

# ENVIRONMENTAL AND SOCIAL AUDIT



**DIREKCI GROUP  
LARGE-SCALE MECHANIZED FARMING AND  
GREENHOUSE PROJECT**

**DECEMBER, 2025**

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## EXECUTIVE SUMMARY

This Environmental and Social Audit (ESA) has been conducted by an independent auditor, jointly acknowledged by the Zamfara State Government, Direkci Group, and affected host communities. The auditor has no financial, operational, managerial, or ownership interest in the project and has undertaken this assignment in accordance with professional standards of independence, objectivity, and transparency, as required under the Framework for Responsible and Inclusive Land-Intensive Agricultural Investment (FRILIA).

The independence of the auditor is fundamental to the credibility of this ESA and ensures that findings and recommendations are evidence-based, balanced, and oriented toward strengthening responsible implementation rather than assigning fault or attributing blame.

### Background

Zamfara State has articulated a clear development priority to reposition agriculture as a driver of food security, employment generation, economic diversification, and rural transformation. In furtherance of this objective, the State Government has actively pursued partnerships with reputable private-sector investors capable of introducing advanced agricultural technologies and large-scale production systems.

Within this policy context, Direkci Group, a Turkish agribusiness company with experience in mechanized farming and greenhouse technologies across Africa and other emerging markets, has commenced engagement and preparatory activities in Zamfara State. The investment has received explicit political endorsement at the highest level of State Government, including formal reception by the Governor and public statements confirming the State's commitment to the partnership.

The project has been publicly presented as a flagship agricultural initiative within Shinkafi Local Government Area (LGA) of Zamfara State. Core project components include large-scale mechanized cultivation of cotton, sugarcane, and soybeans, deployment of modern agricultural machinery, establishment of greenhouse production systems, and implementation of downstream value-chain activities such as poultry farming and other agricultural technologies.

### Purpose of the Audit

Given the scale, land-intensive nature, and wide geographic reach of the project, the Zamfara State Government, Direkci Group, and affected communities jointly acknowledged the need for an independent Environmental and Social Audit at this early stage of implementation.

The objectives of this ESA are to:

- Identify and assess environmental, social, land tenure, and livelihood risks associated with the project as currently designed and mobilized;

- Review alignment with applicable Nigerian laws, Zamfara State policies, international good practice, and FRILIA principles;
- Anticipate risks that could undermine social license, community trust, or long-term project sustainability;
- Propose corrective and preventive measures to guide responsible, inclusive, and conflict-sensitive implementation as the project scales.

The audit is not intended to delay, suspend, or reverse the investment. Rather, it is designed as a risk-management and governance tool to strengthen implementation, protect community interests, and safeguard the reputational and developmental objectives of Zamfara State.

### **Audit Approach**

This ESA adopts a post-entry / early-operation audit approach, reflecting the fact that the project has been publicly announced, politically endorsed, and is undergoing mobilization. In line with FRILIA guidance, the audit focuses on:

- Legitimacy of land access and tenure arrangements;
- Livelihood impacts on farmers, pastoralists, women, and youth;
- Environmental sustainability of large-scale mechanized and greenhouse farming systems;
- Adequacy of consultation, information disclosure, and grievance redress mechanisms.

### **Key Outputs**

The Environmental and Social Audit (ESA) will produce:

- A structured assessment of environmental and social risks and opportunities;
- A compliance and gap analysis against FRILIA and applicable standards;
- A Corrective Action Plan (CAP) with clear responsibilities and timelines;
- Strategic guidance for implementing the project responsibly within Shinkafi LGA.

## 1. INTRODUCTION

### 1.1 Background and Context

Agriculture remains a central pillar of Zamfara State's economy, employing a significant proportion of the population and contributing to food security and rural livelihoods. However, the sector has historically been dominated by smallholder production systems characterized by low productivity, limited mechanization, and vulnerability to climate and market shocks.

In response, the Zamfara State Government has articulated a policy direction that emphasizes:

- Attraction of credible private sector agribusiness investors;
- Modernization of agricultural production systems;
- Development of agro-industrial value chains;
- Job creation, particularly for youth and women.

The engagement of Direkci Group aligns with this policy direction and reflects the State's intent to leverage foreign direct investment and technology transfer to unlock agricultural potential. At the same time, international experience demonstrates that large-scale, land-intensive agricultural investments carry inherent environmental and social risks if not carefully governed.

This audit is therefore positioned as a governance instrument to ensure that Zamfara State's development objectives are achieved without undermining land rights, livelihoods, environmental sustainability, or social cohesion.

### 1.2 Purpose and Objectives of the Audit

The specific objectives of this ESA are to:

1. Review the environmental and social context within which the Direkci Group project is being implemented;
2. Assess actual and potential impacts associated with project activities, including land access, water use, agrochemical application, labor practices, and community relations;
3. Evaluate the project's alignment with FRILIA principles and relevant Nigerian laws;
4. Identify risks that could expose the State or the investor to conflict, reputational damage, or operational disruption;
5. Recommend corrective and preventive measures to strengthen responsible implementation.

### 1.3 Audit Type and Rationale

This assignment is classified as an Independent Post-Entry Environmental and Social Audit, conducted by an external auditor jointly acknowledged by the Zamfara State Government, Direkci Group, and affected communities.

The audit has been commissioned in recognition of the fact that the Direkci Group agribusiness investment has been publicly announced, politically endorsed, and has entered early implementation or mobilization stages. In such circumstances, FRILIA and international good practice emphasize the importance of independent, third-party review to:

- Objectively assess environmental, social, and land-related risks;
- Build confidence among host communities and stakeholders;
- Identify corrective actions that can be implemented without disrupting legitimate investment activities.

The audit is not an enforcement or sanctioning exercise. Rather, it serves as a governance and risk-management tool designed to support the State, the investor, and communities in aligning ongoing implementation with responsible investment standards. This assignment is classified as a post-entry Environmental and Social Audit. The rationale for this approach is that:

- The investment has been publicly announced and politically endorsed;
- Preparatory or early operational activities are reported to be ongoing;
- A traditional pre-investment ESIA would no longer reflect the project's current reality.

The audit therefore focuses on reviewing existing practices, identifying gaps, and recommending adjustments, rather than assessing hypothetical impacts.

### 1.4 Scope of Work

The scope of the ESA covers:

- On-farm mechanized crop production (cotton, sugarcane, soybeans);
- Greenhouse production systems and associated infrastructure;
- Supporting facilities and services, including storage, water supply, and waste management;
- Planned value-chain extensions, such as poultry farming, where sufficient information is available;
- Interactions with host communities, land users, and workers.

The audit covers environmental, social, land tenure, labor, and institutional dimensions.

## 1.5 Methodology

The ESA will be undertaken using a combination of:

- Desk review of available project information, public statements, and policy documents;
- Review of applicable legal and regulatory frameworks;
- Key informant consultations with government officials, project representatives, and community stakeholders (subject to access);
- Field observations where feasible;
- Application of FRILIA analytical principles and international good practice.

## 1.6 Site Visit and Field Verification (Zamfara State)

As part of the Environmental and Social Audit (ESA) of the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project, a site visit and field verification exercise was conducted in Shinkafi Local Government Area (LGA), Zamfara State. The objective of the site visit was to obtain first-hand understanding of the project context, institutional arrangements, environmental and social conditions, and stakeholder perspectives, and to verify information obtained through desk review and consultations.

The site visit activities included the following:

- Meetings and interviews with relevant officials of the Zamfara State Government, including representatives of Ministries, Departments, and Agencies (MDAs) responsible for agriculture, land administration, environment, and investment promotion;
- Engagements with the Shinkafi LGA authorities regarding current and proposed project sites;
- Meetings with traditional leaders and community representatives in selected locations within Shinkafi LGA to understand local land tenure arrangements, livelihood systems, and community perspectives regarding large-scale agricultural investment;
- Collection and review of project-related information, including environmental and social data, land-related information, and institutional documentation made available by the State;
- Field visits and observation tours of areas identified for mechanized farming and greenhouse development, including surrounding communities and land uses within Shinkafi LGA;
- Observation of existing agricultural practices, water sources, access routes, and settlement patterns relevant to the project's environmental and social footprint.

The site visit enabled direct observation of environmental conditions, land use patterns, and socio-economic contexts within Shinkafi LGA, and provided an opportunity to triangulate information obtained through document review and stakeholder discussions. Information gathered during the site visit informed the

assessment of environmental and social baseline conditions, land tenure context, stakeholder engagement practices, and risk identification presented in subsequent sections of this Environmental and Social Audit.

### **1.7 Limitations and Assumptions**

While this report reflects a comprehensive assessment based on detailed information provided by the Zamfara State Government and Direkci Group, certain inherent limitations remain. These include reliance on reported data, potential changes in project implementation after the assessment, and constraints in predicting long-term environmental and social outcomes. Any assumptions made have been clearly stated within the relevant sections.

