

GEF-8 REQUEST FOR CEO CHILD ENDORSEMENT/APPROVAL

TABLE OF CONTENTS

GENERAL CHILD PROJECT INFORMATION	3
Project Summary	3
Child Project Description Overview	6
CHILD PROJECT OUTLINE	9
A. PROJECT RATIONALE	9
B. CHILD PROJECT DESCRIPTION	50
Institutional Arrangement and Coordination with Ongoing Initiatives and Project.....	124
Table On Core Indicators	136
Core Indicators	136
Key Risks	142
C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES	145
D. POLICY REQUIREMENTS	148
Gender Equality and Women's Empowerment:.....	148
Stakeholder Engagement	148
Private Sector	149
Environmental and Social Safeguards	149
E. OTHER REQUIREMENTS	149
Knowledge management	149
Socio-economic Benefits	149
ANNEX A: FINANCING TABLES	153
GEF Financing Table	153
Project Preparation Grant (PPG)	153
Sources of Funds for Country Star Allocation.....	154
Focal Area Elements	154
Confirmed Co-financing for the project, by name and type.....	154
ANNEX B: ENDORSEMENT	154
Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):.....	155
ANNEX C: PROJECT RESULTS FRAMEWORK	155
ANNEX D: STATUS OF UTILIZATION OF PROJECT PREPARATION GRANT (PPG)	168
ANNEX E: PROJECT MAP AND COORDINATES	169
ANNEX F: ENVIRONMENTAL AND SOCIAL SAFEGUARDS DOCUMENTS INCLUDING RATING.....	175
ANNEX G: BUDGET TABLE	175
ANNEX I: RESPONSES TO PROJECT REVIEWS	180

General Child Project Information

Child Project Title

Financing Agrochemical Reduction and Management Plus (FARM+) in Nigeria

Region	GEF Project ID
Africa	11688
Country(ies)	Type of Project
Nigeria	FSP
GEF Agency(ies)	GEF Agency Project ID
AfDB	
Project Executing Entity(s)	Project Executing Type
Federal Ministry of Environment	Government
International Institute of Tropical Agriculture (IITA)	CSO
GEF Focal Area (s)	Submission Date
Multi Focal Area	12/19/2025
Type of Trust Fund	Project Duration (Months)
GET	60
GEF Project Grant: (a)	Agency Fee(s) Grant: (b)
7,500,000.00	675,000.00
PPG Amount: (c)	PPG Agency Fee(s): (d)
200,000.00	18,000.00
Total GEF Financing: (a+b+c+d)	Total Co-financing
8393000	200,000,000.00

Project Sector (CCM Only)

AFOLU

Rio Markers

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
No Contribution 0	Significant Objective 1	Significant Objective 1	Significant Objective 1

Project Summary

Provide a brief summary description of the project, to offer a snapshot of what is being proposed. The summary should include: (i) what is the problem and issues to be addressed? ii) as a child project under a program, explain how the description fits in the broader context of the specific program; (iii) what are the project objectives, and if the project is intended to be transformative,

how will this be achieved? and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. (max. 250 words, approximately 1/2 page)

Nigeria's agricultural sector faces a complex web of interconnected challenges that undermine both productivity and environmental sustainability. The sector's heavy reliance on unpredictable rainfall patterns and unsustainable agrochemical use creates environmental degradation while exposing farmers to health hazards and hunger. These issues are compounded by critical institutional gaps including policy-implementation disconnects despite Nigeria's commitment to international environmental agreements, severely inadequate extension services and fragmented value chains. Financial barriers further constrain transformation with limited tailored products for bio-alternatives, persistent risk perceptions among lenders, and insufficient credit guarantees particularly disadvantage smallholder farmers, women, and youth. These challenges fall unevenly along gender lines, with women and female-headed households bearing compounding structural disadvantages. Key among these include insecure land tenure, time poverty, exclusion from cooperatives, and heightened agrochemical exposure which interactively make gender-responsive intervention essential to sustainable agricultural transformation.

In response to the aforementioned issues, and in alignment with the AfDB Integrated Safeguards System (ISS) and GEF-8 standards, this project recognises local communities including vulnerable groups and custodians of traditional and local knowledge (TLK) as Potentially Affected Peoples (PAPs) and designated as primary targeted beneficiaries across all project components.

The interconnected system of environmental vulnerability, institutional weakness, financial constraints, gender mainstreaming gaps, and overlapping risks in markets and policy threatens the sustainability of the agriculture sector that is vital to Nigeria's development.

The GEF FARM+ child project therefore provides an **integrated solution framework** that addresses these systemic challenges through five complementary components. These are designed to catalyse transformation in Oyo State by integrating OYSADA supported farm settlements into the SAPZ model to provide a robust platform while establishing national replication pathways. For avoidance of doubt, the SAPZ is an AfDB/Federal Government-led programme already operational in Oyo State. FARM+ does not create new SAPZs; rather, it leverages the SAPZ infrastructure at Fasola and Ijaiye as anchors and progressively integrates the remaining OYSADA-managed farm settlements into the SAPZ's operational and value chain framework, with OYSADA playing a state-level coordination role across all nine settlements.

The Nigeria child project as an active and committed participant in the Global FARM+ Program's coordination and knowledge architecture. The project is also designed to generate multiple Global Environmental Benefits (GEBs), which are centrally tracked through GEF core indicators. This project also treats the private sector in both capacities as financier and stakeholder simultaneously. A detailed project framework is presented in Figure 1 below.

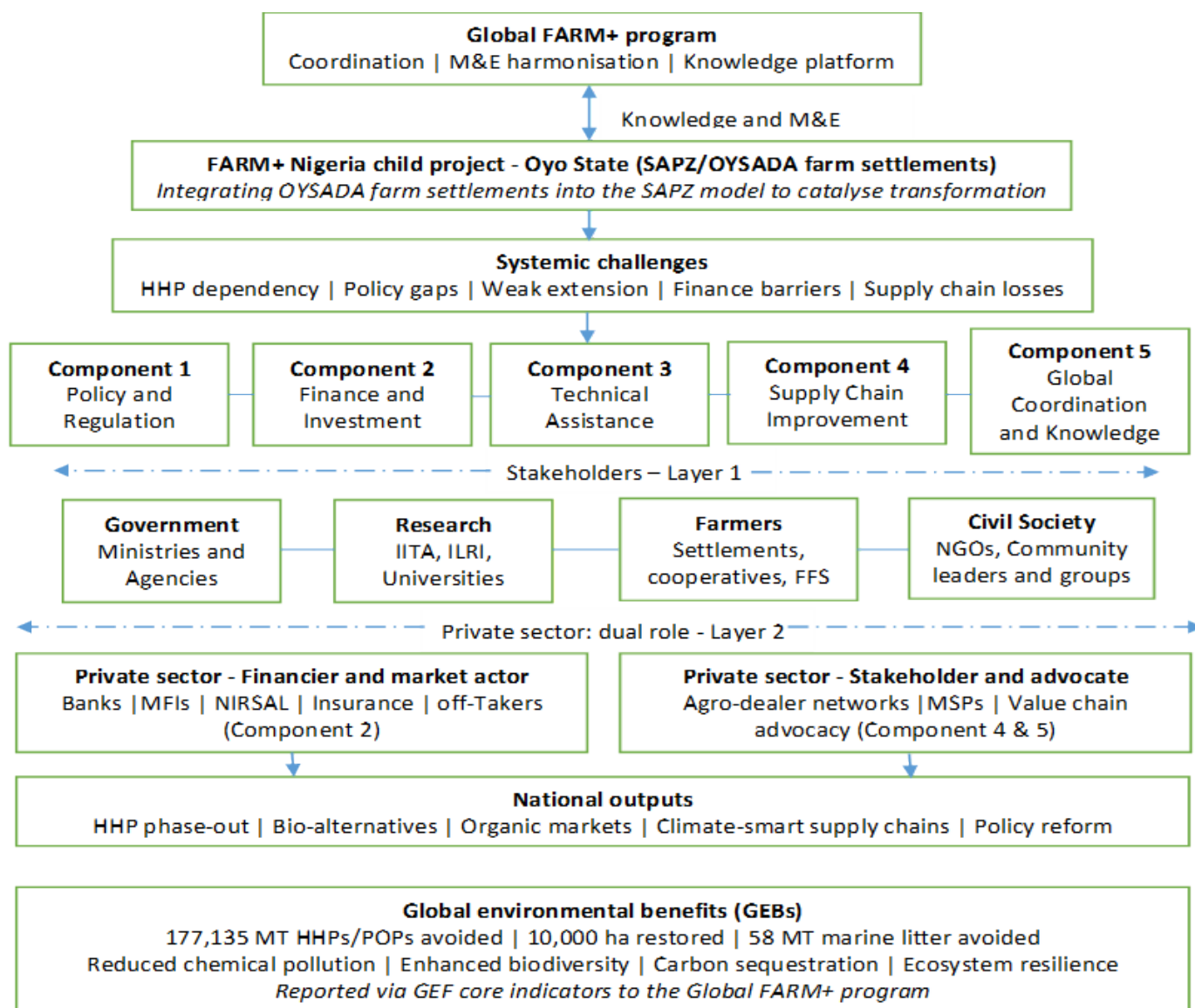


Figure 1: Detailed Project Framework

The project's integrated intervention implementation protocols will reform subsidy structures to redirect support from harmful agrochemicals toward bio-alternatives, while co-designing innovative financial products with banks and MFIs featuring NIRSAL credit guarantees and insurance products that reward sustainable practices. Demonstration plots and Farmer Field Schools will pilot and validate nature-based solutions through rigorous trials, with successful approaches institutionalized in national extension structures. The project establishes bio-alternative supply chains through trained agro-dealer networks and SME production hubs, coordinated via multi-stakeholder platforms that secure premium market access through large company off taker contracts coordinated by OYSADA.

The project advances a transdisciplinary, climate-resilient agriculture model that simultaneously addresses local environmental priorities and contributes to globally replicable pathways, with its design aligned across eleven targets of the Kunming-Montreal Global Biodiversity Framework.

Within the framework of the GCP, a robust monitoring and evaluation framework will systematically track performance metrics and generate timely reports, ensuring evidence-based course corrections and responsive intervention adjustments across the project lifecycle.

Child Project Description Overview

Project Objective

To transform Nigeria's agricultural sector by catalysing climate-smart agriculture adoption and eliminating hazardous pesticide use through integrated policy reforms, innovative financing, sustainable technologies, and strengthened value chains that enhance farmer livelihoods, protect ecosystems, and build climate resilience for nationwide scaling.

Project Components

Component 1: Policy, Regulations & Enforcement

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
750,000.00	15,000,000.00

Outcome:

Outcome 1: A cohesive policy and regulatory enabling environment supports sustainable and climate resilient agriculture.

Output:

1.1 Assessed and revised national policies and regulations promote sustainable and climate resilient agriculture

1.2 Assessed and revised regulatory and enforcement measures support sustainable and climate resilient agriculture

Component 2: Finance, Investment & Insurance

Component Type	Trust Fund
Investment	GET
GEF Project Financing (\$)	Co-financing (\$)
2,680,000.00	68,000,000.00

Outcome:

Outcome 2: Repurposed financial flows and increased access to new finance and instruments, including insurance products, stimulate a transition to sustainable and climate resilient agricultural practices.

Output:

- 2.1 Assessments of existing and promotion of alternative public financing mechanisms provide recommendations on how to redirect public financing mechanisms from degenerative practices towards sustainable and climate resilient agriculture.
- 2.2 National development and commercial banks have increased appetite and capacity to assess risks and provide loans to farmers and agricultural organizations for sustainable and climate resilient agriculture
- 2.3 National agricultural insurance providers are better equipped to offer insurance solutions to incentivize the adoption of climate resilient agricultural practices
- 2.4 Farmers have access to value chains that make it attractive and economically viable to practice sustainable and climate resilient agriculture

Component 3: Technical Assistance and Introduction of Alternatives

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
2,058,500.00	52,000,000.00

Outcome:

Outcome 3: Agricultural stakeholders have the knowledge, information, technical capacity and access to alternatives to practice agriculture that is climate resilient, nature positive and increases yields and income.

Output:

- 3.1 Digitally enhanced Farmer Support Systems (FSS), such as extension officers, agricultural associations and farmer field schools have the capacity to advise and train farmers on sustainable and climate resilient agricultural practices.
- 3.2 Farmers rely upon mobile based platforms that provide localized weather, climate, market, pest information and pest management measures, to climate proof their cropping systems and lower vulnerability to attacks
- 3.3 Sustainable and climate resilient agricultural practices have been field tested to create confidence among financial institutions, insurers, and farmers
- 3.4 Farmers have access to a supporting ecosystem that ensures long-term access to new technologies, services and inputs

Component 4: Improving Food Supply Chains

Component Type	Trust Fund
Investment	GET
GEF Project Financing (\$)	Co-financing (\$)

1,135,463.50

56,000,000.00

Outcome:

Outcome 4: Better supply chain management leads to less waste, less plastics, less GHGs and demonstrates improved product traceability.

Output:

4.1 Improved supply chain management reduces losses, GHG emissions and the use of unnecessary plastics.

4.2 Large companies purchasing agricultural products adopt value chain approaches and innovations that lead to a reduced reliance on harmful agrochemicals and plastics of the products they purchase.

4.3 Small and medium size enterprises (with a focus on women and youth led SMEs) design, manufacture and market harvest/food waste derived products.

Component 5: Global Coordination & Knowledge Dissemination

Component Type

Trust Fund

Technical Assistance

GET

GEF Project Financing (\$)

Co-financing (\$)

300,000.00

2,000,000.00

Outcome:

Outcome 5: Global access to knowledge and best practices is applied to scale up to sustainable and climate resilient agriculture.

Output:

5.1 Knowledge and lessons-learned related to all programmatic aspects are consolidated, published and regularly communicated and disseminated through various Knowledge Management platforms to stakeholders participating in FARM(+) as well as external to the programme.

M&E

Component Type

Trust Fund

Technical Assistance

GET

GEF Project Financing (\$)

Co-financing (\$)

220,000.00

2,000,000.00

Outcome:

An adaptive M&E system generates timely, sex- and age-disaggregated evidence to guide project management and demonstrate impact across all components.

Output:

M&E.1: Digital M&E dashboard operational, tracking adoption, HHP reduction, yields, income, and poisoning incidents in real-time.

M&E.2: Three-phase environmental sampling (baseline, mid-term, final and final) completed to establish a verifiable trend and support the Terminal Evaluation in attributing environmental benefits.

M&E.3: Mandatory reporting products delivered (quarterly reports, MTR, TE) in line with GEF ME/PL/03 and AfDB requirements.

M&E.4: GAP implementation tracker integrated into the M&E dashboard, with disaggregated indicators reported across all five components.

Component Balances

Project Components	GEF Project Financing (\$)	Co-financing (\$)
Component 1: Policy, Regulations & Enforcement	750,000.00	15,000,000.00
Component 2: Finance, Investment & Insurance	2,680,000.00	68,000,000.00
Component 3: Technical Assistance and Introduction of Alternatives	2,058,500.00	52,000,000.00
Component 4: Improving Food Supply Chains	1,135,463.50	56,000,000.00
Component 5: Global Coordination & Knowledge Dissemination	300,000.00	2,000,000.00
M&E	220,000.00	2,000,000.00
Subtotal	7,143,963.50	195,000,000.00
Project Management Cost	356,036.50	5,000,000.00
Total Project Cost (\$)	7,500,000.00	200,000,000.00

Please provide Justification

CHILD PROJECT OUTLINE

A. PROJECT RATIONALE

Describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth,

economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Since this is a child project under a program, please include an explanation of how the context fits within the specific program agenda. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

a) Positioning For Agriculture and Food Systems Transformation

Agriculture globally employs hundreds of millions with women comprising 43% of the agricultural workforce, yet contributes one-third of greenhouse gas emissions, drives over 60% of biodiversity loss, accounts for 70% of freshwater withdrawals, and generates widespread pollution through harmful agrochemical reliance. Between 713-757 million people faced hunger in 2023 (one in eleven globally), with smallholder farmers who produce 30% of global crops on just 25% of agricultural land experiencing a \$170 billion annual financing gap that prevents adoption of climate-resilient practices despite proven alternatives. Climate finance to small-scale agrifood systems remains strikingly low at \$5.53 billion (0.8% of total climate finance), while trillions in government subsidies continue supporting carbon-heavy industrial monoculture systems rather than sustainable alternatives, creating a paradox where those most vulnerable to climate impacts lack access to adaptation support.

Sub-Saharan Africa faces escalating climate hazards including floods, droughts, storms, and landslides that damage infrastructure, destroy crops, and cause food insecurity, with projections indicating increased mean temperatures, intensified heat waves, extended droughts across southern regions, and heavier rainfall intensity increasing flood exposure. One in five Africans experienced food insecurity in 2023, with climate change exacerbating land degradation affecting 24% of land globally where 1.5 billion people depend directly on degraded soils for survival.

Despite proven climate-resilient agricultural practices demonstrated in the region through agro ecological approaches utilizing local genetic diversity, soil enhancement, polyculture systems, agroforestry, and integrated pest management, financial systems fail to incentivize adoption, leaving smallholders disconnected from certified value chains, crop insurance, and affordable credit.

Nigeria's agricultural sector, employing millions in rural communities with yields averaging below 1t/ha for major crops, faces severe climate vulnerability through delayed rainy seasons followed by intense rainfall creating simultaneous flooding and drought risks. Over 70% of farmers utilize indigenous farming knowledge demonstrating exceptional climate resilience and biodiversity preservation, yet widespread harmful agrochemical use driven by yield pressures and lack of alternatives generates health costs with women pesticide applicators (up to 85% of workers in some regions) facing heightened exposure risks. Post-harvest losses averaging 40%, rural youth migration due to limited opportunities, and over 70% export rejection rates due to pesticide residues compound challenges. Existing scalable initiatives like NIRSAL de-risking and NAIC insurance remain insufficient without redirected subsidies, policy alignment, and multi-stakeholder coordination.

Despite facing similar challenges, proven climate-resilient alternatives exist in Nigeria especially in SPAZs, including agro ecological approaches that utilize local crop varieties, enhance soil organic matter, integrate agroforestry, and employ integrated pest management. In most areas of Nigeria, over 70% of farmers use indigenous farming knowledge that demonstrates exceptional climate resilience and biodiversity preservation. However, these sustainable practices remain underutilized due to insufficient financial incentives, policy barriers, and siloed institutional approaches.

Going forward, Nigeria's agricultural transformation requires multi-stakeholder coordination, redirected subsidies toward sustainable practices, and inclusive policy frameworks that engage farmers, women,

youth, and indigenous communities in decision-making processes, while encouraging the design and uptake of green technologies

The multiple and complex challenges described above highlight the need for a multi-stakeholder, systems-based approach to ensure that the proposed solutions are fully owned by relevant stakeholders, and they may be sustained and scaled over time with the necessary foundation provided by aligned policy, finance and institutional capacities. This is where the FARM+ program aims to focus a significant part of its interventions.

To support the transition to green agribusiness, Figure 2 traces the key drivers affecting agile agribusiness transformation at the various levels of decision-making processes in relation. This allowed for the identification of convergent and divergent points in formulating the strategic green agribusiness framework that shall guide the future of this project.

[image found in expanded project rationale]

Figure 2: Connection of drivers for transitioning to agile green agribusinesses

Source: Agency's Analysis (2025)

Understanding how the aforementioned processes are executed through the interconnected levels from the individual farms, cooperatives, SMEs and State structures through to the overall State and Federal economies was essential for this project design since it provided cross-cutting evidence on where the transformation support is needed to be strengthened the most.

The child project addresses these interconnected global-African-Nigerian challenges by establishing a replicable model within the SAPZ framework that redirects Nigeria's agricultural subsidies from harmful agrochemicals toward proven nature-based solutions. This shall be reinforced by mobilizing domestic and international finance through innovative products co-designed with NIRSAL and banking institutions to close the smallholder financing gap, while strengthening women and youth entrepreneurs to manufacture locally-produced bio-alternatives from agricultural waste. While the SAPZ provides existing agro-processing infrastructure, FARM+ delivers three distinct additions not currently present in the SAPZ ecosystem: (i) a structured bio-alternative supply chain linking bio-pesticide producers to farmer cooperatives; (ii) a dedicated Green Agribusiness Revolving Fund targeting HHP-free production systems; and (iii) solar-powered cold storage infrastructure co-located with SAPZ hubs to reduce post-harvest losses currently estimated at 40–50% for perishable crops.

This approach addresses both climate mitigation and economic inclusion, validates climate-resilient practices through rigorous field trials that build financier confidence and inform policy mainstreaming, reduces post-harvest losses and export rejections through improved supply chain infrastructure and certification systems, and establishes multi-stakeholder governance platforms that scale Nigerian innovations nationally while contributing lessons to global knowledge systems. The overarching pathway is to demonstrate how aligned policy, finance, and institutional capacity can transform subsidy-dependent chemical agriculture into profitable, climate-resilient, biodiversity-positive systems that enhance food security while reducing the triple planetary crisis.

a) Baseline Conditions in Nigeria's Agri-Food Systems

Agriculture represents a cornerstone of Nigeria's economic architecture and national development strategy. With over 200 million citizens and a population projected to exceed 350 million by 2050, Nigeria's agricultural transformation is not merely an economic imperative but a national security priority. The baseline analysis of the sector shows both challenges and opportunities across value chains and locations.

▪ Economic Significance and Structural Position of Agriculture and Agribusiness Sector

Driven by successive policy interventions mainly since 2000, agriculture remains fundamentally important to Nigeria's economy, with each government attempting to revamp the sector through redesigned policies. The sector's contribution has evolved from 57% of GDP in the 1960s to its current level of approximately 24%, reflecting the oil economy's emergence while maintaining critical economic relevance. Agriculture also accounts for up to 35% of total employment, providing livelihoods for most Nigerians and generating millions of jobs. The sector is characterized by 80% smallholder farmers operating with inadequate inputs, obsolete technology, limited knowledge of high-value products, weak market linkages, and inefficient value chains.

Approximately 15-30 million smallholder farmers produce an estimated 95% of the country's agricultural output, with average farm sizes at 1.8 hectares. Nigeria's agricultural value chain, though underdeveloped, is estimated at \$85 billion, with the country holding 13% of Africa's 60% share of global uncultivated arable land. This translates to 82 million hectares total, of which only 34 million are currently cultivated. Within this smallholder landscape, gender inequality functions as both a structural development constraint and a driver of environmental vulnerability.

Despite their substantial contributions to agricultural production and natural resource management, women face compounding barriers including limited land rights, restricted mobility, and unequal access to extension services and financial decision-making. These barriers reduce their capacity to adopt climate-smart practices or influence environmental governance. Youth, particularly young women, face additional layers of marginalisation. Addressing these disparities is central to ensuring agricultural initiatives deliver gender-transformative outcomes rather than entrench existing inequalities. In response to stakeholder validation feedback, the project formally records its commitment to a minimum 40% gender-responsive targeting threshold for women and youth across all components, with the current design exceeding this at 42%. Dedicated budget allocations for gender activities have been itemised as standalone budget lines within the project's financial plan to ensure accountability and prevent gender interventions from being absorbed into general project costs.

The sector comprises four primary subsectors of crop production (the largest component), livestock, forestry, and fishing. Major crops include rice, maize, cassava, sorghum, groundnut, and yam, with 70% of households engaged in crop farming. Nigeria's export portfolio historically included palm oil, cocoa, rubber, and groundnuts before oil dominance shifted economic priorities. Figure 3 below shows the trends in the contribution of agriculture to GDP in Nigeria since 1981 (Work Bank, Online)^[1].

[image found in expanded project rationale]

Figure 3: Agriculture Economic Contribution (% of GDP) - 1981 to 2024

Despite being one of Africa's leading agricultural producers, Nigeria loses up to 40% of its food production annually due to inefficiencies in processing, storage, and distribution. This massive post-harvest loss exacerbates food insecurity while reducing farmer incomes. As such, the country has paradoxically shifted from net food exporter to net food importer, with agricultural imports surging 30% to N920 billion in Q1 2024, highlighting structural challenges in meeting domestic demand.

The sector faces multidimensional constraints including limited mechanization, insufficient irrigation infrastructure (affecting productivity during dry seasons), inadequate access to quality inputs and improved seed varieties, fragmented landholdings, weak extension services, and critically limited financial access. Additionally, less than 5% of banks' credit is granted to agriculture, with lack of access to traditional bank finance remaining a major development challenge.

Most smallholder farmers remain unbanked, creating barriers to formal financial services, digital payments, and reinvestment capital. Overall value chain inefficiencies are common in the sector. Multiple intermediaries including middlemen reduce farmer profit margins, transportation infrastructure remains inadequate, cold chain and processing facilities are insufficient, and market linkages remain weak. Climate change compounds these challenges through irregular rainfall patterns, temperature extremes, droughts, and flooding events that reduce crop resilience and yields.

However, strategic opportunities exist if policy direction is aligned with these challenges. Nigeria's agricultural transformation requires integrated approaches addressing the entire value chain from inputs through processing to market access. Success has been recorded in recent government interventions include the Central Bank's Anchor Borrowers' Programme (ABP) linking smallholders with agro-processors, the Presidential Fertiliser Initiative (PFI) improving input access, and the Mass Agricultural Programme (MAP) targeting comprehensive and prioritised value chain development.

Profiling Strategic Crop Enterprises

The FARM+ project targets crop-based agricultural systems only. Livestock production systems are not explicitly included in the project boundary but shall benefit from the spill over effects of the project which shall also support livestock enterprises especially by providing feed. The seven priority crops include cassava, yam, maize, vegetables, soybean, sesame, and ginger. These were selected based on their combined pesticide burden, post-harvest loss rates, and export market relevance, as documented in the baseline assessment.

To reinforce the aforementioned value chain development opportunities space across multiple crops, development finance institutions and emerging agritech platforms are increasingly bridging financing and market access gaps through digital solutions, though scale remains limited. These are areas where the FARM+ child project can leverage to pilot the designing of innovative financing, green technologies, and rapid testing facilities for pesticide residues. A snapshot of the production patterns, hotspot areas, and main challenges is shown in Table 1 below.

Table 1: Top Crops in Nigeria: Production, Regional Distribution, and Main Challenges

Crop	Total Production (10 year trend)	Regional Distribution Pattern	Main Challenges
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1. Cassava	▪ Approximately 50 million tonnes annually from 3.7 million hectares ▪ Peak production: <i>Approximately 63 million tonnes (2021) - 20% of world production & 59 million tonnes (2017)</i>	▪ Concentrated in South and North Central areas due to humid region with drained and moist soils allowing deep root penetration ▪ Benue and Kogi in North Central are largest producers	▪ Pests and diseases especially Cassava mosaic disease (CMD), cassava bacterial blight (CBB) ▪ Limited access to quality planting materials, climate change, poor market access, inadequate storage facilities. ▪ Climate change with altered rainfall patterns and increased temperatures
2. Yam	Over 47 million tonnes annually - Nigeria accounts for over 70% of world yam production	▪ Major production in North Central zone ▪ Benue, Kogi, Nasarawa, Plateau, and Southern states dominate production	▪ Pest and disease attacks (56.3%), climate variability/change (27.5%), high cost of seed yam (13.8%), and high labour cost ▪ Anthracnose disease causing 50-90% yield losses in severe cases ▪ High postharvest losses, weed pressure, decline in soil fertility, soil-borne pests and diseases, storage pests, high labour costs ▪ Yam beetles, nematodes, fungal rots, storage losses, land scarcity and soil depletion
3. Rice (milled)	4.0 million metric tonnes (2018) and Over 9 million metric tonnes from 2019 to date	▪ Top producing states are Kogi, Kwara, Benue, Kaduna, Niger, Kebbi ▪ Grown across all zones but concentrated in North and Middle Belt	▪ Pests including stem borers, rice bugs, rats; diseases such as blast, sheath blight, bacterial leaf blight, rice yellow mottle virus (RYMV) and brown spot ▪ 37% of rice grain yield lost to pest and diseases annually ▪ Weather and climate risks, drought, inadequate fertilizers, lack of storage and processing facilities, low capital for investment, poor access to credit ▪ Termites causing 50-100% yield losses, African rice gall midge (ARGM)
4. Maize	▪ Major staple - 50% of farming households grow maize ▪ Largest domestically produced field crop	▪ Distributed across North and Middle Belt Southern regions also significant producers ▪ Intercropped with root or tuber crops in South	▪ Striga parasite (60-74% infestation rates, causing 30-60% yield losses); Fall Armyworm (FAW) - most destructive invasive pest; Stem borers causing 20-40% field losses and 30-90% postharvest and storage losses ▪ Low soil fertility, pests and diseases, drought, unavailability of improved germplasm, weeds, low market prices, uncertain market access
5. Sorghum	6.9 million tonnes from 5.4 million hectares - Nigeria is world's 2nd largest producer	▪ Semi-arid northern regions mainly cultivate cereals like	▪ Limited production inputs, drought stress, Striga infestation, bird damage https://www.statista.com/statistics/1134510/production-of-milled-rice-in-nigeria/

	after USA	sorghum and millet ▪ Sudan savanna, Northern and Southern Guinea savanna zones are major producers	▪ Cost of fertilizer, inadequate capital, cost of labour, inadequate improved seeds, pest and diseases, weed infestation, inadequate extension workers ▪ Insecurity from banditry and insurgency (tall sorghum creates visibility risks), tolerance to Striga and sorghum long smut needed ▪ Yields often less than 1 ton per hectare, far below potential of 2.5-3.5 tons per hectare
6. Soybeans	▪ Significant growth from 2014-2024, with highest growth in 2015 (46% increase) ▪ Production reached 1.25 million tonnes in 2021-22 (43% increase from previous year) ▪ Area harvested: 1.2 million hectares ▪ Exports forecast to jump from 7,000 MT (2023/24) to 212,000 MT (2024/25) ▪ Average yield: 1.2 MT/ha (below potential)	▪ Concentrated in North-Central and Northern regions (subhumid and semiarid savanna) ▪ Benue State dominates with 21% of total production ▪ Other major producers: Kaduna (9%), Kano (7%), Niger (6%), Taraba (6%), Adamawa (5%), Kwara (5%), Gombe (5%) ▪ Growing shift to southern production due to security challenges in the North	▪ -Low yields due to high seed costs and scarcity of superphosphate fertilizers ▪ Climate change impacts, nutrient depletion, soil fertility decline ▪ Emergence of pests and diseases ▪ Smallholder farming (average 1 hectare, non-mechanized) ▪ Supply-demand gap with rising poultry industry needs ▪ Limited improved cultivars ▪ Security challenges (Boko Haram, farmer-pastoralist conflicts) affecting northern production
7. Vegetables (General)	▪ Growth from 3.11 million MT (1970) to 15.7 million MT ▪ Expected to reach 16.4 million MT by 2028 (from 16.2 million MT in 2023) ▪ Growth rate: 3.83% over last 10 years	▪ Tomatoes: Northern states (Kano, Kaduna, Jigawa, Plateau, Katsina); Southern states (Oyo, Ogun, Osun, Lagos) on smaller scale ▪ Peppers: Second most cultivated vegetable; Southwest and Northern states	▪ Climate change (erratic rainfall, rising temperatures, extreme weather) reducing yields ▪ Pest and disease pressure intensified by warmer, humid conditions (Fall Armyworm, Tuta absoluta, ginger fungus) ▪ Post-harvest losses exceeding 45% for tomatoes due to poor handling and inadequate cold storage ▪ Infrastructure deficiencies (water, electricity, transportation, poor roads) ▪ Traditional farming methods, insufficient technology ▪ Limited access to credit and high input costs

	▪ Recent decline: 0.3% yearly since 2019 ▪ Shift towards organic and locally sourced produce	▪ Onions: Over million tonnes annually mainly produced in Kano, Kaduna, Jigawa, Sokoto, Plateau, Bauchi, Kebbi ▪ Ginger: Over 300,000 tonnes (3rd globally) mainly produced in Kaduna, Bauchi, Benue, Gombe, Nasarawa ▪ Carrots: Northern regions (Zaria, Sokoto, Kano, Jos) dominate production	▪ Shortage of planting supplies and inadequate extension services ▪ Land ownership issues and lack of post-harvest facilities
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- Nigeria accounts for more than a quarter of pesticides used in Africa, with utilization growing 70% from 33,968 tons in 2012 to 57,822 tons in 2022. More than 50% of pesticides used are no longer authorized in the European Union market due to harmful environmental and health effects. However, banned agrochemicals containing active ingredients like Atrazine are still sold openly in Nigerian markets despite NAFDAC regulations. Nigeria initiated a four-year phase-out plan for Paraquat and Atrazine products in 2020, considering the health risks these HHP products pose. Worryingly, 83.3% of the 30 active ingredients commonly used in Nigeria are categorized as Highly Hazardous Pesticides (HHPs), with many banned in Europe but still widely available. An analysis of crop production and agrochemicals utilisation is critical for understanding the patterns and areas where the FARM+ can target for intervention.

- 1) **Cassava:** Nigeria produces approximately 50-63 million tonnes annually over the past decade and account for 20% of world production. The major producing zones are North Central and Southern regions, which however face challenges from cassava mosaic disease, bacterial blight, climate change, and inadequate storage facilities.

Organophosphate pesticides such as chlorpyrifos are commonly reported on cassava crops, and the most common pesticides used include atrazine, chlorpyrifos, paraquat dichloride, glyphosate, and cypermethrin Statista. Herbicides like Atrazine and Metolachlor combinations are applied as selective pre-emergence and early post-emergence treatments to control annual grasses and broadleaf weeds in cassava at 4-5 litres per hectare. Of concern is that 83.3% of the 30 active ingredients commonly used in Nigeria are categorized as Highly Hazardous Pesticides (HHPs), with many banned in the European Union but still widely used by Nigerian farmers.

- 2) **Yam:** Nigeria dominates global production with over 47 million tonnes annually which is 70% of world supply concentrated in North Central states like Benue and Kogi. The crop is however though

threatened by pest attacks with 56.3% of farmers affected annually. Additionally, anthracnose disease also causes up to 90% yield losses, and high postharvest losses.

Approximately 70% of yam farmers in Nigeria apply pesticides, and systemic herbicides are used for long-term control of broadleaves and grasses in yam at 4-6 litres per hectare. Dichlorvos is used as both a household and agricultural insecticide on crops, with over 35 agricultural pesticides and insecticides containing Dichlorvos registered between 2017 and 2019. This occurs despite them being banned in India, Canada, China, Argentina and the EU since 2006, representing the widespread use of HHPs in yam production.

- 3) **Rice (milled):** Production of rice grew from 4.0 million metric tonnes in 2018 to over 9 million metric tonnes in 2024, primarily in Kogi, Kwara, Benue, Kaduna, Niger, and Kebbi states. However huge losses of approximately 37% of grain yield annually occurs due to pests and diseases including stem borers, blast, and the African rice gall midge.

Over 70% of rice farmers in Nigeria utilize pesticides, with selective systemic post-emergence herbicides containing Bispyribac-Sodium applied at 500ml per hectare to control grasses, sedges, and broadleaved weeds. Herbicides are the most common type of pesticide used in Nigeria at 48.3%, followed by insecticides at 23.5% and fungicides at 28.2% Bowagate Global. However, more than half of all pesticide products registered in Nigeria have been withdrawn from the European market or are heavily restricted, highlighting extensive HHP use in rice cultivation.

