for the complainant/survivor and that they clearly understand the referral process.

7.5.1 Process for Receiving GBV Complaint and Referral

Keep complainant/survivor information confidential and anonymous

Complainant should be immediately referred to the GBV-GRM focal person at the School or Community without asking further questions or details

The GBV-GRM Focal Person needs to provide the survivor in information on services available and with their consent, move to recording. The GBV-GRM FP will record the nature of the complaint only with no identifiable information on the survivor. Refer the survivor immediately to the project's registered GBV service providers

The GBV-GRM officer to immediately refer the case to the relevant GBV service provider identified in the referral directory

If the survivor wishes to take police or legal action, information as contained in the referral directory is provided by the GBV Officer

There may be need for the service provider to re-sensitize stakeholders at the project level on SEA/SH/GBV in collaboration with the WUA and also develop strategies to prevent such re-occurrence.

The GBV officer to obtain feedback on resolution of the case from the GBV service provider and record same including strategies to prevent re-occurrence.

7.5.2 Documentation of GBV-GRM Cases

GBV-related complaints would provide information only on the nature of the complaint (what the complainant says in her/his own words), and operators would link the complaint to a GBV service provider for necessary attention and action.

The GBV-GRM focal persons will be trained by the TRIMING/WUA GBV Officers in liaison with GBV service providers on how to receive GBV/SEA/SH cases in a survivor centric approach, hinged on confidentially and empathetically (with no judgement)

- ✓ In recording the incident, the identity of the survivor should be protected, keeping survivor information confidential and anonymous (no names in the record book). This information is limited to (a) the nature of the allegation or incident; (b) whether the incident is likely to be project related; (c) the age/sex of the survivor (if known); and (d) whether the survivor was referred for services.
- ✓ Ensure that no identifiable information on the survivor is stored in the GRM
- ✓ Document the exact complaint (no detailed information of the incident is expected), date, action taken and close the report
- ✓ As required, refer complaints to the GBV service provider

7.6 Awareness of the GRM

The GRM should be given a wide publicity among stakeholder groups such as school management/staff/student, affected parties, interested groups, project MDAs etc. Effective awareness of GRM process makes people have better understanding about their options, depending on the types of complaints. However, measures should also be taken to encourage stakeholders not to submit false claims. Criteria for eligibility need to be communicated and also awareness campaigns should be launched to give publicity to the roles and functions of the GRM.

Awareness should include the following components:

- Scope of the project, planned construction phases, etc.;
- The signed code of conducts to guide activities of skilled and unskilled workers
- Types of GRCs available; purposes for which the different GRMs can be accessed, e.g., construction-related grievances, grievances related to physical and economic displacement. Members of the GRCs in that location and contact details
- How to access the GRM
- How complaints can be reported to those GRC and to whom, e.g., phone, postal and email addresses, as well as information that should be included in a complaint
- Procedures and time frames for initiating and concluding the grievance redress process; boundaries and limits of GRM in handling grievances
- The need for them to take part in GRC meetings and the steps of resolving process and timeline adopted in this mechanism
- A variety of methods can be adopted for communicating information to the relevant stakeholders. These methods could include display of posters in school premises, project offices, community centers as stated by stakeholders during consultations.

7.7 Monitoring and Evaluation

The Project GRM focal persons/ GRM officer will be responsible for:

- Providing the grievance Committee with a weekly report detailing the number and status of complaints
- any outstanding issues to be addressed
- Monthly reports, including analysis of the type of complaints, levels of complaints, actions to reduce complaints and initiator of such action will be sent to the TRIMING
- Quarterly grievances reports will be sent to the Bank
- Periodic feedback on the accessibility, fairness and efficiency will be obtained by the WUA GRM officer through surveys/consultations in the project areas
- Areas that are identified for improvement will be addressed and improved upon

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATION

8.1 Conclusion

The project is envisaged to have a largely positive impact on the benefitting farmers, herders and recipient communities. The potential negative environmental and social impacts which were identified can be mitigated with strict compliance to the mitigation measures stated in the ESMP Matrix. The ESMP and the mitigation costs will need to be embedded in the Engineering Plans to ensure implementation costs are adequately budgeted for by the KRIS and HVIS Project Offices

8.2 Recommendation

The following recommendations are provided for the effective implementation of this ESMP:

- ✓ The TA of the E&S UNIT should develop a School Mitigation Plan (an abridged version of the ESMP) and be embedded within the CONTRACTOR'S, provided to the KRIS/HVIS PROJECT OFFICE as most of the mitigation measures and specific annexes are to be implemented by them.
- ✓ The E&S UNIT/KRIS/HVIS PROJECT OFFICE/MDAs involved in monitoring of the ESMP implementation will need to be adequately trained in line with the capacity building plan in the report
- ✓ The E&S UNIT should endeavour to establish the GRM in all project locations timely to enable stakeholders channel enquiries to the project. This includes installing complaint boxes, setting up GRCs amongst others
- ✓ The E&S UNIT should sensitize the project schools and communities on the available grievance redress channels
- ✓ Considering the security situation across locations in the Country, it is advised that the KRIS/HVIS PROJECT OFFICE workers and any other team engaged by the project make adequate security arrangements for site work. The E&S UNIT should also keep abreast of the security situation in the various project LGAs and inform all relevant parties accordingly.
- ✓ With respect to GBV, it is important for the E&S UNIT to conduct sensitization program for the school staff, KRIS/HVIS PROJECT OFFICE, and community members especially women and girls on prevention strategies and the available reporting and response mechanisms, as well as the grievance redress mechanism in place for the TRIMING project in Kano state.
- ✓ In addition, the state should conduct mapping of GBV service providers and make the inventory available to the GBV focal persons in each project location
- ✓ As earlier stated, in the course of rehabilitation works, there would be moderate to severe likelihood of the occurrence of workplace hazards. Personnel will be predisposed to hazards. "Unsafe behaviours" and "unsafe conditions". Occupational disasters happen more due to "unsafe behaviours" compared to "unsafe conditions". Hence, project/site workers should be trained on unsafe behaviours and be provided with necessary equipment to practice safe behaviours. Further, the necessary facilities to facilitate safe conditions and discourage unsafe behaviours should be made available to workers
- ✓ For effective waste management on site, the KRIS/HVIS PROJECT OFFICE should sign an agreement with KSEPA. This would ensure control of proper collection and disposal of construction wastes Furthermore, the KRIS/HVIS PROJECT OFFICE should implement the waste management plan (see Annex 6) during the period of project implementation
- ✓ Construction Safety signs and boards should be installed to protect workers and the public around the construction sites
- ✓ Priority should be given to local workers especially in the category of unskilled and semi-skilled workforce during project implementation to stimulate local socioeconomic activities, improve livelihood and poverty reduction in the affected communities. Ensure affected communities are assisted and have a voice in appropriation of mitigation measures.