## 2. Environmental and Social Audit Team

The Consultant's Environmental and Social (E&S) audit team comprised specialists with expertise relevant to the audit scope, as summarized in Table 2-1.

**Table 2-1. E&S Audit Team**

<b>Project Role</b>	<b>Expertise / Responsibility</b>
Project Director & ESHS Expert	Oversight and technical guidance on E&S matters
Project Manager & ESHS Specialist	Audit team leader, coordination of all audit activities
Social and Resettlement Specialist	Assessment of social impacts, resettlement, and stakeholder engagement
Local Biodiversity Specialist	Evaluation of local biodiversity and ecosystem considerations
Local Environmental Specialist	Assessment of environmental impacts, mitigation measures
Local Social and Stakeholder Engagement Specialist (SES, Beirut)	Community engagement, social data collection, and analysis

### **3. PROJECT DESCRIPTION**

#### **3.1 Project Overview and Context**

The Direkci Group Large-Scale Mechanized Farming and Greenhouse Project is a land-intensive, technology-driven agribusiness investment being implemented in Shinkafi LGA, Zamfara State, Nigeria. The project has been publicly announced, formally welcomed by the Zamfara State Government, and presented as a flagship initiative aimed at transforming agricultural production systems across the State.

The project is designed to introduce modern mechanized farming practices, greenhouse-based agricultural production, and integrated value-chain activities into Zamfara State's predominantly agrarian economy. It responds to long-standing structural challenges in the agricultural sector, including low productivity, dependence on rain-fed farming, limited access to modern technology, vulnerability to climate variability, and weak linkages to higher-value markets.

The project is implemented at specific sites within Shinkafi LGA, with a focus on maximizing local productivity and demonstrating the potential of modern mechanized and greenhouse farming practices. Its environmental and social footprint is therefore localized to the LGA, though cumulative effects on land use, livelihoods, water resources, labor markets, and community relations within Shinkafi have been considered in the audit.

#### **3.2 The Investor: Direkci Group**

Direkci Group is a Turkish agribusiness and agricultural technology company specializing in mechanized agricultural systems, greenhouse technologies, and integrated agricultural value-chain solutions. The Group's business model covers the full agricultural production lifecycle, including soil preparation, mechanized planting, crop monitoring, fertilization, harvesting, post-harvest handling, and the deployment of modern production technologies.

The company emphasizes technology-driven agricultural modernization, supplying and adapting machinery and greenhouse systems to suit local agro-ecological conditions, climatic realities, and market demands. In addition to operating within Turkey, Direkci Group has expanded its presence across African countries, where it positions itself as a partner to governments and agribusiness stakeholders seeking to modernize agricultural systems, improve productivity, and enhance food security.

In Zamfara State, Direkci Group has been formally received by the State Government at the highest political level, with public statements confirming the State's confidence in the company's technical expertise and experience. This public endorsement positions Direkci Group as a strategic investment partner within the State's agricultural transformation agenda, rather than as a purely commercial operator.







### 3.3 Project Vision, Rationale, and Strategic Objectives

The project's stated vision is to reposition Zamfara State as a center for modern, productive, and climate-resilient agriculture capable of supporting food security, employment creation, and economic diversification. The project aligns with the State Government's development priorities, which emphasize agriculture as a foundation for rural development, poverty reduction, and long-term economic stability.

The strategic rationale for the project is grounded in several interrelated factors:

- Zamfara State possesses extensive arable land and a large agricultural workforce, yet productivity has historically been constrained by limited mechanization and technology;
- Climate variability and insecurity have undermined traditional rain-fed farming systems, increasing vulnerability for rural households;
- There is growing domestic demand for crops such as cotton, sugarcane, and soybeans, which have applications in food systems, agro-processing, and industrial supply chains;
- Greenhouse technologies offer opportunities for year-round production, higher yields, and climate resilience;
- Integrated value-chain development can enhance economic multipliers and attract additional private investment.

Against this backdrop, the project's strategic objectives include:

- Increasing agricultural output and productivity;
- Introducing mechanized and technologically advanced farming practices;
- Enhancing resilience to climate and seasonal variability;
- Creating employment opportunities across agricultural and agribusiness value chains;
- Strengthening agricultural value chains and market linkages;
- Reducing dependence on food imports through increased local production.

### 3.4 Core Project Components

#### 3.4.1 Large-Scale Mechanized Field Crop Production

A central component of the project is the establishment of large-scale, mechanized field crop production systems. Public disclosures indicate a focus on the cultivation of cotton, sugarcane, and soybeans, selected for their economic value, relevance to agro-industrial development, and contribution to food and raw material supply chains.

Mechanized farming activities are expected to include:

- Land preparation using tractors and mechanized implements;
- Mechanized planting, cultivation, and harvesting operations;

- Application of fertilizers, herbicides, and pesticides in accordance with agronomic practices;
- Use of improved seed varieties and modern crop management techniques;
- Coordination or consolidation of land parcels to enable efficient large-scale operations.

This transition from predominantly smallholder, labor-intensive farming to mechanized production represents a significant structural change in land use and agricultural practices, with implications for land access, labor dynamics, and community livelihoods.

### **3.4.2 Greenhouse Agricultural Production Systems**

A defining feature of the project is the planned deployment of diverse greenhouse technologies designed to enable intensive, year-round agricultural production. Public information indicates that the project will introduce multiple greenhouse typologies, including:

- Soil-based greenhouses;
- Soilless or substrate-based greenhouses (including hydroponic systems);
- Polyclima greenhouse structures;
- Ornamental crop greenhouses;
- Specialized greenhouses for crops such as banana.

These systems are intended to:

- Reduce dependence on seasonal rainfall;
- Improve control over growing conditions;
- Increase crop yields and quality;
- Enable production of higher-value crops;
- Enhance resilience to climate variability and extreme weather events.

Greenhouse operations typically require reliable water supply, energy inputs, nutrient management, and waste handling systems. As such, greenhouse expansion has distinct environmental implications, particularly with respect to water abstraction, effluent management, solid waste generation, and energy use.

### **3.4.3 Poultry Farming and Livestock-Related Activities**

The project includes planned integration of poultry farming and potentially other livestock-related activities as part of a broader value-chain development strategy. These components are intended to diversify production, enhance food security, and generate additional employment opportunities.

Although detailed designs and locations for poultry operations have not yet been publicly disclosed, poultry farming introduces specific environmental and social considerations, including:

- Animal waste and manure management;
- Biosecurity and disease control;
- Odor, pest, and vector management;
- Occupational health and safety risks;
- Community health considerations in areas close to settlements.

Given these considerations, poultry and livestock components are treated in this audit as activities requiring careful planning and site-specific assessment prior to large-scale implementation.

#### **3.4.4 Supporting Infrastructure and Value-Chain Development**

Beyond primary production, the project envisions the development of supporting infrastructure and services aimed at strengthening agricultural value chains. These may include:

- Storage and aggregation facilities;
- Input supply and distribution systems;
- Transport and logistics arrangements;
- Training and demonstration facilities;
- Potential downstream processing or partnerships with agro-processors.

The scale and configuration of such infrastructure will influence the project's environmental footprint, employment profile, and interactions with local economies and communities.

### **3.5 Geographic Scope and Area of Influence**

The project is implemented solely within Shinkafi Local Government Area (LGA) of Zamfara State. For the purposes of this Environmental and Social Audit, the project's area of influence includes:

- Current and proposed project sites within Shinkafi LGA;
- Host and neighboring communities whose land, water resources, grazing routes, or livelihoods may be directly or indirectly affected;
- Local labor markets and service providers;
- Agricultural input and output markets influenced by project activities.

Given the localized nature of the project, the assessment considers cumulative and indirect effects within Shinkafi LGA, recognizing that environmental and social impacts may vary across different sites and communities within the LGA.

The confirmed project site is located within Shinkafi Local Government Area (LGA), Zamfara State, at approximately 12.9530° N, 6.0250° E. The site is situated in proximity to existing settlements and agricultural land and is accessible via local road networks. Due to the presence of existing land uses and residential structures within the project footprint, the location presents potential land acquisition and

resettlement considerations, which are assessed in subsequent sections of this Environmental and Social Audit.

### **3.6 Implementation Modality and Phasing**

Available information indicates that the project will be implemented in Shinkafi LGA through a phased approach, beginning with initial pilot or demonstration activities and scaling up within the LGA based on site conditions. Phasing is likely to be influenced by land availability, security conditions, infrastructure access, water resources, and market considerations.

Phased implementation provides opportunities to:

- Test land access and community engagement approaches;
- Identify and address risks at an early stage;
- Incorporate lessons learned into subsequent stages;
- Avoid replication of unmitigated risks within the LGA.