- 4) **Maize:** The crop is Nigeria's largest domestically produced field crop grown by 50% of farming households across North, Middle Belt, and Southern regions. Maize faces severe threats from Striga parasite causing 30-60% yield losses, Fall Armyworm as the most destructive invasive pest, and stem borers causing up to 90% storage losses.

Organophosphate pesticides such as chlorpyrifos are commonly used on maize crops, and selective pre-emergence and early post-emergence herbicides containing Atrazine and Terbutylazine are applied at 4-5 litres per hectare to control annual grasses and broadleaf weeds. Chlorpyrifos is registered in over 42 agricultural insecticides and insecticide brands in Nigeria between 2017 and 2019, though it has been banned in the EU since 2020 and was banned by Nigeria's Federal Ministry of Agriculture on March 7, 2022. However, it continues to be used as an HHP by many farmers.

- 5) **Sorghum:** Nigeria ranks as the world's 2nd largest producer after the USA with 6.9 million tonnes from 5.4 million hectares in semi-arid northern regions, but yields remain below 1 ton per hectare (far below the 2.5-3.5 ton potential) due to drought stress, Striga infestation, insecurity from banditry, and inadequate inputs.

Organophosphate pesticides such as chlorpyrifos are reported on sorghum crops, with systemic selective pre-emergence herbicides containing 800g/kg Atrazine applied at 4kg per hectare to control annual grasses and broadleaf weeds. Pre-emergence herbicides like pretilachlor plus dimethametryne at 2.5 kg active ingredient per hectare and post-emergence herbicides like cinosulfuron at 0.05 kg per hectare have proven effective for weed control in sorghum. Though Nigeria initiated a four-year phase-out plan for Paraquat and Atrazine products in 2020 considering the health risks these HHP products pose, they are still used abundantly.

- 6) **Soybeans:** Despite impressive growth and increasing exports, production remains constrained by low mechanization, poor yields, and the predominance of smallholder farms. The shift from northern to southern production reflects ongoing security challenges in traditional growing areas.

Selective pre-plant incorporated and pre-emergence herbicides are active against annual grasses and broad-leaf weeds in soybeans at application rates of 2-3 litres per hectare, and pre-emergence herbicides are used to control weeds in soybeans at 3-4 litres per hectare. Synthetic pyrethroid insecticides are popular for controlling insects in soybeans and vegetables, and Dichlorvos containing 1000g/litre is used both for stored produce protection and as a public hygiene product, despite being a recognized HHP.

- 7) **Vegetables:** While Nigeria has substantial vegetable production capacity and diversity, the sector faces critical challenges in post-harvest management and climate resilience. The recent production decline (0.3% annually since 2019) signals urgent need for intervention in storage, processing, and climate-smart agricultural practices.

About 40.5% of tomato growers harvest within 5 days after pesticide application, with 12% harvesting within 3 days. This raises serious concerns about pesticide residues on produce. Pre-emergence herbicides are used to control weeds in tomatoes and peppers at 3-4 litres per hectare Statista, while contact and systemic insecticides are applied on vegetables, tomatoes, and cabbage. Vegetable growers use contact insecticides including dimethoate, carbaryl, cypermethrin, deltamethrin, and lambda cyhalothrin, as well as systemic insecticides like imidacloprid, many of which are HHPs. At one point, approximately 80% of vegetable samples from Port Harcourt markets contained detectable pesticide residues, of which 70% exceeded maximum residual limits, indicating widespread HHP contamination.

Approximately 99% of farmers use agrochemicals in their farming in Nigeria, primarily inorganic fertilizers and pesticides to increase production at 69%. However, most farmers using agrochemicals do not follow the recommended guidelines for applying these chemicals. A study showed that 65% of farmers reported they could not read agrochemical application instructions, 92% were exposed to agrochemicals during application, and 73% reported falling sick after exposure. This demonstrates the severe safety challenges with widespread HHP usage across all Nigerian crops.

Overall, the production of crops in Nigeria is affected by an array of challenges some of which shall be targeted by the FARM+ child project. These crosscutting issues have sustained the use of HHPs by farmers.

1. **Climate Change Impact:** Climate change has significantly disrupted agricultural productivity in Nigeria, with erratic rainfall, rising temperatures, and extreme weather events leading to reduced crop yields, increased pest and disease pressure, and land degradation.
2. **Pests and Diseases:** Climate change is driving the spread of pests and diseases in Nigeria, as warmer temperatures and increased humidity create ideal conditions for infestations. The fall armyworm, a pest previously not found in Nigeria, has become a major threat to maize production, and outbreaks of diseases like Tuta absoluta and ginger fungus in May and December 2023 caused farmers to lose significant crops.
3. **Post-Harvest Losses:** The level of PHL across major crops in the country approximately 25%, with over 45% of fresh tomato produced in Nigeria is lost due to poor handling practices, inadequate cold storage and transportation facilities.
4. **Infrastructure Deficiencies:** Farmers, especially those in rural areas, often have limited access to basic amenities such as water, electricity, and transportation, and the poor state of Nigeria's rural feeder roads makes it difficult for farmers to transport their produce to the market.

5. **Traditional Farming Methods:** Identified limiting factors include insufficient expertise and technology in production, shortage of planting supplies, issues with land ownership, inadequate extension services, and lack of post-harvest facilities.
6. **Financial Constraints:** Farmers face limited access to credit, high input costs, and challenges in adopting modern farming technologies and improved seed varieties.

Going forward, the sector's modernization demands strategic investment not only in irrigation and water management systems but also mechanization appropriate for smallholder contexts that enables reduced use of harmful agrochemicals through green practices. This should also extend to post-harvest infrastructure including storage and processing facilities; transportation and cold chain logistics; and agricultural research and extension services. Progressively, the transformation pathways should also embrace digital platforms connecting farmers to inputs, finance, information, and markets; and low cost value addition through agro-processing industrialization.

For strategic planners and policymakers, HPPs free agriculture that is transformed towards agribusiness and market-driven approaches represents Nigeria's most immediate opportunity for inclusive economic growth, youth employment generation, foreign exchange conservation through import substitution, and poverty reduction across rural communities where extreme poverty remains concentrated. Leveraging the sector's transformation from subsistence-oriented production to commercially viable, technology-enabled value chains will determine Nigeria's capacity to feed its growing population with healthy and pesticides residue free food, create millions of jobs, and achieve sustainable development objectives in an era of climate uncertainty.

○ **Consolidated Priority Crops for the FARM+ Project**

The crops included in the FARM+ Project have been categorized into two strategic tiers: Core crops and potential crops for piloting. This classification reflects the current state of agricultural practice in Oyo State, market readiness, and the project's phased implementation strategy. The project shall build upon existing empirical evidence demonstrating the positive relationship between precision agrochemical application and crop productivity gains. Evidence from IITA and partner institutions' prior research and project evaluations has been incorporated into the project's baseline narrative, Theory of Change, and indicator benchmarks. The project shall generate and document new impact evidence through its MEL system, contributing to the growing body of knowledge on the productivity, health, and environmental outcomes of sustainable agrochemical management in smallholder farming systems.

Tier 1: Core Crops (*crops with established production base and state-wide significance*)

1. **Cassava:** has been designated a core crop given its status as a fundamental staple food and its near-universal cultivation across all farming communities in Oyo State. Its widespread adoption makes it a critical crop for food security and smallholder livelihood support.
2. **Yam:** is a culturally and economically significant crop cultivated across Oyo State, with particularly high production density in the Oke-Ogun agricultural zone. Its importance to rural livelihoods and local food systems firmly justifies its inclusion as a core crop.

3. Maize: included as an essential staple crop, maize is cultivated in every Local Government Area of Oyo State. Its dual role in food consumption and agro-industrial processing makes it a strategic core crop for intervention under the FARM+ Project.
4. Soybean: the crop's production is currently a focal point of the Oyo State Agricultural Development Authority (OYSADA), which is actively supporting large-scale production through the distribution of agricultural inputs including fertilizers, certified soybean seeds, and herbicides. This institutional backing positions soybean as a high-impact core crop for productivity enhancement under the project.
5. Vegetables (including tomatoes): they represent a high-priority commodity cultivated by youth farmers across all 33 Local Government Areas of Oyo State. The Ogbomoso region accounts for a substantial share of the state's tomato output, underscoring the crop's economic importance and its potential for value chain development.
6. Cocoa: this is reaffirmed as a core crop following the recent launch of the Cocoa Rebirth Initiative by the Governor of Oyo State. This initiative, launched in February 2026, signals strong political will and institutional commitment to revitalizing cocoa production, making its inclusion in the FARM+ Project both timely and well-aligned with the state's agricultural transformation agenda.

Tier 2 - Potential crops for piloting: Sesame and Ginger (designated trial crops for early adopters targeting export markets)

While Sesame and Ginger are not currently among the widely cultivated crops in Oyo State and do not yet feature in the raw material supply chains of local agro-industries, they have been identified as high-value potential crops with significant strategic merit for the FARM+ Project. Both crops are hereby designated as trial crops for early adopters, to be introduced through a structured piloting framework with the following objectives:

- **Export Market Orientation:** Sesame and Ginger command strong and growing demand in international markets, particularly in Asia, Europe, and North America. Their inclusion as pilot crops positions Oyo State farmers to begin tapping into premium global commodity markets.
- **Organic Certification Program:** Given that these crops have minimal existing cultivation history in the state, they present a unique opportunity to introduce production systems that are organic from inception. Pilot farmers will be enrolled in an organic certification pathway, enabling access to higher-value export markets and premium pricing.
- **Farmer Field School (FFS) Integration:** Sesame and Ginger will serve as flagship learning crops within the FARM+ Farmer Field School curriculum. Early adopters will participate in structured, hands-on training covering agronomy, post-harvest handling, quality standards, and export compliance requirements, generating knowledge and best practices that can be scaled across the state.

This phased and deliberate approach ensures that the introduction of Sesame and Ginger is evidence-based, risk-managed, and anchored in market opportunity, therefore laying a strong foundation for their potential elevation to Core Crop status in future project cycles and expansion to other States.

Leveraging the aforementioned insights from literature evidence and discussions with stakeholders, the project analysis therefore further identifies crops across three distinct intervention pathways that were explored by the stakeholders during the engagement phase:

- **Pathway 1: Post-Harvest Infrastructure and Loss Prevention:** The discussions about strategic pilots and interventions named cassava, yam, soybean, maize, and vegetables as the 'five priority crops' targeted

for reducing post-harvest losses by 30–50% through hermetic storage, solar dryers, and aflatoxin-free processing.

- Pathway 2: Organic Agriculture Policy and Market Development: Reflections with stakeholders identified cocoa, vegetables, sesame, and maize as the value chains through which organic certification and HHP elimination are to be driven while exploring traceability and premium market linkages. University demonstration farms are targeted for showcasing crop-specific IPM for maize, cassava, vegetables, cocoa, sesame, and ginger.
- Pathway 3: IPM and Bio-Pesticide Demonstration: There was consensus that a Demonstration Plot Network at Fasola Hub shall be developed specifically targeting cassava, soybean, and vegetables as the crops for the 10-hectare flagship demonstration plots.

The analyses notes that cassava, yam, maize, soybean, and vegetables are the most extensively covered since they appear across multiple components and pathways. Cocoa, sesame, ginger, and cashew are primarily in the traceability and organic market development pathways, reflecting Oyo State's ambitious export crop profile. The crops listed below reflect what is grown and commercially significant within Oyo State's agro-ecological zone leveraging institutions such as IITA, ILRI, and extension systems, but also scalable to other zones. After pulling together all the discussions with stakeholders including IITA, ILRI, Federal Ministries, farmers and farmer associations, the crops the project will address are listed in Table 2 below:

Table 2: Priority crops for the FARM+ project^[2]

Crop	Pathway and context	Project component and output	Key interventions proposed for the FARM+ project
TIER 1 EXISTING CROPS TO BE PILOTED FOR FOOD SECURITY AND COMMERCIALISATION			
Cassava	Post-harvest, IPM demos, organic manuals	Component 4, Output 4.1	▪ Hermetic storage, solar dryers, aflatoxin-free processing, bio-packaging (cassava starch).
		Component 3, Output 3.3	▪ Side-by-side IPM vs HHP trials; Beauveria bassiana and botanical extracts.
		Component 1, Output 1.2	▪ Crop-specific IPM manual; organic certification; compost application.
		Component 4, Output 4.3	▪ Cassava waste used for bio-packaging, animal feed, biochar; youth and women SMEs
Yam	IPM and bio-pesticide demos; post-harvest loss prevention; organic agriculture and market development	Component 3, Output 3.3	▪ Side-by-side IPM vs HHP trials targeting Dichlorvos and systemic herbicide replacement; Beauveria bassiana and botanical extracts for yam beetles and nematodes; anthracnose bio-fungicide protocols
		Component 4, Output 4.1	▪ Hermetic and ventilated storage to reduce storage pest losses; solar dryers; aflatoxin-free processing zone; equipment leasing for mechanical handling to reduce bruising losses
		Component 1, Output 1.2	▪ Organic production manuals covering yam-specific IPM (anthracnose, yam beetles, nematodes, fungal rots); group

			organic certification with OYSADA; premium domestic & export market linkage
Maize	Post-harvest, organic certification, IPM demos	Component 4, Output 4.1	▪ Hermetic storage; solar dryers; aflatoxin-free zone; equipment leasing (6 sites). ▪ Group organic certification (50% cost subsidy);
		Component 1, Output 1.2	▪ OYSADA brokered contracts; IPM manuals
Soybean	Post-harvest, IPM demos	Component 4, Output 4.1	▪ Hermetic storage; solar dryers; aflatoxin-free zone; warehouse receipt system
		Component 3, Output 3.3	▪ Side-by-side IPM vs HHP trials; push-pull systems; bio-input procurement
Vegetables (including tomatoes)	All three pathways supported by institutional procurement	Component 4, Output 4.1	▪ Solar cold rooms; mobile refrigerated transport; rapid residue testing at Fasola lab
		Component 1, Output 1.2	▪ Institutional procurement quota (hospitals, schools, barracks); 10% price premium; Shoprite/SPAR supplier programme
		Component 4, Output 4.2	▪ HHP-free registry; QR batch tracking; weekly quality testing; export market linkage via NEPC
		Component 3, Output 3.3	▪ IPM package; organic production manuals; climate-adapted varieties
Cocoa	Organic certification and market development	Component 1, Output 1.2	▪ Organic certification; collective bio-input procurement; IPM manuals; premium market access
		Component 4, Output 4.2	▪ QR traceability; HHP-free registry; tripartite farmer-OYSADA-exporter contracts
TIER 2 CROPS TO BE INTRODUCED AND PILOTED FOR EXPORT MARKET AND ORGANIC CERTIFICATION			
Sesame	Organic certification and market development	Component 1, Output 1.2	▪ Organic certification; IPM integration; premium domestic and export market access ▪ QR traceability; NEPC export facilitation; HHP-free
		Component 4, Output 4.2	▪ buyer contracts
Ginger	Organic production manuals and certification	Component 1, Output 1.2	▪ Organic production manuals; IPM pest management (fungal disease focus)
		Component 4, Output 4.2	▪ HHP-free registry; export market linkage

Cashew	Organic certification and market development	Component 4, Output 4.2	QR traceability; premium buyer contracts; HHP-free certification; NEPC export facilitation
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[2] *All sites are within Oyo State. The project is designed as a replication model for scale-up to additional Nigerian states.*

▪ **The Overall State of Food Supply Chains in Nigeria**

Nigeria's food supply chain is characterized by severe structural inefficiencies that generate economic losses estimated at ₦3.5 trillion annually and contribute directly to widespread food insecurity affecting over 30 million people. Despite producing approximately 55 million metric tonnes of food annually, the country loses 40-50% of fresh produce, 60% of tubers, fruits and vegetables, and 20% of fish and grains to post-harvest losses. This paradox of simultaneous hunger and massive food waste reflects deep systemic failures across infrastructure, technology, financing, and policy coordination that prevent smallholder farmers from accessing markets and consumers from accessing affordable, nutritious food. A generic value chain structure for Nigeria is presented in Figure 4 below building on the preliminary consultations with key stakeholders and a review of existing literature. This shall be adjusted to conform to the strategic value chains targeted for this project during implementation.

The baseline value chain analysis shows that Nigeria's infrastructure remains in a state of disrepair, with roads, rail networks, and ports unable to support efficient food movement. Small-scale farmers representing over 70% of the agri-food supply chain have severely limited market access due to the absence of urban-rural freight networks and long-term logistics planning between strategic locations. As of 2020, local transport costs in Lagos were ten times higher than in Durban, South Africa, and Tema, Ghana. Poor rural road networks delay produce movement from farms to markets, resulting in spoilage, financial losses, and reduced farmer incomes before goods even reach consumers. However, some work is being done to construct feeder roads that can reduce the logistics burden for the rural farmers.

[image found in expanded project rationale]

Figure 4: Preliminary crosscutting value chain dynamics in Nigeria

Source: Consultants' analysis (2025)

Post-harvest losses accounting for an average of 40% of total agricultural output are primarily attributable to logistics failures including poor road networks, lack of storage facilities, inadequate transport systems, and bureaucratic policy bottlenecks. Most fresh food produced in northern Nigeria must travel long distances to southern consumption centers, with the produce deteriorating significantly during transit due to poor road conditions, high vehicle maintenance costs, limited transportation options, and inadequate cold chain integration. This continues to expose farmers to income losses which ultimately discourage them from participating in urban markets while resorting to sell within local markets that are not rewarding.

To compound this, the country also faces a cold chain infrastructure crisis. Less than 10% of fresh food produced in Nigeria passes through a cold chain, representing one of the most critical bottlenecks in the food system. Nigeria's total national storage capacity stands at just 225,000 metric tonnes, hugely inadequate for a population exceeding 220 million. The cold chain infrastructure deficit stems from multiple interconnected

challenges. Nigeria's irregular power supply impedes the introduction, uptake, and effective use of cold storage technologies, while high electricity costs make conventional refrigeration economically prohibitive for smallholder farmers and small-scale traders. The absence of strategically located warehouses near farming zones forces farmers to sell produce immediately at rock-bottom prices or risk total losses. Without cold chain systems, farmers cannot control timing of sales, maintain product quality, or access higher-value markets.

Scalable solar-powered cold chain infrastructure integrating affordable storage and cool transportation represents a high-impact, proven strategy to reduce post-harvest food loss, improve smallholder incomes, and strengthen value-chain efficiency across the project area.

To worsen the situations highlighted above, the country is also exposed to food inflation and affordability crisis. Food inflation has surged by 61% over the past year, driven by supply chain disruptions both domestically and internationally. Food inflation rates reached 40.66% in May 2024, forcing Nigerians to allocate 97.4% of their income to food. Rising fuel prices from ₦602.55 in April 2024 to ₦1,000.48 by September 2024 have directly inflated transportation costs and final food prices, with the national average price of 1kg of beef increasing from ₦4,711.64 to ₦5,633.60 in the same period.

Supply chain inefficiencies directly drive these price increases. Multiple intermediaries reduce farmer profit margins while inflating consumer prices, creating a situation where farmers receive minimal compensation while consumers pay exorbitant prices. Poor infrastructure, insecurity, and logistical challenges have made production and distribution of basic commodities increasingly expensive, with foreign exchange shortages limiting food imports and access to processing inputs, setting the stage for stagflation with high unemployment, slow growth, and galloping inflation.

Nigerian commodity prices in USD terms followed a dramatic boom-and-bust cycle over the past decade. Prices rose steadily from 2015 to 2022, with rice surging 133% to peak at \$2,594/tonne. However, 2023-2025 saw a sharp reversal, with prices crashing by 50-70% across major crops. This collapse was driven by the government's 150-day duty-free import window, which flooded markets with cheap imports, pushing prices below production costs and leaving farmers with unsold stock. Figure 5 summarises these price trends showing the need to optimize the supply chains and consider transitioning to green products.

[image found in expanded project rationale]

Figure 5: A Decade Trend of Main Commodities in Nigeria (2015-2025)

It is concerning to also report that there is food insecurity in high food-producing regions. Nigeria has transitioned to a food deficit country with high levels of undernourishment and food vulnerability, with the proportion of Nigerians below the minimum level of dietary energy consumption increasing to 28.3% in 2021. This significant increase largely resulted from the COVID-19 pandemic and heightened insecurity across food production regions in Northern Nigeria, both of which impacted food production, food distribution logistics, and increased post-harvest food losses and waste.

Smallholder farmers account for about 90% of Nigeria's food production yet remain among the poorest and most endangered citizens, with roughly 75% of rural Nigerians living below the poverty line, trapped in cycles of low yields, climate shocks, poor market access, and violent conflict. Insecurity has transformed agriculture into a high-risk venture, with farmers paying 'protection money' that discourages farming activity and reduces

domestic food supply, while flooding and drought increasingly destroy cultivated farmlands and displace farming communities.

Supply chains also face systemic fragmentation and coordination failures driven by policy and institutional challenges. Research reveals the fragmented nature of supply chain management systems in Nigeria, with supply chain collaborations struggling to flourish in highly unpredictable markets. Food quality and safety suffer from lack of policy support, low literacy levels leading to low adoption rates for improved farming systems or inputs, and dysfunctional logistics and transportation systems constraining food preservation from farm to markets.

Effective reduction of food loss in Nigeria requires a unified national coordination framework that integrates food safety policy with infrastructure development, rural planning, and agricultural extension. This entails moving from fragmented multi-actor efforts toward a systemic, whole-of-government approach.

The Nigerian supply chain system is plagued by poor infrastructure, inadequate storage facilities, and lack of coordination between different actors in the system, resulting in significant food loss and waste before reaching consumers. Farmers lack access to necessary inputs including seeds, fertilizer, and credit, while food distribution systems operate inefficiently. Unsustainable government subsidies and financing flows continue to support conventional agricultural systems rather than incentivizing efficiency improvements, cold chain development, and sustainable practices.

Technology and information gaps persist with limited access to supply chain data and expert market intelligence constrains decision-making throughout Nigeria's food system. Farmers lack access to real-time weather information, market prices, and expert guidance on post-harvest storage practices. Limited innovation in the agricultural sector reflects the absence of a national agricultural innovation system driving research and development. Emerging technologies including artificial intelligence, big data, precision agriculture, and internet of things remain largely underutilised despite their potential to transform agricultural value chains.

The skills gap extends throughout the supply chain. Logistics workforce competencies remain insufficient, with pressing needs for targeted training programs, academic-industry partnerships, and mentoring by logistics experts to equip personnel with modern best practices in technology-enabled supply chain management. Without digital tools connecting farmers to inputs, finance, information, and markets, information asymmetries persist that prevent efficient matching of supply and demand.

Achieving sustainable agricultural and food systems in Nigeria is complex because food and commodity value chains are global and cross-cutting by nature. Farmers and communities are currently not be able to realize the benefits of adopting new and more sustainable production and consumption practices due to lack of access to finance, misguided policies and information that disturb the market, for example, subsidies to inorganic fertilizers and unlimited access to ground water resources.

Furthermore, “technological packages” that rely on traditional agrochemicals are often promoted by extension workers who feel that there is only one way to produce. Market failures may also depend on consumer choices and the extent to which consumers can influence their food system. The disconnection between food production and consumption limits the capacity for the alignment of single actors and thus requires holistic and collective action towards positive economic, environmental and social impacts.

Stakeholders emphasized that FARM+ must deliver integrated support packages rather than isolated interventions to effectively capture these opportunities. As highlighted during stakeholder consultations: 'Digital transformation without corresponding skills development and financial support creates technology adoption without utilization, which is a common pattern in failed SME support initiatives.' To address this, FARM+ will target specific sectoral opportunities within agro-processing subsectors that demonstrate particular potential in specialized processing areas. The project's implementation strategy focuses on three critical intervention areas designed for rapid impact (see Figure 6).

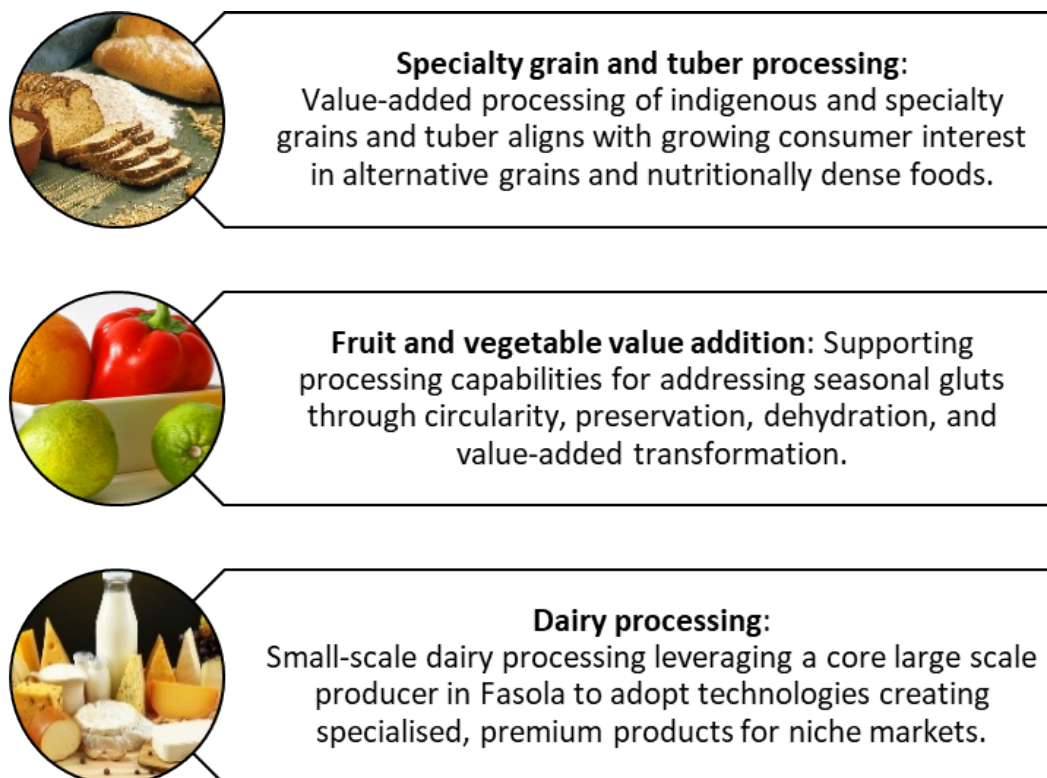


Figure 6: Strategic subsectors with opportunities for growth

Source: Consultants' analysis (2025)

These subsector opportunities align with Oyo State's strategic focus on 'specialty processing niches' and "processing clusters and corridors" where small-scale processors can establish competitive advantages through specialized knowledge and targeted market positioning in organic farming inputs. FARM+ will structure its agribusiness framework around these opportunities as primary implementation pillars, building on the critical success factor analysis conducted during the project design phase. During the piloting phase, FARM+ will specifically assess and refine how these intervention areas integrate with the long-term growth trajectories of agri-food processing SMEs in Oyo State, ensuring that project support mechanisms are aligned with actual business development needs and market realities.

▪ The Patterns of Pesticides Use in Nigeria's Agribusiness

Nigeria's agricultural system is trapped in a critical challenge where farmers apply increasingly harmful pesticides to prevent pre-harvest crop losses from pests and diseases, yet the country still experiences

catastrophic post-harvest losses of 40-50% for fresh produce due to inadequate storage and cold chain infrastructure. Over 90% of Nigerian farmers use Highly Hazardous Pesticides (HHPs) including Paraquat, Chlorpyrifos, and Atrazine, chemicals already banned in the European Union and other developed markets, with more than 65% of all active ingredients in pesticides registered in Nigeria falling into the highly hazardous category according to international classification systems.

These toxic chemicals persist in soil and water systems for extended periods, contaminate food products with residues that frequently exceed international safety limits, and have caused the repeated rejection of Nigerian agricultural exports by EU and US markets, effectively blocking critical foreign exchange opportunities and market access for smallholder farmers. The human health impact is equally alarming, with studies revealing that 92% of farmers are exposed to harmful effects during agrochemical application and 73% reporting illness symptoms after exposure, while inadequate protective equipment use, poor storage practices, and limited understanding of pre-harvest intervals mean that 40% of tomato farmers harvest within 1-5 days after pesticide application, directly violating the recommended 7-day safety guideline and exposing consumers to dangerous chemical residues.

Transitioning Nigerian farmers to safer, sustainable pest management requires strengthening regulatory enforcement, expanding training and access to biological alternatives, and building robust data systems. This enables evidence-based policy that protects productivity and incomes while closing the informal channels through which banned substances persist.

The major users of HHPs span across Nigeria's agricultural landscape, with vegetable farmers cultivating tomatoes, peppers, and leafy greens representing the highest intensity users due to the vulnerability of these crops to insect pests and fungal diseases, followed by rice farmers who rely heavily on herbicides like Paraquat for weed control in both irrigated and rain-fed systems. Cocoa farmers in the southwestern states apply organophosphates and synthetic pyrethroids to combat capsids and mirids that threaten pod production, while cotton farmers in northern Nigeria use extensive cocktails of insecticides throughout the growing season to manage bollworms and other lepidopteran pests.

Cassava and yam producers increasingly resort to chemical treatments as traditional fallowing practices decline and pest pressures intensify with continuous cropping, and commercial fruit producers growing mangoes, citrus, and pineapples apply regular pesticide schedules to meet cosmetic quality standards demanded by urban markets and potential export buyers. Large-scale commercial farms and plantations account for disproportionate volumes of HHP use due to their mechanized application systems and access to bulk purchasing, yet smallholder farmers numbering in the millions collectively represent the majority of users and face the greatest health risks due to inadequate protective equipment, limited literacy affecting label comprehension, and economic pressures that encourage overuse or misuse to maximize immediate yields without understanding long-term consequences.

While biological alternatives exist in Nigeria, including neem-based biopesticides, *Bacillus thuringiensis* formulations, *Trichoderma* species for soil-borne disease management, and beneficial insect release

programs, their adoption remains critically low due to multiple barriers that synthetic pesticide manufacturers and distributors have little incentive to address. Farmers face significantly higher upfront costs for biological products compared to subsidized or counterfeit chemical pesticides, and limited availability through existing agricultural input distribution networks that prioritize high-margin synthetic chemicals.

This is worsened by inadequate technical knowledge about application timing, dosage rates, and integration with other farm management practices since biological controls often require more sophisticated understanding of pest lifecycles and ecological interactions. The effectiveness gap also presents challenges, as biological alternatives typically work more slowly than synthetic pesticides and require preventive application rather than the immediate knockdown effect that farmers experiencing active pest infestations desperately seek, making them appear less effective in crisis situations even when they provide superior long-term pest management and soil health benefits.

Additionally, weak regulatory frameworks fail to ensure quality standards for biological products, limited extension services provide insufficient farmer training on integrated pest management approaches, and the absence of demonstration plots and peer learning networks means farmers lack practical evidence of biological alternatives' effectiveness in local conditions. The research and development infrastructure for adapting and scaling biological pest control solutions to Nigeria's diverse agro-ecological zones remains underfunded, while import dependencies for many biological products create supply chain vulnerabilities and price volatility that further discourage farmer adoption, perpetuating the reliance on hazardous synthetic pesticides despite their documented health, environmental, and economic costs.

Overall, the project explicitly recognises and addresses the multisectoral consequences of indiscriminate agrochemical use, including elevated pesticide-related health risks and healthcare utilisation, diminished produce quality, adverse animal health impacts, and the risk of trade sanctions arising from excessive chemical residue levels in agricultural commodities destined for international markets. Project interventions encompassing training, regulatory enforcement, market incentives for sustainable inputs, and digital monitoring shall collectively contribute to measurable reductions in these risks. Project outcomes shall include indicators on pesticide residue compliance rates and health risk reduction, linked to Nigeria's agricultural trade competitiveness objectives.

▪ **Financing and Insurance Arrangements in the Agribusiness Sector**

Access to affordable and timely financing remains a fundamental challenge constraining Nigeria's agribusiness sector, particularly for smallholder farmers who constitute the majority of agricultural producers but are systematically excluded from formal financial services due to structural barriers in the banking system. Traditional commercial banks perceive agricultural lending as high-risk due to factors such as seasonal income variability, climate uncertainties, and lack of formal land titles or collateral among rural farmers, limited financial literacy, and the dispersed nature of smallholder operations that increases transaction costs.

This has resulted in interest rates often exceeding 20-30% annually with loan tenures that rarely align with agricultural production cycles, making credit prohibitively expensive for most small-scale operations. The few farmers who manage to access formal credit often receive disbursements too late in the planting season to be effective, and face complex documentation requirements that exclude those without formal education or bank accounts. They also encounter rigid repayment schedules that do not accommodate the reality of single

annual harvests for many crops, forcing them to sell produce immediately after harvest when prices are lowest rather than storing for better market opportunities.

To address the systemic gaps, the Central Bank of Nigeria established the Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL Plc) as a specialized financial institution designed to de-risk agricultural financing.

The institution provides credit guarantees that cover a significant portion of potential losses, technical assistance to improve project viability, insurance products that protect both lenders and farmers against production risks, and bank rating mechanisms that incentivize financial institutions to build agricultural lending capacity. NIRSAL's intervention has facilitated billions of naira in agricultural credit across various value chains including rice, cassava, poultry, and horticulture, and has supported the development of commodity-specific financing models. Yet still, penetration to smallholder farmers remains limited with the majority of funds flowing to medium and large-scale commercial operations that can meet documentation requirements and maintain the bankable project proposals that participating financial institutions demand.

Similarly, the Anchor Borrower Programme (ABP), launched by the CBN in 2015, attempted to address financing and market access simultaneously by connecting smallholder farmers organized into cooperatives with large-scale processors or commodity buyers (anchor companies) who serve as guaranteed off-takers, while providing farmers with access to inputs on credit, extension services, and technical support to be repaid in kind after harvest at predetermined prices. Despite facilitating significant production increases in commodities like rice, maize, wheat, and cotton, and mobilizing thousands of smallholder farmers into formal value chains, the ABP faced substantial implementation challenges.

These included chronic delays in input distribution that pushed farmers past optimal planting windows, and inadequate quality control of inputs leading to substandard seeds and fertilizers reaching beneficiaries. Additionally, there were loan repayment difficulties when harvest volumes fell short of projections due to weather events or pest outbreaks, and coordination failures between government agencies and anchor companies. This was compounded by political interference in beneficiary selection processes, and insufficient monitoring systems that allowed diversion of inputs to non-beneficiaries or ghost farmers.

The persistent financing constraints, combined with the practical failures in implementation of well-intentioned government programs, force many farmers to continue relying on informal moneylenders, local traders, or input dealers. These provide credit at exorbitant interest rates often exceeding 50-100% per season or engage in exploitative tied-credit arrangements where farmers must sell their harvest to the creditor at below-market prices. This systematic exclusion from affordable finance compels farmers to under-invest in quality inputs including safer biological pesticides that typically cost more upfront than hazardous chemical alternatives. This further extends to modern irrigation equipment that would reduce climate risk, improved seed varieties with better pest resistance, appropriate storage facilities that prevent post-harvest losses, and the protective equipment necessary for safe pesticide handling.

The agricultural insurance market remains similarly underdeveloped, with low farmer awareness of available products, complex claims processes, and limited actuarial data on Nigerian agricultural risks. The situation is worsened by inadequate distribution networks reaching rural areas, and affordability challenges that keep coverage rates below five percent of farming households despite government subsidies for premium payments under initiatives like the Nigeria Agricultural Insurance Corporation (NAIC) programs. Existing insurance products focus primarily on crop insurance against weather events and area-yield index insurance, with minimal coverage for pest and disease outbreaks, price volatility, or the health impacts of pesticide exposure that would incentivize farmers to adopt safer alternatives.