REFERENCES

ANNEX

Annex 1: Terms of Reference

Annex 2: General Environmental Management Conditions for Construction Contracts

General

1. In addition to these general conditions, the CONTRACTOR shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The CONTRACTOR shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the CONTRACTOR fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to 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 EMP. In general these measures shall include but not be limited to:
(a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
(b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
(c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
(d) Prevent bitumen, oils, lubricants and wastewater 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, collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.
(h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.(i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
(j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
(k) Ensure public safety and meet traffic safety requirements for the operation of work to avoid accidents.

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

Worksite/Campsite Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bunded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed of at designated disposal sites in line with applicable government waste management regulations.
7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
8. Used oil from maintenance shall be collected and disposed of appropriately at designated sites or be re-used or sold for re-use locally.
9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.
10. Construction waste shall not be left in stockpiles along the road but removed and reused or disposed of on a daily basis.
11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

Material Excavation and Deposit

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

15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.
16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
17. The CONTRACTOR shall deposit any excess material in accordance with the principles of the general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.
18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Rehabilitation and Soil Erosion Prevention
19. To the extent practicable, the CONTRACTOR shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.
22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
23. Locate stockpiles where they will not be disturbed by future construction activities.
24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
29. Minimize erosion by wind and water both during and after the process of reinstatement.
30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
31. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

Water Resources Management
32. The CONTRACTOR shall at all costs avoid conflicting with water demands of local communities.
33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream and maintains the ecological balance of the river system.
36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management
39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

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

Blasting

42. Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the SE.

43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.

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

Disposal of Unusable Elements

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

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

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

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

Health and Safety

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

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

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

Repair of Private Property

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

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

CONTRACTOR's Environment, Health and Safety Management Plan (EHS-MP)

54. Within 6 weeks of signing the Contract, the CONTRACTOR shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The CONTRACTOR's EHS-MP will serve two main purposes:

- For the CONTRACTOR, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
- For the Client, supported where necessary by a SE, to ensure that the CONTRACTOR is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the CONTRACTOR's EHS performance.

55. The CONTRACTOR's EHS-MP shall provide at least:

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

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

EHS Reporting

57. The CONTRACTOR shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a CONTRACTOR EHS report is portrayed below. It is expected that the CONTRACTOR's reports will include information on:

- EHS management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the CONTRACTOR;

- Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
- Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.

58. It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the CONTRACTOR keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. A sample format for an incident notification is shown below. Details of EHS performance will be reported to the Client through the SE's reports to the Client.

Training of CONTRACTOR's Personnel

59. The CONTRACTOR shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:

- EHS in general (working procedures);
- emergency procedures; and
- social and cultural aspects (awareness raising on social issues).

Cost of Compliance

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

3. Example Format: EHS Report

Contract: Period of reporting:

EHS management actions/measures:

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

EHS incidents:

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

EHS compliance:

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

Changes:

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

Concerns and observations:

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

Signature (Name, Title Date):

CONTRACTOR Representative

4. Example Format: EHS Incident Notification

EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No:.....

Date of Incident:..... **Time:**.....

Location of incident:.....

Name of Person(s) involved:.....

Employing Company:.....

Type of Incident:.....

Description of Incident:

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

Immediate Action:

Immediate remedial action and actions taken to prevent reoccurrence or escalation

Signature (Name, Title, Date):.....

CONTRACTOR Representative

Annex 3 – Waste Management Plan

The categories of waste envisaged under the sub-project are as follows:

Vegetal waste – This will be vegetation clearance during site preparation and mobilization of equipment to the site. However, vegetal waste is expected to be minimal considering most of the schools are already in existence.

Construction waste – This will include Cement, sands, Paints, Zincs, Metal Scraps, Woods etc.

Particulates Matter & Gases – from movement of vehicles, machine operations, site clearing activities, mixing of materials and chemicals such as paints

Liquid waste - Leakages from vehicles, oil containers, chemicals, adhesives, etc.

Sanitary waste – Waste generated by workers onsite, campsite. Such as, domestic sewage, faeces, urine, wastewater, food remnant, food packaging etc.

The table below shows how this waste generated will be managed.