Accordingly, site-specific assessment and consultation remain critical prior to each phase within Shinkafi LGA.

### **3.7 Land Access and Land Use Considerations**

The project is inherently land-intensive and will require access to significant areas of agricultural land within Shinkafi LGA. Detailed land access arrangements have been disclosed and involve a combination of state land allocation, leasing arrangements, and partnerships with customary landholders.

Land access is treated in this audit as a critical risk variable, with key considerations including:

- Transparency and legitimacy of land allocation processes;
- Recognition of existing land use rights and customary tenure within Shinkafi LGA;
- Potential impacts on smallholder farmers, pastoralists, and other land users in the LGA;
- Adequacy of consultation, consent, and compensation arrangements.

### **3.8 Workforce, Employment, and Skills Development**

The project is expected to generate employment opportunities across a range of skill levels, including farm laborers, machinery operators, greenhouse technicians, agronomists, poultry workers, and support staff. While mechanization may reduce demand for manual labor per hectare, it can increase demand for skilled and semi-skilled workers.

Employment outcomes will depend on project scale, phasing, and operational models. Labor standards, occupational health and safety, and fair employment practices are therefore central considerations for the project.

### **3.9 Alignment with State Development Priorities**

The Direkci Group project aligns with Zamfara State's stated priorities in agriculture, food security, employment creation, and economic diversification. Public statements by the Governor emphasize securing farmlands, restoring confidence in agriculture, and introducing advanced technologies to revitalize the sector.

As a flagship private-sector investment, the project carries heightened expectations regarding responsible conduct, social inclusion, and environmental stewardship.

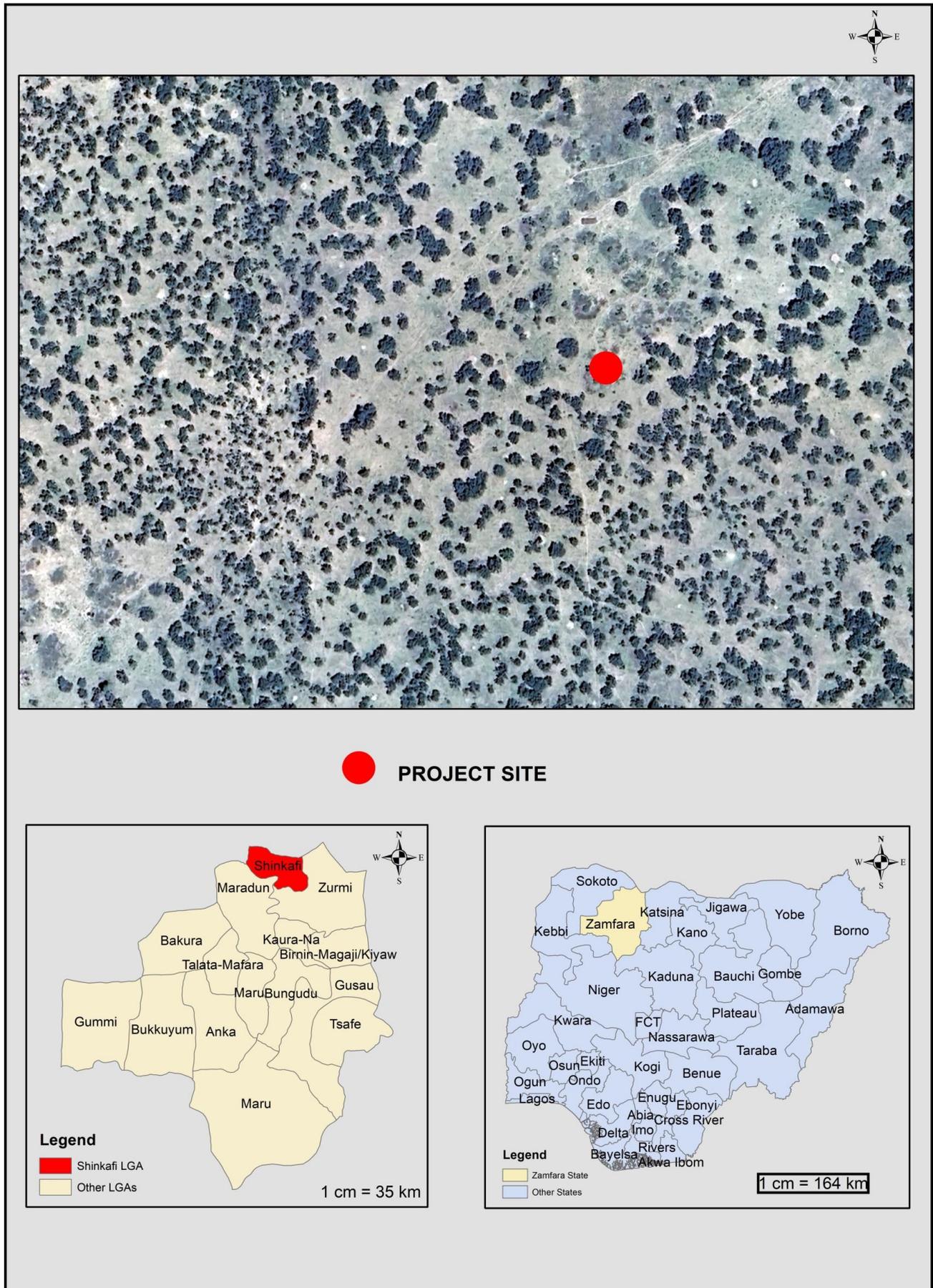
### **3.10 Summary of Key Environmental and Social Risk Drivers**

Based on the project description, the following are identified as key environmental and social risk drivers requiring detailed assessment:

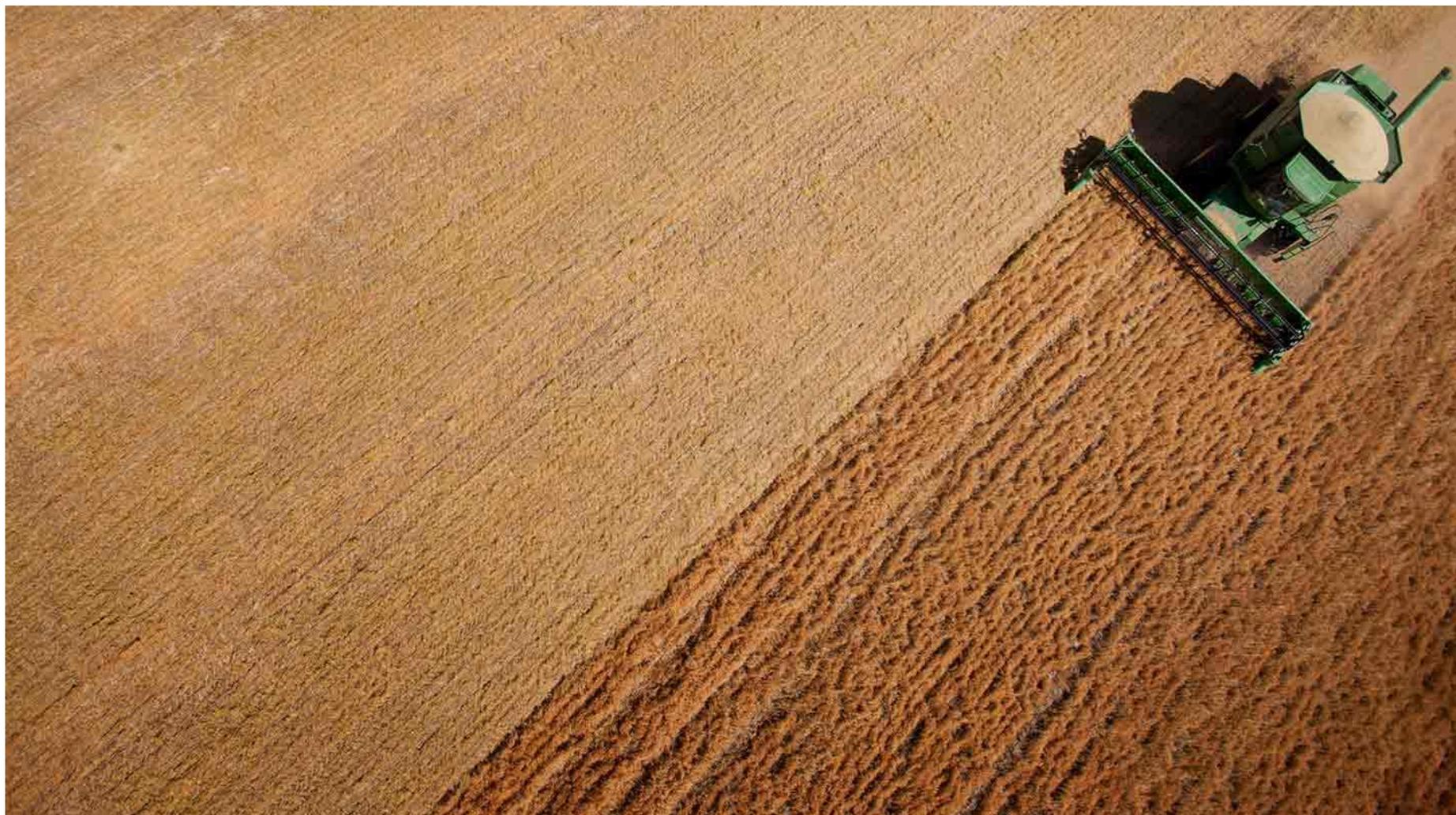
- Land access and tenure security;
- Impacts on farmers, pastoralists, and vulnerable groups;
- Water demand associated with sugarcane and greenhouse operations;
- Agrochemical use and soil health;
- Waste and effluent management from greenhouse and poultry activities;
- Labor conditions and occupational health and safety;
- Community engagement and grievance redress mechanisms.