These interconnected financing and insurance gaps perpetuate destructive cycles where farmers pursue short-term survival strategies including excessive use of cheap harmful pesticides for immediate pest knockdown effects.

The farmers also cultivate marginal lands without proper inputs, and depend on immediate post-harvest sales at distressed prices, all of which undermine long-term productivity, environmental sustainability, and rural livelihoods. This puzzle block the capital accumulation necessary for transitioning to regenerative agricultural practices and biological pest management systems.

▪ **Gender and Youth Inclusion Pathways for Green Agribusiness Transformation**

The FARM+ program recognizes that women assume important roles throughout agrifood value chains to ensure food security and nutrition at community and household levels. Women make up 43% of the global agricultural labor force and almost 70% of employed women in South Asia and more than 60% of employed women in Sub-Saharan Africa work in agriculture. However, the roles and status of women in agriculture and rural areas vary widely by region, age, ethnicity and social class. Gender equality and social inclusion will be mainstreamed in the FARM+ program through several measures including:

- Establishing specific targets for women's participation and leadership in project activities.
- Conducting gender-disaggregated data collection and analysis to understand the differentiated impacts of climate change and agricultural practices on women and men.
- Designing interventions that address the specific needs and constraints faced by women, youth, and marginalized groups in adopting sustainable agriculture practices.
- Gender considerations are considered in assessing and ensuring access by women to value chains, information systems, technologies, equipment and supplies.
- Best practices and lessons learned in empowering women and promoting social inclusion are featured and widely disseminated.
- In the development of the Gender Action Plan, activities will be budgeted, and subsequently monitored and reported on.

In the Nigerian context, gender and youth inclusion remain critical yet under addressed dimensions of agricultural transformation, with significant implications for sustainable pesticide management and post-harvest loss reduction. Women constitute approximately 60-70% of the agricultural workforce in Nigeria, performing the majority of planting, weeding, harvesting, and post-harvest processing activities, yet they face systemic barriers including limited access to land ownership, credit facilities, agricultural training, and decision-making authority over farming practices. This exclusion means that women farmers, who are often more receptive to sustainable agricultural practices, lack the resources and agency to adopt integrated pest management techniques or invest in safer alternatives to harmful pesticides.

Similarly, rural youth increasingly view agriculture as an unattractive, low-status occupation associated with poverty and drudgery, leading to massive youth migration to urban areas and creating labor shortages that compromise proper crop management and post-harvest handling. The absence of youth engagement means that innovative technologies for precision pesticide application, digital pest monitoring systems, and modern post-harvest processing equipment remain underutilized due to limited technological literacy among aging farmer populations.

Empowering women through targeted financing schemes, land tenure reforms, and capacity-building programs can unlock their potential as champions of sustainable pest management, as studies demonstrate that women farmers are more likely to adopt eco-friendly practices when given adequate support. Simultaneously, creating youth-focused agribusiness opportunities through mechanization, digital agriculture platforms, value addition enterprises, and agri-tech innovations can attract young people back to the sector while introducing modern approaches to pest control and post-harvest handling that reduce both chemical dependency and crop losses, ultimately building a more inclusive and sustainable agricultural value chain. Dedicated Gender Analysis and Gender Action Plan are presented in this document as Annex 2 and 3.

Youth integration into FARM+ will be anchored in OSADA's existing Oyo State Youth Agripreneur Database, which comprises over 7,000 biometrically registered youth, more than 1,000 of whom are already operating agricultural enterprises supported under MasterCard Foundation and State Government partnerships. The project will design youth-facing agri-preneurship modules within the Farmer Field School programme, with a target of onboarding at least 500 youth agripreneurs as certified bio-alternative producers and HHP-free farm operators within the first two years of implementation.

▪ Barriers for Transition to Climate Smart Agriculture and Safe Use of Agrochemicals

The pathways forward towards transitioning to climate smart agriculture and the reduced use of harmful agrochemicals require several approaches for transformation. The FARM+ project shall follow the vulnerability to resilience framework (Figure 7) to explore potential pathways for transitioning towards green agribusiness in Nigeria.

[Portal did not accept image]

Figure 7: Vulnerability to resilience framework for Transforming Nigeria's Food Systems

Source: Adapted from Fowler et al. (2025)[\[2\]](#)

Nigeria's food supply chain transformation requires coordinated multi-stakeholder interventions addressing infrastructure, technology, finance, awareness, capacity, and policy simultaneously.

Lack of capacity to enforce regulations, standards and technology integration: Pesticide and fertilizer markets in many developing countries, including countries in Africa, and Nigeria are not adequately regulated in a way which protects farmers' health and the environment. In Nigeria, a dominant barrier is that rules, laws, approvals, and controls have not kept pace with the increasing demand for pesticides leading to the development of a lucrative market for cheap generic and illegal pesticides in many countries. Industry and academic sources estimate that up to 20% of the African market, and as much as 34% the West African market, are illegally produced and traded. Table 3 shows the several provisions in the country, yet still gaps exist in the implementation.

Table 3: Nigeria's Policies, Bills, and Acts

Relevant Policy Documents	Proposed Bills
National Policy on Environment	Alternative Pesticide Control Bill (2023): Proposed by the Alliance for Action on Pesticide in Nigeria (AAPN), this bill seeks to regulate pesticide use and promote sustainable agriculture practices.
National Policy on Chemicals Management 2012	National Committee on Chemical Management (NCCM): coordinated by the Federal Ministry of Environment. AAPN serves as a technical advisory member, contributing to chemical management policies and regulations.
National Policy on plastic waste management	Food Safety Bill (2019): Reviewed and improve in collaboration with AAPN, this bill aims to ensure food safety and reduce pesticide-related health risks.
National Policy on Food Safety and Quality (NPFS) revised in 2024	Pesticides Registration Regulation 2005
Agriculture Promotion Policy (2016-2020): Developed by the Federal Ministry of Agriculture and Rural Development, this policy promotes rational pesticide use, Integrated Pest Management (IPM) programs, and sustainable agriculture practices.	Pesticide Registration Regulations (2021): These regulations aim to ensure safe pesticide use, although gaps in implementation and enforcement remain a challenge.
Established Acts	National Environmental (Hazardous Chemicals and Pesticides) Regulations S.I No. 2020
National Environmental Standards Regulations and Enforcement Agency Act No. 25 of 2007	National Environmental (Hazardous Chemicals and Pesticides) Regulations: Promotes safe use of hazardous chemicals and pesticides, controlling their import, export, and sale.- National Environmental (Chemicals and Pesticides) Regulations, Statutory Instrument no. 92 of 2023. enacted on 08 Nov 2023
National Agency for Food and Drugs Administration and Control Act No. 15 of 1993 LFN 2004	Chemical and Chemical Products Registrations 2020
Harmful Waste (Special Criminal Provisions) Act Cap H1 LFN 2004	Legal Framework of the National Policy on Food Safety and Quality (NPFS) Revised in 2024
Rotterdam Convention Act No.15 of 2007	The Public Health Ordinance Cap 165 of 1958 previously known as the Public Health Laws (1917)
Pharmacist Council of Nigeria Act Cap P17 LFN	The Standard Organization of Nigeria Decree No. 56 of 1971
Food and Drugs Act Cap F32 LFN 2004	The Food and Drug Act No 35 of 1974 (now Food and Drug Act Cap F32 Laws of the Federal Republic of Nigeria, 2004)
Dangerous Drugs Cap D1 LFN 2004	The Animal Disease Control Decree No. 10 of 1988
Agriculture (Control of Importation) Act: Regulates the importation of agricultural products, including pesticides	The Marketing of Breast Milk Substitute Decree No. 41 of 1990 (now Marketing (Milk) Act Cap M5 LFN 2004
Pest Control Products (Special Powers) Act: Concerned with export produce conditions and pest control.-	The National Agency for Food and Drugs Administration and Control Decree No 15 of 1993 (now NAFDAC Act CAP N1 Laws of the Federal Republic of Nigeria, 2004)
	The Food, Drug and Related Products (Registration etc.) Decree No 19 of 1993 (now Food, Drug & Related Products (Registration etc.) Act Cap F33 Laws of the Federal Republic of Nigeria (LFN), 2004
	The Counterfeit and Fake Drugs and Unwholesome Processed Food Act No 25 of 1999 (now counterfeit & Fake Drugs and Unwholesome Processed Foods (Miscellaneous Provisions) Act Cap C34 LFN 2004
	Various byelaws enacted by various LGAs in the country.

The crops included in the FARM+ Project have been categorized into two strategic tiers: Core crops and potential crops for piloting. This classification reflects the current state of agricultural practice in Oyo State, market readiness, and the project's phased implementation strategy. The project shall build upon existing empirical evidence demonstrating the positive relationship between precision agrochemical application and crop productivity gains. Evidence from IITA and partner institutions' prior research and project evaluations has been incorporated into the project's baseline narrative, Theory of Change, and indicator benchmarks. The project shall generate and document new impact evidence through its MEL system, contributing to the growing body of knowledge on the productivity, health, and environmental outcomes of sustainable agrochemical management in smallholder farming systems.

Discussions during the stakeholder consultations showed that, empty packaging and canisters are also filled with counterfeit products and sold as originals. This has serious risks for farmers especially in Africa, since they are less likely to have access to and use protective measures when applying pesticides. Only a few countries in Africa have established a Globally Harmonized System of Classification and Labelling of Chemicals (GHS) to manage the imports of pesticides. Customs in Nigeria have not received sufficient training to adequately monitor the imports and exports of pesticides and prevent illegal trade, nor is there sufficient capacity to regulate and oversee safe storage (such as in harbour facilities) and transport of these agro-chemicals to the end user. Therefore, regardless of several provisions to support the GHS pathway in the country (See Table 4 below) HHPs still find their way through borders.

Table 4: Institutions and Their Roles in GHS Implementation in Nigeria

Institutions	Roles and Responsibility	GHS Implementation Scope	Economic Sector Coverage
Federal Ministry of Health and Social Welfare	FMH&SW develops and enforces regulations for the safe handling, use, and disposal of chemicals, including requirements for labelling, packaging, and documentation.	1. Protection of Human Health: FMH&SW works to protect human health by ensuring that chemicals are handled and used safely, and that exposure to hazardous chemicals is minimized. 2. Training and Capacity Building: FMH&SW provides training and capacity-building programs for healthcare professionals, first responders, and other stakeholders on GHS implementation and compliance. 3. Collaboration with Other Agencies: FMH&SW collaborates with other government agencies, industry stakeholders, and international organizations to promote GHS implementation and compliance.	Consumer chemicals products sector,

		4. Public Education and Awareness: FMH&SW educates the public about the importance of safe chemical management and GHS compliance.	
The National Agency for Food and Drug Administration and Control (NAFDAC)	The Agency Promotes and enforce various initiatives related to responsibility in the Globally Harmonized System (GHS) for the classification and labelling of chemicals.	1. Develop and implement regulations related to chemical safety and GHS implementation 2. Provide guidance and training on GHS implementation and chemical safety. 3. Conducting inspections and enforcement activities to ensure compliance with regulations related to chemical safety and GHS implementation. 4. Promoting public awareness about chemical safety and GHS implementation.	Consumer chemicals products sector, Agricultural sector, Work place sector
Federal Ministry of Environment:	This ministry oversees environmental policies, programs, and regulations in Nigeria as well as promoting chemical safety and management practices in line with GHS including handling, storage, and disposal of chemicals	1. Development of Environmental Regulations: FME and NESREA develops and enforces regulations for the management of chemicals in the environment, including requirements for labelling, packaging, and disposal.	Consumer chemicals products sector, Work place sector
National Environmental Standards and Regulations Enforcement Agency (NESREA):	This agency is responsible for enforcing environmental laws, regulations, and standards in Nigeria. NESREA also Enforce regulations in relation to chemical safety and management practices in accordance to GHS including handling, storage, and disposal of chemicals, biodiversity conservation, sustainable development, and environmental technology	2. Environmental Impact Assessment: FME conducts environmental impact assessments to identify potential risks associated with chemical use and release into the environment. NESREA enforce the compliance for environmental impact assessment. 3. Waste Management: FME and NESREA regulates the management of chemical waste, including disposal and recycling, to prevent environmental pollution. 4. Collaboration with Other Agencies: FME and NESREA collaborates with other government agencies, industry stakeholders, and international organizations to promote GHS implementation and compliance. 5. Public Education and Awareness: FME educates the public about the importance of safe chemical management and GHS compliance.	Consumer chemicals products sector, Agricultural sector, Work place sector

Nigeria Customs Service-NCS	Plays a crucial role in implementing the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) in Nigeria, particularly in the importation and exportation of chemicals.	1. Inspection and Verification: NCS inspects and verifies chemical shipments to ensure compliance with GHS requirements, including proper labelling and packaging. 2. Classification and Coding: NCS classifies and codes chemical imports and exports according to the Harmonized System (HS) and GHS classification systems. 3. Documentation and Certification: NCS requires and verifies documentation, such as Safety Data Sheets (SDSs) and certificates of origin, to ensure compliance with GHS requirements. 4. Enforcement of GHS Regulations: NCS enforces GHS regulations, including restrictions on the importation and exportation of hazardous chemicals. 5. Collaboration with Other Agencies: NCS collaborates with other government agencies, industry stakeholders, and international organizations to promote GHS implementation and compliance.	Consumer chemicals products sector, Work place sector
Federal Ministry Industry, Trade and Investment	Strengthening Nigeria's industrial base by promoting innovation, supporting manufacturing, and fostering key sector growth through policy development, regulatory framework and industry support.	1. Policy Development: FMITI develops and implements policies related to chemical management, including GHS implementation. 2. Regulatory Framework: FMITI establishes and enforces regulations for the classification, labelling, and packaging of chemicals in Nigeria. 3. Industry Support: FMITI provides support to industries, including small and medium-sized enterprises (SMEs), to implement GHS requirements. 4. Training and Capacity Building: FMITI provides training and capacity-building programs for stakeholders, including industry representatives, regulators, and other interested parties. 5. International Cooperation: FMITI collaborates with international	Consumer chemicals products sector, Work place sector

		organizations, such as the United Nations, to promote GHS implementation and share best practices. 6. Public Awareness: FMITI raises public awareness about the importance of GHS implementation and the benefits of safe chemical management.	
Federal Consumer Protection and Completion Commission	CPC enforces GHS regulations, ensuring that manufacturers, importers, and distributors of chemicals comply with labelling and packaging requirements.	1. Consumer Education: CPC educates consumers about the safe use of chemicals, including the importance of reading labels and following instructions. 2. Product Safety Monitoring: CPC monitors the safety of chemical products in the market, identifying and addressing potential hazards. 3. Collaboration with Other Agencies: CPC collaborates with other government agencies, industry stakeholders, and international organizations to promote GHS implementation and compliance. 4. Investigations and Enforcement Actions: CPC investigates complaints and takes enforcement actions against manufacturers, importers, or distributors that fail to comply with GHS regulations.	Consumer chemicals products sector, Work place sector
Federal Ministry of Agriculture & Food Security	Regulates the use of agricultural chemicals, including pesticides, fertilizers, and other substances, to ensure compliance with GHS requirements.	1. Training and Capacity Building: provides training and capacity-building programs for farmers, agricultural extension agents, and other stakeholders on the safe use of agricultural chemicals and GHS compliance. 2. Development of Agricultural Chemical Regulations: develops and enforces regulations for the use of agricultural chemicals, including requirements for labelling, packaging, and documentation. 3. Collaboration with Other Agencies: collaborates with other government agencies, industry stakeholders, and international organizations to promote	Agricultural sector

		GHS implementation and compliance in the agricultural sector.	
		4. Monitoring and Enforcement: monitors the use of agricultural chemicals and enforces compliance with GHS regulations, including inspections and audits of farms and agricultural businesses.	
Federal Ministry of Transport	The Ministry regulates the transportation of chemicals by land, air, and water, ensuring that chemicals are transported safely and in compliance with GHS requirements.	1. Develop and implement regulations related to chemical safety and GHS implementation	Transport and logistics sector
Federal Ministry of Labour and Employment	This ministry is responsible for labor laws, regulations, and policies, including those related to occupational safety and health including those related to chemical safety and GHS implementation in Nigeria.	2. Provide guidance and training on GHS implementation and chemical safety. 3. Conducting inspections and enforcement activities to ensure compliance with regulations related to chemical safety and GHS implementation. 4. Promoting public awareness about chemical safety and GHS implementation.	Workplace sector
National Emergency Management Agency (NEMA):	NEMA is responsible for responding to chemical emergencies and incidents, and disaster management. GHS implementation helps ensure that responders are equipped with the necessary information to respond safely and effectively.	Provide guidance and training on GHS implementation and chemical safety. Promoting public awareness about chemical safety and GHS implementation.	Workplace sector
Institute of Safety Professionals of Nigeria (ISPON):	ISPON is a professional organization that focuses on safety and health issues in Nigeria, providing training, certification, and advocacy for safety professionals.	Provide guidance and training on GHS implementation and chemical safety.	Workplace sector
Occupational Safety and Health Practitioners of Nigeria (OSSN):	A professional body for safety, health, and environment practitioners, OSSN aims to promote occupational safety and health in Nigeria	Provide guidance and training on GHS implementation and chemical safety.	Workplace sector
The Institute of Chartered Chemists of Nigeria (ICCON)	This is a professional organization that regulates and promotes the practice of chemistry in Nigeria.	Provide guidance and training on GHS implementation and chemical safety.	Workplace sector
Federal Ministry of Marine and Blue Economy	The Ministry regulates the transportation of chemicals by water, ensuring that		Transport and logistics sector

	chemicals are transported safely and in compliance with GHS requirements.	Develop and implement regulations related to chemical safety and GHS implementation	
Federal Road Safety Corp	FRSC enforces GHS regulations for the transportation of hazardous materials by road, ensuring that drivers, vehicles, and cargoes comply with GHS requirements.	2. Provide guidance and training on GHS implementation and chemical safety. 3. Conducting inspections and enforcement activities to ensure compliance with regulations related to chemical safety and GHS implementation. 4. Promoting public awareness about chemical safety and GHS implementation	Transport and logistics sector
Nigeria Police Force	The Nigeria Police Force enforces GHS regulations in collaboration with other regulatory agencies, ensuring that individuals and organizations comply with GHS requirements.	Provide guidance and training on GHS implementation and chemical safety for its personnel. Maintaining law and order during transportation of hazardous material Investigate crimes related to illegal transportation of or disposal of hazardous chemicals, and Promoting public awareness about chemical safety and GHS implementation	Consumer chemicals products sector, Work place sector, Transport and agricultural sector
Nigeria Ports Authority -NPA	NPA regulates the handling of chemicals at ports and terminals, ensuring that chemicals are handled, stored, and transported safely and in compliance with GHS requirements. NPA collaborates with other government agencies, industry stakeholders, and international organizations to promote GHS implementation and compliance in the ports and terminals sector.		Transport sector- ports and terminals
Nigeria Railway Corporation -NRC	NRC regulates the transportation of chemicals by rail, ensuring that chemicals are transported safely and in compliance with GHS requirements.	Inspection and Monitoring: conducts regular inspections and monitoring of transport operations to ensure compliance with GHS regulations.	Transport and logistics sector
Nigeria Maritime Administration & Safety	NIMASA regulates the transportation of chemicals by water, ensuring that chemicals are transported safely and in compliance with GHS requirements.	3. Training and Capacity Building: provides training and capacity-building programs for its personnel, sector operators, and other stakeholders on GHS implementation and compliance.	Transport and logistics sector
National Inland Water Ways	NIWA regulates the transportation of chemicals by water, ensuring that chemicals are transported safely and in compliance with GHS requirements.		Transport and logistics sector

Nigeria Shippers Council	NSC's efforts help promote safe transportation of chemicals, reducing the risk of accidents and spills.	4. Development of appropriate Regulations: develops and enforces regulations for the transportation of chemicals, including requirements for labelling, packaging, and documentation. 5. Collaboration with Other Agencies: collaborates with other government agencies, industry stakeholders, and international organizations to promote GHS implementation and compliance in the transport sector.	Transport and logistics sector
Nigeria Civil Aviation Authority	NCAA regulates the transportation of chemicals by air, ensuring that chemicals are transported safely and in compliance with GHS requirements.		Transport and logistics sector
Federal Airport Authority	FAAN regulates the transportation of chemicals by air, ensuring that chemicals are transported safely and in compliance with GHS requirements.		Transport and logistics sector

Digital tools spanning market information, weather forecasting, supply chain visibility, and mobile payments offer a convergent opportunity to simultaneously improve farmer decision-making, logistics efficiency, and financial inclusion across the agricultural value chain.

Limited market, financial and insurance innovations: In many developing countries, producers have little motivation to adopt sustainable practices. Domestically, niche and specialty markets for responsibly produced food are severely limited, particularly in LDCs and SIDS. This is because consumers are either unaware of the benefits or cannot afford the premium, making it difficult for traditional producers to access the few markets that do exist in capital cities. The global market offers little respite, as the relatively small scale of organic and green commodity supply chains subjects them to a significant cost disadvantage.

Addressing this requires boosting public and private partnerships to help these sustainable supply chains achieve cost competitiveness. Crucially, this problem is exacerbated by existing public funding. Trillions of dollars in subsidies and incentives often have the perverse effect of degrading natural assets, harming health and economies. These funds typically fuel the use of harmful agrochemicals, which destroys biodiversity and disrupts vital ecosystem functions.

Additionally, subsidized inputs like low-cost water or energy promote overexploitation, encouraging non-climate-resilient cropping and contributing to severe pollution. However, this vast sum of money represents a major solution: repurposing these subsidies is essential to finance the transition to sustainable and climate-resilient agriculture. Governments frequently offer input subsidies, notably for synthetic fertilizers, with the goal of boosting yields and meeting production targets. However, these subsidies carry a dual negative impact: they cause negative environmental externalities from chemical use, and they strain agricultural budgets, limiting the government's ability to invest in sustainable farming. Changing these established incentive structures to promote sustainability is not a straight forward task. Such reform faces significant political pressure from large domestic and international suppliers of agrochemical products, requiring policymakers to have a solid understanding of the political economy and power asymmetries within the input supply chain.

Transforming agricultural finance requires shifting from input-focused subsidies toward inclusive, risk-smart mechanisms. This expands affordable credit for smallholders, youth, and women; deploying crop

insurance against climate and pest shocks; and scaling service-based cooling models. The end goal is to lower barriers to investment and build resilient, productive farm enterprises.

Commercial banks represent a critical source of agricultural financing, yet they face significant challenges in supporting the transition to sustainable and climate-resilient agriculture (SCRA), particularly for smallholder farmers. Currently, banks rarely extend financing to smallholders, and when they do, they seldom offer products tailored for SCRA. This reluctance stems from their reliance on existing 'technological packages' to predict yield and calculate risk for loan approval. The main hurdle is that equivalent 'technological packages' supporting SCRA practices are often missing.

This forces banks to manually calculate loan potential on a case-by-case basis for producers who adopt SCRA methods, making the approval process expensive, complicated, and slow compared to loans based on established, conventional farming models. To facilitate a transition to SCRA, it is essential to develop new financial tools and instruments. These must both discourage the overuse of agrochemicals and provide attractive loan products and alternatives that specifically support sustainable and climate-resilient production.

In addition to the financial landscape context presented above, the agribusiness sector in Nigeria has also experienced an increase in insurance providers, albeit dominated by NAIC as a public entity. Agricultural insurance in Nigeria has evolved from informal risk-sharing mechanisms among traditional farming communities to a structured, government-backed system that began taking shape in the 1980s. The Nigerian Agricultural Insurance Corporation (NAIC) was established in 1987 through the Nigerian Agricultural Insurance Corporation Act as a response to the need for a formal risk management framework to protect farmers from catastrophic losses and encourage agricultural investment. Initially focused on large-scale commercial farmers, the program struggled with low uptake due to limited awareness, high premiums, and farmer scepticism about claim settlements.

The turning point came when the government introduced a 50% premium subsidy scheme to make insurance more accessible and affordable to smallholder farmers. Over the decades, the market has gradually expanded beyond NAIC's monopoly, with the National Insurance Commission (NAICOM) licensing private insurance companies like IGI (the first private agricultural insurer), Leadway, AllCO, and Sanlam to enter the sector from the early 2000s onward. In recent years, the landscape has been transformed by insurtech companies and mobile-based platforms that leverage weather data, satellite imagery, and index-based insurance models to reach previously underserved smallholder farmers, marking a shift from traditional indemnity-based products to more innovative, scalable solutions that align with Nigeria's digital agriculture agenda and financial inclusion goals.

A summary of agricultural insurance products and providers in Nigeria is shown in Table 5 below showing the dominance of private providers.

Table 5: Agricultural Insurance Products and Providers in Nigeria

Provider	Type	Main Products Offered	Key Features
Nigerian Agricultural Insurance Corporation (NAIC)	Government (Federal)	• Subsidized crop insurance • Subsidized livestock (cattle, sheep, goat, pigs) • Poultry insurance • Plantation crops (cocoa, rubber, cotton) • Fisheries insurance	• 50% premium subsidy for farmers • Free agricultural extension services • Covers food crops, cereals, root crops

Industrial & General Insurance (IGI)	Private	• Crop insurance • Livestock and bloodstock insurance • Poultry insurance • Fisheries insurance • Forestry insurance	• First private insurer licensed by NAICOM for agricultural insurance • Can serve as loan collateral
Leadway Assurance	Private	• Farm produce insurance • Crop insurance • Livestock insurance • Poultry insurance • Fish farm insurance • Farm machinery/equipment	• Coverage against fire, burglary, lightning, flood, explosion, windstorm, earthquake • Bush fire coverage included
Sanlam Insurance	Private	• Crop insurance (arable & tree crops) • Livestock insurance • Aquaculture/fish farm insurance • Area yield index insurance • Farm property insurance • Goods in transit	• Covers from germination to maturity • African swine fever extension available • Combined fire and burglary coverage
AIICO Insurance	Private	• Crop insurance • Poultry insurance • Livestock insurance • Plantation crop insurance • Area yield index insurance • Farm property insurance	• Covers broilers, layers, parent stock • Requires 5 years historical yield data for index insurance
Universal Insurance	Private	• Agricultural insurance (3 plans)	• Established 1961 • Various agricultural insurance programs
Prestige Assurance	Private	• Fishery insurance • General agricultural insurance	Online quote system available
NEM Insurance	Private	• 'Farmers' Comfort' policy	Designed for several unexpected events
FIN Insurance	Private	• Agricultural insurance products	• Established 1981 • Bauchi State government-owned
ACRE Africa	Insurance Intermediary	• Smallholder crop insurance • Mobile-based insurance	• Mobile phone registration • Low premiums • Operates across multiple African countries
Pula	Insurtech and Intermediary	• Weather index insurance • Area yield insurance • Livestock insurance (hybrid index/indemnity)	• Data science-driven • Climate risk focus

The Nigerian agricultural insurance market presents significant opportunities for the FARM+ child project, with over a dozen active providers offering diverse products covering crops, livestock, poultry, and aquaculture, supported by a government subsidy program that covers 50% of premiums through NAIC. However, the sector faces substantial challenges including low insurance penetration among smallholder farmers (who comprise the majority of Nigeria's agricultural workforce), limited awareness of insurance benefits, affordability concerns despite subsidies, complex claims processes, and inadequate weather data infrastructure for accurate risk assessment.

FARM+ project should strategically partner with insurtech innovators to deploy mobile-driven, data-informed crop insurance. This implies simplifying enrolment, reducing premiums through improved risk modelling, and accelerating claims settlement while building farmer trust and financial literacy to unlock rural market penetration at scale.

Lack of systematic policy coordination and inter-ministerial and sectoral partnerships: Achieving the transition to Sustainable and Climate-Resilient Agriculture (SCRA) requires a comprehensive and coordinated approach spanning multiple national priorities, including productivity, climate adaptation, biodiversity, and food security. The difficulty lies in the fact that Nigeria faces limited resources and complex political systems, often forcing policymakers to prioritize immediate crises over long-term strategic coherence. Creating isolated, ad-hoc policies without systematic assessment is inefficient, leads to fragmented actions, and can result in significant unintended consequences.

For example, short-sighted efforts to boost food security, such as incentivizing groundwater use, can increase current yields but deplete non-renewable resources, severely undermining future adaptive capacity. Similarly, import restrictions may stimulate domestic production but in climatically unsuitable areas, driving up prices, increasing undernourishment, and exacerbating food insecurity during extreme weather events. To successfully foster SCRA, Nigeria must undertake a systematic assessment of existing policies (Table 5) and profile them to identify weak areas for adjustment. This process ensures that policies send consistent signals to farmers, effectively meet national objectives, and incorporate critical feedback loops connecting farmers' on-the-ground experiences with policymakers to continuously improve policy formulation.

Table 6: Responsibility of the Government Institutions

S/N	Life Cycle	Regulators
1	Managing Importation	NCS, NAFDAC , FMENV,NESREA, DPR, FMARD, SON, FMITI
2	Managing Placement in the Market	FMENV, NAFDAC, NESREA, CPC, FMARD
3	Production, Commercial Sale and Distribution/ Own Use	FMENV, NAFDAC, SON, NESREA,, FMITI, FMARD
4	Managing Transport and Distribution	FMENV, NESREA, NAFDAC, FRSC, NPF, NOSDRA, NIMASA, NPA, TRANSPORT
5	Managing Display	FMENV, NAFDAC, NESREA, CPC
6	Managing use	FMENV, NAFDAC, NESREA, FMLE&E, FMoH, FMARD, MMSD
7	Managing Disposal	FMENV, NESREA, SEPAs, Sanitation and Waste Management Agencies

- Nigeria Customs Service (NCS), Federal Ministry of Trade, Industry & Investment (FMITI), Consumer Protection Council (CPC), Nigeria Ports Authority (NPA), Nigeria Maritime Administration and Safety (NIMASA), Ministry of Mines Development (MMSD), State Environmental Protection Agencies (SEPAs), Federal Road Safety Corp (FRSC), Federal Ministry of Labour & Employment (FML&E), National Oil Spill Response and Detection Agency (NOSDRA) and Department of Petroleum Resources (DPR).

Ultimately, this lack of policy coherence and failure to coordinate policy delivery (e.g., through integrated public finance programming) means that policies in one sector often undermine the goals of another. For instance, economic, trade, and agricultural policies frequently conflict with and weaken climate and biodiversity-related objectives. The imperative for policymakers is clear: Countries must determine whether relevant institutions are working together effectively and collaboratively. This requires actively assessing and addressing how intra- and inter-institutional mechanisms can be used to improve coherence and coordination.

Another challenge for policymakers and practitioners has been the lack of understanding of the political economy around food and agricultural policy change. Power asymmetries and vested commercial and political interests hold back policy and investment reforms that support the transition towards more sustainable and resilient practices. To accelerate changes in food systems, policy makers need increased capacities to understand the political economy and power asymmetries, to successfully adopt and implement more sustainable policy measures and investments.

Establishment of a dedicated national food supply chain strategy with measurable targets and implementation timelines; improved coordination between federal ministries, state governments, and private sector actors; regulatory frameworks supporting public-private partnerships in infrastructure development; and trade policies balancing import substitution with food security imperatives.

Lack of knowledge and capacity to adapt to the evolving patterns of climate change: Climate change is already a reality for smallholder farmers, but this harsh experience has not translated into the critical, localized knowledge needed for effective decision-making. Farmers, along with local leaders and land users, often lack awareness of specific climate projections and how to build long-term resilience. Importantly, this knowledge gap obscures the fact that unsustainable practices, such as excessive pesticide use, are actively eroding ecological resilience. By degrading the productive landscape, these habits make farmers even more susceptible to climate impacts.

This challenge is compounded by outdated extension services. Although climate-smart solutions are continually being developed at the pilot level, extension workers often rely on siloed, traditional information from agricultural schools. As a result, they are unable to effectively communicate the latest best practices to

rural populations. These deep-seated challenges are most pronounced in LDCs and SIDS. These nations face the triple threat of low access to capacity, technical assistance, and finance, while simultaneously experiencing the most severe impacts from land degradation, climate change, biodiversity loss, and pollution. Worsening this, private sector finance frequently bypasses LDCs and SIDS due to low credit ratings and high political uncertainty, making the design of specialized financial mechanisms necessary. Therefore, a key strategy will be to integrate funding from the GEF Chemical and Waste Focal Area with the resources of the Least Developed Countries Fund (LDCF).

The nature of modern agriculture where global value chains deliver food and clothing across numerous borders necessitates a global programmatic approach. To effectively achieve a worldwide transition to sustainable and climate-resilient agricultural systems, this approach is essential for harmonizing policies, legislation, financing, incentives, standards, and norms across diverse geographies, weather conditions, governments, and varied farm systems.

Furthermore, farming practices are extremely diverse, varying significantly based on commodity, farm size, capital access, risk level, and location (agro-ecological zones). Given the localized nature of climate, pests, and diseases within diverse crop and agroecosystems, solutions for sustainable and climate-resilient agriculture (SCRA) must be highly customized. Effective SCRA strategies cannot be one-size-fits-all; they must be adapted to local circumstances and the specific producer type. Local implementation is especially crucial for adaptation, as vulnerability, exposure, and successful solutions are inherently linked to site-specific conditions and capabilities. The agricultural sector presents an enormous opportunity to catalyze a system-wide transformation towards sustainable and climate-resilient practices.

Achieving this requires a critical realignment of investments from governments, financial institutions, and private investors must be restructured. This restructuring must prioritize the creation of equitable food and commodity value chains that simultaneously cut emissions, repair damaged ecosystems, improve resilience to climate shocks, and support global commitments related to pollution, human health, biodiversity, and social justice. FARM+ is designed to drive this transformation. The Nigerian case requires investment in logistics workforce training; strengthening of agricultural extension services providing farmers with climate-smart practices; support for agro-processing industrialization creating value addition opportunities; and promotion of rural youth employment in agricultural value chains.

Gaps in infrastructure development: Infrastructure deficiencies represent a critical bottleneck in Nigeria's agri-food value chains, directly contributing to excessive pesticide use and substantial post-harvest losses. The lack of adequate storage facilities, including climate-controlled warehouses and grain silos, forces farmers to apply heavy doses of chemical pesticides and fumigants to protect harvested crops from rapid deterioration, pest infestations, and fungal contamination during storage periods. Poor road networks and transportation systems delay the movement of produce from farms to markets, extending the time crops remain vulnerable to spoilage and pest damage, which in turn drives farmers to use more aggressive chemical treatments as a preventive measure.

The absence of reliable cold chain infrastructure for perishable fruits and vegetables results in post-harvest losses estimated at 40-60% for some crops, compelling farmers to over-produce and apply excessive pesticides throughout the growing season to compensate for anticipated losses. Limited access to processing facilities means that farmers cannot convert surplus harvests into value-added products, leading to gluts that attract pest infestations and necessitate emergency pesticide applications. Furthermore, inadequate rural electrification hampers the operation of modern storage and processing equipment, forcing reliance on traditional methods that require intensive chemical preservation. These infrastructure gaps create a vicious cycle where farmers depend on harmful pesticides as a substitute for proper post-harvest handling systems,

while simultaneously losing significant portions of their harvest, undermining both food security and farmer incomes.

Of concern is that there are shortfalls in strategic investment targeting rural roads connecting farming zones to markets, rehabilitation of rail networks for agricultural freight, port efficiency improvements, development of inland container depots near farming communities, and massive expansion of cold chain infrastructure including solar-powered cold rooms, refrigerated transportation, and strategically located warehouses.