S/N	Potential Source	Waste Type	Waste Streams	Management
A	**PREREHABILITATION**			
1	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	• Use water suppression to prevent dust emission • Maintain vehicles and machineries to reduce emission • Maintain low speed to reduce dust and gaseous emission
2	Site Clearing and Installation of temporary workers camp and offices and workshops	Non-Hazardous	• Vegetal Waste • Industrial Waste: Metal scraps, packaging waste	• Vegetal waste shall be supplied to farmers for use as compost. • Woody vegetal shall be supplied to host communities for domestic uses including as fuel wood for cooking. • Segregated and stored on site to be collected at least once a week for reuse or recycle through the Kano State Environmental Planning and Protection Agency (KASEPPA)or licensed third party facilities.
3	Workers' camp	Domestic and Sanitary	• Food remnant, kitchen wastes. Food packaging etc • Domestic Sewage	• To be transferred to locals for use as compost and animal feed. • Plastic and other packaging to be recycled through licensed recycling third parties or collected by refuse management and sanitation board (REMASAB} • Sewage will be collected in a properly closed constructed septic tank and will be evacuated in conjunction with (REMASAB) at least twice during the 18month period or as required.
B	**REHABILITATION**			
1	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	• Use water suppression to prevent dust emission • Maintain vehicles and machineries to reduce emission • Maintain low speed to reduce dust and gaseous emission • Use of cleaner technologies and modern equipment
2	Civil works Workers' camp/offices	Non-Hazardous /Industrial	• Spoils • Waste Packaging and Dunnage such as scrap wood, scrap metal, steel, glass, plastic, paper and cardboard, empty metal containers**,** excess concrete, broken equipment, or components • Domestic-type waste: wastepaper and food scraps, metal cans	• Segregated and kept securely in closed containers on site. To be evacuated by (KASEPPA) or transferred to approved recycling third parties for reuse/recycling. • Non-recyclables to be removed by (KASEPPA) or other approved waste CONTRACTOR by the state • To be transferred to locals for use as compost and animal feed. • Plastic and other packaging to be evacuated by (KASEPPA) or recycled through licensed recycling third parties.
3	Civil Works	Hazardous Waste	**Solid Wastes:** used batteries, chemical containers, concrete etc **Liquid Waste:** spent lubricating oils, hydraulic fluids, brake fluids, battery electrolyte, and dielectric fluids, chemical cleaning agents, paints, primers, thinners, and corrosion control coatings; sealants and adhesives etc	Store on site in closed and labelled containers with secondary containment to be evacuated by (KASEPPA) or registered waste CONTRACTOR with off-site permitted hazardous waste treatment, storage, or disposal facilities in accordance with (KASEPPA) policies

	Civil works	Waste Water	Wastewater from equipment washing and concrete production	Discharged to the ground as only very small quantity is envisaged at this stage.
	Civil works	Electrical and electronic waste (e-waste)	Electrical wirings, cables, damaged computers etc.	This will be sent to Material Recovery Facilities/ recycling facilities in the state for proper management
C	**OPERATION**			
1	Movement of vehicles	Emission	COx, SOx, NOx, CO, Dust	See A1
2	Operations	Solid waste Chemical waste Sewage E-waste	Maintenance of buildings, roofing sheets, iron sheets, paint. Sewage evacuation from constructed toilets	Segregated and kept securely in closed containers on site to be collected by (KASEPPA). Non-recyclable solid waste to be sent to approved (KASEPPA) dumpsites. Recyclable waste to be sent to MRF facilities and recycling facilities, this will be done in liaison with (KASEPPA). Liaise with WASH departments at the LGA and other WASH projects like SURWASH ON Sewage management and WASH facilities
Cost (Also captured the relevant section of ESMP Matrix Table)				

Annex 4 – Occupational Health and Safety Plan

Every project poses its own HSE risks. This plan is developed to meet up with OHS standards and to achieve the objectives set for the project. The project team shall undertake to ensure high performance standards and conformity with contract requirements by managing the works in a systematic and thorough manner.

- ***Competency***

All personnel required to operate or work with any equipment or machine must be competent, be tested for each equipment that he/she shall be operating. All personnel who as part of their profession require licensing or certification must obtain the necessary certification before he/she shall be allowed to work on the site.

- ***Fitness***

All personnel working on site shall be required to be certified medically fit to do so by an approved medical facility or Medical Doctor (pre-employment medical examination)

- ***HSE Training***
    - **Induction/Orientation**

Every new or rehired employee and SubCONTRACTORs employees must undergo mandatory OHS orientation / induction. The purpose of the Induction is to educate workers and make them aware of the major potential hazards he or she shall come into contact with while working on the site; also, it is one more opportunity to stress the importance of HSE being the first priority in the operations.

The content of the HSE orientation / induction shall cover the following subjects:

- Site safety rules.
- Personnel protective equipment requirements (PPE).
- Environmental sensitivity and protection.
- Preparation and planning of the job (Daily Pre-task talk).
- Emergency plan and muster points.
- SEA/SH and GBV prevention strategies
- COVID-19 prevention strategies

    - ***Project Specific HSE Training***

In addition to the HSE orientation /induction, there shall be specific site HSE trainings which shall cover the following topics:

- Manual handling.
- Electrical Safety
- Emergency Prevention, Preparedness and Response
- Work at height training
- First Aid training (for site First Aiders)
- Lifting and Rigging
- Safe Driving techniques (for drivers)

EMERGENCY PREPAREDNESS AND RESPONSE

Emergency procedures and evacuation plan shall be developed by the HSE Department and displayed on the notice board. These procedures shall be communicated to all staff. Also each section/department shall have at least a trained first aider at all times.

- **HSE IMPLEMENTATION AND PERFORMANCE MONITORING**
    - **HSE Meetings**

HSE management meetings shall be held once a month. The meeting is to help identify safety problems, develop solutions, review incident reports, provide training and evaluate the effectiveness of our safety program. Some of the meetings shall be:

- Project/Site Management HSE Meeting for management and supervision (Monthly).
- Tool box talk meetings for all workforce (Weekly).
- Pre-task briefing for all workforces (Daily).
- Special situation meeting (As required).

    - ***HSE Reporting***

All incidents and illnesses must be reported to site supervisor after which investigation shall commence and recorded so that appropriate corrective actions shall be implemented to prevent any re-occurrence and report findings shall be forwarded to management for review. Reporting requirements shall include notification of incident, investigation report, and monthly report. Notification of Incident form shall be developed which shall be filled and submitted to HSE department for investigation.