These issues form the basis for the analyses presented in subsequent sections of this Environmental and Social Audit.

Figure 1: Project Site













## **4. LEGAL, POLICY, AND INSTITUTIONAL FRAMEWORK**

### **4.1 Introduction**

This section sets out the legal, policy, and institutional framework applicable to the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project in Shinkafi LGA, Zamfara State. It identifies the statutory, customary, and policy instruments that govern land access, environmental management, agricultural development, labor relations, and community engagement, and provides the benchmark against which compliance and gaps are assessed in subsequent sections of this Environmental and Social Audit (ESA).

In line with global standards for Environmental and Social Audits and the Framework for Responsible and Inclusive Land-Intensive Agricultural Investment (FRILIA), the analysis recognizes that effective governance of land-intensive agricultural investments depends not only on formal laws but also on customary tenure systems, institutional practice, and the roles of subnational and traditional authorities.

### **4.2 Federal Legal and Regulatory Framework (Nigeria)**

#### **4.2.1 Environmental Protection and Impact Assessment**

Environmental management in Nigeria is governed primarily by federal legislation. The Environmental Impact Assessment (EIA) Act establishes the requirement for environmental assessment of projects likely to have significant environmental effects. Large-scale agricultural investments involving land clearing, irrigation, agrochemical use, greenhouse infrastructure, and livestock or poultry operations fall within the category of projects that may require environmental screening and approval.

The Federal Ministry of Environment is responsible for administering the EIA Act and issuing approvals where applicable. In practice, coordination between federal and state environmental authorities is required for projects implemented at subnational level.

Additional federal regulations issued by the National Environmental Standards and Regulations Enforcement Agency (NESREA) address issues such as waste management, pollution control, and environmental quality standards that are relevant to mechanized farming, greenhouse operations, and poultry production.

#### **4.2.2 Land Administration and Tenure**

Land tenure in Nigeria is governed by the Land Use Act, which vests all land within a state in the Governor, to be held in trust for the people. Under the Act, statutory rights of occupancy may be granted over land, while customary rights of occupancy

apply predominantly in rural areas and are administered through Local Government Authorities.

In Shinkafi LGA, customary land tenure systems remain the dominant framework, recognizing communal ownership, lineage-based rights, and long-standing land use patterns. As such, any land-intensive agricultural investment in the LGA must navigate both statutory land administration processes and customary tenure arrangements.

Failure to adequately recognize and reconcile these parallel systems represents a significant source of social risk for large-scale agricultural projects within Shinkafi LGA.

### **4.2.3 Agriculture, Water Resources, and Natural Resource Management**

Federal agricultural policies and sectoral regulations provide guidance on agricultural development, irrigation, livestock production, and natural resource management. Water use for irrigation, greenhouse operations, and livestock production is subject to national water resource governance frameworks, particularly where surface water abstraction or groundwater extraction is involved.

Crops such as sugarcane, which are water-intensive, and greenhouse systems that rely on controlled irrigation, have direct implications for water resource sustainability and require alignment with applicable water management regulations and good practice.

### **4.2.4 Labour, Employment, and Occupational Health and Safety**

Employment relations in Nigeria are governed by the Labour Act and related regulations, which establish minimum standards for wages, working hours, conditions of service, and worker welfare. Occupational health and safety obligations arise from general labour legislation and sector-specific guidelines.

Mechanized agriculture, greenhouse operations, and poultry farming introduce occupational risks related to machinery operation, chemical handling, confined spaces, heat exposure, and biosecurity. Compliance with labour standards and the provision of safe working conditions are therefore central considerations under this audit.

## **4.3 Zamfara State Legal and Policy Framework**

### **4.3.1 State Environmental Governance**

Environmental management at the state level is undertaken through Zamfara State institutions responsible for environmental protection, natural resource management, and pollution control. State environmental laws and regulations complement federal EIA requirements and provide oversight for projects implemented within the State.

Large-scale agricultural projects such as the Direkci Group investment require engagement with State environmental authorities for environmental screening, permitting, monitoring, and compliance.

### **4.3.2 Land Administration and Local Government Roles**

In Zamfara State, rural land is predominantly administered under customary tenure arrangements, with Local Government Authorities playing a formal role in the administration of customary rights of occupancy. Traditional institutions and community leadership structures are central to land allocation, dispute resolution, and representation of community interests.

For land-intensive agricultural investments, effective engagement with:

- State land administration institutions;
- Local Government Authorities in affected LGA;
- Traditional rulers and community leaders; and
- Existing land users and rights holders

is essential to ensure legitimacy, transparency, and social acceptance.

### **4.3.3 State Agricultural Development Policies**

Zamfara State's agricultural policies emphasize modernization, mechanization, food security, employment creation, and private-sector participation. The Direkci Group project aligns with these policy objectives and has been publicly framed as a flagship initiative supporting the State's development agenda.

However, alignment with State policy also implies heightened expectations regarding responsible conduct, social inclusion, environmental stewardship, and adherence to best practice standards.

## **4.4 Customary Land Tenure and Traditional Authority Systems**

Customary land tenure systems remain fundamental to land governance in Zamfara State. Land is often held communally and managed through traditional institutions, with access rights derived from lineage, residency, or long-standing use.

Under FRILIA and international good practice, legitimate tenure rights include statutory, customary, and informal rights. Agricultural investments that fail to recognize and protect customary land rights risk generating conflict, undermining livelihoods, and eroding community trust.

Accordingly, this audit treats customary land tenure and traditional authority systems as integral components of the applicable governance framework rather than as informal or secondary considerations.

## 4.5 International Good Practice and FRILIA Principles

The Framework for Responsible and Inclusive Land-Intensive Agricultural Investment (FRILIA) provides guidance for ensuring that large-scale agricultural investments are economically viable, socially inclusive, environmentally sustainable, and politically legitimate.

Key FRILIA principles relevant to this project include:

- Respect for legitimate land tenure rights;
- Transparency in land access and investment arrangements;
- Meaningful and informed engagement with affected communities;
- Protection of livelihoods and vulnerable groups;
- Environmental sustainability and climate resilience;
- Accountability, monitoring, and grievance redress.

These principles are applied throughout this ESA as analytical benchmarks against which project practices are assessed.

## 4.6 Institutional Roles and Responsibilities

Implementation and oversight of the Direkci Group project involve multiple institutions at federal, state, local, and community levels, including:

- Zamfara State Government (policy direction and political oversight);
- State ministries responsible for agriculture, lands, environment, and investment promotion;
- Local Government Authorities in affected LGA;
- Traditional institutions and community leadership structures;
- Relevant federal regulatory bodies where applicable.

Clear definition of institutional roles, coordination mechanisms, and accountability arrangements is essential for effective environmental and social risk management.

## 4.7 Implications for the Environmental and Social Audit

The legal, policy, and institutional framework outlined above establishes the basis for assessing compliance, identifying gaps, and formulating corrective actions. Particular attention is required for:

- Alignment between statutory land administration and customary tenure systems;
- Adequacy of environmental screening and permitting;
- Labour standards and occupational health and safety compliance;
- Institutional capacity for monitoring and enforcement;
- Consistency with FRILIA principles.

These considerations guide the detailed analyses presented in subsequent sections of this Environmental and Social Audit.

## **5. ENVIRONMENTAL BASELINE CONDITIONS**

### **5.1 Introduction**

This section presents the environmental baseline conditions relevant to the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project in Zamfara State. The purpose of the baseline is to establish the existing environmental setting against which actual and potential environmental impacts associated with project activities can be identified, assessed, and managed.

In accordance with international Environmental and Social Audit (ESA) practice and FRILIA principles, the baseline focuses on environmental receptors that are likely to be affected by land-intensive agriculture, mechanized farming, greenhouse systems, irrigation, and poultry-related activities. Given that the project is now implemented solely within Shinkafi Local Government Area (LGA), the baseline is presented at the Shinkafi LGA level, with recognition of spatial variability and the need for site-specific verification during subsequent phases of project implementation.