Additionally despite the massive chemical input, Nigeria still loses between ₦3.5 trillion annually to post-harvest losses because the fundamental infrastructure for food preservation including cold storage, refrigerated transport, and efficient logistics which remains absent. The paradox is clear since farmers poison their land, water, and bodies with banned chemicals trying to protect crops in the field, only to experience 40-50% of their harvest rot in storage or transit due to infrastructure failures, creating a dual crisis of contaminated food and massive waste that undermines both farmer incomes and national food security.

Lack of farmer awareness, collective stakeholder buy in, technical know-how, and finance on sustainable, nature-based alternatives: Small-scale farmers are currently locked into a cycle of relying on hazardous agrochemicals and antimicrobials. They view these inputs as necessary for achieving the high yields and quality demanded by markets, ensuring crop security at affordable prices. This reliance is partly due to their limited connection to certified value chains and a critical lack of knowledge regarding safer alternatives. The situation is exacerbated by a communications imbalance: farmers are often unconvinced by non-chemical alternatives because of the powerful messaging from large agrochemical companies. Furthermore, competing financial needs and limited budgets prevent them from making the investments required to adopt more resilient farming practices. Unfortunately, the essential support system has failed them. This FARM+ child project shall leverage the resilience designing framework (Figure 8) to consolidate interventions that support accelerated uptake of NbS in the country

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Figure 8: Resilience Building framework

Source: Adapted from Awokuse *et al.* (2025)[\[1\]](#)

Additionally, public extension and advisory services are underfunded and unable to provide consistent, current, and comprehensive support whether for pest diagnosis or for offering practical alternatives for various types of food production. As a result, many farmers turn to private extension services that are commercially bundled with the sale of seed and chemical inputs, a structure that inherently promotes agrochemical use and is often tied directly to market access. Despite these challenges, a sustainable path offers greater financial reward.

Methods like nature-based, climate-resilient agriculture, and the use of locally produced bio-fertilizers and biopesticides, have been shown to increase farmer income (as seen in Honduras, where farmers selling their own bio-inputs significantly reduced their costs). To break this cycle, there is an urgent need to educate farmers on the dangers of pesticides and build their capacity in applying sustainable, resilient methods. Most importantly, the entire system must be reformed so that market access, extension support, and finance are no longer contingent on the application of harmful agrochemicals

Weak coordination of policies and targeted support at local and national levels to align with international commitments: A significant hurdle for policymakers and practitioners is the capacity to bridge the implementation gap between ambitious global and national commitments and tangible actions on the ground. Effectively linking policy frameworks across different scales proves challenging. For instance, even when Nigeria defines its specific targets,

such as those for Land Degradation Neutrality (LDN), these national and international pledges often fail to translate into local action.

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This breakdown occurs because real-world implementation demands greater integration across sectors and scales, supported by crucial assistance in capacity building, technology transfer, infrastructure, and financial resources. Furthermore, the local landscape where vital ecosystem services are delivered and managed often lacks the necessary policy structures, processes, tools, and social capital. Without the ability to enact public policies that analyse synergies and balance the environmental, economic, and social trade-offs at this local level, the transition towards sustainable agri-food value chains will be extremely difficult to achieve.

a) **Policy Considerations and Challenges for Addressing Future Challenges**

The FARM+ Nigeria project will leverage proven sustainable landscape management approaches to strengthen climate resilience among rural farming communities while advancing Nigeria's commitments under the National Adaptation Plan (NAP) and Nationally Determined Contributions (NDCs). Building on policy drivers and documented best practices in climate information dissemination and evidence-based agricultural interventions, mainly under the SPAZs, the project will implement several strategic activities.

These include diversification of cropping systems to enhance soil conservation and fertility; collaborative research partnerships with national institutions such as the National Agricultural Research Institute (NARI) and relevant agricultural research centres including Universities and IITA to develop climate-resilient, disease-resistant crop varieties that reduce input dependency while ensuring higher yield stability; and comprehensive capacity-building initiatives on climate risk management strategies that enable farmers to proactively respond to climate-related shocks while improving farm-level profitability and sustainability.

The project anticipates several implementation challenges requiring proactive management. These include agrochemical industry resistance through lobbying and misinformation campaigns necessitating sustained advocacy and regulatory support; institutional coordination delays across multiple agencies demanding clearly defined roles and high-level political commitment. Additionally, the project anticipates financial institutions' risk aversion to unfamiliar bio-alternative technologies requiring intensive capacity building and demonstrated reduced default rates. There are also chances of farmer adoption barriers including scepticism about bio-alternative efficacy and transition period uncertainties necessitating extensive demonstrations and peer learning platforms.

Climate variability might also potentially disrupt research trials requiring adaptive management and climate-indexed insurance while gender and social inclusion constraints including unequal land tenure and youth urban migration shall demand targeted gender-transformative interventions. Inevitably, supply chain vulnerabilities for bio-alternatives including inconsistent quality and limited distribution networks requiring quality assurance systems and agro-dealer partnerships may also manifest. This shall be worsened by knowledge transfer barriers from extension capacity gaps and limited digital connectivity necessitating diverse communication channels, visual learning tools, and investments in rural digital infrastructure.

The project design postulates that, leveraging institutional coordination and multi-stakeholder engagement shall also reduce the risks within the programme. FARM+ Nigeria recognizes that transformative agricultural development requires robust institutional coordination and inclusive stakeholder participation. Throughout project implementation, FARM+ in the country will establish and maintain continuous multi-stakeholder consultation platforms across its five (5) programme components, engaging critical actors including Federal and State Ministries, Departments and Agencies (MDAs), farmer cooperatives and associations, youth and women agricultural groups, private sector agribusinesses, academic and research institutions, civil society organizations, and financial institutions.

These consultations will ensure that project interventions are contextually relevant, evidence-informed, and responsive to diverse stakeholder needs and national priorities. The project will strategically align with and strengthen

existing coordination mechanisms including the Federal Ministry of Agriculture and Food Security's sector working groups, National Food Systems Dialogue platforms, and agricultural value chain coordination committees and align with GCP frameworks. Additionally, this shall entail exploring the establishment of enhanced coordination structures under a cross-ministerial centralized framework to ensure policy coherence, resource optimization, and sustained impact beyond the project lifecycle.

b) Project Justification and Objective

The FARM+ child project is strategically justified by the urgent need to transform Nigeria's climate-vulnerable agricultural sector trapped in harmful agrochemical dependency that degrades ecosystems, threatens farmer livelihoods, and undermines food security. Systemic challenges highlighted above including limited sustainable technology access, inadequate post-harvest infrastructure generating massive losses, constrained financing, and insufficient farmer capacity require targeted GEF incremental financing. This shall catalyse transformative interventions in policy reform, financial innovation, regulatory strengthening, research validation, extension revitalization, women and youth entrepreneurship, and premium market development that baseline SAPZ infrastructure alone cannot achieve. The project shall ultimately cluster production and processing with technology and market access that facilitate sustainable practice adoption and transform agricultural landscapes toward climate resilience and environmental sustainability.

Based on the comprehensive barriers identified, and in full alignment with the Global Child Programme (GCP)'s strategic framework, nine coordinated interventions will be implemented under the FARM+ Nigeria child project. Each shall respond directly to the root causes and systemic failures identified while ensuring coherence with the programme-wide approach to sustainable agricultural transformation across participating countries.

- 1. Integrated policy coherence and regulatory modernization:** Establish inter-ministerial coordination mechanisms to harmonize agricultural, environmental, trade, and financial policies while strengthening NAFDAC, customs, and enforcement agencies to phase out HHPs, and prevent illegal pesticide trade. This shall be complemented by implementing a Globally Harmonized System of Classification and Labelling, streamline bio-pesticide approvals, and build policymaker capacity to navigate political economy challenges and vested commercial interests blocking reform.
- 2. Research, innovation, and technology validation:** Create collaborative research platform with IITA, CRIN, ARCIN, and universities to design, test, and validate locally-appropriate bio-alternatives, climate-adapted varieties, and nature-based solutions through demonstration plots and Farmer Field Schools. The project proposes using rigorous trials that generate bankable evidence for financiers while integrating indigenous farming knowledge with modern agro-ecological science and establishing quality assurance protocols.
- 3. Subsidy restructuring and financial product innovation:** A program shall be designed to redirect agricultural subsidies from harmful agrochemicals toward sustainable alternatives through systematic assessment and evidence-based reform, while co-designing innovative financial products with banks, MFIs, and cooperatives. Potential areas to consider include credit guarantees, blended finance, transition grants, and preferential terms that prioritize women and youth entrepreneurs and eliminate barriers to SCRA lending.
- 4. Climate-resilient insurance and risk management:** Leveraging the technical expertise of PMU and consultants, the child project shall facilitate the development of agricultural insurance products with NAIC and private insurers. This innovative model shall recognize enhanced resilience of sustainable practices through premium discounts, parametric triggers enabling rapid pay-outs, bundled cooling-as-a-service models, and specialized windows for women and youth bio-alternative entrepreneurs covering production and market risks.
- 5. Strategic infrastructure for post-harvest loss prevention:** A targeted allocation of funds shall prioritize low cost solar-powered cold storage at farm settlements and aggregation centres, rehabilitate rural feeder roads, establish processing facilities, and deploy hermetic storage systems. The project shall expand green energy alternatives to break the cycle where infrastructure deficits force excessive pesticide use yet still result in massive post-harvest losses.

Specifically, all post-harvest infrastructure investments funded under FARM+ will be subject to an energy efficiency and climate-resilience screening requirement. Priority will be given to solar-powered cold storage units, biomass-fuelled dryers, and off-grid compatible processing equipment that do not rely on Nigeria's national electricity grid. Equipment procurement specifications will include minimum energy efficiency ratings and maintenance cost thresholds to ensure long-term operational viability. RUWES Initiative Nigeria will co-facilitate the energy technology assessment process as part of its advisory role within the project.

6. Extension service revitalization and climate knowledge integration: Leveraging collaborations with agriculture ministry, the project shall adopt a PPP mechanisms to transform collapsed extension system through comprehensive agent training in climate-smart agriculture and IPM, deploying digital advisory platforms with real-time climate projections and pest alerts. The core innovation shall be to establish Farmer Field Schools for experiential learning, train lead farmers as community multipliers, and integrate university students into extension practicums creating sustainable talent pipelines. Further recognising the documented weakness of Nigeria's public agricultural extension system, FARM+ will establish a tri-partite extension delivery model comprising: (i) certified peer farmer educators (FFS graduates) as the primary last-mile touchpoint; (ii) a digital extension advisory platform integrated with IoT pest monitoring, providing push notifications to farmer clusters; and (iii) a formal engagement protocol with State Agricultural Development Programme (ADP) extension agents, who will receive refresher training and be integrated into the project's extension delivery chain. The Federal University of Agriculture and Technology operating in the project zone will also be engaged as an extension backstopping institution.

7. Market transformation and premium value chain development: Leveraging PPP arrangements, this child project will establish HHP-free certification systems, broker long-term offtaker contracts guaranteeing price premiums, and develop digital traceability enabling consumer verification. To incentivize uptake of best practices, the project shall target export markets reducing rejection rates, create domestic awareness campaigns, support women and youth aggregators achieving economies of scale, and organize supply chain forums coordinating producers with buyers.

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8. Women and youth bio-alternative entrepreneurship: Leveraging co-financing from strategic partners, the child project shall strengthen SMEs manufacturing locally-produced organic pesticides and fertilizers from agricultural waste through production infrastructure at incubation centres, entrepreneurship training, business development services. This shall extend to financing access, agro-dealer certification establishing distribution networks, business expos connecting producers with national buyers, and mentorship programs accelerating market penetration.

9. Multi-stakeholder governance and scaling pathways: The project shall use existing institutional arrangements to create permanent coordination platforms convening government, research institutions, financial providers, private sector, cooperatives, and development partners through quarterly reviews and annual innovation challenges. The focus will be to establish knowledge management systems documenting innovations for global dissemination, create policy feedback loops informing national commitment updates, and facilitate model replication across additional states and Africa.

This project in Oyo State, if successful, can therefore serve as a demonstration case for several development pathways including but not limited to:

- **Policy and institutional reform:** The project pathway establishes an inter-ministerial coordination mechanism that reduces bio-pesticide approval timelines while providing a tested template for managing agrochemical industry resistance and achieving policy coherence between agricultural subsidies and environmental objectives.

- **Financial innovation and de-risking:** The project showcases how to create bankable technological packages through NIRSAL credit guarantees, climate-responsive insurance premium discounts, and targeted financing for women and youth that demonstrate how strategic public finance catalyses private capital mobilization for sustainable agriculture transitions.
- **Research-to-practice knowledge transfer:** The pathway builds a collaborative innovation pipeline linking IITA, CRIN, ARCN, and universities through rigorous RCTs and competitive grants that generate locally-appropriate bio-alternatives while integrating indigenous knowledge with modern agro-ecological science. Operationally, the project shall conduct a structured comparative performance analysis of bio-fertilizers and bio-pesticides relative to conventional inorganic agrochemicals, disaggregated by crop type and agro-ecological zone. The analysis shall capture evidence on yield outcomes, input cost efficiency, environmental footprint, and soil health impacts. Findings shall be packaged into accessible formats for use in farmer advisory services, agro-dealer training, and policy advocacy, supporting evidence-based decision-making on sustainable input adoption across target value chains.
- **Extension and capacity building:** The project shows how to transform extension systems through comprehensive agent training, digital advisory platforms with real-time climate projections accessible via basic mobile phones, lead farmer multiplier models, and NYSC student integration supported by zero-rated mobile data agreements.
- **Market systems and value chains:** The child project demonstrates how certification systems linked to premium offtaker contracts, women and youth bio-alternative enterprises utilizing circular economy approaches, and digital traceability systems create market incentives that drive HHP-free production adoption more effectively than regulatory mandates alone.
- **Cross-cutting mechanisms:** The project establishes multi-stakeholder coordination platforms and knowledge management systems that ensure policy coherence, enable South-South cooperation, and align results with international frameworks to create federal incentives for national scaling of successful interventions.

By demonstrating that sustainable agriculture is financially viable and less risky than conventional practices, the FARM+ project unlocks previously inaccessible finance for HHP reduction while delivering measurable impacts. This includes reducing HHP purchases and application rates across participating farms, decreasing women's occupational exposure to toxic pesticides during field work and post-harvest processing, improving community health outcomes by minimizing pesticide pollution in soil and water sources, and protecting consumers from contaminated foods. By project end, this shall ultimately show financial institutions, investors, policy makers, researchers, and farmers that transitioning away from highly hazardous pesticides generates both environmental, and human health benefits alongside economic advantages. The goal is to create a replicable financial architecture that can mobilize capital at scale for agricultural transformation that prioritizes farmer wellbeing, gender equity, and community safety across Nigeria and beyond.

a) Key Baseline Investments to be Leveraged by the Project

The FARM+ child project builds upon substantial baseline investments that provide critical foundations for scaling climate-resilient and sustainable agricultural practices across Nigeria's agribusiness sector. At the national level, the Agricultural Transformation Agenda (ATA) has established essential infrastructure for enhancing value chains of key agricultural commodities, improving input supply systems, and supporting market development. This will directly benefit the Special Agro-Industrial Processing Zones (SAPZs) by providing market linkages, aggregation centres, and quality standards that incentivize sustainable production practices.

The Anchor Borrowers' Programme (ABP), initiated by the Central Bank of Nigeria, has created financing mechanisms connecting smallholder farmers with anchor companies while providing credit for inputs and technical support. However implementation challenges including delayed disbursements and inadequate monitoring have limited its effectiveness in reaching the most vulnerable farmers who would benefit from transitioning to climate-resilient practices. The Green Alternative policy framework, articulated in the Agriculture Promotion Policy 2016-2020, emphasizes sustainable agricultural practices, resource conservation, efficient use of land and water, and adoption of environmentally friendly farming techniques. The framework creates an enabling policy environment that aligns with FARM+ objectives even as enforcement and farmer-level implementation remain inconsistent.

Beyond these national programs, significant institutional investments provide technical capacity and demonstration platforms that FARM+ can leverage for scaling innovations.

[1] Awokuse, T., Lim, S., Santeramo, F., & Steinbach, S. (2024). Robust policy frameworks for strengthening the resilience and sustainability of agri-food global value chains. *Food Policy*, 127, 102714.

[1] <https://api.worldbank.org/v2/en/indicator/NV.AGR.TOTL.ZS?downloadformat=excel>

[2] Fowler A. Monteiro, G., Morales de Queiroz Coleman, S., & Silva Mendes, J. (2025). From resilience to sustainability: exploring key stakeholders in agribusiness. *RAUSP Management Journal*, 60(1), 35-51.

B. CHILD PROJECT DESCRIPTION

This section asks for a theory of change as part of a joined-up description of the project as a whole, including how it addresses priorities related to the specific program, and how it will benefit from the coordination platform. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the guidance document. (Approximately 3-5 pages) see guidance here

The objective of the FARM+ project in Nigeria is to unlock finance and build capacity to support governments and agricultural stakeholders in transitioning from unsustainable agricultural practices to sustainable and climate resilient agricultural practices and increase the uptake of nature-based solutions to build the resilience of farming practices to climate change, protect, regenerate and improve productive landscapes and soil health and reduce soil and water pollution from harmful agrochemicals. Building upon the GEF FARM program, FARM+ will place an increased focus on redirecting existing public financial flows to the agricultural sector by supporting governments in assessing and redesigning harmful agricultural subsidies and incentives and taking the necessary measures to repurpose financing and incentives with the objective of encouraging and supporting the uptake of sustainable and climate resilient agriculture. Furthermore, FARM+ will collaborate with regional and national development banks as well as commercial banks and other financial institutions, to design financial products and mechanisms³ that encourage the implementation of sustainable and climate resilient agricultural practices. Partnering with insurance providers and initiatives, FARM+ aims to incentivize the adoption of new practices in the face of climate variability, by increasing access to insurance products that improve the financial security of farmers against crop loss. This is essential since Nigeria is highly vulnerable to climate change and its economy depend heavily on the agricultural sector.

a) Problem Tree

The problem tree identifies excessive use of highly hazardous pesticides (HHPs) and harmful agrochemicals as the core problem, driven by root causes including inadequate policy and regulatory frameworks, limited access to affordable finance for bio-alternatives, insufficient technical knowledge among farmers and agribusinesses, weak institutional coordination across sectors, and market failures that fail to incentivize sustainable practices. The problem is further compounded by weak monitoring and enforcement systems related to the illegal trade, distribution, and use of counterfeit or unregistered agrochemicals, which undermine national regulatory efforts and increase environmental and human health risks. The analysis further recognises that the adverse consequences of HHP dependency including soil degradation, water contamination, loss of pollinators, reduced food safety, and compromised human health disproportionately affect women and children, who bear the highest exposure burden. This is mainly through post-harvest handling, washing of contaminated clothing, and proximity to chemical application without adequate protective equipment.

In alignment with the Global Child Programme (GCP) gender framework, the child project's response to the identified root causes and immediate consequences is therefore designed to be gender-transformative, addressing not only the technical and policy drivers of HHP dependency but also the gender-differentiated vulnerabilities and barriers. These, including limited access to finance, extension services, and decision-making power prevent women from leading the transition to sustainable agricultural practices.

The immediate impacts ultimately cascade into broader systemic failures including compromised food security, threatened public health and safety, degradation of critical ecosystem services, increased rural poverty, and undermined climate resilience. This also results in failure to meet international environmental commitments under the Stockholm, Rotterdam, Basel, and Minamata Conventions, as well as national obligations under the Paris Agreement, Convention on Biological Diversity, and United Nations Convention to Combat Desertification.

b) Theory of Change and Integrated Approach

The FARM+ Global Child Project's Theory of Change provides a strategic framework for addressing systemic barriers to sustainable agriculture transformation and achieving the program's overarching objectives. Developed through a comprehensive stakeholder engagement to determine the baseline showing status, gaps and opportunities, the Theory of Change articulates the causal pathways through which program interventions will catalyze transformative change across policy, finance, technology, and value chain dimensions. Therefore, the FARM+ Nigeria project directly addresses the identified problems by promoting HHP reduction, advancing bio-pesticide and agroecological alternatives, developing guidelines to protect vulnerable ecosystems, identifying polluted ecosystems for restoration, and establishing the policy, financial, technical, institutional, and market system transformations necessary to shift Nigeria's agricultural sector from chemical dependency toward regenerative practices that restore ecosystem health while improving farmer livelihoods and food security. The project will also strengthen institutional monitoring and enforcement capacities related to agrochemical management, including support for improved regulatory coordination, pesticide monitoring systems, farmer awareness, and strengthened oversight of illegal and counterfeit agrochemical products.

The integrated approach proposed for the FARM+ child project reflects the project's Theory of Change, which emphasizes the transformation of agricultural systems to achieve sustainable development and multiple global environmental benefits. The SAPZs are central to this approach, serving as hubs for sustainable agricultural practices and innovation. This Theory of Change for the FARM+ child project is based on the

premise that by clustering agricultural production and environmentally friendly processing activities within the SAPZs, the project can create a critical mass of sustainable practices that will drive dynamic and systemic change in the wider agricultural sector. This approach is designed to address the root causes of environmental degradation, such as the overuse of agrochemicals, poor land management practices, and inefficient resource use.

Further, within the SAPZs, the project will promote a range of climate-smart agricultural practices, including organic farming, integrated pest management (IPM), and sustainable water use. These practices are essential for improving soil health, reducing greenhouse gas emissions, and enhancing biodiversity. The SAPZs will provide the necessary infrastructure, such as training centers, processing facilities, and storage units, to support these practices and ensure their widespread adoption. The integrated approach also includes robust knowledge management, monitoring and evaluation mechanisms to track the project's progress and ensure that it remains responsive to the evolving needs of the agricultural sector. These mechanisms will involve regular data collection, impact assessments, gleaning of best practices and feedback loops that will allow the project to adapt its strategies and interventions as needed.

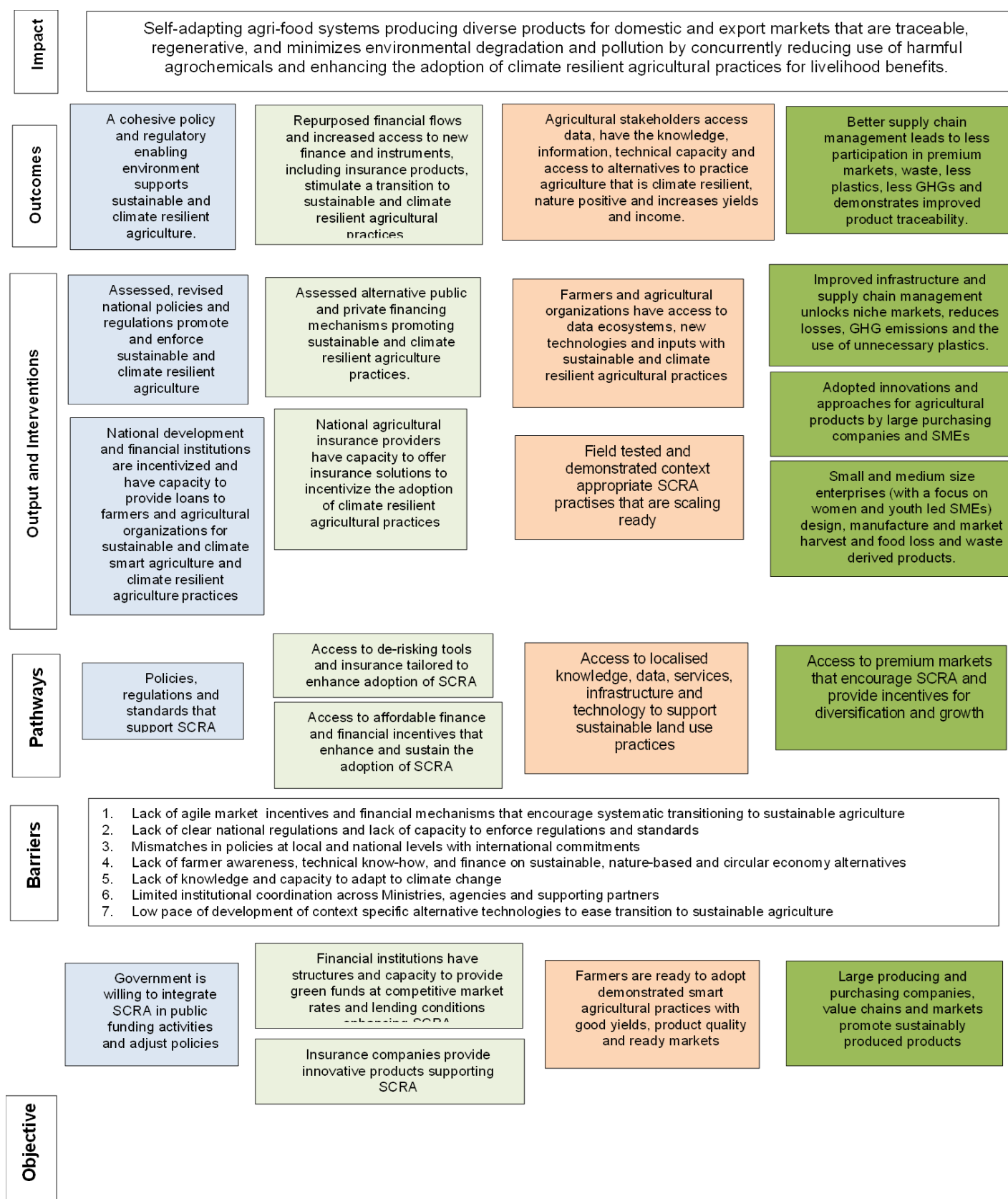
To ensure that the transition away from harmful agrochemicals is practical and achievable for farmers, the project will combine phased adoption approaches, demonstration activities, extension support, access to sustainable agricultural inputs, and financial incentives that reduce transition risks for smallholder farmers and agribusinesses.

Because gender inequality drives both constrained agricultural productivity and disproportionate environmental risk, FARM+ operates on the premise that lasting sustainability outcomes require deliberate transformation of the norms, asset gaps, and institutional barriers that limit women's and youth's agency. To ensure that the transition away from harmful agrochemicals is practical and achievable for farmers, the project will combine phased adoption approaches, demonstration activities, extension support, access to sustainable agricultural inputs, and financial incentives that reduce transition risks for smallholder farmers and agribusinesses.

As targeted interventions expand women's access to resources, governance, and markets, households and communities are expected to adopt safer agrochemical practices and invest in environmental restoration. This generates a virtuous cycle in which gender equity and environmental sustainability reinforce one another. Gender considerations are therefore mainstreamed across all SAPZ-based interventions in alignment with the Global Child Programme (GCP) gender framework. This ensures that women farmers have equitable access to SAPZ infrastructure, training, and market linkages, and that all data collection, impact assessments. Additionally, all the knowledge products generated within the SAPZs are fully gender-disaggregated and contribute to the FARM+ programme-wide gender impact goals.

The baseline and child project's alignment with the FARM+ program's Theory of Change ensures that it is well-positioned to tackle the systemic challenges facing Nigeria's agricultural sector and achieve the desired transformation. The integrated approach also aligns with Nigeria's national development priorities and international commitments, ensuring that the project contributes to both national and global environmental goals.

THEORY OF CHANGE



Core logic and transformational pathways

The Theory of Change identifies critical barriers including inadequate policy frameworks, limited access to finance, insufficient technical capacity, weak institutional coordination, and market failures that perpetuate harmful agrochemical dependency, generate excessive waste, contribute to land degradation, and undermine

climate resilience in agricultural systems. To address these interconnected challenges, the program employs an integrated approach where strategic interventions across five complementary components create mutually reinforcing outcomes that accelerate transition toward sustainable and climate-resilient agriculture

This child project will be coordinated with AfDB's Special Agro-industrial Processing Zones (SAPZs) programme to drive agricultural transformation across the continent. SAPZs are agro-based development initiatives designed to concentrate agro-processing activities within areas of high agricultural potential to boost productivity and integrate production, processing, and marketing of selected commodities. The SAPZs aim to attract private sector investors along the entire value chain, thereby increasing food production, adding value to agricultural produce, and creating decent jobs for Africa's growing youth population.

Therefore, in order to achieve the impact desired by the FARM+ project in Nigeria, AfDB will play a key role in catalysing agricultural transformation, in three main ways:

- Orchestrating at the sector level the impact-oriented borrowing plans and an evidence-based implementation plan for transformation, in the form of an 'Agricultural Transformation Partnership for Africa'.
- Designing and leading the operations in areas that are both critical to drive transformation and for which AfDB is able to leverage its comparative advantage.
- Scaling and replicating the activities and programs of partners that have demonstrable success and the potential to play a key role in country and commodity specific transformation.

These activities are fully in line with the objectives of the AfDB FARM+ Child project, for example, by addressing private sector involvement and value-chain strengthening, which will be strongly complemented by strengthening the enabling environment, facilitating sustainable financing, and ensuring POPs pesticides and HHPs-free practices.

The project will actively seek synergies and knowledge exchange with ongoing national and regional initiatives related to sustainable agriculture, soil health, agricultural finance, and climate resilience, including initiatives implemented through IITA, SAPZ platforms, and other strategic technical and financial partners.

Further, strengthening access to technology, financing, incentives and private sector investment can facilitate the use of innovative alternatives, such as biopesticides and IPM, and provide greater stability when faced with extreme environmental conditions. When successfully implemented, these measures will attract private sector investment particularly in the areas of value addition, transportation, storage, processing, marketing, etc.

The gender analysis and comprehensive Gender Action Plan (GAP) have been developed, coordinated with the Global Child Programme (GCP), and fully integrated across all five project components, outputs, and the Results Framework with gender-disaggregated indicators. Strategic partnerships have been established with women's cooperatives, Community Health and Agriculture Monitor networks, and women's savings groups across the nine Oyo State farm settlements. Gender-differentiated guidance, training, and awareness-raising materials including gender-appropriate PPE, chemical safety training adapted to women's schedules and literacy levels, and local language digital advisory content have been embedded into the project's capacity building and extension delivery systems. Progress will be tracked through a dedicated GAP implementation tracker within the project's M&E system, with gender performance reported at output, outcome, and impact levels throughout the project lifecycle.

Under this Child Project, a gender analysis and comprehensive gender action plan with gender-disaggregated indicators will be developed during project development and mainstreamed within all aspect of the project. Implementation will include establishing strategic partnerships and identifying synergies with women's associations and organisations that focus on women's empowerment, and developing guidance, training, and awareness raising materials that directly address gender-differentiated issues.

Causal assumptions and expected transformation

The Theory of Change assumes that by simultaneously strengthening enabling policy environments, de-risking and mobilizing sustainable finance, facilitating access to proven alternatives and technologies, transforming value chains toward circular and regenerative models, and institutionalizing knowledge management and coordination mechanisms, the program will trigger systemic shifts in behaviour, practices, and investment patterns among farmers, agribusinesses, financial institutions, policymakers, and value chain actors. These combined interventions are expected to generate multiple Global Environmental Benefits (GEBs) including reduced chemical pollution, enhanced biodiversity, improved soil and water quality, increased carbon sequestration, and strengthened ecosystem resilience. This will simultaneously delivers significant socioeconomic co-benefits including improved farmer livelihoods, enhanced food security and safety, increased youth and women's economic empowerment, and reduced post-harvest losses.

Pathway to impact

The Theory of Change demonstrates how short-term outputs (policies reformed, financial instruments deployed, alternatives adopted, value chains upgraded, knowledge disseminated) lead to intermediate outcomes (scaled adoption of sustainable practices, increased investment flows, strengthened institutional capacities, transformed market systems) that ultimately achieve long-term impacts: sustainable and climate-resilient agricultural systems that protect human and environmental health, enhance food security and nutrition, improve rural livelihoods, and contribute to national and global climate and biodiversity commitments. This strategic framework ensures that all program activities are results-oriented, evidence-based, and collectively contribute to transformative change beyond incremental improvements.

a) Stakeholder Engagement by Component and Output

The successful implementation of FARM+ requires comprehensive stakeholder engagement strategies tailored to each component and output, ensuring that interventions are co-designed with beneficiaries, aligned with institutional mandates, and supported by actors across agricultural value chains through coordinated federal-state-community partnerships. Gender parity is mandated across all policy review bodies and inter-ministerial coordination platforms, with gender-responsive chemical safety standards embedded in revised regulations and organic certification schemes prioritising women-led cooperatives. This is consistent with the GCP's gender lens on inclusive policy reform.

Under Component 1 addressing policy, regulations, and enforcement, stakeholder engagement centers on building multi-level coordination platforms that connect federal agencies including FMAFS, NESREA, and NAFDAC with Oyo State ministries of Environment and Agriculture through quarterly forums that harmonize chemical management policies and enforcement protocols across all the 36 states.

- **Farmer cooperatives** in five farm settlements: Fasola, Ijaiye, Lalupon, Eruwa, and Akufo become primary beneficiaries during the first phases of the project and shall be active participants through pilots, and internal compliance systems where cooperative leaders trained in HHP identification conduct peer monitoring using rapid test kits. At the same time, women's groups organized as *“Community Health and Agriculture Monitors”*

will document pesticide poisoning incidents and advocate for alternatives at community meetings, churches, and markets.

There are nine farm settlements across Oyo State and the rest shall be progressively engaged in the course of the project lifecycle and depending the types of crop predominant to the farm community.

List of Farm Settlements and Their Local Governments in Oyo State

1. Akufo Farm Settlement – Ido Local Government, Ibadan Region.
 2. Ilora Farm Settlement – Afijo Local Government, Oyo Region.
 3. Otiri Farm Settlement – Itesiwaju Local Government,
 4. Eruwa Farm Settlement – Ibarapa East Local Government, Ibarapa Region
 5. Fasola Farm Settlement – Oyo West, Oyo Region
 6. Ijaye Farm Settlement (Atan Community) – Akinyele Local Government, Ibadan Region
 7. Ireesaadu Farm Settlement – Surulere Local Government, Ogbomosho Region
 8. Lalupon Farm Settlement – Egbeda Local Government, Ibadan Region
 9. Adetola Farm Settlement – Ido Local Government, Ibadan Region
-

- **The private sector** engagement extends to agro-dealer associations like FEPSAN who partner with NAFDAC to deliver compliance training and self-regulate member businesses. This transforms dealers from passive HHP suppliers into certified “Sustainable Agriculture Input Centers” providing IPM advisory services to farmers in exchange for premium dealer margins on bio-alternatives.
- **Research institutions** including IITA, University of Ibadan, FUNAAB, and LAUTECH embed graduate students in farm settlements conducting participatory action research. They shall establish demonstration farms that host quarterly field days where financial institutions, policymakers, and farmer representatives witness side-by-side comparisons of conventional versus bio-alternative systems.
- **Civil society organizations** like Environmental Rights Action and Alliance for Action against Pesticide in Nigeria (AAPN), participate in bi-annual stakeholder forums reviewing policy implementation and co-designing solutions, while traditional and religious leaders provide cultural legitimacy and mobilization channels for community-based enforcement initiatives that complement top-down regulatory systems.

Component 2 focusing on finance, investment, and insurance requires intensive engagement with commercial banks, microfinance institutions, and public financial institutions who participate in co-design workshops to develop tailored agricultural products. These support climate-smart lending, with NIRSAL Plc providing credit guarantees and technical assistance while the Central Bank coordinates through the Bankers' Committee on agricultural lending targets and risk-sharing facility capitalization. The pilot Green Agribusiness Revolving Fund will be administered by NIRSAL under a dedicated HHP-free credit window, with disbursements conditional

on verified participation in IPM or bio-alternative production systems. Fund utilisation will be monitored through quarterly portfolio reviews by the PMU's finance specialist, cross-referenced against the Component 5 M&E dashboard. All borrowers will be required to complete a financial literacy module prior to first disbursement. An independent fiduciary audit will be conducted annually and results published on the project knowledge portal. A minimum of 40% of the Green Agribusiness Fund is ring-fenced for women and youth-led enterprises, finance products are redesigned to remove land ownership as collateral, and climate-smart insurance products are co-designed with women farmers. This is aligned with the GCP's priority of removing structural financial barriers for women.