- **HSE Inspection and Audits**

For continual improvement of HSE management system, HSE inspection and audit shall be conducted. An inspection checklist shall be developed. This is to ensure that the HSE management system is being adhered to. The inspection shall be conducted by the HSE department together with site management.

Corrective and Preventive Actions and Non Conformities

During the cause of inspections, concerns raised shall be addressed and closed out. It is expected that in a period of two weeks, a close out inspection shall take place to verify that the corrective actions have been closed.

Project HSE Rules

The project HSE rules shall be developed and supervision shall develop specific rules and procedures when necessary.

The following site rules shall be implemented at all times. The Site Manager shall draw these rules to the attention of their own workmen or staff. All sub-CONTRACTORs must ensure that these rules are drawn to the attention of their workmen and staff.

The Principal CONTRACTOR may implement additional site rules during the contract programme. Any such additional rules shall be notified to all personnel engaged on the project prior to their implementation. The HSE rules shall include but not limited to:

1. Personal Protective Equipment must be worn at all times.
2. All instructions issued by the Site Manager regarding the storage, handling or cleaning of materials, plant and equipment must be followed.
3. All vehicles must be parked in the designated areas.
4. Any workman suffering from a medical condition that might affect his work and/or that could require specific Medical treatment must inform the supervisor before commencing work.
5. All site tools shall either be battery operated or 110 volts.
6. No one shall be permitted on site if it is believed that they are under the influence of alcohol or drugs.
7. Vehicles must not reverse without a banksman in attendance.
8. All visitors to site must undergo a site-specific induction and operative Identity badges must be worn at all times.
9. All excavations must be secured.
10. Smoking and eating shall only be permitted in the designated area. This area shall be identified during induction.
11. No hot works operations are permitted without a hot work permit in place.
12. There shall be no radios or other music playing devices on site.
13. Good housekeeping practices to be adopted.
14. Compliance with all Ethical Power Permit to Work systems
15. The site keyed access procedure must be strictly adhered to.
16. All CONTRACTORs must comply with Site Health & Safety Guidelines / Site Safety Method Statement
17. No untrained worker shall be permitted to operate heavy machineries.
18. COVID-19 protocols to be adhered to including frequent handwashing, use of nose masks when in crowded spaces, timely reporting of any symptoms to HSE officer and immediate isolation

- **Safe Work Practices/Personal Protective Equipment (PPE)**

The basic PPE required for the project shall be Safety Glasses, Safety Boots, Hand Gloves, Hard Hat, ear plugs and Coverall. Any other PPE shall be used as applicable. Management is responsible for the provision of PPE and usage shall be enforced at all time.

PPE shall be provided in circumstances where exposure to hazards cannot be avoided by other means or to supplement existing control measures identified by a risk assessment. An assessment shall be made to ensure that the PPE is suitable for purpose and is appropriate to the risk involved.

Information, instruction & training shall be given to all employees on safe use, maintenance and storage of PPE. Employees shall, in accordance with instructions given, make full use of all PPE provided and maintain it in a serviceable condition and report its loss or defect immediately to the maintenance department where it shall be replaced.

PPE shall be replaced when it is no longer serviceable and returned on a new for old basis. Employees shall sign to state that they have received PPE when issued.

- **Welfare Facilities**

The provision of welfare facilities on the site shall be communicated to all operatives at site induction.

A cleaning regime shall be implemented and maintained for the duration of the construction phase to ensure the site welfare facilities remain in a clean and tidy condition.

If mains drinking water becomes unavailable during the construction phase bottled water shall be brought to site for all operatives for the necessary period.

- **Signage**

Adequate provision for warning and directional signs shall be made.

Annex 5 – Traffic Management Plan (TMP)

The main objective of this TMP is to provide safe passage for community members, pedestrians, motorcyclist, cyclists and vehicular traffic in the project areas during the construction.
The CONTRACTOR should designate a TMP Supervisor who will oversee traffic management along major roads within the project corridors.
The following are the minimum requirements for traffic management on the project:

a) Design and layout of Road Systems

The CONTRACTOR in conjunction with the community, SPIU and FRSC must: -

a) Plan traffic routes to give the safest route between places within the project route
b) Make traffic routes wide enough for safe movement of the largest vehicle using them.
c) Ensure all drops and falls are adequately protected.
d) Avoid traffic routes passing close to vulnerable areas such as fuel tanks.
e) Ensure there are designated safe areas for loading, unloading and plant maintenance.
f) Avoid sharp corners or blind bends, if these cannot be avoided install mirrors.
g) Road crossings and junctions, should be clearly signed and marked.
h) Make entrances and gates wide enough.
i) Set speed limits and clearly mark on traffic routes; (5mph).
j) Give prominent warning of limited headroom and overhead cables.

b) Liaisons with Government Traffic Agencies

The TMP will ensure liaisons with the FRSC at the State level. In situations where heavy traffic impacts are envisaged, the CONTRACTOR will liaise with the FRSC to ensure traffic coordination and mitigate adverse traffic impacts.

c) Pedestrians

a) Provide separate routes for pedestrians and where needed provide suitable barriers.
b) If traffic routes are used by both pedestrians and vehicles they should be wide enough.
c) Provide suitable well marked crossing points.