### **5.2 Physical Environment**

#### **5.2.1 Geographic Location and Topography**

Zamfara State is located in north-western Nigeria and lies largely within the Sudan and Northern Guinea savannah ecological zones. The State's topography is generally flat to gently undulating, with isolated rocky outcrops and low hills in certain areas. Elevation varies moderately across the State, influencing surface drainage patterns and land suitability for agricultural development.

The generally gentle terrain is conducive to mechanized agriculture and greenhouse infrastructure. However, localized slopes, drainage channels, and erosion-prone areas may present environmental risks where land clearing and soil disturbance occur without appropriate mitigation measures.

#### **5.2.2 Climate and Climatic Variability**

Zamfara State experiences a tropical continental climate characterized by two distinct seasons:

- a rainy season, typically from May to October; and
- a dry season, from November to April.

Rainfall is seasonal and increasingly variable, with fluctuations in onset, duration, and intensity observed in recent years. The dry season is marked by high temperatures, low humidity, and Harmattan winds, which can contribute to crop stress, soil moisture loss, and dust generation.

Climate-related factors relevant to the project include:

- periodic droughts and dry spells;
- increasing temperature extremes and heat stress;
- intense rainfall events that may lead to flooding and soil erosion.

These conditions underscore both the rationale for greenhouse technologies and irrigation-dependent crops, and the need for careful management of water resources, energy use, and soil protection.

### **5.2.3 Geology and Soils**

The geology of Zamfara State is dominated by basement complex formations, giving rise to soils that are predominantly sandy loam to loamy in texture. Soil fertility varies across locations depending on land use history, management practices, and proximity to water bodies.

Common soil characteristics and issues include:

- moderate fertility in many cultivated areas;
- susceptibility to wind and water erosion following vegetation removal;
- declining organic matter due to continuous cultivation;
- potential compaction associated with mechanized equipment;
- sensitivity to excessive or inappropriate agrochemical application.

Large-scale mechanized farming and greenhouse operations may intensify existing soil degradation risks if not accompanied by sound soil management practices, including erosion control, nutrient management, and crop rotation.

### **5.2.4 Water Resources**

Water resources in Zamfara State include surface water bodies (rivers, streams, and seasonal watercourses) and groundwater aquifers. Surface water availability is highly seasonal, with increased flows during the rainy season and significant reductions during the dry season.

Groundwater serves as an important source of water for domestic use and agriculture, particularly during dry periods. However, groundwater recharge rates are variable, and over-abstraction poses localized risks in some areas.

The project's emphasis on sugarcane cultivation, greenhouse irrigation systems, and poultry operations is expected to increase demand for reliable water supply. Key baseline considerations include:

- seasonal variability in water availability;
- competing water demands from communities and agriculture;
- potential impacts of intensive abstraction on groundwater sustainability.

## **5.3 Biological Environment**

### **5.3.1 Vegetation and Land Use**

Vegetation in Zamfara State is characteristic of savannah ecosystems, consisting of grasses, shrubs, and scattered trees. Much of the natural vegetation has been modified through long-term agricultural use, grazing, fuelwood collection, and settlement expansion.

Current land use patterns include:

- rain-fed crop cultivation;
- grazing and pastoral activities;
- mixed farming systems;
- settlements and associated infrastructure.

Remaining natural vegetation provides ecosystem services such as soil stabilization, habitat for wildlife, and resources for local livelihoods. Land clearing for large-scale agriculture may further reduce natural vegetation cover if not managed responsibly.

### **5.3.2 Biodiversity and Ecosystem Sensitivity**

Zamfara State does not contain formally designated national parks of high conservation status, but local ecosystems support a range of plant and animal species adapted to savannah conditions. Biodiversity sensitivity varies across locations, particularly near watercourses, wetlands, and areas of relatively intact vegetation.

Potential biodiversity concerns associated with the project include:

- habitat loss due to land clearing;
- disturbance of fauna through noise, machinery, and human activity;
- indirect impacts on grazing routes and wildlife movement.

## **5.4 Ambient Environmental Quality**

### **5.4.1 Air Quality**

Ambient air quality in Zamfara State is generally good in rural areas, with localized degradation associated with dust from unpaved roads, agricultural activities, and seasonal Harmattan conditions. Mechanized farming operations may temporarily increase dust and emissions from machinery, particularly during land preparation and harvesting.

### **5.4.2 Noise Environment**

Background noise levels in rural Zamfara are typically low. Mechanized agricultural operations, including tractors, harvesters, and generators, may introduce localized increases in noise levels, particularly near settlements and worker accommodation areas.

### **5.5 Environmental Sensitivities Relevant to the Project**

Based on the baseline conditions, key environmental sensitivities relevant to the project include:

- Water availability and sustainability during dry seasons;
- Soil erosion and degradation risks associated with land clearing and mechanization;
- Land use changes within Shinkafi LGA and potential cumulative effects at the local level
- Pressure on natural vegetation and grazing areas;
- Waste and effluent management requirements for greenhouse and poultry activities.

These sensitivities inform the identification and assessment of environmental risks and impacts presented in subsequent sections of this Environmental and Social Audit.

### **5.6 Summary**

The environmental baseline indicates that Zamfara State provides a generally suitable physical setting for mechanized agriculture and greenhouse development, while also exhibiting vulnerabilities related to climate variability, water scarcity, soil degradation, and land use pressures. Understanding these baseline conditions is essential for assessing the environmental risks associated with the Direkci Group project and for designing appropriate mitigation and management measures.

## **6. SOCIAL BASELINE AND LAND TENURE CONTEXT**

### **6.1 Introduction**

This section presents the social baseline and land tenure context relevant to the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project in Zamfara State. The purpose of this section is to describe the existing social, economic, institutional, and land governance conditions against which the project's social risks and impacts are assessed.

In line with international Environmental and Social Audit (ESA) practice and the Framework for Responsible and Inclusive Land-Intensive Agricultural Investment (FRILIA), the social baseline emphasizes people, livelihoods, land rights, and governance systems that are likely to be affected by land-intensive agricultural investments. Given the project's intended multi-LGA and state-wide scope, this section adopts a broad contextual approach, while recognizing that site-specific conditions will vary and require further verification during implementation.

### **6.2 Demographic and Socio-Economic Context**

Zamfara State is predominantly rural, with a large proportion of the population engaged directly or indirectly in agriculture and related livelihood activities. Rural communities are typically organized around farming, livestock rearing, petty trading, and artisanal activities. Household incomes are largely dependent on seasonal agricultural production, making livelihoods highly sensitive to climate variability, land access, and security conditions.

Key socio-economic characteristics relevant to the project include:

- High dependence on land and natural resources for livelihoods;
- Limited diversification of income sources in rural areas;
- Youth unemployment and underemployment;
- Gender-differentiated access to land, assets, and economic opportunities.

Any large-scale agricultural investment therefore interacts directly with the primary livelihood base of local communities.

### **6.3 Livelihood Systems**

#### **6.3.1 Crop Farming**

Crop farming is the dominant livelihood activity across Zamfara State. Most farmers operate smallholder systems characterized by rain-fed production, low mechanization, and limited access to modern inputs. Common crops include cereals, legumes, and cash crops cultivated for household consumption and local markets.

Land availability, soil fertility, rainfall reliability, and access to labor are critical determinants of household welfare. Changes in land access or land use patterns can therefore have immediate and significant livelihood implications.

### **6.3.2 Pastoralism and Agro-Pastoral Systems**

Pastoralism and agro-pastoralism remain important livelihood systems in Zamfara State. Seasonal livestock movement and access to grazing land and water points are essential for pastoral livelihoods. In many areas, farmers and pastoralists coexist through informal arrangements governing land use, crop residue access, and water sharing.

Large-scale agricultural developments may affect these arrangements by altering land availability, restricting access to grazing routes, or increasing competition for water resources. Such impacts can heighten the risk of livelihood disruption and social tension if not managed carefully.

### **6.3.3 Gender and Vulnerable Groups**

Women play a significant role in agricultural production, processing, and household food security, yet often face constraints in access to land, inputs, credit, and decision-making. Youth, widows, land-poor households, and migrant pastoral groups may also experience heightened vulnerability.

FRILIA emphasizes the need to identify and protect vulnerable groups whose livelihoods and tenure rights may be disproportionately affected by land-intensive investments.

## **6.4 Land Tenure and Land Governance Context**

### **6.4.1 Statutory Land Tenure Framework**

Under Nigeria's Land Use Act, all land within a State is vested in the Governor, to be held in trust for the people. Statutory rights of occupancy may be granted, while customary rights of occupancy apply primarily in rural areas and are administered through Local Government Authorities.