- **Farmer organizations and cooperatives** receive training in preparing bankable project applications and financial literacy through partnerships between OYSADA, state agricultural development programs, and business development service providers like SMEDAN, enabling them to access the revolving loan fund and grant facility for agro-smart inputs.
- **Insurance companies** partner with NAIC to co-design climate-smart agriculture insurance products covering adoption risks, with actuarial analysis conducted through pilot programs tracking yield variability and loss ratios among farmers using bio-alternatives compared to conventional methods.
- **Off-taker companies** including export firms facilitated by NEPC, processors, and retail chains like Shoprite and SPAR engage through tripartite agreements with farmer cooperatives and OYSADA, committing to purchase HHP-free produce at premium prices while providing embedded agronomic support through IITA and CRIN field schools.
- **Mobile money** operators including MTN and Airtel integrate with the digital loan application platform to reduce transaction costs for disbursements and repayments, while the Project Steering Committee with balanced representation from government agencies, financial institutions, and farmer organizations provides oversight ensuring stakeholder alignment and addressing implementation bottlenecks through monthly coordination meetings.

Component 3 on technical assistance and bio-alternatives introduction is structured around an Integrated Pest Management (IPM) framework, sequencing cultural practices, biological controls, and bio-alternatives as primary interventions, with reduced-risk chemical use only as a last resort. A precision agriculture module will deploy IoT-enabled sensors and remote sensing tools to provide real-time crop health data, reduce chemical over application, and feed alerts into the digital extension advisory platform. The approach engages extension workers from Oyo State ADP and NAERLS as primary change agents who receive intensive training on IPM facilitation and digital platform administration. They will then support the Farmer Field Schools across farm estates and settlements where farmers learn through experiential observation rather than top-down instruction. Training is adapted to women's schedules, mobility, and literacy levels through female para-extension workers and last-mile community delivery, with women constituting at least 50% of Farmer Field School participants and lead farmers in IPM demonstration plots. This reflects the GCP's commitment to inclusive capacity building and technology transfer.

- **Lead farmers** graduating from FFS programs become certified peer educators serving 20-30 neighbouring farmers through demonstration plots while receiving quarterly stipends linked to verified adoption by mentees. This creates farmer-to-farmer extension networks that reduce the extension agent-to-farmer ratio from the baseline 1:10000 to effective 1:500 through digital amplification.

- **Input suppliers and agro-dealers** receive business model training from FEPSAN on stocking and promoting bio-alternatives despite lower profit margins, supported by consignment arrangements, volume guarantees, and demonstration plots maintained at dealer premises showcasing product effectiveness.
- **Youth and women entrepreneurs** access the Youth and Women Green Agribusiness Fund under the Green Agribusiness Fund Africa (GAF) initiative and managed by JR Farms Nigeria^{[1][2]}, providing loans at 5% interest to establish bio-alternative production enterprises including neem oil processors, botanical extract manufacturers, and microbial agent multipliers, with incubation support at Fasola Hub innovation center through SMEDAN partnerships.
- **IITA's Business Innovation Platform** integrates cassava value chain linkages, Aflasafe and NoduMax distribution networks, hermetic storage technology transfer, and Youth Agripreneur program training connecting Oyo youth to commercialization opportunities.
- **Research institutions** including NIHORT, CRIN, NRCRI, and universities provide scientific protocols for efficacy trials, with graduate students conducting monitoring at FFS sites while UI and FUNAAB computer science students develop localized AI pest identification models through capstone projects.
- **Digital platform users** including 20,000 farmers on SMS services and 5,000 using smartphone apps interact with a network of 20 entomologists from universities and IITA who provide rapid diagnosis through crowdsourced pest surveillance systems, while NiMet delivers weather forecasts and climate advisories enabling optimized planting decisions.

Component 4 addressing food supply chain improvements engages aggregators, processors, and exporters who determine market demand signals and quality standards influencing farmer pesticide use decisions, with these off-taker companies committing to purchase produce from farmers adopting sustainable practices through contracts brokered by OYSADA and facilitated by NEPC export linkages. Women post-harvest processors are prioritised in equipment leasing schemes, women-led cooperatives are integrated into premium off-taker contracts and the HHP-free traceability platform, and circular economy SME support explicitly targets women and youth-led enterprises. Certification will be delivered through a two-tier system including: (i) group/cooperative-level HHP-free certification, accessible to smallholder farmer clusters and validated through the project's traceability platform; and (ii) linkage to the national organic produce certification framework administered by the Federal Ministry of Agriculture. Individual smallholder certification will not be pursued in isolation; instead, cooperative and association-level certification under a shared umbrella arrangement will be the primary model to reduce cost and administrative burden. This coordinated approach is consistent with the GCP's gender lens on equitable employment and value chain participation.

- **Cold chain operators, warehouse managers, and logistics companies** shall partner through equipment leasing arrangements and operational subsidies during demand-building phases, enabling farmers to store produce for seasonal price advantages rather than distressed immediate sales that perpetuate pesticide dependency.
- **Post-harvest technology providers** including NSPRI and equipment manufacturers will deliver training through state ADP extension agents while establishing maintenance networks of 50 trained technicians

ensuring farmers can operate hermetic storage systems, solar dryers, and mechanical shredders distributed through 6 equipment leasing centers across Oyo State.

- **Youth-led SMEs** transforming agricultural waste into livestock feed, compost, and bio-pesticides shall engage through partnerships with ILRI for black soldier fly technology and IITA cassava value chain projects, accessing financing through SMEDAN-supported start-up incubation at Fasola innovation center.

Certification bodies including Ecocert and IFOAM will partner to certify farmer cooperatives at subsidized rates through group certification schemes, while NAFDAC establishes rapid pesticide residue testing protocols at Fasola Hub laboratory enabling weekly quality screening for supermarket suppliers and export consignments.

- **Digital traceability platform developers** like Farmcrowdy and Hello Tractor integrate QR code batch tracking from farm to warehouse, linking 10,000 registered farmers to 5 major off-takers contracted for HHP-free produce with premium pricing transparency delivered through MTN and Airtel zero-rated agricultural content.

Component 5 on global coordination and knowledge dissemination engages national and international research counterparts through collaborative publishing arrangements documenting cost-effectiveness, efficacy, and environmental footprint of non-chemical alternatives under Nigerian farming contexts in peer-reviewed scientific venues. All baseline assessments, M&E data, and knowledge products are fully gender-disaggregated, with gender-transformative lessons from Nigeria including the Community Health and Agriculture Monitor model and women-led circular economy enterprises systematically contributed to the global FARM+ knowledge platform. This transition from current practices is aligned with the GCP's priority of gender-responsive knowledge management across the programme.

- **Private sector associations and multi-stakeholder platforms** receive capacity strengthening to advocate for climate-smart agriculture as core business models, while peer-to-peer learning programs connect Nigerian stakeholders with counterparts in countries facing similar challenges. This shall be achieved through knowledge exchange platforms that consolidate lessons learned on programmatic aspects including financing innovations, insurance product design, value chain linkages, and policy enforcement approaches.
- **Knowledge management platforms** at local, national, and global levels disseminate baseline assessment results, impact evaluations, and best practices to stakeholders both within and external to FARM+. The digital dashboards will provide real-time tracking of extension contacts, adoption rates, sales volumes, and environmental indicators accessible to policymakers, financial institutions, researchers, and farmer organizations for adaptive management and evidence-based decision-making.

Cross-cutting coordination mechanisms operate through quarterly federal-state joint task forces chaired alternately by federal ministry permanent secretaries and Oyo State commissioners. These bring together gender sensitive and accommodative technical working groups that address specific implementation challenges including bio-alternative supply chain development, digital platform interoperability, certification standard harmonization, and enforcement protocol alignment.

- **Monthly coordination meetings at state level** convene OYSADA, Oyo ADP, cooperative leaders, university researchers, buyer representatives, and financial institution loan officers to troubleshoot operational issues and ensure aligned service delivery across farm settlements and estates.
- **Research-extension-farmer integration platforms** shall be convened quarterly by IITA at Fasola Hub translate participatory trial findings into extension messages while identifying priority research needs emerging from

farmer experience, creating continuous innovation loops between universities, NAERLS curriculum development, state ADP implementation, and farmer field application.

- **Women's groups and youth networks** secure 40% and 30% reserved representation respectively in cooperative governance structures, ensuring gender- and age-specific perspectives shape intervention design while specialized committees within cooperatives address barriers to women's and youth participation in sustainable agriculture transitions.
- **Traditional authorities** provide consent for infrastructure siting and conflict resolution around water access and land allocation, while religious leaders amplify awareness campaigns on HHP dangers through churches and mosques, creating comprehensive social pressure supporting adoption of biological alternatives.

This multi-layered stakeholder engagement architecture ensures interventions respond to beneficiary needs, leverage institutional comparative advantages, address power imbalances through inclusive governance, and create sustained ownership across government, private sector, research institutions, civil society, and farming communities necessary for transformative agricultural systems change.

The mapping of core indicators for the FARM+ Project in Nigeria as shown in Table 2 below establishes a clear, auditable link between localized interventions and the delivery of broad Global Environmental Benefits.

Table 2: Core Indicators: Activity-to-Target Mapping

CI #	Core Indicator And GEF Target	Area Covered, Specific Interventions And Activities	How Target Is Achieved
CI 3	Area of Land And Ecosystems Under Restoration <i>10,000 ha</i>	SAPZ pilots: 2,175 ha and OYSADA settlements: 7,825 ha - Total: 10,000 ha 1. Implement agroforestry integration using tree-crop systems in SAPZ hubs and farm settlements. 2. Roll out Climate-Smart Agriculture (CSA) practices including conservation tillage, cover cropping, and water harvesting. 3. Systematically use verified bio-pesticides and integrated pest management solutions. 4. Establish a field-based monitoring and verification system to track restoration progress.	a) Restoration of degraded farmland through agroforestry and CSA practices across SAPZ hubs and OYSADA farm settlements to rehabilitate soil health, enhance biodiversity, and restore water cycles. b) Elimination of HHPs and adoption of bio-alternatives address root causes of soil degradation, biodiversity loss, and water contamination, allowing natural ecosystems to recover while enhancing agricultural sustainability. c) Verified against restoration protocols.
CI 4	Area of Landscapes Under Improved Practices	Same geographic coverage as CI 3 while integrating improved practices in SAPZ sites and OYSADA settlements - Total: 10,000 ha	a) Extension supported transition from HHP-based to IPM and bio-alternative farming across all targeted hectares.

	10,000 ha	1. Farmer Field School (FFS) rollout across all project sites to build farmer-level technical capacity at scale. 2. Implement extension agent training and lead farmer certification programme. 3. Development and deployment of a digital agricultural advisory platform. 4. Agricultural subsidy redirection towards verified sustainable inputs supported by tailored insurance products. 5. Certified and incentivised agro-dealer network for bio-product market access	b) Landscape improvement is achieved through certified HHP-free practices, bio-alternative adoption, and reduced agrochemical loads on soil and water. c) Certification and incentives ensure that sustainable inputs are commercially available and accessible to farmers within project areas, therefore closing the supply chain gap between production and last-mile delivery.
CI 5	Area of Marine Habitat Under Improved Practices 40,000 ha	40,000 ha marine habitat (Guinea Current LME corridor) 1 LME (GCLME) under reduced pollution. 1. Integrated nutrient and pesticide management pilot across SAPZ hubs and farm settlements - 10,000 ha. 2. Soil and water conservation infrastructure pilot in the most critical watershed buffer zones - 10,000 ha. 3. Organic fertiliser transition programme that establishes composting infrastructure and scaling innovative bio-based nutrient sources – 10,000ha. 4. Biochar application and nutrient retention trials using cassava processing waste - 10,000ha. 5. Real-time environmental monitoring and adaptive management system.	a) Source-to-sea pollution reduction via Ogun River basin eliminates agrochemical runoff from the project farmland b) Scaling innovative bio-based nutrient sources permanently reduces nutrient leaching burden on coastal waterways. c) Traceability and HHP-free certification removes pesticide burden from coastal waters. d) Circular economy pilots eliminate unnecessary plastics with cassava starch films replacing plastic crates. e) All this directly protects 40,000 ha of near-shore and coastal marine habitat within the GCLME from pollution and hypoxia.
CI 6	GHG Emissions Mitigated	Project-wide - SAPZ and farm settlements.	a) Clean energy transition and input substitution deliver the majority of direct emissions reductions.

	150,400 tCO ₂ e (Direct)	1. Renewable energy substitution replacing diesel generators with solar power systems at processing infrastructure. 2. Input substitution and demand reduction through elimination of synthetic agrochemical production. 3. Clean refrigeration infrastructure using solar-powered cold room deployment at aggregation nodes. 4. Supply chain efficiency and loss reduction halving post-harvest losses to reduce energy waste in spoiled production chains. 5. Low-carbon enterprise development by incubating green SMEs producing bio-alternative agrochemicals.	b) Supply chain efficiency improvements and green enterprise development sustain and scale long-term emissions reductions. c) Sequestration from restored land adds indirect benefits.
CI 9	Chemicals of Global Concern Reduced (Chemicals & Waste FA) POPs/HHPs: 177,135 MT Marine litter: 58.455 MT Total: 235,590 MT	National scope for import reduction and Oyo State for on-farm elimination 1. Pesticide regulatory reform and market entry to phase-out HHPs and registration of bio-alternatives. 2. Customs and border control infrastructure with rapid pesticide testing laboratories to reduce illegal HHP imports. 3. Aggregate chemical pollution prevention by substituting bio-alternatives and enforcing HHP phase-out. 4. Retail market transformation and last-mile distribution by converting selected agro-dealers to sustainable agriculture input centres. 5. Plastic pollution co-benefit by avoiding marine plastic	a) Targeted policy reform and incentives drive POPs and HHP elimination. b) Reduced reliance on plastic-based agrochemical packaging leads directly to lower leakage into waterways, resulting in proportional declines in marine litter.

		litter through POPs packaging elimination.	
CI 10	Persistent Organic Pollutants (uPOPs) to Air Reduced <i>2.095 gTEQ</i>	Oyo State - farm settlements and SAPZ zones 1. Unintentional POPs (uPOPs) release prevention supported by incentivised waste disposal pathway diversion. 2. Community waste infrastructure targeting composting centres diverting organic waste	a) Eliminating HHP-related plastic packaging and disposal incentives are the main driver. b) This is combined with circular waste diversion through composting centers, prevents open burning of agricultural plastics and the associated release of pollutants.
CI 11	People Benefiting from GEF-Financed Investments <i>Women: 1,500,000</i> <i>Men: 2,000,000</i> <i>Total: 3,500,000</i>	Oyo State for direct benefits and National for policy reach 1. Farmer Field Schools (FFS) and peer educator cascade. 2. Digital advisory platform deployment generating alerts to support informed farm-level decision-making. 3. Crop insurance uptake expansion by facilitating access to parametric crop insurance products. 4. Agricultural finance access using a revolving fund and grants targeting women and youths. 5. Bio-alternative enterprise development and mechanization access. 6. Policy and national scaling impact focusing on HHP phase-out and subsidy reform.	The 3.5 million beneficiary figure combines national policy impacts through subsidy reform and HHP bans with direct Oyo State interventions under the five components

Global Environmental Benefits Pathways

This project delivers a high-integrity GEB model by integrating Chemicals and Waste (C&W) and International Waters (IW) mandates into a single, auditable logic chain. Nigeria's Atlantic coastline is part of the Guinea Current Large Marine Ecosystem (GCLME), one of the most productive but heavily stressed marine systems in Africa. Agricultural runoff from Oyo State's farmlands flows through the Ogun River basin into Lagos Lagoon and ultimately the Atlantic Ocean, carrying dissolved pesticide residues, nitrate loads, and plastic micro-fragments. The intervention moves beyond isolated pilots to a source-to-sea pathway where upstream regulatory reform directly generates downstream marine protection:

- **Upstream (C&W integration):** By leveraging a USD 6.5M allocation to reform national pesticide legislation and certify HHP-free value chains, the project locks in the avoidance of 177,135 MT of POPs/HHPs (CI 9.1). This intervention is structurally anchored in the Oyo State SAPZ, ensuring that 10,000 ha of intensified production (CI 3 & 4) adopts bio-pesticides and circular cassava-starch packaging. This circularity specifically addresses CI 10, avoiding 2.095 gTEQ of uPOPs by eliminating the open burning of agricultural plastics.
- **Downstream (IW integration and connectivity):** The IW focal area allocation of USD 1,000,000 is ring-fenced specifically for this source-to-sea intervention, funding water quality monitoring along the Ogun River, stakeholder coordination with NESREA and the Niger Basin Authority, and establishment of riparian buffer zones at key farm settlement boundaries. These on-land interventions are functionally linked to the Guinea Current LME (CI 5.2) through the Ogun River basin. The IW-funded riparian buffers and real-time water quality monitoring act as a 'pollution interceptor.' Because every hectare of HHP-free land upstream prevents a plume of chemical and nutrient runoff from reaching the coast, the project achieves a 4:1 impact ratio, bringing 40,000 ha of sensitive marine habitat (CI 5) under improved management. The 40,000 ha marine habitat target (CI 5) is achieved through the combined effect of on-land agrochemical elimination and near-shore coastal management improvements.
- **Market-led sustainability:** The target of 177,135 MT is made certain through 'HHP-free premium pricing' and border enforcement, ensuring that GEBs are not merely aspirational but are a mandatory by-product of the SAPZ's commercial success. The project's traceability platform and SME lead circular economy business components targeting the elimination of plastic packaging, and cassava-starch film substitutes further reduce solid plastic entry into river systems.

Through this convergence, the project demonstrates that managing agricultural chemicals is the most cost-effective lever for protecting transboundary marine ecosystems, providing a scalable template for the GEF-8 'Integrated Programs' philosophy.

Key Assumptions Shaping the Impact

The FARM+ project's successful implementation across all five components and attainment of the GEBs relies on several critical assumptions regarding institutional readiness, stakeholder commitment, market conditions, and enabling policy environments that underpin intervention feasibility and scalability.

Component 1 assumes that:

- Federal and state governments maintain political will to enforce HHP phase-out measures despite agrochemical industry resistance, and that NAFDAC and NESREA possess sufficient budgets and personnel for sustained market surveillance beyond initial project investments.
- The framework presumes farmer cooperatives demonstrate organizational cohesion to implement internal HHP elimination standards without free-rider problems.
- Additionally it is assumed that that women's groups and youth networks maintain active participation in community monitoring despite competing time demands from household responsibilities and income-generating activities.

Component 2 assumes that:

- Commercial banks and microfinance institutions perceive agricultural lending to bio-alternative adopters as sufficiently profitable to justify product development despite guarantee support.

-
- Farmers demonstrate adequate financial literacy to prepare bankable applications after training,
 - Repayment rates sustain the revolving fund without continuous external subsidy.
 - Insurance pathways presume actuarial data demonstrates lower loss ratios for HHP-free systems justifying affordable premium discounts while remaining commercially viable.
 - Parametric triggers minimize basis risk where pay-outs correspond with actual losses
 - Premium buyers maintain consistent demand for HHP-free produce at price differentials compensating farmers for transition costs while traceability systems prevent mixing that would undermine market integrity.

Component 3 is based on the assumptions that:

- Extension workers shall successfully translate IPM training into farmer behaviour change rather than mere information dissemination.
- Farmer Field Schools convincingly demonstrate bio-alternative effectiveness within single seasons despite biological systems requiring years to establish optimal pest regulation/
- Lead farmers maintain motivation for modest stipends while their advice carries social credibility to influence neighbours.
- Bio-alternative enterprises assume youth and women entrepreneurs acquire business management skills for viable operations.
- Raw material supply chains remain stable and affordable with quality control maintained across distributed networks.
- Digital advisory systems achieve sufficient accuracy and rural coverage with farmers trusting and acting upon pest alerts and climate recommendations delivered through mobile channels.

Component 4 leverages key assumptions that:

- Post-harvest technologies deliver claimed performance despite potential operational challenges.
- Aggregation centres achieve throughput volumes justifying infrastructure costs.
- Equipment leasing functions effectively despite seasonal cash flow constraints.
- Circular economy interventions presume markets exist for waste-derived products at profitable price points
- Institutional buyers shift procurement toward HHP-free suppliers despite price premiums.
- Export certification remains accessible for smallholder cooperatives.
- Traceability platforms maintain data integrity despite connectivity limitations and potential falsification while premium pricing transparency reaches farmers rather than being captured by intermediaries.

Component 5 assumes that:

- Baseline assessments generate robust causal evidence despite attribution challenges in complex agricultural systems.
- Stakeholders actively engage with published findings to influence decisions rather than materials accumulating unused.
- Peer-to-peer learning yields actionable insights adaptable to local contexts.
- Commodity companies perceive market benefits from sustainability commitments sufficient to outweigh supply chain reformulation costs while industry associations coordinate collective action rather than succumbing to free-rider dynamics.

Cross-cutting assumptions include that:

- Climate change impacts do not accelerate beyond anticipated levels overwhelming adaptive capacity
- Policy coherence is maintained despite bureaucratic rivalries and personnel turnover.
- Macroeconomic stability preserves affordability of imported inputs and equipment.
- Gender norms evolve to support women's participation while youth perceive agriculture as attractive despite urbanization pressures
- Infrastructure including rural roads and electricity supply supports cold chain operations and digital functionality while land tenure security provides confidence for long-term investments.

These interconnected assumptions collectively determine whether FARM+ achieves anticipated scale and impact, with violations triggering adaptive management responses including intervention redesign, stakeholder re-engagement, or strategic pivots to alternative pathways for achieving programme objectives. A set of risk shall make these assumptions be subjected to test during implementation (Table 10) and hence the need to proactively position a set of mitigation strategies to reduce project failure.

Components, Activities and Expected Results

The FARM+ child project in Nigeria strategically adapts all five components to national and local contexts, designing interventions that respond to Nigeria's specific agricultural challenges, institutional capacities, and development priorities while maintaining alignment with global programme objectives. The following process was followed to align the components, outcomes and activities with the realities of Nigeria and more specifically Oyo State which is the implementation area (Figure 9).

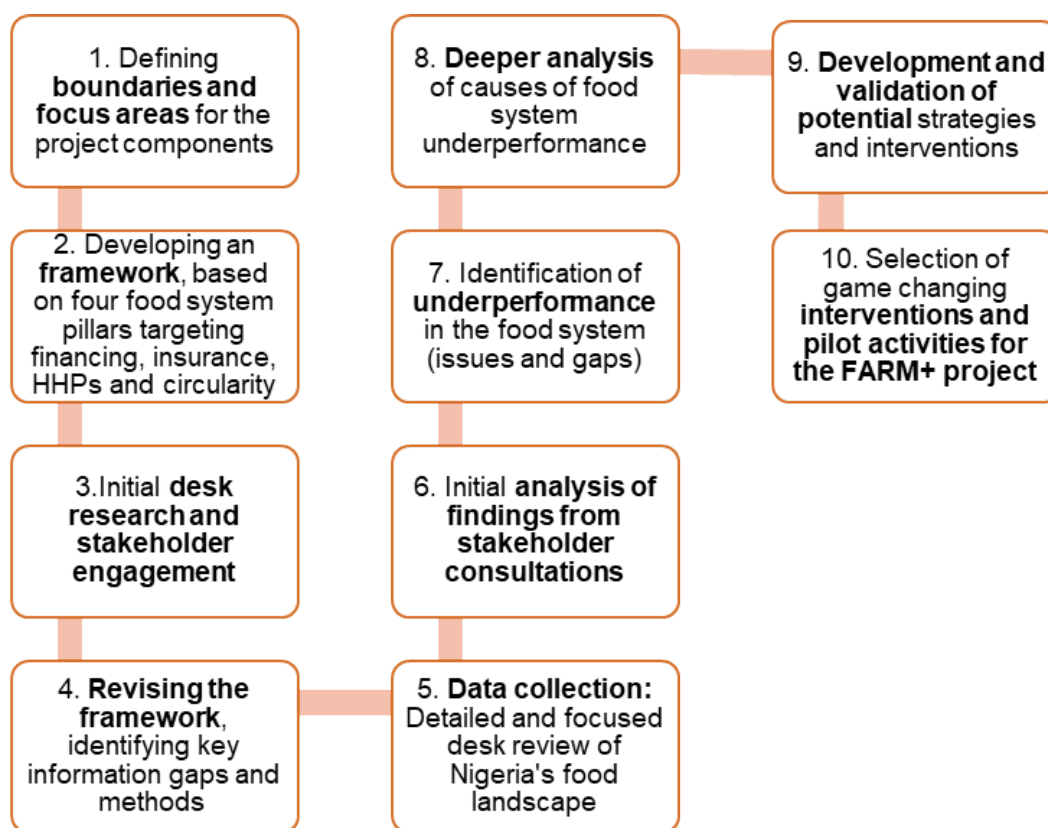


Figure 9: The Process for Identifying Interventions and Pilots

Source: Consultants' analysis (2025)

Component 1: Policy, Regulations and Enforcement – coherent government policies, regulations, and enforcement measures to support sustainable and climate resilient agriculture

This component seeks to inform the development of processes for policy, regulatory and standards revisions and actions that support, accelerate and sustain the transition to climate smart agriculture while reducing the use of HHPs and unlocking finance. The project shall provide targeted institutional support to national and sub-national government agencies responsible for agrochemical regulation and enforcement. This shall include technical assistance for the establishment and operationalisation of Local Agrochemical Regulatory Task Forces, training for enforcement officers on inspection protocols and regulatory standards, and the development of community-level reporting mechanisms for counterfeit and adulterated input supply. The project shall further facilitate information-sharing arrangements between regulatory bodies, agro-dealers, and law enforcement, contributing to a coordinated regulatory ecosystem that deters illegal agrochemical trade.

Output 1.1: Assessed and revised national policies and regulations promote sustainable and climate resilient agriculture

The core of this output will be establishing a Policy Review Task Force to establish clear guidelines and standards for environmentally sound agriculture practices as a framework for farmers and financial institutions to adopt and ultimately strengthen a policy environmentally sound and climate resilient

agricultural practices. Stakeholder consultations showed that there is already aligned work in progress and the FARM+ project should ensure the integration of best practices including guidelines, protocols and a Commission. The following complementary activities shall be implemented to achieve Output 1.1:

- Establish or strengthen a national policy review task force or Commission to review and align policies, strategies, and plans, and incentive related to the use of HHPs in agriculture, climate smart agriculture, pollution and financing.
- Develop a digital data aggregation and results portal to inform and create awareness among policy makers, financial institutions and investors on how harmful practices will result in diminished yields, livelihoods and profits.
 - Assess and evaluate how climate change impacts have increased the use of harmful agrochemicals at national level and how use may increase under future climate change scenarios.
 - Conduct a scenario analysis that assesses the impact of harmful agrochemicals in land degradation, water resource pollution and climate change risk and vulnerability at national level and in relevant agro-productive regions.
- Strengthen the National Chemicals Coordinating Committee as an autonomous agency represented by key stakeholders that is mandated to “own” the Pollution Bill.
 - Design a labour division framework for stakeholders to eliminate duplication of responsibilities, facilitate information sharing, and strengthen knowledge systems.
- Align the application of insurance provisions across all crop and livestock enterprise.
 - Enhance the capacity of NAIC to coordinate the insurance sector and frequently design adapted products that respond to the changing agricultural, environmental and national conditions.

To execute the above activities, the project shall design programs under two strategic pathways.

Pathway 1: National Chemical Management Framework Strengthening

This intervention strategically targets policy development, regulatory harmonization, enforcement capacity, and institutional coordination stages to create a comprehensive enabling environment that systematically phases out highly hazardous pesticides (HHPs) while promoting climate-smart alternatives.

Strategic Pilots and Interventions

1. Federal-State Policy Harmonization Platform

- The project shall support quarterly coordination forums linking FMAFS, NESREA, NAFDAC with Oyo State Ministry of Environment and Agriculture. Additionally, a digital policy tracking system monitoring state adoption of federal frameworks shall be designed and adopted. This shall be

supported by technical working groups on pesticide regulation, organic standards, enforcement protocols

2. Evidence-Based Policy Impact Assessment System

- This child project will design a national dashboard tracking HHP importation, usage patterns, and contamination levels, supported by mobile monitoring tools for enforcement officers across federal/state agencies. This shall feed into public-facing compliance scorecard showing federal and state performance leveraging partnership with National Bureau of Statistics and universities for data analysis

Capacity Building and Climate-Smart Agriculture Integration

NAERLS extension curriculum integrates climate-resilient varieties that require approximately 40% fewer pesticide applications while maintaining yields under variable rainfall. This shall be anchored by **state-Level** training of Oyo policy officers on sustainable agriculture policy frameworks through intensive programs at NAERLS regional center, with ongoing mentorship from Federal Ministry of Environment. This FARM+ project will also equip state environmental officers with mobile pesticide testing kits and enforcement protocols through quarterly field training.

Output 1.2: Assessed and revised regulatory and enforcement measures support sustainable and climate resilient agriculture

This output aims to develop internationally aligned regulatory and enforcement tools that are adapted to the Nigerian context using several activities feeding into pathway 2:

- Assess and analyze the status and impact of control and enforcement approaches and capacity in place at national level against a set of nationally accepted criteria aligned with national development, sustainability and climate (resilience) goals.
- Design or revise priority regulatory, enforcement and compliance measures and incentives that would be deemed most impactful based on the assessment conducted.
- Strengthen national enforcement by providing equipment to laboratories, training and capacity building to officials and users of agrochemicals on new regulatory and enforcement measures.

Pathway 2: Organic Agriculture Policy Operationalization and Market Development

This intervention leverages market power of certification systems, premium pricing incentives, and institutional procurement to drive adoption of organic production practices across cocoa, vegetables, sesame, and maize value chains. Strategic interventions at farm certification, input supply, aggregation, and buyer contract stages systematically eliminate harmful agrochemicals while securing premium market access.

Strategic Pilots and Interventions

1. Fasola Hub Organic Production Cluster

- The project shall support group organic certification through OYSADA brokered partnerships with 50% cost subsidy supported by collective bio-input procurement (neem oil, Trichoderma, compost) reducing costs by 30%.

2. University-Led Organic Research and Demonstration

- The project envisages supporting 5-hectare organic demonstration farms at two universities showcasing crop-specific IPM building towards participatory on-farm trials with 500 surrounding farmers in the settlements per university. This shall lead to the development of organic production manuals for main crops including maize, cassava, vegetables, cocoa, sesame, ginger.

3. Oyo State Institutional Procurement for Organic Produce

The child project shall establish a quota system for Government hospitals, schools, military barracks committing to purchasing HHP-free vegetables. This spans to preference for suppliers from Fasola Hub and farm settlement cooperatives with a 10% price premium built into procurement contracts expanding to 50% over the project lifecycle.

Capacity Building and Climate-Smart Agriculture Integration

At the state-level the project shall retrain Oyo State ADP extension agents on organic certification requirements, IPM package design, organic input production, and market linkage facilitation through intensive residential programs at NAERLS regional center. Train 200 Farmer Field School facilitators on participatory learning methodologies through FAO-supported train-the-trainer programs. Organic soil management systems sequester CO₂e annually through compost application, cover cropping with legumes (mucuna and cowpea), and elimination of synthetic nitrogen fertilizers that generate N₂O emissions.

Pathway 3: Enforcement Capacity Strengthening and Market Surveillance

This intervention builds regulatory enforcement capacity to prevent illegal HHP importation and distribution while transforming agro-dealers from passive HHP suppliers to active sustainability advisors. Strategic interventions at border control, market surveillance, dealer compliance, and prosecution stages systematically eliminate HHP availability while ensuring bio-alternative accessibility.

Strategic Pilots and Interventions

1. Integrated Border Control System

- The project shall support and strengthen the functions of a Single Trade Window integration requiring NAFDAC pre-clearance before pesticide shipment, supported by 24-hour pesticide testing laboratories at ports for suspicious shipments. This shall be supported by digital import tracking system linking NAFDAC, Customs Service, and NESREA within the knowledge management system at national level.

2. Oyo State Market Surveillance and Rapid Response

- It shall be proactive for the project to support monthly surprise inspections using rapid pesticide testing kits and farmer hotline (toll-free number) for reporting suspected illegal pesticides. This shall benefit from public awareness campaigns at markets on HHP dangers and legal alternatives.

3. Agro-Dealer Compliance and Business Transformation

The project will focus on training on IPM advisory services, bio-alternative products, and regulatory compliance culminating in the accreditation as '*Certified Sustainable Agriculture Input Centers*' with branding support.

Capacity Building and Climate-Smart Agriculture Integration

Bio-alternative supply chains displace HHPs that generate active ingredient through energy-intensive synthesis, replacing them with locally-produced neem oil, botanical extracts, and microbial agents with lower carbon footprint. The enforcement shall gradually eliminate highly persistent organophosphates and pyrethroids that contaminate water sources and kill beneficial insects critical for natural pest regulation.

Cross Cutting Enablers

The enabling framework integrates multi-level financial support, digital systems, and policy coordination to facilitate Nigeria's transition from highly hazardous pesticides. Financial architecture combines federal credit guarantees through NIRSAL (90-95% coverage), streamlined NAFDAC bio-pesticide registration with reduced fees and faster approvals, and a grant program supporting farmers with transition costs. Oyo State contributes funding in counterpart funding while leveraging acceptable matching ratios with federal and development partners, supplemented by blended finance structures mobilizing funds from multilateral institutions.

Digital infrastructure establishes comprehensive farmer registries with QR-code traceability linking production data to market transactions, mobile advisory services delivering real-time pricing and pest management guidance in local languages, and tablet-equipped extension agents conducting electronic farm assessments that feed centralized monitoring systems. Policy coordination operates through Federal Environment Ministry's chemicals management framework, FMAFS extension policy revisions emphasizing integrated pest management, expanded NAFDAC prohibited substances lists, and tax incentives for bio-pesticide value chain actors.

Oyo State's Organic Agriculture Promotion Law then mandates preferential land access and government procurement quotas, while a monthly Policy Implementation Committee addresses operational bottlenecks and a quarterly Federal-State Joint Task Force harmonizes enforcement standards, documents lessons learned, and facilitates knowledge transfer across Nigeria's 36 states through annual learning exchanges.

Component 2: Finance, Investment and Insurance - Increasing access to finance and investments for sustainable and climate resilient agricultural practices

This component focuses on profiling the financing landscape by assessing the existing and alternative finance mechanisms to inform and support the redirection of public and private financing from degenerative agricultural practices towards sustainable and climate resilient agriculture. The approach will be to redesign and create innovative finance mechanisms, tools, and incentives that help mobilize greater financial resources and increase program impact.