S/N	Aspects	Descriptions	Responsible Party
1	Traffic/Safety Signage	▪ Safety signage should be put at strategic locations to warn road users of the ongoing construction activities. ▪ Signages should also be located along borrow pits, engineering yards and workers' camp.	CONTRACTOR
2	Movement of Vehicles and Equipment	▪ Mobilization of equipment and materials should be done at off-peak period (10am – 4pm), mainly on weekends, holidays ▪ Enforce speed limit. ▪ Ensure vehicles and equipment are parked at Camp site and designated areas ONLY. ▪ Untarred access roads shall be sprinkled with water frequently to suppress dust emissions. ▪ The CONTRACTOR must ensure that trucks carrying sand/soil to and from the sites are well covered in order not to cause injury to the public. ▪ Station flagmen at junctions, diversion points, near public crossings such as schools and speed bumps will be installed in built up areas and near public facilities such as schools, mosques, churches to reduce speed and dust ▪ During peak periods, such as market days FRSC will also be involved in assisting traffic and road safety management. Furthermore, the CONTRACTOR will engage the services of FRSC to train all project drivers.	CONTRACTOR
3	Training	▪ Hire drivers with appropriate driver's license. ▪ Liaise with FRSC to train drivers ▪ As part of refresher course for construction workers, train drivers on defensive driving and enforce speed limits	CONTRACTOR
4	Communication	▪ All Traffic and Safety signages should be boldly written in English & local languages. ▪ Any incident/ accidents should be reported immediately to the SPIU within 24hrs. The SPIU will also report to the NPCU/WB within 48hrs	CONTRACTOR SPIU CONTRACTOR

		including immediate action taken	
	Cost	**All actions and costs have been embedded in the ESMP Matrix Table**	

Annex 6 – Sample Code of Conducts

Individual Code of Conduct

Preventing Gender Based Violence and Violence Against Children

Definitions:

Gender Based Violence (GBV) - is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

Sexual Exploitation and Abuse (SEA) is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another

Sexual harassment (SH) is the unwanted behavior of a sexual nature

Violence Against Children (VAC) is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse

I, _____, acknowledge that preventing gender-based violence (GBV) and violence against children (VAC) is important. The company considers that GBV or VAC activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. All forms of GBV or VAC are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or VAC may be pursued if appropriate.

I agree that while working on the project I will:

- Consent to police background check.
- 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.
- Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual contact or activity with children—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
- Not engage in sexual favours—for instance, making promises or favourable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behaviour.
- Unless there is the full consent[2] by all parties involved, I will not have sexual interactions with members of the surrounding communities. 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.
- Attend and actively partake in training courses related to HIV/AIDS, GBV and VAC as requested by my employer.
- Consider reporting through the GRM or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.

With regard to children under the age of 18:

- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children unrelated to my family into my home unless they are at immediate risk of injury or in physical danger.
- 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.
- 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" below).
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labour 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.
- 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:

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

---

[2] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

- 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.
- Ensure images are honest representations of the context and the facts.
- Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions
I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include:

- Informal warning.
- Formal warning.
- Additional Training.
- Loss of up to one week's salary.
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
- Termination of employment.
- Report to the police if warranted.

I understand that it is my responsibility to avoid actions or behaviors that could be construed as GBV or VAC or breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual 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 VAC. I understand that any action inconsistent with this Individual Code of Conduct or failure to take action mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____
Printed Name: _____
Title: _____
Date: _____

CONTRACTOR's Code of Conduct

Preventing Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA)

Definitions:
Gender Based Violence (GBV) - is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.
Sexual Exploitation and Abuse (SEA) is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another
Sexual harassment (SH) is the unwanted behavior of a sexual nature
Violence Against Children (VAC) is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse

1. The company is obliged to create and maintain an environment which prevents Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA) issues. The company 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:
2. 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.
3. 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.
4. 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.
5. 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.
6. Sexual favours or other forms of humiliating, degrading or exploitative behaviour are prohibited.
7. 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.

8. 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.
9. 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.
10. 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 COMPANY
Signed by _____
Title: _____
Date: _____

Manager's Code of Conduct

Preventing Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA)

Definitions:

Gender Based Violence (GBV) - is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

Sexual Exploitation and Abuse (SEA) is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another

Sexual harassment (SH) is the unwanted behaviour of a sexual nature

Violence Against Children (VAC) is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse

Managers at all levels have particular responsibilities to create and maintain an environment that prevents GBV and SEA. They need to support and promote the implementation of the Company Codes of Conduct. To that end, Project Managers are required to sign up to Codes of Conduct applicable to their managerial duties within the context and also sign the Individual Codes of Conduct. This commits them to support and develop systems that facilitate the implementation of this action plan and maintain a GBV-free, child-safe and conflict-free work environment. These responsibilities include but are not limited to:

Mobilization

1. Establish a GBV/SEA Compliance Team from the CONTRACTOR's and consultant's staff to write an Action Plan that will implement the GBV and SEA Codes of Conduct.
2. The Action Plan shall, as a minimum, include the
   i. Standard Reporting Procedure to report GBV and SEA issues through the project Grievance Redress Mechanism (GRM);
   ii. Accountability Measures to protect confidentiality of all involved; and,
   iii. Response Protocol applicable to GBV survivors/survivors (including access to support coping and post-trauma management strategies) and perpetrators.
   iv. Engagement of the services of social service providers (NGOs) with requisite skill in the prevention and management of GBV and SEA.
3. Coordinate and monitor the development of the Action Plan and submit for review to the RAMP-PIU safeguards teams, as well as the World Bank prior to mobilization.
4. Update the Action Plan to reflect feedback and ensure the Action Plan is carried out in its entirety.
5. Provide appropriate resources and training opportunities for capacity building so members of the compliance team will feel confident in performing their duties. Participation in the Compliance tame will be recognized in employee's scope of work and performance evaluations.
6. Ensure that CONTRACTOR, consultant and client staff are familiar with the AGILE GRM and that they can use it to anonymously report concerns over GBV and SEA.
7. Hold quarterly update meetings with the compliance team to discuss ways to strengthen resources and GBV/SEA support for employees and community members.
8. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.
9. Ensure that when engaging in partnership, sub-grant or sub-recipient agreements, these agreements

   a) Incorporate this Code of Conduct as an attachment;
   b) Include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers to comply with this Code of Conduct; and

c) expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and SEA, to investigate allegations thereof, or to take corrective actions when GBV/SEA has occurred, shall constitute grounds for sanctions and penalties.