While the statutory framework provides the formal basis for land administration, its practical application in rural Zamfara State is strongly influenced by customary systems and local governance practices.

### **6.4.2 Customary Land Tenure Systems**

Customary land tenure remains the dominant land governance system in Zamfara State. Land is commonly held communally or by extended families, with access and use rights allocated through traditional authority structures. Rights are often based on lineage, long-standing occupation, or community membership, rather than formal documentation.

Customary tenure systems provide social legitimacy and local conflict-resolution mechanisms but may lack formal records. As a result, land rights can be vulnerable to exclusion if large-scale investments proceed without transparent and inclusive engagement.

### **6.4.3 Role of Traditional Institutions**

Traditional rulers and community leaders play a central role in land allocation, dispute resolution, and representation of community interests. Their involvement is critical for establishing legitimacy and social acceptance of land-related decisions.

However, reliance solely on elite or centralized authority without broad community consultation may result in exclusion of certain groups, particularly women, youth, and secondary land users.

## **6.5 Land Use Patterns and Existing Land Users**

Land across Zamfara State is used for a mix of crop cultivation, grazing, settlement, and resource collection. Multiple users may rely on the same land at different times of the year, including farmers, pastoralists, and fuelwood collectors.

Large-scale agricultural projects may introduce competing land uses or restrict access to land previously used by communities. Understanding existing land use patterns is therefore essential for identifying potential displacement, livelihood impacts, and conflict risks.

## **6.6 Community Engagement and Social Organization**

Rural communities in Zamfara State are typically organized through a combination of formal administrative structures (wards and LGA) and informal or traditional institutions. Community decision-making often involves elders, religious leaders, and recognized representatives.

Meaningful engagement requires:

- Inclusive consultation beyond elite leadership;
- Clear information disclosure;
- Opportunities for feedback and negotiation.

FRILIA emphasizes that engagement must be free of coercion, informed, and ongoing, particularly where land and livelihoods are concerned.

## **6.7 Grievance Resolution Practices**

Communities traditionally rely on customary mechanisms for dispute resolution, including mediation by elders and traditional leaders. While these systems can be effective, they may not always provide accessible or impartial remedies for all groups.

Large-scale investments benefit from the establishment of transparent, accessible, and project-specific grievance redress mechanisms that complement existing systems and allow concerns to be raised and addressed in a timely manner.

## **6.8 Social Sensitivities and Conflict Context**

Zamfara State has experienced social and security challenges that have affected rural livelihoods and land use patterns. Competition over land and natural resources, combined with insecurity, can heighten sensitivities around large-scale land allocations.

Land-intensive investments must therefore be designed and implemented in a conflict-sensitive manner, with attention to existing tensions, perceptions of fairness, and the distribution of benefits and risks.

## **6.9 Summary of Key Social and Land Tenure Risk Factors**

Based on the social baseline and land tenure context, the following factors are identified as critical to the project's social risk profile:

- Dependence of local livelihoods on land and natural resources;
- Prevalence of customary and undocumented land rights;
- Farmer–pastoralist land use interactions;
- Gender and youth vulnerabilities;
- Central role of traditional institutions in land governance;
- Potential for exclusion or elite capture if engagement is inadequate;
- Need for accessible grievance redress mechanisms.

These factors inform the assessment of social risks and impacts and the development of corrective and preventive measures in subsequent sections of this Environmental and Social Audit.

## **7. STAKEHOLDER IDENTIFICATION AND ENGAGEMENT REVIEW**

### **7.1 Introduction**

This section reviews stakeholder identification and engagement processes relevant to the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project in Zamfara State. It examines how stakeholders are identified, the nature and adequacy of engagement undertaken to date, and the extent to which engagement practices align with international Environmental and Social Audit (ESA) standards and FRILIA principles.

Given the land-intensive and state-wide nature of the project, effective stakeholder engagement is critical to ensuring legitimacy, social acceptance, and long-term sustainability. This section assesses engagement both as a governance process and as a risk-management tool.

### **7.2 Stakeholder Identification**

#### **7.2.1 Primary Stakeholders**

Primary stakeholders are individuals or groups directly affected, or likely to be affected, by project activities. For the Direkci Group project, primary stakeholders include:

- Host communities in areas where project activities are located or proposed;
- Customary landholders and users, including farmers and pastoralists;
- Women, youth, and other vulnerable groups whose livelihoods depend on land and natural resources;
- Project workers and prospective employees.

These stakeholders bear the greatest potential risks and therefore require priority attention under FRILIA.

#### **7.2.2 Secondary Stakeholders**

Secondary stakeholders are groups or institutions that have an interest in, or influence over, the project but are not directly affected by land access or livelihood impacts. These include:

- Zamfara State Government institutions and agencies;
- Local Government Authorities in affected LGA;
- Traditional rulers and community leadership structures;
- Federal regulatory bodies where applicable;
- Civil society organizations and local associations;
- Agricultural input suppliers, traders, and service providers.

Secondary stakeholders play a key role in enabling or constraining project implementation and social acceptance.

### 7.2.3 Vulnerable and Marginalized Groups

In line with FRILIA and international good practice, particular attention is required for stakeholders who may experience disproportionate impacts or face barriers to participation. These include:

- Women with limited land ownership or decision-making authority;
- Youth and land-poor households;
- Pastoralists and transhumant groups;
- Widows, elderly persons, and persons with disabilities.

Effective engagement requires proactive identification and inclusion of these groups.

### 7.3 Stakeholder Engagement to Date

Publicly available information indicates that engagement to date has focused primarily on:

- High-level discussions between Direkci Group and the Zamfara State Government;
- Political endorsement and public announcements of the investment;
- Initial interactions with state institutions and leadership.

While such engagement is necessary for project initiation, it does not substitute for systematic, community-level consultation, particularly where land access and livelihood impacts are anticipated.

### 7.4 Assessment of Engagement Adequacy

#### 7.4.1 Alignment with FRILIA Principles

FRILIA emphasizes early, meaningful, and inclusive engagement with affected stakeholders, particularly where land and livelihoods are concerned. Engagement should be:

- Informed and transparent;
- Inclusive of all legitimate rights holders and users;
- Conducted in good faith and free from coercion;
- Ongoing throughout the project lifecycle.

At the current stage, engagement appears to be strong at the political and institutional level, but limited in scope at the community and land-user level. This presents a potential gap relative to FRILIA expectations.

#### 7.4.2 Information Disclosure

Effective engagement depends on timely and accessible information disclosure. Key issues requiring disclosure include:

- Project scope and phasing;
- Land access arrangements;
- Expected benefits and risks;
- Employment opportunities and requirements;
- Grievance redress mechanisms.

The extent to which such information has been disclosed at the community level will require verification through field engagement.

### **7.4.3 Inclusiveness and Representation**

Engagement processes that rely solely on traditional or political leadership risk excluding women, youth, pastoralists, and secondary land users. Inclusive engagement requires deliberate strategies to reach these groups and to ensure their perspectives are reflected in decision-making.

## **7.5 Grievance Redress Mechanisms**

At the time of this audit, no formal, project-specific grievance redress mechanism has been publicly documented. Communities traditionally rely on customary dispute resolution mechanisms; however, such systems may not be accessible or effective for all stakeholders.

International good practice and FRILIA recommend the establishment of a transparent, accessible, and culturally appropriate grievance redress mechanism that:

- Is available to all affected stakeholders;
- Allows anonymous complaints where appropriate;
- Provides timely and fair resolution;
- Operates independently of political or elite influence.

## **7.6 Stakeholder Engagement Risks**

Based on the review, key stakeholder engagement risks include:

- Perceptions of exclusion among land users or vulnerable groups;
- Misinformation or unrealistic expectations regarding benefits;
- Escalation of land-related grievances if engagement is delayed;
- Reduced social license to operate as the project scales across Shinkafi LGA.

Addressing these risks requires structured, ongoing, and inclusive engagement processes.

## **7.7 Summary and Implications for the Audit**

Stakeholder engagement is a critical determinant of the project's social legitimacy and sustainability. While high-level institutional engagement has been established, there is a need to strengthen community-level engagement in line with FRILIA principles and international ESA standards.

The findings of this section inform the assessment of social risks and the development of corrective actions and engagement strategies presented in subsequent sections of this Environmental and Social Audit.

## 8. ASSESSMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

### 8.1 Introduction

This section assesses the potential and actual environmental and social risks and impacts associated with the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project in Zamfara State. The assessment is based on the project description, environmental and social baseline conditions, stakeholder engagement review, and applicable legal and policy frameworks.

In line with international Environmental and Social Audit (ESA) practice and FRILIA principles, the assessment adopts a risk-based approach, focusing on issues that could materially affect land rights, livelihoods, environmental sustainability, community relations, and project viability. The assessment considers both project-specific and cumulative impacts, recognizing the project's land-intensive and multi-LGA scope.