Output 2.1: Assessment of existing and alternative finance mechanisms provide recommendations on how to redirect public and private financing from degenerative practices towards sustainable and climate resilient agriculture

Pathway 1: Financial Institution Capacity Development

This intervention strategically builds the capacity of commercial banks, MFIs, non-bank financial institutions, and public financial institutions to design, deliver, and manage agricultural financial products that support

climate-resilient and sustainable farming practices. The pathway targets institutional gaps in responsible investment knowledge, loan appraisal capabilities for smart agriculture, and product innovation using several activities:

- Conduct a national level situation analysis of the existing finance instruments, their impact and potential for sustainable and climate resilient agriculture.
 - Formulate a robust SWOT framework to selected potential candidates for inclusion in the new direction of the project considering inclusiveness for women, smallholder farmers, youths and SMEs.
 - Determine and quantify the allocations of public and private expenditure
- Leverage the situation analysis to design products and incentives that respond to the transition requirements of the FARM+ project targeting de-risking pathways.
 - Conduct scenario and simulation analyses for potential outcomes for the preferred tools and incentives on food security, transition to climate smart agriculture, and sector contribution to GDP.
- Design a stakeholder coordination framework and platform (multi-stakeholder platform) for the transition pathways identified while acknowledging a clear ownership arrangement, power differences and interest of different stakeholders.

Strategic Pilots and Interventions

1. Responsible Investment Training Program

- The project shall commence with a capacity needs assessments across partner financial institutions supported by training modules on responsible investment principles and ESG criteria as well as coaching for loan officers and credit analysts on sustainable agriculture lending

2. Agricultural Financial Product Innovation Hub

- This child project will co-design workshops with banks and MFIs to develop tailored agricultural products leading to pilot testing of climate-smart lending products across 5-10 institutions. This entails designing or restructuring internal assessment tools and guidelines for sustainable agriculture loans.

3. Smart Agriculture Loan Appraisal System

- There shall be processes to develop specialized training modules for evaluating good agricultural practices and hands-on training for credit analysts on assessing climate-smart farm applications. Over archingly, the project shall help to design standardized profiling tools to reduce portfolio at risk (PAR)

Capacity Building and Climate-Smart Agriculture Integration: The project envisages loan products prioritizing precision agriculture tools, climate-smart technologies, regenerative agriculture inputs, and environmentally safer crop-protection alternatives through preferential terms and streamlined approval processes. There shall be state-level engagement of regional banks and MFIs through partnership agreements, federal coordination with Central Bank and banking associations for standards alignment, and development of master trainers who can cascade learning across financial sector networks.

Output 2.2: Financial mechanisms for sustainable and climate resilient agriculture developed, and financial institutions have increased capacity to assess risks and provide loans

Pathway 2: Blended Finance Mechanism for Sustainable Agriculture

The intervention deploys a dual-instrument approach combining targeted grants and a revolving loan facility to dramatically reduce financial barriers for farmers and agribusinesses adopting sustainable practices. This pathway strategically intervenes at input acquisition, technology adoption, and working capital stages to accelerate the transition from harmful agrochemicals to agro-smart alternatives. The output shall strengthen sustainability related lending by shifting capital towards sustainable and climate resilient agriculture and incentivize the adoption of technologies and techniques that eliminate the use of harmful practices.

The project will forge partnerships with financial institutions including commercial banks, microfinance institutions (MFIs), other non-bank financial institutions, and public financial institutions to enhance their capacity in responsible investment and in designing financial products tailored to the needs of the agricultural sector. This support will also strengthen their ability to effectively assess loan applications from farmers implementing smart agricultural practices.

The child project will also engage legally recognized small organizations (such as networks, associations), individual farmers and farmer groups, as well as agribusiness intermediaries, to build their capacity in preparing bankable projects and loan or investment applications. These efforts aim to foster mutually beneficial business relationships by improving linkages and cooperation across actors within the agrochemical value chain.

To address the growing challenge of high input costs and limited access to affordable financing for farmers and agribusinesses, the project proposes a blended support mechanism combining **targeted grants** and a **revolving loan facility** offered through participating financial institutions.

Under this approach, a **grant facility** will be established to lower the cost of agro-smart inputs such as precision agriculture tools, climate-smart technologies, regenerative agriculture inputs, and environmentally safer crop-protection alternatives. By subsidizing a portion of the cost, the grant will make these innovative and sustainable inputs more accessible to smallholder farmers, cooperatives, and emerging agribusinesses. This intervention aims to accelerate the adoption of technologies and practices that improve productivity, reduce dependency on harmful inputs, and strengthen resilience to climate-related shocks.

Complementing the grant support, the project will partner with financial institutions to introduce a **revolving loan fund** designed to offer financing at **below market interest rates**. This affordable lending window will help mitigate the burden of high borrowing costs that currently constrain investment in improved technologies and sustainable agricultural practices. The revolving nature of the fund ensures that repayments replenish the pool, enabling continuous lending to additional borrowers over the life of the project and beyond. The key activities include to:

- Establish partnerships with financial institutions to strengthen responsible investment and agricultural financial product development.

- Identify and engage financial institutions (commercial banks, MFIs, non-bank financial institutions, public banks) for partnership.
- Conduct capacity needs assessments for partner financial institutions.
- Deliver training on responsible investment principles.
- Support financial institutions in designing and piloting agricultural-focused financial products.
- Set up a fund with partner financial institutions to on lend to borrowers conducting climate smart practises
- Buy down interest using the fund for borrowers practising smart agro activities. This can be in range of 3 to 5%, 3% for those adopting smart practises and an additional 2% for those making early or scheduled loan repayments.

Indicators:

- Number of partnership agreements signed with financial institutions
 - Number of staff trained in responsible investment and agricultural lending
 - Number of new or improved agricultural financial products developed
 - Value of loans disbursed
 - Quality of loan portfolio (percentage of NPLs, Percentage of loans paid as per repayment schedule)
- Enhanced capacity of financial institutions to assess loan applications from farmers implementing good agricultural practices.
 - a. Develop training modules on loan appraisal for farmers implementing good agricultural practices.
 - b. Conduct workshops, coaching, and hands-on training for loan officers and credit analysts.
 - c. Establish internal tools/guidelines for improved assessment of sustainable agriculture loan applications.

Indicators:

- Number of financial institution personnel trained in loan appraisal for sustainable agriculture
 - Percentage improvement in loan assessment quality (e.g., reduced PAR, better profiling)
- Make mandatory the establishment of tailored agribusiness strategies for all financial institutions offering finance to the sector through an Act of law.
 - Establish an accredited national capacity building and certification program for financial institutions to strengthen their capacity to develop sufficient, agile, and competitive financial products that meet the specific needs of women, youth, smallholder farmers, and SMEs to increase their access to finance.
 - Establish a coordinated training-of-trainers program with standardized materials to build the capacity of (field level) loan officers on how to assess loans for sustainable and climate resilient agriculture.

- Support the integration of ESRA systems and compatibility with Multilateral Environmental Agreements (MEAs).
- Develop sector level technological packages (leveraging Big Data and AI) to promote and support the integration of de-risking instruments, such as climate insurance, into financial institutions to help transfer the risk of climatic events to the insurance industry.
- Develop a sector level M&E data repository leveraging block chain technologies.

Together, the grant and subsidized loan instruments are expected to:

- Reduce the financial barriers to adopting agro-smart and climate-resilient inputs.
- Stimulate investment across the agricultural value chain.
- Support farmers and agribusinesses in transitioning to more regenerative and environmentally responsible production systems.
- Strengthen the capacity of financial institutions to offer tailored, affordable agricultural products.
- Create a sustainable mechanism for expanding access to finance well into the future.

This blended financing approach promotes inclusive growth, enhances environmental sustainability, and creates long-term economic benefits for both farmers and lending institutions.

Strategic Pilots and Interventions

1. Grant Facility for Agro-Smart Inputs

- The project shall provide subsidies (30-50%) for precision agriculture tools, climate-smart technologies complemented with grants for regenerative agriculture inputs and safer crop-protection alternatives as direct support to smallholder farmers, cooperatives, and emerging agribusinesses. The project shall serve as a model for sustainable agricultural innovation in West Africa by pioneering the deployment of precision agriculture technologies and circular economy frameworks within Nigeria's agrochemical management landscape. Technology-driven interventions including sensor-based input application, georeferenced field mapping, and AI-assisted advisory tools shall be systematically documented, evaluated, and packaged for replication and scale across the sub-region.

2. Revolving Loan Fund with Interest Rate Buy-Down

- The project shall support concessionary-market interest rate financing through partner financial institutions with incentivised interest reduction for farmers adopting smart agricultural practices, coupled with an additional 2% reduction for early or scheduled loan repayments. The project capitalization of the fund provides ongoing liquidity to banks/MFIs

3. Bankable Project Development Support

- This child project will focus on training for farmer organizations and networks in preparing investment applications through technical assistance for agribusiness intermediaries on financial planning as well as establishing linkage facilitation across agrochemical value chain actors.

Capacity Building and Climate-Smart Agriculture Integration: Project financing shall prioritize technologies that improve productivity while reducing dependency on harmful inputs, support for climate-resilient

practices that strengthen adaptation to climate shocks, and investments in regenerative production systems that restore soil health and biodiversity. This shall be supported by state-level training of farmer organization leaders in financial literacy and bankable project preparation, federal coordination with agricultural finance institutions for standardized application processes. Overall the project shall support the development of lead agribusinesses as demonstration cases for successful sustainable agriculture financing.

Output 2.3: National agricultural insurance providers are better equipped to offer insurance solutions to incentivize the adoption of climate resilient agricultural practices

Pathway 3: Agricultural Insurance and Risk Management

This intervention develops and deploys insurance products that protect farmers from adoption risks associated with transitioning to climate-resilient practices, strategically reducing barriers to sustainable agriculture uptake. The core activities include to:

- Provide technical support and build the capacities of the insurance industry to bundle insurance solutions into service delivery models, like financial institutions, that promote the use of resilient agricultural practices and reach scale.
- Conduct feasibility analyses to build the business case for offering insurance solutions that incentivize the adoption of climate resilient agricultural practices while aligning with sustainable business models for insurance companies.

To effectively execute the above activities, this FARM+ child project shall institute a series of pilot initiatives.

Strategic Pilots and Interventions

1. Climate-Smart Agriculture Insurance Product Development

- The project will support the co-designing of products covering adoption risks with insurance providers including adapted weather-indexed insurance for climate variability protection, and crop-specific coverage for farmers using bio-alternatives

2. Farmer Insurance Awareness and Enrolment Campaign

- It is essential to also roll out awareness campaigns on insurance benefits and risk management supported by simplified enrolment processes through farmer cooperatives and premium subsidies for early adopters of climate-smart practices.

Capacity Building and Climate-Smart Agriculture Integration: The child project shall, in partnership with NAIC and private insurance providers finance innovative insurance products specifically designed to de-risk climate adaptation investments, coverage linked to adoption of regenerative practices and reduced agrochemical use, and parametric triggers based on climate data and sustainable farming indicators. This entails training of insurance agents on agricultural risk assessment and climate-smart practices, capacity development for insurance companies in product design and actuarial analysis for sustainable agriculture, and farmer education on insurance mechanisms and claims processes.

Output 2.4: Farmers have access to value chains that make it attractive and economically viable to practice sustainable and climate resilient agriculture

A series of interconnected activities is proposed in this child project:

- Undertake a national level readiness assessment (complemented with a scaling readiness later in the project) to map climate change impacts on major agricultural products; potential for markets to absorb sustainable and climate resilient agricultural products, and barriers for entry.
- Strengthen the SAPZs and cooperatives to act as multi-stakeholder innovation hubs and identify ‘niche’ opportunities for farmer entrepreneurs including SMEs.
- Evaluate the potential of institutional buyers as the foundation to unlocking markets and increase the uptake of sustainable and climate resilient agriculture.
- Use provisions in AfCTA and ECOWAS to engage with national and international agri-businesses to promote sustainable sourcing and supply chain practices targeting sustainable and climate resilient agricultural commodities.
- Support research institutions to pilot and support the development of new value chains through market analysis, identification of barriers for market entry, support in creating enabling conditions, monitoring and evaluation systems, and the development of certification standards.

Pathway 4: Sustainable Value Chain Linkages and Market Access

This intervention creates structured market linkages that reward farmers for adopting sustainable and climate-resilient practices through guaranteed offtake agreements, premium pricing, and integrated value chain partnerships. The pathway strategically intervenes at aggregation, quality assurance, market connection, and contract enforcement stages to make sustainable agriculture economically attractive.

Strategic Pilots and Interventions

1. **Premium Market Offtaker Partnerships for Priority Crops**
 - Financing shall be provided to support tripartite agreements linking farmer cooperatives to premium buyers and processors targeting 10-15% price premium for HHP-free and organically certified produce.
2. **Sustainable Agriculture Aggregation Centers**
 - The project shall finance the establishment of quality testing facilities for pesticide residue screening while focusing on grading and sorting infrastructure meeting export and premium market standards.
3. **Direct Retail and Export Value Chain Programs**
 - This FARM+ child project shall finance export certification support for and digital traceability platform linking farm-level practices to end buyers.
4. **Contract Farming and Outgrower Schemes**
 - Within the framework of farm settlements, there shall be structured agreements between agribusinesses and farmer groups leveraging input advance systems tied to sustainable practice adoption.

Capacity Building and Climate-Smart Agriculture Integration: This project shall foster value chain incentives explicitly reward IPM adoption, biological pest control use, and reduced chemical inputs through and differential pricing. This also entails supporting contract terms favouring climate-adapted varieties and agroforestry systems, and traceability systems document and verify sustainable practice implementation for market access.

Cross-Cutting Enablers

The financial architecture establishes a revolving loan fund capitalized through blended finance from development partners and government sources, complemented by a grant facility designed to subsidize input costs and support technology adoption, while credit guarantee mechanisms work to de-risk agricultural lending for participating financial institutions. Supporting this structure shall be a comprehensive digital infrastructure featuring a loan application and tracking platform integrated with the national farmer registry, mobile money integration that reduces transaction costs for disbursements and repayments, and real-time portfolio monitoring dashboards that enable financial institutions to track their agricultural lending performance effectively. The entire framework operates within a coordinated policy environment that aligns with national agricultural finance policy and financial sector regulations, facilitates coordination between relevant ministries and the Central Bank on agricultural lending targets. The core functions are consolidated under the oversight of a steering committee with balanced representation from government agencies, financial institutions, and farmer organizations to ensure stakeholder alignment and accountability.

Component 3: Technical Assistance and Introduction of Alternatives – Introducing sustainable and climate resilient agricultural practices reducing reliance on harmful agrochemicals.

This component focuses on accelerating the strengthening of national and local institutional capacity to support women and men farmers in identifying and responding to climate risk and vulnerability while building resilience by adopting climate smart good agricultural practices. Four strategic pathways are proposed for accelerated impact each targeting the outputs.

Output 3.1: Enhanced Farmer Support Systems (FSS), such as extension officers, agricultural associations and farmer field schools have the capacity to inform and train farmers on sustainable and climate resilient agricultural practices.

Pathway 1: Digitally-Enhanced Extension Transformation

This intervention strengthens FSS advisory capacity on sustainable and climate-resilient practices through integrated technical assistance models combining enhanced extension agent training, farmer field school methodologies, and digital amplification tools, targeting comprehensive coverage across all planned farm estates and historical settlements. To achieve the above, a series of key activities are planned for the project:

- Conduct a national level assessment of knowledge, attitudes, mind-sets and practices in climate smart agriculture.
- Identify priority capacity and training needs that could lead to enhanced resilience, reduced reliance on hazardous agrochemicals and are vital for the climate resilience of productive landscapes.
- Establish a national level research cluster that mobilizes national institutions, such as national universities, to enhance the capacity of farmer support systems (FSS), extension services (ES) farmer field schools (FFS) and local agroclimatic tables.
- Conduct a national level Social Behaviour Change Campaign (SBCC) program with training and awareness raising activities, supported as appropriate by digital tools, such as Farmer-to-Farmer videos or social media, to provide context appropriate services and information

- Design and pilot guidelines and arrangements for the adoption and/or expansion of communal labor practices that can address the limited supply of farm labor targeting cooperatives. The project shall comply fully with the International Labour Organization's (ILO) Child Labour Conventions including ILO Convention No. 138 (Minimum Age) and Convention No. 182 (Worst Forms of Child Labour) and with the implementing organisation's Child Protection Policy. Prior to field activities, all project staff, consultants, and implementing partners shall complete mandatory child safeguarding training. Project interventions shall incorporate child protection screening mechanisms, and any identified instances of child labour or safeguarding risks within project communities shall be reported and addressed through established referral pathways in coordination with relevant government social protection authorities.

Strategic Pilots and Interventions

1. NAERLS Regional Training Center at Fasola Hub

- Establish Southwest Nigeria's first Climate-Smart Agriculture Training Centre with residential facilities for intensive IPM and bio-alternative certification programs

2. Farmer Field School Scale-Up

- Establish a network of FFSs in the selected estates and farm settlements supported by IITA, NAERLS, and NIHORT focusing on IPM practices. This shall involve experiential learning plots comparing HHP vs. bio-alternatives

3. Lead Farmer Network With Certified Peer Educators

- FFS graduates trained as community-level technical advisors to serve the neighboring farmers through demonstration plots and peer learning and paid a gratuity stipend linked to verified adoption by mentees

4. Digital Extension Platform Integration

- Equip Oyo ADP extension agents with smartphones and mobile data collection apps, establish a video library with demonstrations in Yoruba on bio-pesticide preparation, IPM techniques, CSA practices. Coordinate WhatsApp group moderation by extension agents.

Capacity Building and Climate-Smart Agriculture Integration: The project shall support State-level certification of Oyo ADP extension agents in IPM facilitation with a selected few (50%) advancing to Master Trainers. This shall also entail federal development of standardized curricula for crop-pest systems through NAERLS and ARCN with targeted certified trainers, and training of cooperative leaders in organizational management and technical coordination.

Output 3.2: Farmers rely upon mobile based platforms that provide localized weather, climate, market, pest information and pest management measures, to climate proof their cropping systems and lower vulnerability to attacks.

The output aims to restructure and localise the early warning systems to enhance farmer's (and other value chain actors) preparedness in the face of risks such as pest and disease outbreaks, and extreme weather conditions.

Pathway 2: Climate-Smart Digital Advisory Systems

This intervention strengthens FSS advisory capacity on localized, actionable agricultural intelligence through game-changing digital solutions combining weather forecasting, pest early warning systems, market intelligence platforms, and mobile advisory content delivery. It targets comprehensive coverage of registered farmers across Oyo farm estates and Farm settlements. The key activities to guide the achievement of the above is highlighted below:

- Develop a dynamic, evidence-based, monitoring, evaluation and response framework supported by local youths and women to collect data while supporting community engagement on the use of emerging digital tools.
- Integrate a rapid alert and response protocol into national telephone service providers' platforms or the input access platforms with ambassadors deployed at all levels of the communities to provide backstopping services.

Strategic Pilots and Interventions

1. Integrated Digital Agriculture Platform for Oyo State

- Develop a hybrid SMS/USSD Service (basic phones) and Smartphone App (data-enabled for weather alerts, market prices, pest outbreak warnings in Yoruba with backend support from IITA pest database.

2. Pest Surveillance and Early Warning Network

- Crowdsourced monitoring where farmers photograph pest damage → AI preliminary identification → Entomologist verification. An expert network of entomologists provide rapid diagnosis through platform. An alert system using automated SMS is triggered to farmers in 10km radius when pest threshold exceeded to reduce prophylactic HHP spraying through targeted intervention.

3. Market Information and Premium Pricing Transparency

- Real-time prices using daily updates from Fasola Hub, Bodija Market, export buyers for HHP-free premiums. Integrate a warehouse receipt system using digital platform for depositing HHP-free commodities at accredited warehouses (Fasola, Eruwa, Akufo)

Capacity Building and Climate-Smart Agriculture Integration: Precision pest management triggers spraying only when economic thresholds are exceeded based on platform-calculated field monitoring data, climate-adapted cropping calendar recommends heat/drought-tolerant varieties for projected conditions, and water-smart irrigation scheduling optimizes timing through soil moisture models integrated with weather forecasts.

Output 3.3: Sustainable and climate resilient agricultural practices have been collected to create confidence among financial institutions, insurers, and farmers.

Pathway 3: Field-Tested Bio-Alternatives and Financial Confidence

This intervention builds financier, insurer, and farmer confidence through field-testing game-changing bio-alternatives including locally-produced neem oil, botanical extracts (bitter leaf, African marigold), microbial agents (Trichoderma, Bacillus), hermetic storage, and push-pull systems across demonstration plots and FFS comparison trials. A series of activities are planned for the FARM+ child project.

- Generate data and context appropriate evidence on the performance of nature and conservation based, climate resilient agricultural practices.
- Design a localized support system leveraging existing structures in the Federal Ministry of Agriculture and Food Security (FMAFS) to provide guidance on adoption and design of local solutions for addressing climate impacts in an integrated manner.
- Identify and train lead farmers to be able to field test at farm level and demonstrate the performance of technologies and practices that are climate resilient.
- Develop an “offtaker or aggregator” anchored model that focuses on logistics and storage to minimize post-harvest waste and support transition to circular economy business models
- Engage with large scale producers and/or relevant agro-productive associations such as CropLife to apply and demonstrate sustainable approaches in phases, in order to showcase results and benefits, to subsequently replicate results.

Strategic Pilots and Interventions

1. Demonstration Plot Network

- Fasola Hub to act as the flagship with 10 hectares showcasing complete IPM packages for selected major crops including cassava, soybean and vegetables. Estates and farm settlements shall also conduct side-by-side comparison (HHP conventional vs. IPM bio-alternative vs. untreated control. This demonstrates and documents yields, costs, pest pressure, beneficial insects, soil health, and economic returns.

2. Bio-Pesticide Efficacy Trials

- Neem oil formulations, botanical extracts, microbial agents and post-harvest innovations following standard scientific protocols.

3. Financial Institution Field Days

- Invite NIRSAL, OYSADA and NAIC to demonstration sites during peak performance (flowering, harvest) and present economic data including cost-benefit analysis, default rates for HHP-free borrowers, premium pricing captured. Farmer testimonials from lead farmers who share transition experiences, profitability improvements

4. Insurance Product Development As A Risk Assessment Pilot

- Partner with NAIC member companies to assess HHP-free farming risks vs. conventional to facilitate the launch of bundled crop insurance products with lower premiums for certified HHP-free farmers.

Climate-Smart Agriculture Integration: Annual soil health and biodiversity monitoring at demonstration plots documenting regeneration under bio-alternatives, while IITA quantifies carbon sequestration in agroforestry sites, and NESREA partnership tracks reduced pesticide residues in water sources compared to conventional farms.

Output 3.4: Farmers have access to a supporting ecosystem that ensures long-term access to new technologies, services and inputs

Pathway 4: Sustainable Bio-Alternative Ecosystem

This intervention establishes sustainable access to new technologies, services, and inputs through game-changing ecosystem components including local bio-pesticide production, agro-dealer networks, equipment leasing, technical service providers, and certification systems, deployed via hub-and-spoke model centered on Fasola with outreach to farm settlements. The guiding activities are:

- Design and support the expansion of the “one-stop-shop” model of agrodealers who are trained and certified on agrochemical use.
- Enhance the coverage of “Spray Support Providers” and “Gang Sprayers” approaches and capacitate them in all aspects of safe agrochemical use and available alternatives. The project shall systematically engage gang sprayer service providers as critical last-mile actors within the agrochemical application service ecosystem. A structured capacity building programme shall be developed and delivered, incorporating competency modules on precision dosing science, personal protective equipment (PPE) usage, application equipment calibration including the IITA herbicide calculator refined under the Zero Hunger project and the agronomic and health consequences of over- and under-application. Service providers shall be trained in partnership with government and private agricultural extension systems, and their integration into formal certification and registration frameworks shall be actively pursued.

Strategic Pilots and Interventions

1. Youth-Led Bio-Alternative Production Network

- **Youth and Women Green Agribusiness Fund provides** loans at concessionary interest rates targeting neem oil processors, botanical extract manufacturers, microbial agent multipliers, compost/vermiculture units and incubation centers with business development support at Fasola hub innovation center.

2. Agro-Dealer Capacity Building Supported by Equipment Leasing Hubs

- The project shall establish FEPSAN partnership to train agrodealers on bio-alternative handling, storage, farmer education while providing premium margins for bio-alternatives incentivize stocking. Each agrodealer shall be supported to maintain small demonstration plot showcasing bio-alternatives.
- equipment units distributed; 70% reduction in labor constraints for bio-alternatives

3. Certification and Technical Service Providers

- **Organic Certification for** farmer cooperatives at subsidized rates while youth-led enterprises offer bio-pesticide application services (trained by NAERLS). The project shall establish 3 mobile soil labs serving farm estates as part of co-financing from IITA for the equipment.
- **Agronomic Consultancies:** 30 certified agronomists provide paid advisory services to farmer groups (NIRSAL-subsidized)
- **Target:** 5,000 farmers accessing professional technical services; 3,000 certified organic by Year 3

4. IITA Business Innovation Platform (BIP) Integration

- Strengthen the cassava value chain by linking farmers to IITA-incubated processing SMEs requiring HHP-free raw materials. Accelerate Aflasafe distribution by scaling IITA's aflatoxin biocontrol through Oyo agro-dealer network. The project will enhance hermetic storage tech transfer with IITA-developed PICS bags produced locally by licensed manufacturers with a focus on IITA Youth Agripreneur program that trains Oyo youth in bio-alternative value chains.

Capacity Building and Climate-Smart Agriculture Integration: The child project shall support circular economy which utilizes agricultural waste as bio-pesticide raw materials (neem cake fertilizer byproduct, cassava peels, and composted crop residues) with solar-powered processing, while drought-tolerant seeds are bundled with bio-alternative packages at agro-dealer outlets. Youth and women are trained in bio-alternative entrepreneurship and agro-dealers certified in sustainable input management (state level), NAFDAC reduces bio-pesticide registration.

Pathway 5: Integrated Source Control and Pathway Interception to Protect Marine Habitat

This pilot demonstrates pollution reduction pathways from source to sea by transforming agricultural practices in Ogun River basin communities, protecting 40,000 hectares of Lagos Lagoon marine habitat (Figure 14) while generating scalable integrated water resources management (IWRM) models for transboundary African river-ocean systems. The proposed activities deliver a *Transformative Integrated Pilot* employing a *nexus approach for agriculture-water-environment* where mutually reinforcing activities create a *multiplier effect* across all five FARM+ components. Through an *IWRM approach* feeding into the *Niger Basin Authority's International Waters* sustainability mechanisms, the pilot establishes robust regional coordination captured in enhanced Knowledge Management Systems reflecting Nigeria's commitment to collaborative learning with NBA. This pilot serves as the game-changing cornerstone for achieving the *complete phase-out of HHPs* in Nigeria through integrated deployment of tailored financing, green transitioning subsidies, rigorous M&E, and capacity building particularly in buffer zone management. This transforms it from a standalone intervention into the essential catalyst determining Nigeria's HHP phase-out success.

Strategic Pilots and Interventions

1. Integrated Nutrient and Pesticide Management

Target Area: 10,000 hectares of marine habitat

- Conduct rapid soil testing for all targeted sites (SAPZ and Farm Settlements = 10,000hectares) and develop precision fertilizer prescriptions to achieve 30-50% reduction
 - Plant native vegetation strips (minimum 15m width) along Ogun River tributaries flowing through SAPZs and farm settlements
 - Coordinate with Niger Basin Authority on upstream-downstream water sharing
 - Establish 5 Farmer Field Schools demonstrating IPM and organic fertilizer alternatives
 - **Marine benefit:** Prevents 500MT of excess nitrogen and 50MT of HHPs from reaching coastal waters

2. Soil and Water Conservation Infrastructure

Target Area: 10,000 hectares of marine habitat

- Map all farms within 500m (buffer zones) of Ogun River tributaries as the priority intervention zone and reduce HHPs in these critical watersheds with 50% bio-pesticide subsidy targeting 6,000 hectares
 - Implement contour farming on sloped farmland targeting 3,000 hectares with grass waterways
 - Construct 100 farm ponds capturing rainy season runoff covering 1,000 hectares and reduce river abstraction by 30%
 - Train 200 farmers in buffer zone maintenance and host learning visit on agriculture-marine linkages

- **Marine benefit:** Prevents 5,000 tons of sediment annually; reduces agrochemical loads by 40-60%

3. Organic Fertilizer Transition Program

Target Area: 10,000 hectares of marine habitat

- Establish 20 community composting centers processing 10,000 tons/year of agricultural waste
 - Train 1,000 farmers in compost production and application
 - Partner with ILRI to scale black soldier fly frass as slow-release fertilizer
 - **Marine benefit:** Replaces quick-release synthetic fertilizers that leach into waterways

4. Biochar Application Trials

Target Area: 10,000 hectares of marine habitat

- Produce biochar from cassava processing waste
 - Test nutrient retention capacity on a pilot of 1,000 hectares in year one and scale to 10,000 hectares by end of project
 - Measure reduction in phosphorus runoff (target: 45% reduction)
 - **Marine benefit:** Prevents nutrient loading that causes algal blooms in Lagos Lagoon

5. Real-Time Monitoring and Adaptive Management

- Install 3 automated monitoring stations tracking pesticides, nitrogen, phosphorus, turbidity
 - Deploy 5 mobile testing labs for rapid farmer feedback at aggregation points
 - Establish digital traceability platform linking farm practices → water quality → marine health
 - Publish quarterly 'pollution reduction scorecards' and coordinate seasonal flow management with Niger Basin Authority
 - **Marine benefit:** Ensures environmental flows, prevents hypersaline conditions, provides early warning for adaptive management

Cross-Cutting Enablers for Component 3

Research and Development Support: The project shall provide a dedicated R&D Innovation Fund to finance competitive grants to Universities and IITA for neem formulation, botanical extracts, microbial mass production, and post-harvest bio-controls, targeting at least 5 validated innovations with 3 commercialized through Oyo SMEs. This implies leveraging IITA's accumulated institutional knowledge and legacy tools from prior weed management and agrochemical projects, including the herbicide dosing calculator originally developed and subsequently refined under the Zero Hunger project. These evidence-based tools shall be contextualised, updated, and embedded within project training curricula, field advisory services, and digital platforms. Their adoption shall be tracked as a project performance indicator, and their integration into national extension systems shall be pursued as a sustainability and scale objective.

Policy and Regulatory Framework: Oyo shall be supported to enact Organic Agriculture Policy with an input subsidy allocation to bio-alternatives, while NAFDAC streamlines registration and FMAFS establishes a Bio-

Alternative Voucher Program accounting for 20% of the National Subsidy, The Joint Oyo-Federal Task Force convenes quarterly for regulatory alignment.

Monitoring and Evaluation System: This child project shall develop a digital dashboard that tracks extension contacts, FFS attendance, sales, and adoption rates in real-time, while impact indicators measure HHP reduction, yields, income, and poisoning incidents. The data flows from Oyo ADP through State M&E to FMAFS national dashboard generating quarterly policy briefs.

Component 4: Improving Agricultural Supply Chains - Improving agricultural value chain practices to minimize waste, soil and water pollution, plastics and GHG emissions

This component promotes sustainable supply chain practices, by engaging with agri-businesses and supporting a select number of “accelerator and anchor” supply chains in introducing better approaches to demonstrate their benefits. The child project identifies three pathways to achieve the overarching goal.

Output 4.1: Improved supply chain management reduces losses, soil and water pollution, GHG emissions and the use of unnecessary plastics

The targeted activities include:

- Pilot community and cooperative owned storage facilities and logistics (including cold chain) complemented with solar dryers and rapid moisture testing kits to reduce food waste and losses.
- Support the non-plastic industry and use one state to pilot the elimination of unnecessary plastics and apply sustainable packaging.
- Support aggregation in production hotspots by providing tailored financing to improve local agro-processing and value addition starting with a select few companies in the SAPZs across multiple value chains

Pathway 1: Post-Harvest Infrastructure and Loss Prevention

This intervention strategically targets harvest, drying, storage, and aggregation stages across three priority crops (cassava, soyabean, maize and vegetables) to simultaneously reduce post-harvest losses by 30-50%, cut GHG emissions by up to 40%, and eliminate unnecessary plastics through integrated supply chain improvements. The above core activities shall be integrated into targeted pilot interventions. The project articulates and operationalises explicit linkages between its agrochemical management interventions and post-harvest loss reduction objectives. Working within the framework of the Special Agro-Industrial Processing Zones (SAPZ) and the Oyo State Agribusiness Development Agency (OYSADA) modern wholesale market infrastructure, the project shall engage processors, packagers, and market operators as active stakeholders in ensuring produce quality and compliance with residue standards. Post-harvest loss reduction strategies including produce handling protocols, cold chain linkages, and quality certification mechanisms shall be co-designed with these value chain actors and reflected in the project's results framework as a demonstration of the project's transformative impact on agricultural value chain outcomes.

The project articulates and operationalises explicit linkages between its agrochemical management interventions and post-harvest loss reduction objectives. Working within the framework of the Special Agro-Industrial Processing Zones (SAPZ) and the Oyo State Agribusiness Development Agency (OYSADA) modern wholesale market infrastructure, the project shall engage processors, packagers, and market operators as active stakeholders in ensuring produce quality and compliance with residue standards. Post-harvest loss reduction strategies including produce handling protocols, cold chain linkages, and quality

certification mechanisms shall be co-designed with these value chain actors and reflected in the project's results framework as a demonstration of the project's transformative impact on agricultural value chain outcomes.

Strategic Pilots and Interventions

1. Fasola Agribusiness Hub Demonstration Site

- The project shall deploy IITA hermetic storage technologies and solar dryers while simultaneously establishing aflatoxin-free processing zone on Fasola Hub. The site shall also have rapid pesticide residue testing lab installed as the first in Southwest serving farmers in the surrounding settlements and estates.

2. Eruwa and Akufo Farm Estate Cold Chain Development

- The project shall deploy low cost solar-powered cold rooms at aggregation points complemented by mobile refrigerated transport for perishable produce

3. Equipment Leasing Centers

- The project targets 6 locations across Oyo State to deploy low-cost dryers, hermetic containers, mechanical shredders using a concessionary down payment, and two year repayment plans via NIRSAL Plc

Capacity Building and Climate-Smart Agriculture Integration: The bio-based packaging from project supported IITA and university research replaces plastics with cassava starch biodegradable materials, while ILRI-modelled vermiculture composting systems convert agricultural waste to organic fertilizer through cooperatives, and solar dryers eliminate diesel and firewood emissions across drying operations. The project shall support state-level training of extension agents on post-harvest technologies at Fasola Hub through Oyo ADP, federal certification of equipment maintenance technicians via NSPRI/ARCN, and development of lead farmers as peer educators on hermetic storage within farmer cooperatives.

Output 4.2: Companies purchasing agricultural products adopt value chain approaches and innovations that lead to a reduced reliance on harmful agrochemicals and plastics of the products they purchase.

Three core activities shall be targeted for this output and embedded in the pilot programs:

- Design a sourcing framework that provides a quota system in premium markets (domestic and export) under the NEPC for farmers producing using climate smart practices.
- Implement organic farming produce labelling for both local and export markets.
- Implement systematic research using top performing value chains on the use and impact of product labels that provide information about social, environmental, and pollution impacts.

Pathway 2: Traceability and Premium Market Linkages

The intervention leverages market power of large companies to drive adoption of sustainable value chain approaches across five priority crops (cocoa, sesame, ginger, cashew, vegetables), strategically intervening at farm certification, aggregation, testing, and buyer contract stages to systematically reduce harmful

agrochemical reliance while securing premium market access and long-term procurement commitments. The project shall conduct structured agro-dealer market assessments to identify supply gaps, price barriers, and distribution constraints inhibiting the uptake of bio-pesticides and other sustainable agricultural inputs. Based on assessment findings, the project shall co-design and pilot context-appropriate market incentive mechanisms including input subsidies, blended finance facilities, and structured offtake agreements in partnership with agro-dealers, financial institutions, and input suppliers. Assessment findings and incentive model results shall be documented and shared with government and development partners to inform national input market policy.