Training

1. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV/SEA Codes of Conduct.
2. Provide time during work hours to ensure that direct recruits attend the mandatory induction training which covers GBV/SEA training required of all employees prior to commencing work on site.
3. Managers are required to attend and assist with the NGO-facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce results of consequential evaluations.
4. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.
5. Prevention
6. All managers and employees shall receive a clear written statement of the company's requirements with regards to preventing GBV/SEA in addition to the training.
7. Managers must verbally and in writing explain the company and individual codes of conduct to all direct recruits.
8. All managers and employees must sign the individual 'Code of Conduct for GBV and SEA, including acknowledgment that they have read and agree with the code of conduct.
9. To ensure maximum effectiveness of the Codes of Conduct, managers are required to prominently display the Company and Individual Codes of Conduct in clear view in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
10. Managers will explain the GRM process to all employees and encourage them to report suspected or actual GBV/SEA
11. Mangers should also promote internal sensitization initiatives (e.g. workshops, campaigns, on-site demonstrations etc.) throughout the entire duration of their appointment in collaboration with the compliance team, service providers and in accordance to the Action Plan.
12. Managers must provide support and resources to the compliance tea and service provider NGOs to create and disseminate the internal sensitization initiatives through the Awareness-raising strategy under the Action Plan.

Response

1. Managers will be required to provide input, final decisions and sign off on the Standard Reporting Procedures and Response Protocol developed by the compliance team as part of the Action Plan.
2. Once signed off, managers will uphold the Accountability Measures set forth in the Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV/SEA (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
3. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision was made.
4. Managers failing to comply with such provision can be in turn subject to disciplinary measures, to be determined and enacted by the company's CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:

i. Informal warning
ii. Formal warning
iii. Additional Training
iv. Loss of up to one week's salary.
v. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
vi. Termination of employment.

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 EMPLOYER
Signed by _____
Title: _____
Date: _____

Annex 7 – Campsite Management Plan (CMP)

The objectives of the Camp Management Plan are:

- Avoid or reduce negative impacts on the community and maintain constructive relationships between local communities and workers' camps; and
- Establish standards on worker welfare and living conditions at the camps that provide a healthy, safe and comfortable environment.

Legal Requirements and Grievances

The CONTRACTOR is required to operate within the parameters of the Nigeria Labour Law and the International Labour Organization guidelines. The World Bank Performance Standards are applicable to AGILE and its sub projects. Furthermore, the Grievance Redress Mechanism contained in this ESMF is required to be adhered to by the CONTRACTOR.

CONTRACTOR personnel shall conduct regular safety walks and an HSE committee will track performance against requirements stipulated in this plan. The CONTRACTOR will also have its grievance mechanism developed for the project.

Additionally, CONTRACTOR would be required to sign and acknowledge the Code of Conduct and agree to abide by its provisions.

Management and Monitoring

Figure below presents a flow chart summarising key management step associated with implementation and review of this Plan, including steps to allow for continued improvement. Table 1 presents a summary of the potential impacts related to camp activities, together with mitigation and management measures to avoid or reduce these impacts, and the monitoring required to assess the performance of these measures.

The CONTRACTOR shall develop a CONTRACTOR Plan which shall, as a minimum, incorporate the camp management measures described in the Table below. The CONTRACTOR shall not be limited to these measures.

Monitoring to be undertaken as part of this Plan is described in the table below. .TheCONTRACTOR is responsible for developing area or site-specific procedures for the monitoring program (where necessary) based upon the final design details of the infrastructure.

Management and Monitoring of CONTRACTORs Campsite

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
Community Relations	Unauthorized movements of construction workers (during and after working hours) could result in trespassing, damage to local land and property and create amongst local residents a sense of their privacy being invaded. Residents may feel vulnerable and there may be increasing incidents of crime and or violence (GBV etc) and threats to the safety of community members. Disparity of pay, increase in disposable income and potential availability of illegal substances, illicit or culturally inappropriate lifestyle choices, leading to increased tension between local communities and the workers at camps.	1. CONTRACTOR shall enforce a 'closed' camp policy unless otherwise agreed and approved by Company. Workers will comply with the agreed camp closure hours. 2. CONTRACTOR shall implement suitable measures to maintain the closed camp policy which may include perimeter security fences, security controls and guard houses, monitoring transfer of goods into and out of camps for contraband and stolen goods. CONTRACTOR should refer to the Project Security Management Plan. 3. CONTRACTOR, as appropriate, shall provide adequate recreation facilities for workers to reduce incentive for leaving camps during leisure time. 4. CONTRACTOR shall limit workers interaction with the community when outside the camp e.g., by organising transport directly to and from the worksite. 5. If community members or local businesses express grievances in relation to camp related activities/operations, the Project shall respond to the grievance in accordance with the Grievance Redress Mechanism contained in the ESMF. 6. NPCU/SPIU may request that camp related activities/operations be amended to address community grievances. CONTRACTOR shall comply with these requests. 7. Workers shall abide by camp rules which include a disciplinary process to be developed by the CONTRACTOR once appointed. 8. The Project shall, be cognisant of the environment in which it works and shall, where practicable, respect local cultural events such as religious events, funerals and the like. 9. The Project shall provide training to all workers on camp management including: a. A briefing on camp rules, including closed camp policy, behaviour	Monitoring and Verification	Continuous Every 3 months Every 6 months Continuous Continuous Continuous Every 3 months Continuous Every 3 months	CONTRACTOR, Supervising Consultant and SPIU WUA