### 8.2 Methodological Approach

The risk and impact assessment draws on:

- Review of project design and publicly available information;
- Analysis of environmental and social baseline conditions;
- Consideration of stakeholder engagement processes to date;
- Alignment with applicable laws, policies, and FRILIA principles.

Risks are assessed qualitatively based on:

- **Likelihood** of occurrence;
- **Severity** of potential impact;
- **Reversibility** of effects;
- **Sensitivity** of affected receptors (communities, land users, ecosystems).

The assessment covers both direct impacts arising from project activities and indirect or induced impacts associated with land use change, resource demand, and economic transformation.

### 8.3 Environmental Risks and Impacts

#### 8.3.1 Land Clearing and Soil Degradation

The establishment of large-scale mechanized farms and greenhouse facilities may require land clearing and soil disturbance. Potential impacts include:

- Loss of topsoil and soil structure;
- Increased susceptibility to erosion;
- Soil compaction from heavy machinery;
- Decline in soil organic matter.

If not properly managed, these impacts may reduce long-term land productivity and increase environmental degradation. Conversely, improved agronomic practices could mitigate or reverse some existing soil degradation if appropriately implemented.

### **8.3.2 Water Resource Use and Sustainability**

The project's emphasis on sugarcane cultivation, greenhouse irrigation systems, and poultry operations is expected to increase demand for water resources. Potential risks include:

- Over-abstraction of surface or groundwater;
- Reduced water availability for communities and other users;
- Seasonal water stress during dry periods;
- Cumulative impacts where multiple sites draw from shared water sources.

Water-related risks are particularly significant given climate variability and existing competition for water resources.

### **8.3.3 Agrochemical Use and Pollution**

Mechanized farming and intensive greenhouse production typically involve the use of fertilizers, herbicides, and pesticides. Potential impacts include:

- Soil contamination;
- Runoff into surface water bodies;
- Groundwater pollution;
- Risks to human health and non-target species.

Improper storage, handling, or application of agrochemicals increases these risks, particularly in areas lacking robust regulatory oversight.

### **8.3.4 Waste and Effluent Management**

Greenhouse operations and poultry farming generate solid waste and liquid effluents, including plant residues, packaging materials, manure, and wastewater. Inadequate waste management may result in:

- Localized pollution;
- Odor and pest issues;
- Public health concerns;
- Degradation of soil and water quality.

The cumulative impact of waste generation across multiple sites requires careful planning and management.

### **8.3.5 Biodiversity and Habitat Disturbance**

Land conversion and increased human activity may lead to:

- Loss of natural or semi-natural vegetation;
- Disturbance of wildlife habitats;
- Disruption of ecological connectivity, particularly near watercourses and grazing areas.

Although Zamfara State does not host highly protected ecosystems, localized biodiversity values may still be affected.

## **8.4 Social Risks and Impacts**

### **8.4.1 Land Access and Tenure Risks**

Land access represents one of the most significant social risk areas for the project. Potential risks include:

- Inadequate recognition of customary land rights;
- Displacement of existing land users;
- Loss of access to farmland, grazing areas, or seasonal resources;
- Disputes arising from unclear or contested land allocation processes.

Failure to address tenure legitimacy and inclusiveness could undermine project legitimacy and trigger conflict.

### **8.4.2 Livelihood Impacts**

Changes in land use and agricultural systems may affect livelihoods in multiple ways:

- Reduction in access to land for smallholder farmers;
- Disruption of pastoral grazing routes and water access;
- Unequal distribution of employment and economic benefits;
- Increased vulnerability for land-poor households.

While the project has potential to generate employment and economic opportunities, benefits may not be evenly distributed without deliberate inclusion measures.

### **8.4.3 Labour and Working Conditions**

Mechanized agriculture, greenhouse operations, and poultry farming introduce occupational risks, including:

- Machinery-related accidents;
- Chemical exposure;
- Heat stress and confined-space hazards;
- Biosecurity risks in poultry operations.

Inadequate labour standards or safety measures may result in worker injury, health impacts, and reputational risk for the project.

#### **8.4.4 Community Health and Safety**

Project activities may affect community health and safety through:

- Increased traffic and machinery movement;
- Exposure to agrochemicals;
- Environmental pollution from waste and effluent;
- Potential disease transmission associated with livestock operations.

These risks are heightened where project sites are located near settlements or shared resource areas.

#### **8.4.5 Social Cohesion and Conflict Risks**

Given the existing sensitivity around land, livelihoods, and security in Zamfara State, large-scale agricultural investments may exacerbate social tensions if perceived as inequitable or exclusionary. Risks include:

- Farmer–pastoralist conflicts;
- Intra-community disputes over land allocation;
- Erosion of trust between communities, the State, and the investor.

Effective engagement and transparent processes are critical to mitigating these risks.

### **8.5 Cumulative and Induced Impacts**

The project's implementation within Shinkafi LGA may give rise to cumulative impacts, including:

- Gradual reduction in available agricultural and grazing land within the LGA;
- Increased pressure on local water resources;
- Transformation of local labour markets;
- Incremental environmental degradation if mitigation measures are not consistently applied.

Induced impacts may also arise from increased population movement, infrastructure development, and economic activity associated with the project in Shinkafi LGA.

### **8.6 Risk Significance and Prioritization**

Based on the assessment, the most significant environmental and social risk areas include:

- Land access and tenure legitimacy;
- Water resource sustainability;

- Livelihood impacts on farmers and pastoralists;
- Labour conditions and occupational health and safety;
- Community engagement and grievance management.

These risks require prioritized attention through targeted mitigation and corrective measures.

## **8.7 Summary**

The assessment indicates that the Direkci Group project presents both opportunities and risks. While the project has potential to contribute to agricultural modernization, employment, and food security, its land-intensive and multi-site nature introduces substantial environmental and social risks.

Effective management of these risks, in line with FRILIA principles and international ESA standards, is essential to ensuring the project's long-term sustainability and social legitimacy. The findings of this section inform the development of mitigation measures and corrective actions presented in the subsequent section.

## 9. MITIGATION MEASURES AND CORRECTIVE ACTION PLAN (CAP)

### 9.1 Introduction

This section sets out the mitigation measures and Corrective Action Plan (CAP) developed in response to the environmental and social risks and impacts identified in Section 8. The CAP is designed to prevent, minimize, mitigate, or remedy adverse impacts and to enhance positive outcomes associated with the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project.

In line with international Environmental and Social Audit (ESA) practice and FRILIA principles, the CAP emphasizes risk prioritization, clear accountability, time-bound actions, and ongoing monitoring. The measures outlined herein apply across the project lifecycle and are particularly critical given the project's land-intensive, multi-LGA scope and phased implementation approach.

### 9.2 Principles Guiding the Corrective Action Plan

The CAP is guided by the following principles:

- **Legitimacy and Inclusiveness:** Respect for legitimate land tenure rights and inclusion of all affected stakeholders;
- **Prevention First:** Prioritization of measures that avoid impacts before relying on mitigation or compensation;
- **Proportionality:** Alignment of mitigation measures with the severity and likelihood of risks;
- **Transparency and Accountability:** Clear roles, responsibilities, and timelines;
- **Adaptive Management:** Continuous learning and adjustment based on monitoring results and stakeholder feedback.

### 9.3 Environmental Mitigation Measures

#### 9.3.1 Land Clearing and Soil Management

**Risks Addressed:** Soil erosion, compaction, fertility loss.  
**Mitigation Measures:**

- Limit land clearing to approved areas and phases;
- Implement soil conservation measures, including contour farming, buffer strips, and cover cropping where feasible;
- Adopt controlled machinery movement to minimize soil compaction;
- Apply crop rotation and organic matter management to maintain soil health.

### 9.3.2 Water Resource Management

**Risks Addressed:** Over-abstraction, water scarcity, competition with community users.

**Mitigation Measures:**

- Conduct site-specific water availability assessments prior to irrigation development;
- Implement water-efficient irrigation technologies, particularly for greenhouse operations;
- Monitor groundwater and surface water abstraction rates;
- Establish water-sharing protocols with host communities where applicable.

### 9.3.3 Agrochemical Management

**Risks Addressed:** Soil and water contamination, human health impacts.

**Mitigation Measures:**

- Develop and implement an Integrated Pest Management (IPM) approach;
- Ensure proper storage, handling, and application of agrochemicals;
- Train workers on safe chemical use and emergency response;
- Prohibit the use of banned or highly hazardous chemicals.

### 9.3.4 Waste and Effluent Management

**Risks Addressed:** Pollution, odor, public health concerns.

**Mitigation Measures:**

- Develop waste management plans for greenhouse and poultry operations;
- Promote composting or safe reuse of organic waste where feasible;
- Ensure safe disposal of non-organic waste through approved facilities;
- Monitor effluent quality and prevent discharge into water bodies without treatment.