Strategic Pilots and Interventions

1. Digital Traceability Platform

- The project shall support the development of a mobile app linking farmers to HHP-free registry supported by QR code batch tracking from farm to warehouse while integrating with warehouse receipt system at Fasola Hub.

2. Farmer Cluster Contract Financing

- The pillar shall targeted tripartite agreements involving farmer groups, OYSADA, and export companies and facilitated by NEPC. This shall unlock opportunities for pre-arranged purchase at a premium for HHP-free commodities supported by embedded agronomic support through IITA led field schools.

3. Supermarket Supplier Development Program

- Partner with high-end markets such as Shoprite and SPAR for organic vegetable supply from Ijaiye Farm Settlement with weekly quality testing at Fasola Hub lab while leveraging the cold chain linkage to urban retailers.

Capacity Building and Climate-Smart Agriculture Integration: IITA-developed IPM packages shall deploy biological controls like *Beauveria bassiana* and push-pull systems, climate-adapted varieties reduce spray requirements through drought resistance, and agroforestry models integrate shade trees for simultaneous carbon sequestration and natural pest regulation. The project shall also target state-level certification of lead farmers in organic practices, federal training of NAFDAC quality control officers on rapid residue testing, and private sector capacity development of agro-dealers on bio-pesticide handling. The project shall deepen its private sector engagement strategy to include formal partnership arrangements with agrochemical manufacturing companies. Engagement shall encompass joint product development for bio-input alternatives, co-investment in distribution infrastructure, and participation in regulatory compliance initiatives. Memoranda of Understanding (MoUs) shall be established with selected private sector partners, with clearly defined roles, resource contributions, and accountability mechanisms to ensure meaningful and sustained industry participation throughout the project lifecycle.

Output 4.3: Small and medium size enterprises (with a focus on women and youth led SMEs) design, manufacture and market harvest/food waste derived products.

The key activities include:

- Implement a circular economy program with a dedicated investment funding and technical assistance targeting women and youth led SMEs.

Pathway 3: Circular Economy Leveraging Youth and Women SME Development

This intervention catalyses SME-led circular economy opportunities by transforming agricultural waste streams (cassava waste, crop residues, plant materials) into market-ready products (livestock feed, compost/biochar, bio-pesticides) through strategic support at waste collection, processing, product development, and marketing stages. This creates new revenue streams while reducing environmental burden.

Strategic Pilots and Interventions

1. ILRI Black Soldier Fly and Cassava Peel Feed Production

- Capacitate youth-led enterprises converting cassava processing waste to protein feed in partnership with IITA cassava value chain project and ILRI livestock research in the Fasola hub with some in situ plants to reduce transport and aggregation costs.

2. Biodegradable Packaging from Agricultural Waste (1 University R&D pilot)

- University of Ibadan research on cassava starch films replacing plastic crates and bags which are subsequently commercialization through SMEDAN Oyo State Business Support Centre -supported start-ups at Fasola innovation center

Capacity Building and Climate-Smart Agriculture Integration: The child project targets closed-loop systems that transform agricultural waste into compost to rebuild soil health and reduces synthetic inputs, prevent 10,000 tCO₂e methane emissions by composting instead of burning crop residues, and create integrated crop-livestock networks through cassava waste-derived feed production. A multi-tiered approach shall train youth/women in bio-alternatives at Fasola center (state level), leverage SMEDAN business services and streamlined NAFDAC bio-pesticide registration (federal level).

Component 5: [Global Coordination and Knowledge Dissemination](#) - Global access to knowledge and best practices is applied to scale up sustainable and climate resilient agriculture.

This component ensures that FARM+ progress and impact shall be measured to allow for impact assessments as part of program monitoring. Knowledge products for continuous learning will also be developed. The FARM+ Knowledge and Data Portal will operate as an open-access platform hosted on a government-designated server administered by the FMEnv NCCM Secretariat. All project performance data including HHP reduction rates, beneficiary numbers disaggregated by gender and age, soil health indicators, and fund disbursement records will be updated quarterly and accessible to all registered stakeholders, including civil society organisations, farmer associations, academic institutions, and GEF partner agencies. A data governance protocol, including access tiers and quality assurance procedures, will be finalised at project inception and published on the portal's public landing page.

Output 5.1: Project and program baseline assessments completed

- Consolidate and aggregate results from baseline assessments and publish and disseminate results through the Knowledge Management Platforms at local, national and global levels.

Output 5.2: Knowledge and lessons-learned related to all programmatic aspects are consolidated, published and regularly communicated and disseminated through various Knowledge Management platforms to stakeholders participating in FARM(+) as well as external to the programme.

- Identify existing data and knowledge platforms (financing, insurance agri-food systems) to inform the development, integration and management of the national level FARM+ programme's Knowledge Management Platform.
- Design a peer-to-peer learning and knowledge exchange program within the country and between countries facing similar challenges with Nigeria.
- Establish collaborative arrangements with national and international counterparts to publish results on the cost- effectiveness, efficacy and environmental footprint of non-chemical management alternatives and their socio- technical adoption hurdles under varying farming contexts in established scientific venues.

Output 5.3: Large food and agricultural commodity value chain partners advocate for and advise on greener agricultural practices through private sector networks.

- Incentivize and strengthen the capacity of the private sector associations and established MSPs to advocate for climate smart agriculture practices as part of their business models.

Pathway: Digital Knowledge Hub for Real-Time Learning and Adaptive Management

FARM+ will establish an integrated Digital Knowledge Ecosystem that transforms traditional knowledge management from retrospective documentation into a dynamic, real-time learning and decision-support system. This pathway leverages digital platforms, peer learning networks, and private sector partnerships to accelerate adoption of climate-smart practices while enabling continuous project adaptation based on live field data and stakeholder feedback.

Strategic Pilots and Interventions

1. Interactive Agro-Processing Knowledge Hub

- Develop a mobile-accessible digital platform that aggregates real-time data from FARM+ interventions, presenting practical knowledge through multimedia formats (videos, infographics, and voice notes in local languages) tailored to different user literacy levels.
- The platform shall feature: Live learning modules; Peer success stories; Interactive Q&A forum; and Market intelligence dashboard.

2. Cross-State Peer Learning Exchange Program

- Establish structured quarterly exchange visits and virtual learning circles connecting FARM+ beneficiaries in Oyo State with successful agro-processing SMEs and farmer cooperatives in other Nigerian states facing similar climate and market challenges.
- The program will focus on: Thematic learning tracks; Reverse innovation workshops; Virtual monthly roundtables; Innovation funds.

3: Private Sector Green Champions Network

- Create an exclusive network of 20-30 leading agro-input dealers, commodity off-takers, processing equipment suppliers, and financial service providers committed to promoting and incentivizing climate-smart practices.
- The network operates through: Green business certification program; Joint marketing campaigns; Innovation co-investment fund; Quarterly business roundtables.

Building on the above complementary pathways and activities across the five components, the FARM+ project is further informed by a three-tier process that shall support the implementation of the suggested solutions. An integrated support framework based on the key elements identified in the findings would incorporate three interconnected levels (see Figure 10).



Figure 10: Three-tier climate smart agribusiness development framework for Nigeria

Source: Consultants' analysis (2025)

This multilevel framework reflects the complex, systemic nature of sustainable food systems development challenges identified by experts during consultations and shall be monitored as the project is implemented.

Resources and strategic partnerships

Resources: The resources required to achieve the expected results are detailed within the Total Budget and Work plan developed for the implementation of the Global Child Project in Nigeria.

Partnerships: The FARM+ Global Child Project adopts a comprehensive partnership approach designed to strengthen coordination, policy coherence, and collaborative action across multiple sectors critical to agricultural transformation. Recognizing that sustainable development outcomes require collective effort, the

project establishes systematic multi-stakeholder consultation and engagement mechanisms throughout implementation, monitoring, and evaluation phases. This inclusive framework engages a diverse coalition of strategic actors including government institutions and policymakers at federal and state levels, development finance institutions and banking associations, private sector agribusinesses and investors, academic and research institutions, civil society organizations, and representative bodies for farmers, youth, and women. The organigram in Figure 11 below delineates the specific roles, responsibilities, and comparative advantages of key stakeholders in advancing project implementation and collectively addressing Nigeria's agricultural development challenges. Additional stakeholder analysis and engagement modalities are detailed in the Stakeholder Engagement Plan.

To institutionalize these partnerships and maximize developmental impact, the project will develop a comprehensive Stakeholder Engagement Strategy during its inception phase. This strategic framework will systematically identify opportunities to deepen partnerships, mobilize complementary resources and co-financing, leverage existing technical expertise and institutional capacity, harness extension networks for scaled outreach, and create synergies with ongoing national and subnational initiatives. This approach ensures that FARM+ operates as a catalytic platform that aligns diverse stakeholder interests toward shared objectives while building sustainable institutional relationships that endure beyond the project lifecycle.

Innovation

FARM+ advances innovation through its integrated programmatic approach that bridges policy reform, financial innovation, technical assistance, and value chain strengthening. Key innovations include: the Policy Reform Guidelines combining systems mapping and trade-off assessments to guide evidence-based reforms while embedding gender, social inclusion, and Indigenous rights; financial innovations through subsidy repurposing. This shall also capture blended finance, de-risking instruments, and bundled credit-insurance products connecting smallholders to public and private capital; technical innovations including digital tool assessments, global compendiums of agroecological alternatives, and research integrating indigenous knowledge integrated with modern science; and value chain innovations featuring sustainable packaging, traceability systems, and circular economy models. The project's transformative innovation lies in connecting localized practices focusing on SAPZs with global financial and policy architectures, blending traditional knowledge with modern agroecology and climate science to catalyze fundamental transition toward sustainable, climate-resilient agriculture.

Sustainability and exit strategy

Project sustainability is ensured through multiple strategic interventions including development and institutionalization of tools and systems (Policy Reform Guidelines, financial standard operating procedures, and traceability frameworks) within government agencies and local institutions. The coverage also includes comprehensive capacity building among key stakeholders through technical assistance, training, and education across policy, finance, alternatives adoption, and value chains dimensions. This project will facilitate innovative financing instruments enabling sustained capital flows into sustainable agriculture initiatives; identification and integration of cost-effective agroecological alternatives within farmer support systems; and establishment of inclusive governance mechanisms ensuring Indigenous peoples, women, and youth influence long-term decision-making. The Knowledge Management Strategy institutionalizes learning and exchange, while alignment with international frameworks (Basel, Rotterdam, and Stockholm Conventions) and national commitments (NDCs, NAPs) ensures political incentives for durability beyond project closure.

Specifically, upon completion of the five-year GEF funding period, project sustainability will be ensured through: (i) the pilot Green Agribusiness Revolving Fund, which will be transferred to NIRSAL for continued administration as a permanent HHP-free agricultural credit window; (ii) the SAPZ institutional framework, anchored in State Ministries of Agriculture across the 8 participating states, which will absorb project technical functions into their operational mandates; (iii) certified FFS peer educators who will continue extension delivery as members of registered farmer cooperatives; and (iv) the Component 5 knowledge and M&E portal, which will be transitioned to the FMEnv's NCCM Secretariat for ongoing management. Co-financing commitments have been documented in the co-financing letters attached as Annex A.

Furthermore, to ensure the sustainability of agrochemical application services beyond the project period, the FARM+ Project shall establish a competency certification pathway for trained spray service providers in collaboration with IITA and relevant national certification bodies. Upon successful completion of project-supported training, providers shall receive a nationally recognised certificate of competence, formally qualifying them to deliver fee-based agrochemical application services within their communities. This mechanism shall underpin the project's exit strategy and promote the emergence of a self-sustaining, professionalised last-mile service market.

Scale-up potential

FARM+ incorporates scalability through interconnected national and global strategies. Nationally, standardized tools, capacity-building modules, and decision-support systems enable replication across diverse contexts (given the size of Nigeria) while maintaining contextual relevance. Globally, the project leverages high-level platforms including COP30, and the Impact Investors Foundation (IIF) to integrate sustainable agriculture into international climate finance agendas. Scalability mechanisms include South-South cooperation, peer-to-peer learning exchanges, digital knowledge hubs, and market-based strategies engaging commodity buyers and responsible sourcing initiatives. Critically, scale-up extends beyond technical replication to creating enabling systemic conditions through policy reforms, institutional strengthening, and financial de-risking that unlock public and private investment. Global Forums will engage national, regional, and global stakeholders to amplify learning, knowledge exchange, and dissemination of FARM+ results.

Adapted digital solutions

The Global Child Project ensures stakeholders utilize the FARM+ Knowledge Management digital platform to access decision-making information, technical and financial advice, knowledge exchange resources, and training materials. Recognizing varying internet connectivity, the project shall provide detailed guidance on platform utilization and accessibility. Additionally, the project will develop a catalogue of existing digital tools supporting Sustainable Climate-Resilient Agriculture (SCRA) practices, including pest and disease management systems, climate variability monitoring tools, and input application decision-support systems. The catalogue will assess tools for applicability (languages, offline functionality), purpose, social and gender sensitivity, and limitations to support farmers' practices, youth engagement, and progress monitoring toward ecological and climate-resilient agriculture adoption.

Stakeholder Labour Division Framework and Institutional Organization

The FARM+ Nigeria program adopts a comprehensive multi-stakeholder governance and implementation framework that delineates clear roles, responsibilities, and collaborative mechanisms among diverse actors across government, private sector, civil society, development partners, and beneficiary communities. This

institutional architecture ensures coordinated action, policy coherence, efficient resource mobilization, and accountability throughout program implementation.

The program's governance framework operates at multiple levels (national, state, and community) with coordination mechanisms that facilitate vertical and horizontal integration across sectors and institutions. At the national level, a multi-stakeholder “*Program Steering Committee*” will provide strategic oversight, policy guidance, and facilitate inter-ministerial coordination among key Ministries, Departments, and Agencies (MDAs) including the Federal Ministries of Agriculture and Food Security, Environment, Finance, Budget and National Planning, Industry, Trade and Investment, and Women Affairs. State-level implementation committees will ensure contextualized program delivery, stakeholder mobilization, and alignment with state agricultural development priorities, while community-level structures will engage farmer organizations, women and youth groups, and local traditional institutions in participatory implementation and monitoring.

The baseline identified intertwined key areas of focus for collaboration for farmers, SMEs and other stakeholders in the realm of managing shocks emanating from stakeholder-level variables as highlighted in Figure 12 below.

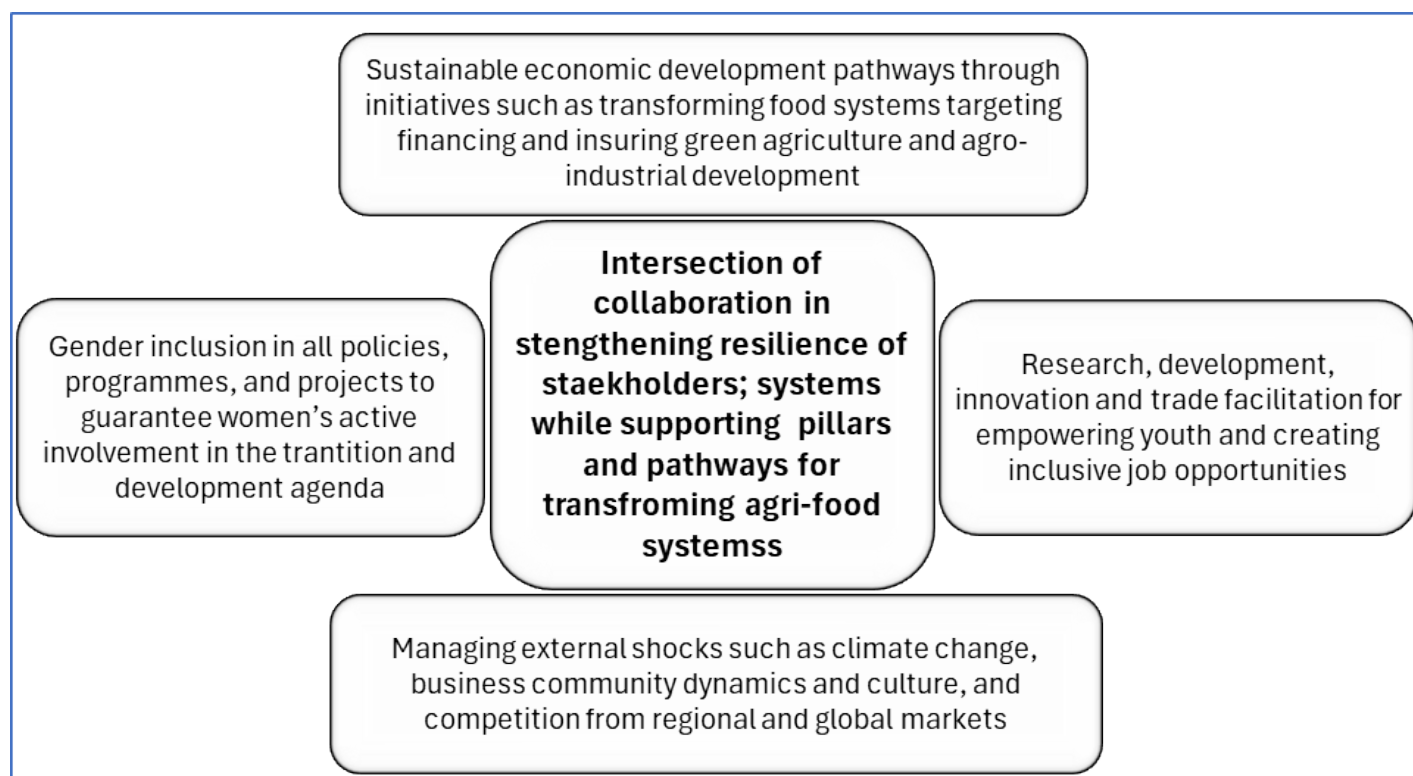


Figure 12: Collaboration pillars where capacity gaps are identified

Source: Agency's analysis (2025)

Acknowledging the above reality and opportunities, a critical institutional innovation under FARM+ Nigeria is the establishment of a “*Policy Review Commission*” that will serve as a specialized technical body mandating to conduct comprehensive analysis of existing agricultural policies, regulations, and institutional frameworks affecting pesticide management, post-harvest handling, and sustainable agriculture adoption. The Commission will comprise representatives from relevant regulatory agencies (National Agency for Food and Drug Administration and Control – NAFDAC; Standards Organisation of Nigeria – SON; Federal Ministry of Environment); technical experts from research institutions (National Agricultural Research Institutes, universities); civil society organizations specializing in environmental health and food safety such as CropLife;

private sector representatives from agribusiness and agricultural input sectors; and farmer organization representatives ensuring grassroots perspectives inform policy recommendations.

The Policy Review Commission's mandate includes conducting gap analysis of current pesticide regulations against international standards (Rotterdam, Stockholm, and Basel Conventions); identifying regulatory inconsistencies and institutional coordination gaps; proposing policy reforms to facilitate adoption of biological alternatives and integrated pest management. They shall recommend financial incentives and disincentives that encourage transition away from harmful agrochemicals; develop guidelines for green procurement in agricultural value chains; and ensure policy coherence across agriculture, environment, trade, and health sectors. The Commission will operate transparently with regular stakeholder consultations, public hearings, and evidence-based decision-making processes, submitting formal policy recommendations to the Program Steering Committee and relevant government authorities for adoption and implementation.

The labour division framework shall be designed to assign specific responsibilities across stakeholder categories while avoiding duplication leveraging existing responsibilities outlined in Table 7 below.

Table 8: Key Stakeholders and Generic Roles and Responsibilities

Stakeholder	Roles and responsibilities
Government institutions	Provide enabling policy environments, regulatory enforcement, extension services, and public financing.
Private sector actors (input suppliers, processors, traders, financial institutions)	Drive market-based solutions, innovation, investment, and value chain development.
Civil society organizations and NGOs	Facilitate community mobilization, awareness raising, advocacy, and accountability mechanisms.
Research and academic institutions	Generate evidence, conduct adaptive research, provide technical assistance, and support capacity building.
Farmer organizations and cooperatives	Serve as primary implementation partners, demand aggregators, and knowledge intermediaries.
Development partners and financing institutions	Provide technical assistance, catalytic financing, risk-sharing mechanisms, and global knowledge exchange.
Women and youth groups	Ensure gender-responsive and youth-inclusive programming while serving as change agents within their communities.

This structured yet flexible framework ensures that each stakeholder contributes according to their comparative advantage while maintaining collective accountability for achieving FARM+ Nigeria's transformative objectives of reducing harmful pesticide use, minimizing post-harvest losses, and building climate-resilient agricultural systems. Memorandum of Understanding (MoU) between the different stakeholders and the PMU will be finalised at project inception.

A comprehensive Stakeholder Engagement Plan was developed during the Project Preparation Grant (PPG) phase to identify key stakeholders, beneficiaries, and institutional partners critical to the FARM+ project's success in Nigeria. Extensive consultations during the PPG phase engaged diverse stakeholders including federal and state government agencies, private sector actors, smallholder farmers, farmer organizations, women and youth groups, civil society organizations, academia, and project-affected communities. These

consultations communicated project objectives, incorporated stakeholder views into project design, and identified concerns and expectations.

The stakeholder engagement process was further guided by the Global Child Programme (GCP), ensuring that consultation approaches, stakeholder mapping, and engagement methodologies were aligned with the FARM+ programme-wide standards. This further guaranteed that Nigeria's stakeholder engagement experience contributes to and benefits from cross-country learning across all FARM+ participating countries.

The Plan strengthens partner capacities for managing social and environmental risks while ensuring full and effective stakeholder participation, including grievance redress mechanisms for project-affected populations, consistent with Social and Environmental Standards (SES). The resulting engagement strategy outlines specific activities, communication channels, and consultation mechanisms to maintain continuous stakeholder involvement throughout implementation. A detailed Stakeholder Engagement Plan is attached (uploaded separately).

Farmer Associations and Civil Society Organisations

Engagement with Farmer Associations and Civil Society Organisations was conducted through structured consultations, including community meetings, focus group discussions, and key informant interviews. These engagements aimed to ensure inclusive participation, capture grassroots perspectives, and integrate local knowledge into project planning and implementation.

a) Small Farmers' Associations (Focusing on Men, Women, and Youth)

- **Gender-Segregated Focus Group Discussions (FGDs):** Recognizing that women in rural Nigeria often defer to men in mixed settings, the PPG team held separate sessions. This allowed women to speak freely about their specific health risks during pesticide application and their unique barriers to land access.
- **On-Farm 'Pesticide Mapping':** One of the Universities Agricultural departments (Ajayi Crowther University, Oyo) walked the PPG team through their fields, identifying the specific 'chemical hotspots' and explaining the difference between the use of certain hazardous pesticides on crops and bio-pesticides.

b) Civil Society Organizations (CSOs)

- **National and State-Level Roundtables:** Environmental and social CSOs (focused on health, land rights, and gender) were consulted to critique the use HHP against Biopesticides and its implications on the environment and health related concerns on farmers.
- **CSOs as 'Safeguard Auditors':** Local CSOs were engaged to identify potential 'governance gaps' in the project, particularly regarding how funds for bio-pesticide subsidies would be coordinated to prevent elite capture.

The findings from consultations with Farmer Associations and Civil Society Organisations were systematically incorporated into the project design to ensure community needs and priorities were reflected in project outcomes. Key insights informed the identification of target beneficiaries, the selection of appropriate agricultural interventions, and the development of community-based monitoring frameworks. Feedback on land tenure, gender inclusion, and traditional farming practices directly shaped the project's safeguard

measures and implementation strategies, ensuring a participatory and context-sensitive approach throughout.

Project Affected Parties

The integration of community consultations during the Project Preparation Grant (PPG) phase was the turning point where the FARM+ Nigeria project moved from a theoretical environmental framework to a socially grounded implementation plan. The feedback gathered from smallholders' farmers in the subproject areas directly reshaped the ProDoc to ensure that the transition away from hazardous agrochemicals didn't create a 'sustainability gap' for the most vulnerable. Local communities are therefore substantively integrated into the project at every level. As the primary inhabitants of Oyo State, farming households across the nine farm settlements constitute the direct beneficiary base, with traditional and religious leaders formally engaged as community mobilisation channels, and women's groups constituted as Community Health and Agriculture Monitors. Institutionally, OYSADA coordinates project delivery at state level, Oyo State ministries sit on the Project Steering Committee, and local universities including University of Ibadan, LAUTECH, and FUNAAB co-generate localised agricultural innovations as embedded research partners. Local youth are channelled into bio-alternative and circular economy enterprises, while digital extension platforms deliver real-time agricultural advisories in local languages to an estimated 20,000 farmers. The project's entire implementation architecture is therefore built on and through local institutions, leadership structures, and community networks — not merely translated into local languages. Here is how those specific consultation outcomes were integrated into the final design:

1) Shift from 'Extension Service' to 'Governance Hubs'

Consultation Finding: Farmers expressed a lack of trust in top-down government extension services and a preference for learning from peers and shared local farmers' experiences.

- **Integration:** In Component 3, the project design was updated to replace a standard 'training' model with Farmer Field Schools (FFS) anchored in existing Local Community Governance. The 'governance' pillar ensures that local farmers/ settlements are the custodians of the project, not just passive recipients.

2) Formalization of Traditional and Local Knowledge (TLK)

Consultation Finding: Older farmers and women identified specific indigenous plants (e.g., Neem, botanical extract,) they already use for pest control but noted these were dismissed by modern markets.

- **Integration:** A dedicated activity was added to Component 3 to fund the scientific validation and standardization of TLK. This allows traditional bio-pesticides to be officially recognized as part of the proposed 'FARM+' alternatives, lowering the cost of entry for disadvantaged farmers.

3) Inclusion of 'Green Tenure' Safeguards

Consultation Finding: Tenant farmers and sharecroppers (the majority in many regions) explicitly stated they were afraid to stop using fast-acting chemicals because they had no guarantee they would still have access to the land once the soil health improved.

- **Integration:** In Component 4, the project integrated Security of Tenure as a core sustainability metric. Farmers who adopt sustainable practices are protected by written (often community-witnessed) land-use agreements and will have to green funda

4) Designing Inclusive Supply Chains

Consultation Finding: Women and youth highlighted that they were often 'priced out' of the market by middlemen who controlled transport and storage.

Integration: The design of Component 4 was modified to support Community-Managed Aggregation Centers. By placing the governance of these hubs in the hands of local cooperatives, and providing them with the necessary supports required, the project ensures that the 'Green Premium' for chemical-free produce stays within the community.

To effectively integrate Local Community Governance, Traditional and Local Knowledge (TLK), and Security of Tenure into the FARM+ project, the design shifted from viewing these as 'safeguard risks' to viewing them as 'enabling conditions.' In the context of transitioning away from highly hazardous agrochemicals, these three pillars provide the social infrastructure necessary for farmers to accept the risks associated with adopting new biological or mechanical alternatives. The core focus of these issues in project design was on Components 3 and 4 as outlined below.

1) Component 3: Technical Assistance and Introduction of Alternatives

The goal here is to replace chemical dependency with sustainable practices. This transition is rarely successful if it is purely a top-down technical transfer.

- Integration of TLK (The Evidence Base): * Bio-Prospection and Validation: The project design uses Component 3 to fund the documentation of indigenous pest management practices (e.g., specific plant extracts or intercropping rituals). By scientifically validating these practices, the project builds on existing farmer confidence rather than asking them to trust an entirely 'foreign' alternative.

- o Farmer-to-Farmer Knowledge Transfer: Designate 'Knowledge Elders' within communities to co-lead training sessions alongside technical experts.

- Community Governance (The Delivery Mechanism):

- o Farmer Field Schools (FFS): Anchor technical assistance in existing community structures (e.g., traditional councils or local cooperatives). These bodies should govern the selection of 'demonstration plots' to ensure they are representative of the community's diverse soil types and socio-economic levels.

- o Local Oversight Committees: Establish community-led monitoring groups to track the efficacy of biopesticides, ensuring that the 'alternatives' are culturally and economically appropriate.

2) Component 4: Improving Food Supply Chains

Supply chain stability relies on the long-term commitment of the producer, which is directly tied to their relationship with the land.

- **Security of Tenure (The Investment Incentive):**
 - o **Long-Term Soil Health:** Farmers without secure tenure (e.g., those on short-term verbal leases) are incentivized to use fast-acting chemicals to maximize immediate yield before their lease expires. To encourage the adoption of alternatives (which often require longer 'soil recovery' periods), Component 4 should include Tenure Verification and Documentation as a prerequisite for supply chain infrastructure support (like silos or processing hubs).
 - o **Gender-Inclusive Tenure:** Ensure that women—who often perform the bulk of the weeding and pesticide application—have documented access rights to the land. This empowers them to make decisions about chemical reduction within the supply chain.
- **Local Governance in Value Addition:**
 - o **Cooperative Governance:** When designing aggregation centers or processing facilities, the management framework should be rooted in local governance structures to prevent elite capture and ensure that 'Green Premium' prices actually reach the smallholders.
 - o **Traceability Protocols:** The design uses traditional community mapping to establish 'Pesticide-Free Zones' within the supply chain, where community governance enforces the exclusion of prohibited chemicals to protect the brand integrity of the FARM+ produce.

Private Sector

During the Project Preparation Grant (PPG) phase, private sector stakeholders at both national and state levels have been identified and engaged across the FARM+ project's five components: policy development, financing and insurance mechanisms, designing climate-smart alternatives, strengthening food supply chains, and designing a knowledge management system. The scope of engagement included discussions on potential national and subnational frameworks, including possible public-private partnership (PPP) modalities to facilitate successful project implementation. The private sector highlighted current barriers to entry and incentives needed to stimulate their participation in providing sustainable solutions for Climate-Smart Agriculture and reducing Highly Hazardous Pesticides in Nigeria.

Through competitive procurement processes, the private sector will be invited to participate in activities across the entire agricultural value chain as businesses, consultants and advisors. Engaged private sector actors will be encouraged to adopt climate-smart practices and alternatives to HHPs in line with project objectives. This, includes participating in the production, distribution, and uptake of biological pest control solutions, organic

inputs, and climate-resilient technologies. Private players in the agrochemical manufacturing sector have been identified as key stakeholders who will benefit from grant facilities and technical support to transition their businesses toward green production practices. This includes transitioning from the production and distribution of HHPs to safer, bio-based pest management solutions and environmentally friendly agricultural inputs, ensuring business continuity while contributing to environmental sustainability.

Procurement under the FARM+ Project shall be governed by the regulations of the lead financing institution. Where co-financing applies, procurement rules of the primary donor shall take precedence, and any supplementary framework shall apply only where explicitly aligned and non-contradictory. A Procurement Management Plan, developed prior to project inception, shall specify the applicable rules, thresholds, and procedures, and shall be approved by all funding parties.

The project will incubate potential pilot initiatives such as bio-pesticide production facilities, climate-smart input distribution centres, and digital extension service platforms. These will be taken up by the private sector under Build-Operate-Transfer (BOT) arrangements, ensuring sustainability and scalability beyond the project lifespan. Business models for CSA adoption and HHP reduction will be developed across the value chain, with strengthened private sector involvement through enabling access to financing and industry incentives that promote environmentally sustainable agricultural practices.

Financial instruments including risk-sharing mechanisms and agricultural insurance products will be designed and deployed to support CSA implementation and HHP phase-out activities. Private insurance companies will be strategically integrated to support and complement the Nigeria Agricultural Insurance Corporation (NAIC), expanding coverage and product offerings for climate-smart agricultural practices and protecting farmers transitioning away from HHPs.

The project will leverage co-financing provided by baseline initiatives and partnerships with financial institutions, private sector entities, and research institutions to support CSA adoption and HHP reduction. Co-financing contributions can be in-kind, including the provision of laboratory facilities for soil and pesticide residue testing, support for agricultural extension services, training facilities, demonstration farms, digital platforms, and technical expertise. These in-kind contributions will enhance project impact while fostering genuine private sector ownership and commitment.

The project will strengthen public-private, cross-sector, and interagency collaborations at national and state levels. Through formalized coordination structures, regular meetings among all stakeholders will be held. The national coordination structures will be involved in key implementation decisions in consultation with the FARM+ program coordination mechanisms. Training and capacity building will be provided to members of project coordination structures leveraging private sector best practices. The project shall formalise circular economy partnerships with participating agrochemical companies to establish structured chemical container recovery and disposal systems. Leveraging existing industry-led initiatives including incentive-based pack-return programmes operated by private sector partners such as Saro Agro Sciences the project shall design and implement community-level collection points and reverse-logistics mechanisms. These interventions shall measurably reduce agrochemical waste in farming households and surrounding environments, with performance tracked against defined waste reduction indicators.

Strategies will be developed to mainstream climate-smart agricultural policies and ensure policy coherence across government agencies and business sectors. The project coordinating committee will be tasked with implementing and ensuring the success of these mainstreaming activities. A detailed Stakeholder Engagement Plan outlining engagement mechanisms across all five project components is attached (uploaded separately).

Gendering The FARM+ Project For Women's Empowerment

This project is explicitly anchored in Nigeria's policy and regulatory frameworks, including the National Policy on Chemicals Management (under review), the National Policy on Organic Agriculture (draft), and Nigeria's obligations under the Rotterdam, Stockholm, Basel, and Minamata Conventions. It also builds on completed national initiatives such as the Les Bond UPOP Reduction Project, the GHS Implementation Programme, and the HCFC Phase-Out Management Plan to avoid duplication and maximise synergy.

The FARM+ project recognizes that gender inequality significantly constrains both environmental sustainability and agricultural development outcomes across Nigeria's rural landscapes. Women contribute an estimated 50–70% of labour in smallholder agriculture and play central roles in household-level natural resource management and community resilience. However, they continue to face systemic barriers including insecure land tenure, limited access to extension services, exclusion from cooperatives and decision-making structures, time poverty, restricted mobility, and disproportionate exposure to agrochemical risks through both productive and domestic roles. Men, by contrast, generally maintain greater control over land ownership, financial decision-making, agricultural inputs, and market participation.

Youth, particularly young women, face intersecting barriers linked to age, gender, and economic marginalisation that limit their participation in environmental management and higher-value agricultural activities. These inequalities increase the vulnerability of women and youth to environmental hazards, chemical exposure, climate shocks, and livelihood insecurity. The project has the operational capacity to effectively target these groups through OSADA's existing biometric database of more than 7,000 registered women and youth beneficiaries.

To address these challenges, FARM+ adopts a comprehensive gender-transformative approach integrated across all project components. The project will strengthen women's land-use security, promote access to climate-smart technologies and gender-appropriate personal protective equipment (PPE), and deliver inclusive capacity-building tailored to women's schedules and literacy levels. It will also support women-led enterprises in eco-friendly value chains through improved access to finance, markets, and business development services.

Project interventions will promote gender parity in governance and decision-making structures, reduce unpaid care burdens through labour-saving technologies and community childcare models, and implement robust safeguards including gender-sensitive grievance mechanisms, occupational health and safety monitoring, and GBV/SEA/SH prevention measures with zero-tolerance enforcement. By addressing structural barriers and unequal power relations, the project seeks to strengthen women's agency, expand youth inclusion, and ensure that environmental and agrochemical interventions contribute to lasting gender-transformative outcomes rather than reinforcing existing inequalities.