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
		between fellow workers and the community; b. Procedures for dealing with camp related complaints, worker issues and community issues and c. Community relations orientation. The objective of this orientation will be to increase awareness about the local area and cultural sensitivities.			
Health	Potential interaction between workers, persons engaged in illicit activities and the community increases the risk of spreading communicable diseases, particularly in more remote communities. Camp operations have the potential to develop favourable conditions for pests and disease, which could impact the health of workers and the community, as well as affect community livelihoods	1. CONTRACTOR shall comply with the Minimum Health Requirements for Project Execution and the Community Health and Safety Management Plan which set out requirements and management measures on controlling communicable diseases within camps and to outside communities 2. CONTRACTOR shall enforce the closed camp policy to limit interaction with community 3. Posters and informational sessions will be conducted to raise awareness among the workforce and communities locally around the worker camps.	Verification	Every three months Continuous Every three months	CONTRACTOR Supervising Consultant SPIU E&S Team
Waste management, pollution and environmental impacts	Camp has the potential to have off site pollution impacts from waste disposal, emissions and spills. Camp operations may also cause environmental issues including deteriorating water quality, erosion, sedimentation, noise and air quality issues. These factors have the potential to affect the community if not adequately managed.	1. CONTRACTOR shall exercise all reasonable due diligence to conduct its operations in a manner that will minimize pollution. 2. CONTRACTOR shall comply with the Waste Management Plan and Hazardous Materials Management Plan which define requirements to contain, transport, handle and dispose of camp wastes and hazardous materials to avoid impacts to human health and the environment. 3. CONTRACTOR shall also apply appropriate mitigation measures as contained in this ESMF.	Verification & Notification	Continuous	CONTRACTOR Supervising Consultant SPIU
Community resources	• Any infrastructure, services or resources used by camps (e.g. water abstraction) that result in reductions/ shortage/interruptions for the local community will have a negative impact. • There is potential for social envy and increased resentment from the community towards the Project and project team if camp facilities are perceived to be superior to those in the community. Services of note include camp health facilities, power supply, clean running water. Restricted ability to access these services may increase frustration at the level	1. CONTRACTOR shall utilise water sources for camp use in a manner that minimises impacts on local supply and use. Where necessary, water supply should be sought outside of the community source(s). 2. The Project shall routinely monitor quality and supply of water source used by camp through quarterly sampling exercises. 3. CONTRACTORs shall be encouraged to extend Corporate Social Responsibility projects to host communities.	Verification and On-going	Prior to establishing the camps Every 3 months Annual	CONTRACTOR Supervising Consultant SPIU

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	of the services available to them.				
Camp location	• Construction camps may result in a noticeable increase in traffic, noise, air emissions and light intrusion which could negatively affect the amenity and lifestyle of nearby communities and pose a potential safety issue.	1. Potential camp locations will be selected in consultation with SPIU and affected communities. Necessary permits will be obtained from the relevant Local Authorities for the approved camp location. 2. The Project shall refer to those Environmental & Social Management Plan's (ESMP) that include mitigation/avoidance measures that relate to the local community, including: • Noise and Vibration Management Plan; • Air Emissions Management Plan; and • Waste Management Plan.		Prior to establishing the camp Continuous	CONTRACTOR and/or Company Community SPIU
Labour Influx	There is a likelihood of influx of non local labour into areas around the construction camps. However, people from outside of the local area may migrate into existing settlements or develop new settlements in proximity to camps and the Project area. Labour Influx can result in disputes and sometimes violence between the new settlers and the resident community. Migrants moving into existing settlements may increase demand and inflate prices for housing, goods and services. Increased population and development of new and uncontrolled settlements increase pressure on infrastructure, services and resources. Major labour influx related risks include workers' sexual relations with minors and resulting pregnancies, presence of sex workers in the community, the spread of HIV/AIDS, sexual harassment of female employees, child labour and abuse, increased drop out rates from school, poor labour practice and lack of road safety.	• CONTRACTOR shall enforce a 'closed' camp policy. This is intended to deter individuals setting up near camp. • CONTRACTOR shall develop a Labour Influx Management Plan. • CONTRACTOR is to coordinate with Local government to ensure that no illegal and unsafe settlements develop. • CONTRACTOR shall review and ensure adherence to labour influx management plan.	Verification	Continuous	CONTRACTOR and SPIU
Worker welfare and living conditions	Construction workers living in camps may encounter stresses and discomforts that negatively impact their health and welfare. These stressors or discomforts may be caused by Poor living conditions (accommodation, ablution and sanitary, health, recreation catering and laundry).	CONTRACTOR shall comply with minimum standards for camp buildings, facilities and services in line with the Bank standard or as contained in the Project Invitation to Tender (ITT) requirements. This will include separate sleeping spaces and toilets for male and female workers with ability to lock from inside, WASH facilities should comply with WHO standards including portable water with well-placed overhead tanks, wash basins and concrete and covered septic tanks Sleeping matrasses should be provided for all workers to avoid them sleeping on the floor	Verification	Continuous	CONTRACTOR, Supervising Consultant and SPIU