### 9.3.5 Biodiversity and Habitat Protection

**Risks Addressed:** Habitat loss and ecosystem disturbance.

**Mitigation Measures:**

- Avoid ecologically sensitive areas where practicable;
- Maintain buffer zones near watercourses and natural vegetation;
- Minimize disturbance during land preparation and harvesting;
- Restore disturbed areas where feasible after operations.

## 9.4 Social Mitigation Measures

### 9.4.1 Land Access and Tenure Safeguards

**Risks Addressed:** Displacement, tenure disputes, loss of access to land.  
**Mitigation Measures:**

- Undertake transparent, inclusive land access processes for each project site;
- Recognize and document customary land rights and secondary land uses;
- Secure voluntary agreements with affected land users prior to land allocation;
- Avoid involuntary displacement wherever possible; where unavoidable, apply fair and timely compensation consistent with good practice.

### 9.4.2 Livelihood Protection and Enhancement

**Risks Addressed:** Loss of livelihoods, unequal benefit distribution.  
**Mitigation Measures:**

- Prioritize local employment and skills development;
- Support alternative livelihood opportunities for affected households where land access is reduced;
- Facilitate access to training, inputs, or market linkages for smallholders where feasible;
- Monitor livelihood outcomes over time.

### 9.4.3 Labour and Occupational Health and Safety

**Risks Addressed:** Worker injury, unsafe working conditions.  
**Mitigation Measures:**

- Implement labour standards consistent with national law and good practice;
- Provide training on machinery operation, chemical handling, and biosecurity;
- Supply appropriate personal protective equipment (PPE);
- Establish incident reporting and response procedures.

### 9.4.4 Community Health and Safety

**Risks Addressed:** Traffic accidents, pollution exposure, disease risks.  
**Mitigation Measures:**

- Manage vehicle movement and site access to reduce accident risks;
- Control dust, noise, and emissions near settlements;
- Implement biosecurity measures for poultry operations;
- Engage communities on health and safety awareness.

### 9.4.5 Stakeholder Engagement and Grievance Redress

**Risks Addressed:** Social tension, unresolved grievances.  
**Mitigation Measures:**

- Establish a project-specific grievance redress mechanism accessible to all stakeholders;
- Ensure timely, fair, and transparent resolution of complaints;
- Maintain ongoing engagement with communities throughout project phases;
- Document engagement processes and outcomes.

### 9.5 Corrective Action Plan (CAP) Implementation Framework

The CAP shall be implemented through a structured framework that includes:

- Assignment of responsibilities to the investor, relevant State institutions, and contractors;
- Clear timelines for each corrective action;
- Allocation of adequate resources for implementation;
- Integration of CAP actions into project planning and operations.

### 9.6 Monitoring and Reporting

Monitoring is essential to verify the effectiveness of mitigation measures and to enable adaptive management. Key actions include:

- Regular monitoring of environmental and social indicators;
- Periodic reporting to relevant authorities and stakeholders;
- Disclosure of monitoring results in an accessible format;
- Independent verification where appropriate.

### 9.7 Summary

The mitigation measures and Corrective Action Plan outlined in this section provide a structured pathway for addressing the environmental and social risks associated with the Direkci Group project. Effective implementation of the CAP is essential to safeguarding land rights, protecting livelihoods, minimizing environmental harm, and ensuring alignment with FRILIA principles and international ESA standards.

## **10. CONCLUSIONS AND RECOMMENDATIONS**

### **10.1 Introduction**

This section presents the overall conclusions of the Environmental and Social Audit (ESA) of the Direkci Group Large-Scale Mechanized Farming and Greenhouse Project in Zamfara State and sets out strategic and operational recommendations. The conclusions are derived from the assessment of project design, environmental and social baseline conditions, legal and institutional frameworks, stakeholder engagement processes, and the identified environmental and social risks and impacts.

The recommendations are framed to support responsible project implementation in line with the Framework for Responsible and Inclusive Land-Intensive Agricultural Investment (FRILIA), applicable Nigerian laws, and international good practice for land-intensive agricultural investments.

### **10.2 Overall Conclusions**

#### **10.2.1 Project Opportunity and Strategic Importance**

The audit concludes that the Direkci Group project represents a significant opportunity for Zamfara State to advance agricultural modernization, improve food security, create employment, and stimulate economic development. The introduction of mechanized farming systems, greenhouse technologies, and integrated value-chain activities aligns with State development priorities and responds to structural challenges in the agricultural sector.

The project's state-wide ambition and political endorsement underscore its strategic importance, while also elevating expectations regarding responsible governance, environmental stewardship, and social inclusion.

#### **10.2.2 Environmental Viability**

From an environmental perspective, Zamfara State provides a generally suitable physical setting for mechanized agriculture and greenhouse production. However, the audit identifies key environmental sensitivities related to water availability, soil health, climate variability, waste management, and cumulative land use change.

The project's environmental viability is contingent upon the effective implementation of water-efficient technologies, soil conservation measures, responsible agrochemical management, and systematic monitoring. Without these measures, there is a risk of localized environmental degradation and resource stress, particularly as the project scales across multiple Local Government Areas.

### 10.2.3 Social and Land Tenure Risks

The audit identifies land access and tenure legitimacy as the most critical social risk area for the project. The prevalence of customary land tenure systems, dependence of livelihoods on land and natural resources, and the presence of farmer–pastoralist interactions create a complex social context for large-scale agricultural investment.

While the project has potential to generate employment and livelihood benefits, these benefits will not be automatically inclusive. Without transparent land access processes, meaningful community engagement, and targeted livelihood protection measures, the project risks generating social tension, exclusion, or conflict.

### 10.2.4 Stakeholder Engagement and Governance

Stakeholder engagement to date has been strong at the political and institutional level but remains limited at the community and land-user level. This gap presents a material risk to social license and long-term project sustainability.

The audit concludes that strengthening engagement processes, particularly with affected communities and vulnerable groups, is essential to align the project with FRILIA principles and international good practice.

### 10.2.5 Overall Risk Profile

Overall, the project is assessed as high-impact with manageable risks, provided that corrective actions and mitigation measures are implemented effectively and consistently. The most significant risks—land access, water resource sustainability, livelihood impacts, and community relations—are not insurmountable but require deliberate, proactive management.

## 10.3 Key Recommendations

### 10.3.1 Land Governance and Tenure

- Adopt a phased, site-specific land access approach for all project locations.
- Ensure transparent and inclusive land access processes that recognize customary and secondary land rights.
- Avoid involuntary displacement wherever possible; where unavoidable, apply fair compensation and livelihood restoration measures.
- Document land agreements clearly and make information accessible to affected stakeholders.

### 10.3.2 Community Engagement and Social Inclusion

- Implement a structured stakeholder engagement plan covering all project phases.
- Ensure inclusive engagement that reaches women, youth, pastoralists, and other vulnerable groups.

- Establish and operationalize a project-specific grievance redress mechanism prior to further expansion.
- Maintain ongoing dialogue with communities to manage expectations and address concerns promptly.

### **10.3.3 Environmental Management**

- Conduct site-specific environmental screening prior to project expansion.
- Implement water-efficient irrigation and greenhouse technologies.
- Strengthen soil conservation and agrochemical management practices.
- Develop and enforce waste and effluent management plans for greenhouse and poultry operations.

### **10.3.4 Labour and Occupational Health and Safety**

- Enforce labour standards consistent with national law and international good practice.
- Provide training, protective equipment, and clear safety procedures for all workers.
- Monitor labour conditions and address non-compliance promptly.

### **10.3.5 Institutional Coordination and Capacity**

- Clarify roles and responsibilities among State institutions, Local Government Authorities, and traditional leaders.
- Strengthen coordination mechanisms for land administration, environmental monitoring, and social oversight.
- Allocate adequate resources for implementation of the Corrective Action Plan (CAP).

## **10.4 Role of the Independent Auditor**

The audit reaffirms the importance of the independent auditor's role in providing objective assessment, identifying risks, and supporting corrective action. Independence from both the State and the investor enhances the credibility of findings and recommendations and supports shared accountability among all stakeholders.

Continued engagement of an independent auditor during implementation, particularly during project expansion phases, is recommended to support adaptive management and continuous improvement.

## **10.5 Final Statement**

The Direkci Group Large-Scale Mechanized Farming and Greenhouse Project has the potential to deliver meaningful economic and social benefits to Zamfara State. Realizing this potential depends on responsible implementation that respects land

rights, protects livelihoods, safeguards the environment, and engages communities transparently.

This Environmental and Social Audit provides a structured foundation for managing risks and guiding the project toward outcomes that are consistent with FRILIA principles, national legal requirements, and international good practice. Effective implementation of the recommendations herein will be critical to securing the project's long-term sustainability and social legitimacy.