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
		First aid kits should be provided in the Camp sites and the HSE officers should receive training on first aid The area should be secured and security arrangements should be made to ensure workers safety			
	Cultural issues (nationality, religion, discrimination, GBV and harassment, etc.).	• CONTRACTOR shall ensure that applicable ESMF mitigation measures for specific issues are applied. • CONTRACTOR may provide prayer rooms and other facilities, as necessary and to the extent practicable, to satisfy the religious needs and customs of its workforce. • CONTRACTOR's personnel shall not engage in any discrimination, GBV, SEA or harassing behaviour. CONTRACTOR shall establish an Equal Opportunity Policy to promote non-discrimination in accordance with Labour and Worker Conditions Management Plan. • CONTRACTOR shall implement a worker grievance procedure to address grievances between workers. .	Verification	Continuous	CONTRACTOR
	Mental health issues (morale, isolation, family attachments, boredom).	1. Camps will be treated as closed camps. Camp rules in relation to alcohol consumption and drug prohibition will be complied with. 2. CONTRACTOR shall provide recreational facilities where practicable. 3. CONTRACTOR will provide counselling for all workers, with no discrimination by race, sex or religion.	Verification	Continuous Every 6 months	CONTRACTOR
	Personal security (crime, and emergencies).	• Camps will be controlled by security to avoid intrusions from outside community. • Work Site Security Plan to be developed by CONTRACTOR shall include security measures to be provided at the camps which may include fencing, locks, alarms, pass card systems, badge and pass system, access points, safe transport of personnel as appropriate. • CONTRACTOR shall develop an Emergency Response Plan that meets requirements set out in ITT package	Verification	Prior to establishing camp	CONTRACTOR
	Environmental stress (climate, noise etc.).	CONTRACTOR shall comply with Minimum Health requirements for Project Execution including the following: • Accommodation will be designed to suit climatic conditions; • Accommodation and surroundings shall be constructed so that noise	Verification	Continuous	CONTRACTOR

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
		does not interfere with sleep to the extent that is reasonably practicable; and • Health and hygiene inspections shall be carried out.			
Decommissioning	Decommissioning of camps has several potential impacts: • Local employment and provision of local goods and services at camps will no longer be required; • Locals employed and previously accommodated in camps will no longer have access to services and benefits available at camps (e.g. health services, recreation facilities); and • Infrastructure which provides benefits to communities may no longer be maintained (e.g. roads, camp boreholes) and may be decommissioned and removed.	• CONTRACTOR is to follow retrenchment procedure contained in Labour and Worker Conditions Management Plan (if available) • Where Community requests, some infrastructure and services may be retained as advised by the NPCU and the World Bank: ○ Disturbed areas will be reinstated; ○ Where practicable, CONTRACTOR will return camp areas to former landforms; ○ No facilities will be maintained in or near especially environmentally or socially sensitive areas; and ○ Where there are negative consequences of induced access, the facility will also be decommissioned and the area reinstated.	Verification	Continuous	CONTRACTOR SPIU

Annex 8 – Labour Influx Plan

This plan identifies labor requirements and sets out the procedures for addressing labor conditions and risks associated with the proposed project, which is aimed at helping Kano AGILE to determine the resources necessary to address project labor issues.

SUB-CATEGORY	WORKER IMPACTS\RISKS	PROJECT IMPACTS\RISKS	MITIGATION MEASURES	MONITORING	MONITORING FREQUENCY	RESPONS-IBILITY
Employment	Influx of many foreigners into project communities	Competition on livelihood and job opportunity with locals	Unskilled labour shall be from the project communities. Where possible qualified	Verify	Onset of Project and bi-weekly	CONTRACTOR Monitoring: Supervision

			skilled workers on contract shall also be sourced within the community			Consultant SPIU E&S team
Housekeeping.	The general appearance of the camp deteriorates making camp life unpleasant.	The overall camp experience is compromised which in turn leaves workers demoralised and unproductive.	Ensure that camp grounds and common areas are routinely cleaned and organised with appropriate signage in place, and that grounds are maintained (e.g., grassed areas are regularly mown). Establish easily accessible, designated smoking areas which are clearly highlighted and regularly cleaned.	Verify	Monthly	CONTRACTOR Monitoring: Supervision Consultant SPIU E&S team
Recreation.	Workers spend most of their time in the camps and could become disenchanted and bored. They may want to leave the camps and go into the local towns and villages in search of recreation.	Tensions arise from the local communities as workers impact their activities in search of recreation. An increase in alcohol consumption and prostitution could result due to the influx of workers into local communities.	Provide appropriate recreational facilities and activities, that are suitable to the workers interests, while also been mindful of the community's cultural norms. These should be discussed with the camp residents committee.	Assessment	Quarterly	CONTRACTOR Monitoring: Supervision Consultant SPIU E&S team
Spiritual /Religion.	Workers will want access to places of worship for their chosen religion. They may leave the camps and go into the local towns and villages in search of an appropriate place of worship.	Tensions arise from the local communities as workers impact their activities.	Provide appropriate places of worship where residents express a need for this in accordance with cultural sensitivities, and assess transport arrangements on a case-by-case basis. Ensure that equipment and facilities are kept clean and well maintained.	Assessment	Quarterly	CONTRACTOR Monitoring: Supervision Consultant SPIU E&S team
SUB-CATEGORY	**WORKER IMPACTS\RISKS**	**PROJECT IMPACTS\RISKS**	**MITIGATION MEASURES**	**MONITORING**	**MONITORING FREQUENCY**	**RESPONS-IBILITY**
Security.	Workers may be exposed to security risks such as banditry and kidnapping	Workers are kidnapped and stop work is issued until the issue is resolved	Security management to be prepared by the SPIU, CONTRACTORs, supervision consultant in conjunction with the State Government and security agencies. Areas that have high security threats should be avoided	Assessment	Continuous	CONTRACTOR Monitoring: Supervision Consultant SPIU -E&S Team
Community relations.	Communities are negatively impacted by camp activities: noise, waste, traffic, lighting and so forth. This may result in negative	Workers are stopped from going to work, which affects productivity.	Implement control measures to avoid and minimise the impacts of camp and living conditions on communities. Limit foreign worker interaction with	Assessment	Quarterly	CONTRACTOR Monitoring: Supervision Consultant SPIU E&S TEAM

	actions towards camp operations such as road closures and the prevention of workers or suppliers from entering the worksite.		communities and provide cultural sensitivity awareness training to facilitate appropriate interaction with communities.			

Annex 9: Attendance