FARM+ will implement a rigorous gender-responsive monitoring and evaluation system with sex- and age-disaggregated indicators across all project components. Monitoring will track women's participation in Farmer Field Schools, adoption of climate-smart and safer agrochemical practices, representation in governance structures, access to finance and markets, changes in income, and reductions in agrochemical exposure. The project targets at least 1.5 million women beneficiaries and a minimum of 40% women's representation across all governance structures.

A dedicated Gender Specialist within the PMU will coordinate closely with the Global Child Programme (GCP) Gender Specialist to oversee quarterly progress reviews, annual gender audits, and community scorecards. Gender focal points at district level will work directly with women's groups and youth representatives to

validate findings and co-develop responsive interventions. Gender-disaggregated data and lessons learned will be systematically integrated into annual reporting, midterm reviews, terminal evaluations, policy dialogues, and community learning exchanges.

The project's Results Framework mainstreams gender-sensitive indicators across all five components at output, outcome, and impact levels, with indicator definitions, methodologies, and reporting cycles aligned to the GCP gender framework to ensure coherence across participating countries and contribute to programme-wide impact assessment. The GAP Mapping Table will serve as the operational reference linking each gender-sensitive indicator to its corresponding component, output, responsible party, and quantitative target throughout the project lifecycle.

1. Gender Roles and Socio-Economic Positioning

Gender and socio-economic relations across the project areas shape how women, men, and youth participate in agricultural production systems and how they access and benefit from environmental resources. These norms also determine who carries the burden of environmental degradation, climate shocks, and unsafe agrochemical use.

a) Division of Labour in Agricultural and Household Systems

Women perform a large share of the labor-intensive tasks in smallholder agriculture, particularly in food crop production, weeding, application of organic inputs, harvesting, sorting, and post-harvest processing. They are also responsible for essential domestic and community-care tasks such as:

- Water collection and management, often walking long distances due to declining water quality and availability.
- Household energy management, including fuelwood collection, which exposes them to environmental degradation and time poverty.
 - Childcare, elder care, and food preparation, leaving limited time for income-generating activities or participation in technical training.

Despite contributing 50--70% of the total labour in smallholder agricultural systems, women's roles are generally perceived as 'supportive' rather than economically productive. This perception leads to underinvestment in women's skills, safety, and economic empowerment. Men, on the other hand, tend to control the tasks associated with higher-income potential, including land clearing, mechanized activities, marketing of produce, and negotiations with buyers. This grants men greater access to cash income and decision-making authority.

b) Control Over Productive Assets and Decision-Making Power

FARM+ will address critical gender-based disparities in productive asset access that currently constrain women's participation in agro-processing value chains. The project will target four key intervention areas including land tenure security, where customary systems limit women's access and collateral options; livestock and equipment ownership, where women manage primarily low-value assets with limited market potential and financial decision-making structures at household and cooperative levels that exclude women from resource allocation. Focus shall also be on market participation barriers including mobility restrictions, childcare responsibilities, and inadequate market information that confine women to informal, lower-value markets. By addressing these systemic inequalities, FARM+ will enhance women's capacity to adopt climate-smart technologies, safe agrochemical practices, and land restoration measures, thereby strengthening both gender equity and environmental sustainability outcomes.

c) Limited Access to Information, Extension Services, and Training

Women's participation in extension programs and farmer field schools remains low because:

- Training times and locations often conflict with caregiving responsibilities.
- Male extension agents may lack gender-sensitive outreach approaches.
- Social norms discourage women from speaking openly in mixed-gender training sessions.
- Lower literacy levels reduce women's uptake of written agrochemical safety information.

As a result, women are more likely to rely on informal knowledge, increasing their exposure to chemical risks and reducing productivity.

d) Socio-Economic Vulnerability and Time Poverty

Women's unpaid care burden significantly limits their ability to:

- Participate in project meetings
- Attend long-duration training
- Engage in decision-making committees

- Pursue higher-value value chain opportunities

Time poverty reduces women's competitiveness, their ability to adopt environmentally sustainable practices, and their uptake of new technologies such as personal protective equipment (PPE), improved storage, or integrated pest management.

e) Youth and Gendered Barriers

Youth, particularly young women, face intersecting constraints rooted in both age and gender:

- Limited land access: Elders typically retain control, giving youth minimal land to cultivate.
- Low financial literacy and limited access to capital: Youth rarely qualify for formal loans.
- Marginalization from cooperatives and producer groups: Membership structures often prioritize older men.
- High unemployment and underemployment: This pushes youth into informal, low-paying segments of value chains (e.g., casual labour, transportation, small-scale retail).
 - Gendered expectations: Young women are expected to transition quickly into marriage and domestic roles, limiting their entrepreneurial prospects.

Consequently, youth often lack incentives or resources to adopt safe agrochemical practices, participate in environmental management, or invest in sustainable production.

a) Gender Norms and Their Impact on Environmental and Chemical Management

Gender norms reinforce unequal exposure to environmental risks:

- Women's presence in household spaces places them closer to areas where chemicals are stored unsafely.
- Men typically purchase and apply chemicals, but women often handle contaminated equipment, clothing, and residues.
- Women's limited technical training leads to higher health risks during weeding or post-harvest tasks when chemical residues remain active.

These disparities highlight the need for tailored interventions that recognize differentiated risks and empower women and youth to contribute meaningfully to environmental sustainability, chemical safety, and climate resilience.

1. Socio-Economic Barriers Faced by Women and Vulnerable Groups

The gender and socio-economic assessment reveals multiple, interlinked structural barriers that disproportionately constrain women, youth, and other vulnerable groups across the project landscape. These barriers stem from historical inequalities, cultural norms, weak institutional support, and limited economic opportunities. Collectively, they shape who benefits from agricultural investments and who bears environmental and chemical risks.

a) Unequal Land Tenure and Resource Rights

Women's limited control over land remains one of the most significant obstacles to their economic empowerment. In most communities, customary practices grant men primary authority over land ownership, inheritance, and allocation. Women often access land only through marriage or male relatives, making their tenure insecure and easily revoked. Implications include:

- Women cannot use land as collateral to access formal loans or farming credit.
- They have less authority to decide what crops to grow, how to use inputs, or which technologies to adopt.
- Limited land discourages long-term investments in soil fertility, restoration, and climate-smart techniques.
- Female-headed households often farm on smaller, more degraded plots with lower productivity.

This structural imbalance perpetuates economic vulnerability and directly affects adoption of sustainable chemical and environmental management practices.

b) Education and Literacy Gaps

Lower literacy levels, especially among rural women, limit their ability to access and interpret technical information on safe agrochemical use, integrated pest management, and ecosystem restoration. Many

information materials are text-heavy or available only in English, further excluding low-literacy beneficiaries. The consequences include:

- Difficulty understanding chemical labels, hazard symbols, and PPE instructions.
- Limited uptake of new technologies demonstrated during extension visits or training.
- Dependence on second-hand information from traders or neighbours, which may be inaccurate.
- Higher risk of unsafe handling, storage, and disposal practices.

These gaps widen the gendered divide in environmental and health outcomes.

c) Limited Mobility and Time Poverty

Women and young mothers face chronic time constraints due to their unpaid domestic and caregiving responsibilities. Daily workloads may include farming labour, childcare, fetching water and firewood, household chores, and supporting community activities. As a result:

- Women often cannot attend training, field demonstrations, or meetings held far from home or during peak household hours.
- Participation in leadership roles is low because meetings are scheduled at times that conflict with household responsibilities.
- Limited mobility reduces their access to agro-input dealers, markets, banking services, and extension officers.

Time poverty not only restricts their economic choices but also shapes their exposure to environmental and chemical hazards, as they spend more time in contaminated environments such as fields and homesteads.

a) Exclusion from Farmer Cooperatives and Agricultural Networks

Cooperatives, producer groups, and agricultural associations are powerful entry points for accessing credit, information, bulk inputs, and market opportunities. However, women and youth remain underrepresented due to:

- Membership rules favouring landowners or heads of households usually men.

- Cultural norms that discourage women from participating in mixed-gender forums.
 - Limited financial contributions required for membership or shareholding.

FARM+ will address the consequences of women's exclusion from formal structures, which manifests in three critical ways: lack of bargaining power resulting in unfair market prices, limited access to innovations, extension support, and subsidized inputs, and minimal visibility in environmental and chemical use decision-making. The project will specifically target interventions to lift women and youth out of low-value, high-environmental-risk value chain segments where they are currently concentrated, ensuring equitable access to market opportunities, technical support, and decision-making platforms that enable safer, more profitable participation in agro-processing.

b) Higher Exposure to Agrochemical and Environmental Risks

Women and children are often more exposed to agrochemical hazards due to their roles in the household and informal agriculture. Several factors increase this risk:

- Chemicals are frequently stored inside the home because of limited storage space or weak safety awareness.
- Women, who handle food preparation and cleaning, are more likely to come into contact with residues on produce, equipment, and clothing.
- Women rarely receive PPE or may find it ill-fitting, uncomfortable, or expensive.
- In mixed-farming households, men spray chemicals while women wash contaminated garments or tools without adequate protection.

This unequal exposure increases health risks, reproductive hazards, and long-term socio-economic disadvantages.

c) Economic Vulnerability and Poverty in Female-Headed Households

Female-headed households including widows, single mothers, and households affected by migration face heightened economic insecurity. Lack of labour, capital, and support networks pushes these households toward low-input, low-return agricultural activities, often on marginal land.

This contributes to:

- Lower productivity and income.
- Higher sensitivity to climate shocks and environmental degradation.
 - Reduced ability to invest in safe agricultural practices, restoration activities, or sustainable inputs.

Their heightened vulnerability makes them more dependent on unsustainable practices and more exposed to chemical and environmental hazards. The combined effect of these socio-economic constraints is a gendered cycle of vulnerability where limited access to resources reduces productivity, increases exposure to environmental hazards, and restricts participation in landscape restoration, climate resilience initiatives, and integrated natural resource management. Unless addressed intentionally through project interventions, these barriers will continue to undermine the effectiveness and sustainability of environmental and chemical safety programs.

1. Gender-Differentiated Impacts of Environmental and Chemical Risks

Gender norms and socio-economic inequalities shape the degree and type of exposure women, men, and youth face from environmental degradation and unsafe agrochemical practices. Because of their roles, responsibilities, and limited access to resources, women and children bear a disproportionate share of environmental and chemical risks. These impacts span health, livelihoods, productivity, and long-term resilience.

a) Increased Exposure through Household Roles

Women are responsible for food preparation, washing produce, handling harvested crops, and collecting water. As a result:

- They are directly exposed to chemical residues from recently sprayed crops.
- They handle contaminated water used for cooking or household cleaning.
 - Children, who accompany mothers during these activities, face secondary exposure pathways, increasing their health risks.

Poorly stored agrochemicals within the home, often due to limited storage options, further increase accidental poisoning risks for women and children.

b) Exposure during Labour-Intensive Farm Tasks

Women conduct tasks such as weeding, thinning, sorting, and post-harvest handling. These activities are often performed shortly after chemical application, when residue levels remain high. Women also wash contaminated clothing and equipment used by male sprayers, frequently without protective gear. This results in:

- Chronic low-dose exposure to toxic chemicals
- Respiratory problems, skin infections, and reproductive health complications
- Higher vulnerability to long-term health conditions linked to agrochemical use

c) Information and Awareness Gaps

Women's lower access to extension services and technical training means they receive less information on:

- Safe handling and storage of chemicals
- Appropriate use of PPE
- Integrated pest management techniques
 - Environmental impacts of improper chemical use

Because training is often targeted at men or held at inconvenient times for women, knowledge gaps persist, increasing health risks and reducing women's capacity to influence household decisions on safer alternatives.

d) Economic Dependency and Limited Decision-Making Power

Due to unequal land and asset ownership, many women rely economically on male household members. This dependency limits their ability to:

- Invest in safer, non-chemical pest control options
- Purchase PPE or improved storage containers

- Transition to climate-smart or organic practices
- Challenge unsafe chemical practices within the household

Consequently, women's exposure is often dictated by decisions they cannot control, reinforcing existing inequalities.

a) Gendered Impacts on Ecosystem Degradation and Climate Vulnerability

Environmental degradation (soil loss, water scarcity, biodiversity decline) intensifies women's workloads, as they must walk further for water and fuelwood and spend more time caring for sick family members exposed to pollutants. Climate shocks further reduce household income, pushing families toward cheaper, hazardous chemicals and unsustainable land practices, deepening women's vulnerability.

1. FARM+ Child Project Response and Gender-Transformative Approach

The project adopts a gender-transformative approach aimed not only at addressing gender inequalities but actively shifting harmful norms and improving women's and youth's agency in environmental and agrochemical governance. This approach aligns with AfDB's Gender Strategy, the GEF Gender Policy, and national gender frameworks. Interventions are integrated across all project components, ensuring that women and vulnerable groups benefit equitably from project resources, training, and decision-making processes.

a) Enhancing Women's Access to Resources and Technologies

- Strengthen women's land-use security through community sensitisation, advocacy with traditional leaders, and legal support mechanisms for documentation.
- Provide women farmers with climate-smart technologies such as improved seedlings, drip irrigation kits, organic fertilizers, and small-scale processing equipment.
- Ensure women receive adequate PPE, proper chemical storage boxes, and materials designed to fit their body sizes (e.g., gloves, masks).
- Support women's access to extension officers trained in gender-responsive agricultural practices.
- These measures help reduce exposure risks and increase women's productivity in a safe and sustainable way.

b) Inclusive Capacity Building and Extension Services

- Deliver modular, practical training adapted to women's schedules, education levels, and mobility limitations.
- Provide mobile, last-mile extension support through community para-extension workers including women and youth.
- Use demonstrations, illustrated materials, local languages, and hands-on approaches to reach low-literacy groups.
- Integrate environmental education and chemical safety into community radio programs and women's savings groups.

This ensures that women, youth, and vulnerable groups have equal opportunities to gain critical knowledge for safe chemical and environmental management.

c) Strengthening Women's Economic Empowerment

- Identify and support women-led enterprises in eco-friendly value chains such as organic inputs, climate-resilient seeds, waste recycling, and community nurseries.
- Link women to microfinance institutions, village savings groups (VSLAs), digital wallets, and credit schemes that do not require land ownership.
- Support market access for women-led cooperatives, including branding, packaging, and identification of buyers and off-takers.
 - Facilitate mentorship programs connecting successful women entrepreneurs with young women.

These interventions reduce economic dependency, increase agency, and promote long-term resilience.

d) Increasing Women's Leadership and Decision-Making Power

- Mandate gender parity in project committees, farmer organisations, land-use planning structures, and local environmental governance bodies.
- Provide leadership, negotiation, and public-speaking training to women and youth to enhance their confidence and influence.
- Encourage joint decision-making at household and community levels on land management, chemical use, and environmental restoration.
 - Institutionalise women's voices in policy dialogues through stakeholder engagement platforms.

This ensures that women are not only participants but key influencers in agrochemical governance and environmental planning.

a) Reducing Unpaid Care Burdens

- Introduce practical labour-saving technologies such as fuel-efficient stoves, water harvesting systems, grain threshers, and small solar-powered tools.
- Support community childcare models to enable women to attend trainings and participate in leadership bodies.
- Promote clean energy solutions that reduce time spent collecting fuelwood.
- Improve access to clean water sources or water-saving systems to reduce daily household burdens.

Reducing care burdens frees women's time for productive activities, training, and decision-making roles.

1. Safeguards and Protection Measures

The project integrates gender-responsive Environmental and Social Safeguards (ESS) to ensure that activities do not unintentionally reinforce inequalities or expose women, men, youth, and vulnerable populations to heightened risks. These measures are aligned with the AfDB Integrated Safeguards System (ISS), GEF Minimum Standards, and national environmental and gender policies.

Gender considerations are embedded in all safeguard instruments including the ESMP, Stakeholder Engagement Plan, GRM procedures, and community-level training programs to ensure that women and youth not only participate safely but also benefit equitably from project interventions.

a) Gender-Sensitive Grievance Redress Mechanism (GRM)

To ensure equitable access and responsiveness, the GRM is designed to be safe, confidential, and accessible to women, youth, and persons with disabilities. Key measures include:

- Multiple reporting entry points (community leaders, SMS, suggestion boxes, women's groups, focal points).
- Anonymous submission options for sensitive issues such as GBV/SEA/SH.

- Dedicated female grievance focal points trained in survivor-centered approaches.
- Clear procedures that ensure timely response, referral, and closure of cases.
- Regular community sensitization to raise awareness about rights and grievance channels.
- Quarterly reporting (with confidentiality protected) to track gender patterns in complaints and resolutions.

The GRM prioritizes non-retaliation, inclusiveness, and safety for all complainants.

b) Monitoring Occupational Health and Safety (OHS) for Women and Youth

Women often handle tasks that involve prolonged exposure to chemical residues, and youth may also participate in hazardous farm work. To minimize risks:

- Regular OHS risk assessments will identify gender-specific exposure pathways for chemical handling, storage, application, washing contaminated clothing, or post-harvest activities.
- Provision of gender-appropriate PPE, including sizes suitable for women and youth, and training on correct use.
- Monitoring of chemical exposure impacts through community health screenings and collaboration with local health facilities.
- Safe storage demonstration units at households and cooperatives to reduce accidental poisoning risks.
- Compliance monitoring with national OHS standards and AfDB ESS requirements.
 - Gender-disaggregated reporting of OHS incidents and mitigation actions.

This ensures women and youth are protected throughout the project's agricultural and environmental activities.

c) Prevention and Mitigation of GBV, SEA, and SH Risks

Given that project activities may involve interactions between contractors, community members, and extension staff, the project integrates strong measures to prevent Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH).

Key actions include:

- Mandatory Codes of Conduct (CoC) for contractors, extension agents, project staff, and community facilitators, outlining zero tolerance for GBV/SEA/SH.
- Comprehensive training on gender equality, respectful behaviour, and reporting obligations for all project personnel.
- Community awareness sessions targeting men, women, and youth to challenge harmful norms and increase understanding of consent, rights, and accountability.
- Establishing safe and confidential reporting channels with referral pathways to health, psychosocial, and legal support services.
- Ensuring contractor contracts include GBV/SEA/SH clauses and penalties for non-compliance.
- Regular monitoring by the PMU to ensure adherence to CoCs and quick response to incidents.
- Collaboration with local women's rights organisations to strengthen service provision and community-level prevention.

These actions ensure that project activities do not inadvertently create or exacerbate GBV risks, particularly for women and young girls.

a) Safeguards Integration into Community-Level Activities

To ensure community-wide protection:

- All environmental and chemical training sessions will incorporate risk mitigation modules tailored to the needs of women, children, and vulnerable groups.
- Women's groups will be leveraged as platforms for awareness, risk monitoring, and safe reporting.
- Safeguards specialists will adopt participatory approaches to ensure that mitigation measures reflect local gender dynamics.
 - Household-level awareness campaigns will address safe chemical practices, environmental protection, and risks associated with improper disposal or handling.

This promotes shared responsibility for environmental and gender-related safeguards within the community.

b) Gender-Responsive Safeguard Monitoring and Reporting

The project will maintain sex- and age-disaggregated data for all safeguard indicators, including:

- Number of grievances received and resolved (by gender and type).
- Number of OHS incidents involving women and youth.
- Number of GBV/SEA/SH cases reported and referred (confidential).
- Compliance with Codes of Conduct by contractors.
 - Participation levels in safeguard training sessions.

Monitoring results will feed into adaptive management and decision-making processes, ensuring safeguards remain effective throughout implementation.

1. Monitoring and Accountability

The project establishes a robust gender-responsive Monitoring and Evaluation (M&E) system to ensure that gender equality and women's empowerment outcomes are systematically tracked, reported, and used to inform adaptive management. Monitoring mechanisms are aligned with the GEF-8 Core Indicator Framework, AfDB's Results Measurement Framework, and national gender strategies.

Gender indicators will be integrated across output, outcome, and impact levels to ensure that progress on gender equality is visible, measurable, and actionable throughout the project cycle.

a) Integration of Gender into the M&E Framework

The M&E system will ensure that:

- All project results are sex- and age-disaggregated.
- Data collection tools (surveys, training registers, attendance sheets) include gender markers.
- Baseline, midterm, and endline assessments measure changes in women's empowerment, access to resources, decision-making power, and exposure to environmental and chemical risks.

- Gender specialists work closely with the PMU to continuously monitor progress and address inequalities as they arise.
- Regular gender performance reports feed into project implementation reviews, donor reports, and community feedback loops.

b) Key Gender Indicators

The following indicators will be used to track progress, aligned with the GEF-8 Core Indicator Worksheet:

No.	Indicators	Measurement
1.	% of women with improved access to safe agrochemical practices	Measured by access to PPE, safe storage tools, training received, and adoption of integrated pest management.
2.	% of women trained in climate-smart and environmentally safe technologies	Includes training on ecosystem restoration, water conservation, organic inputs, and other climate-smart innovations.
3.	Number of women-led enterprises supported	Tracked by type of enterprise, sector (seedling production, waste management, value addition, etc.), and business growth metrics.
4.	% of women participating in project governance and decision-making structures	Includes representation in community committees, cooperatives, PMU consultative groups, land-use planning bodies, and chemical governance platforms.
5.	Reduction in occupational exposure to agrochemicals among women and youth	Monitored through safety compliance assessments, health facility reports, and adoption of safe handling practices.
6.	Household income changes among women beneficiaries	Assessed through periodic socio-economic surveys comparing baseline and endline income data.
7.	% of youth (disaggregated by sex) accessing training, inputs, and decision-making platforms	Ensures that young women and men are equally integrated in project benefits.
8.	Incidents of GBV/SEA/SH reported and safely resolved	Confidentially tracked through the GRM while ensuring anonymity and survivor-centered approaches.
9.	Women's perception of agency, voice, and influence in environmental and chemical management decisions	Measured through qualitative tools such as focus group discussions, outcome harvesting, and perception surveys.

a) Gender Accountability Mechanisms

The following structures will ensure accountability for gender integration:

- Gender Specialist within the PMU responsible for monitoring, technical support, data analysis, and reporting.
- Quarterly Gender Progress Reviews conducted with implementing partners and community representatives.
- Community Scorecards to capture women's feedback on service delivery, safety, and participation.

- Annual Gender Audits to assess compliance with gender targets across components.
- Contractor and partner compliance checks ensuring adherence to gender-related safeguards (e.g., PPE distribution, GBV CoCs, inclusive training).
- Adaptive management processes allowing real-time adjustments based on gender monitoring findings.

b) Knowledge Management and Learning

FARM+ will establish a structured knowledge management system to capture gender-responsive innovations throughout implementation, tracking quantitative and qualitative indicators including women's participation, leadership, income changes, and resource access while documenting barriers such as time poverty, mobility constraints, and financial access.

Gender focal points at PMU and district levels will ensure consistent data collection and work with women's groups, cooperatives, and community leaders to validate findings and co-develop interventions. The project will also establish gender-sensitive feedback mechanisms enabling women participants to safely report challenges and suggest improvements, ensuring adaptive responses to women's evolving needs rather than relying solely on periodic formal evaluations.

Environmental and Social Safeguards

The overall environmental and social risk for the FARM+ project in Nigeria is considered Moderate, as the project activities are expected to be undertaken in carefully selected agricultural zones within Oyo State under the Special Agro-Industrial Processing Zone (SAPZ), leveraging farm settlements and estates that surround the Fasola Agribusiness Hub. Project interventions will be strategically targeted to these established farming communities with existing infrastructure and institutional support.

The project benefits from the presence of strategic functional institutions in the project area, including the National Agricultural Seeds Council (NASC), the International Institute of Tropical Agriculture (IITA), the Oyo State Agricultural Development Agency (OYSADA), and other research and extension institutions that provide critical technical support, research capacity, quality assurance services, and farmer outreach mechanisms. These institutions will serve as key implementation partners, offering laboratory facilities, demonstration sites, technical expertise, and extension networks that strengthen project delivery and ensure sustainability of interventions.

To ensure these benefits are equitably distributed, the project integrates gender-responsive safeguards across all implementation activities embedding protections against GBV, SEA, and occupational health risks into contractor codes of conduct, extension protocols, and community engagement processes. All this while maintaining a confidential and accessible grievance redress mechanism with dedicated female focal points. This ensures that women, youth, and vulnerable groups participate safely and benefit equitably from project interventions.

FARM+ will formally adopt and cross-reference the existing Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) completed for the Fashola Agribusiness Industrial Centre, which has been submitted for disclosure by the Federal Ministry of Environment. The project will not commission a parallel ESIA for Fashola but will instead prepare a supplementary Environmental and Social Audit (ESA) to identify any additional impacts specific to FARM+ project activities. This audit will be completed within the first six months of project implementation and reviewed by the AfDB's environmental and social specialists prior to major infrastructure investment disbursements.

The project also frames the removal and disposal of Organochlorine Pesticides (which are POPs) not merely as a logistical move, but as a crucial risk management workflow following a strict Chain of Custody from the farm gate to the final destruction point. Under the FARM+ project, a specialized team of chemical waste management experts, guided by a formal Terms of Reference, will ensure the OCPs are handled in an Environmentally Sound Manner (ESM) while accounting for gender considerations through the following three-stage narrative:

1. Stabilization and Inventory (The 'Freeze' Phase)

This phase will be focused on identifying the risk and preventing immediate contamination before moving the chemicals.

- **Expert Deployment:** The project team, accompanied by the regulatory agency (NESREA), will deploy the Environmental Management Toolkit (EMTK) to quantify and identify the OCPs.

- **Risk Mitigation:** To stabilize the storage sites (cooperative warehouses or pilot sites) and prevent stock leaking, identified compromised containers will be immediately repackaged into UN-approved High-Density Polyethylene (HDPE) drums.
- **Tracking Setup:** Every drum will be meticulously labelled with the chemical name and a unique Project ID Code to ensure auditable tracking throughout the entire disposal process.

2. Secure Transport and Legal Clearance (The 'Link' Phase)

This phase ensures all movement adheres to strict federal regulations to maintain the Chain of Custody considering a number of factors.

- **Regulatory Permits:** The Project Management Unit (PMU) will submit the full inventory to the Federal Ministry of Environment and NESREA; and obtain the mandatory 'Permit to Transport Hazardous Waste' in strict adherence to the NESREA National Environmental (Hazardous Chemicals and Pesticides) Regulations.
- **Specialized Logistics:** A licensed hazardous waste transporter will be engaged to transport the stocks. The vehicle will be equipped with essential safety features, including spill kits and GPS tracking, and the driver would be trained in emergency response.
- **Waste Manifest:** A legally required Waste Manifest (Chain of Custody document) detailing every drum and its weight, accompanies the truck and transfers liability from the site to the transporter.

3. Destruction and Final Reporting (The 'End-of-Life' Phase)

This phase documents the irreversible destruction of the POPs and translates the physical action into M&E data.

- **Destruction Method:** Aligning with the Circular Economy approach, the standard practice for FARM+ Nigeria will be to utilize High-Temperature Incineration (co-processing) in certified cement kilns (e.g., Lafarge Geocycle plants). This method guarantees the complete destruction of the OCPs.
- **Contingency Plan:** If stocks are deemed too concentrated for local facilities, the waste would be exported through the Basel Convention's Prior Informed Consent (PIC) procedure, requiring approval from transit countries.

- **Accountability:** The PMU will translate the physical destruction into M&E data by summing the total weight from the Certificates of Destruction (CoDs) that will be issued by the disposal facility.
- **M&E Reporting:** These figures would be entered into the reporting portal, reflecting the amount of toxic chemicals reduced and avoided as part of the project's official GEF submission.

The work of promoting Climate-Smart Agriculture practices and reducing Highly Hazardous Pesticides including PoPs will potentially positively impact job creation, particularly for youth and women in green agriculture value chains, including the formalization of informal agricultural service providers and input distributors. The transition toward sustainable agricultural practices is expected to improve farmer livelihoods, enhance environmental health, and strengthen community resilience to climate change. Further, the environmental and social risks have been thoroughly identified, analyzed, and mitigation measures prescribed, and these are presented in the Environmental and Social Management Plan (ESMP) uploaded separately.

Knowledge management

The project is formally registered as a contributing national node to the GEF Global Programme on HHP Reduction. Component 5 will document and transmit Nigeria-specific evidence including bio-alternative efficacy data, HHP phase-out regulatory decisions, and financing model outcomes to the global programme knowledge hub for synthesis and adaptation across the 14 participating countries. Additionally, the project formally commits to aligning its HHP phase-out milestones with the Global Action Plan on HHP Management currently under development within the Global Framework on Chemicals (GFC), and to submitting progress updates to GFC processes through the FMEnv NCCM focal point.

Knowledge management will be mainstreamed across all five project components, with dedicated support under Component 5 for developing and implementing a comprehensive Knowledge Management Strategy. This strategy will establish systematic mechanisms across the knowledge cycle to: (i) generate and capture knowledge products including lessons learned, best practices, and innovations from national and global child projects; (ii) share and disseminate knowledge among participating countries and stakeholders through webinars, peer-learning exchanges, and publications; (iii) adapt global knowledge products for context-specific country application; and (iv) promote evidence-based decision-making and adaptive management. The FARM+ Knowledge Management Platform will serve as the central repository for disseminating and accessing knowledge resources.

FARM+ will establish a structured knowledge management system to capture gender-responsive innovations throughout implementation, tracking quantitative and qualitative indicators including women's participation, leadership, income changes, and resource access while documenting barriers such as time poverty, mobility constraints, and financial access. Gender focal points at PMU and district levels will ensure consistent data collection and work with women's groups, cooperatives, and community leaders to validate findings and co-develop interventions. The project will also establish gender-sensitive feedback mechanisms enabling women participants to safely report challenges and suggest improvements, ensuring adaptive responses to women's evolving needs rather than relying solely on periodic formal evaluations.

The project shall develop and operationalise a Data Protection and Privacy Framework prior to the commencement of data collection activities. The Framework shall be consistent with the Nigeria Data Protection Act (NDPA) 2023 and applicable donor requirements. It shall address data classification, storage, access controls, informed consent procedures, and data subject rights. As part of in-kind contributions, a Data Protection Officer (DPO) shall be designated within the project management unit, and all field staff handling personal data shall receive mandatory training before deployment.

Knowledge Sharing, Learning, and Scaling Up

The child project places a strong emphasis on knowledge sharing, learning, and the synthesis of experiences, both within Nigeria and across the broader region. By engaging with platforms for regional collaboration and knowledge exchange, the project will facilitate the dissemination of successful practices and lessons learned from the implementation of SAPZs. This includes leveraging the expertise of regional institutions such as the African Development Bank (AfDB) and the Economic Community of West African States (ECOWAS) to foster cross-country learning and support.

The project will also engage in regular dialogue with global and regional stakeholders, including governments, NGOs, research institutions, and the private sector, to ensure that the latest innovations and best practices are integrated into project activities. This continuous learning approach will enable the project to adapt to emerging challenges and opportunities, thereby maximizing its impact.

Scaling up successful approaches from the local to the national and regional levels is a key objective of the child project. By building on the SAPZ framework, the project aims to create a model for sustainable agriculture that can be replicated across different regions of Nigeria and in other countries facing similar challenges. The project's inclusive approach, which involves local communities, government agencies, private sector partners, and civil society organizations, ensures that the benefits are widely shared and that stakeholders remain committed to sustaining the outcomes beyond the program's duration.

The project's engagement with global and regional frameworks is integral to its strategy for achieving sustainable and climate-resilient agriculture in Nigeria. By aligning with international agreements and regional strategies, fostering knowledge sharing and collaboration, and scaling up successful interventions, the project is well-positioned to contribute to both national and global environmental goals, while also enhancing food security, economic resilience, and social equity in the region.

Localization of FARM+ Knowledge Management in Nigeria Context

The FARM+ knowledge management strategy is localized to Nigeria's agricultural context by:

- **Building on Existing Systems:** Leveraging OYSADA's extension network, IITA's research expertise, and NASC's quality assurance systems rather than creating parallel structures
- **Culturally Appropriate Content:** Developing knowledge products that reflect local farming practices, indigenous knowledge, and cultural norms in Oyo State
- **Language and Literacy:** Prioritizing Yoruba language content and visual communication methods suitable for varying literacy levels
- **Technology Adaptation:** Matching digital solutions to local connectivity infrastructure and mobile phone penetration rates
- **Institutional Anchoring:** Embedding knowledge management functions within OYSADA and partner institutions for sustainability
- **Policy Alignment:** Ensuring knowledge products support Nigeria's National Agricultural Technology and Innovation Policy and Climate-Smart Agriculture strategies

The FARM+ project aligns strategically with Nigeria's Nationally Determined Contributions (NDCs) under the Paris Agreement, supports the Federal Ministry of Agriculture's agricultural transformation agenda, contributes to national pesticide management and regulation frameworks, and links directly with food security and nutrition objectives, ensuring that project interventions complement and strengthen existing national development priorities and climate commitments.

Knowledge Management and Coordination Framework

The FARM+ project establishes a Knowledge Management and Coordination Framework to systematically capture and disseminate climate-smart agriculture practices to all stakeholders through accessible platforms. The structure has robust governance at national and state levels, quality assurance mechanisms, and sustainability embedded through institutional capacity building and integration with Nigeria's permanent agricultural and environmental institutions.

Governance Structure

The FARM+ knowledge management governance operates at two levels: nationally through a Steering Committee chaired by the Federal Ministry of Agriculture with representation from the Federal Ministry of Environment, NASC, research institutions, and private sector, supported by a Technical Working Group of experts from IITA, universities, and development partners. This is supported by a Private Sector Advisory Panel engaging agrochemical manufacturers, agribusinesses, and insurance companies. Also state level governance is structured through OYSADA's Knowledge Management Unit, the Fasola Hub Coordination Team, and an Extension Officers Network serving as frontline knowledge ambassadors.

Coordination Mechanisms

Coordination is maintained through quarterly steering committee meetings, monthly technical working group sessions, digital collaboration platforms for document sharing and virtual engagement, cross-component integration ensuring knowledge management supports all five FARM+ components. This is supported by regional linkages with FARM+ knowledge exchange events, and partnership protocols with strategic institutions (IITA, OYSADA, NASC) defining roles and responsibilities.

Quality Assurance and Sustainability

Quality is ensured through technical review of all knowledge products (Table 910) by subject matter experts (Consultants and technical leads in the PMU), farmer feedback loops for content refinement, peer review mechanisms for research outputs, and documentation of lessons learned for adaptive management. Sustainability is embedded through capacity building of local institutions for continuity beyond project life, integration of digital platforms with existing government systems, revenue models for long-term platform maintenance, and knowledge repositories hosted by permanent institutions (IITA, OYSADA) for continued access.

Table 11: Key Knowledge Management Products

Product	Description of the Service	Target Audience
CSA Practice Manuals and Farmer Guides	Practical guides on climate-smart practices, bio-pesticide use, and HHP alternatives in local languages with visual aids	Smallholder farmers, farm settlements, agricultural cooperatives, extension agents
Digital Knowledge Platform	Mobile-accessible platform with SMS/USSD services, video tutorials, weather advisories, pest management alerts and project execution progress indicators	Smallholder farmers, youth farmers, women groups, agri-entrepreneurs
Policy Briefs and Technical Reports	Evidence-based policy recommendations, research findings, and feasibility studies on CSA adoption and HHP reduction	Government agencies, policymakers, development partners, private sector

Training Toolkits and Curriculum	Standardized training materials for capacity building on CSA, green agrochemical production, and sustainable value chains	Extension workers, agro-dealers, agrochemical manufacturers, farmer organizations
Case Studies and Success Stories	Documented best practices, pilot results, and farmer testimonials showcasing CSA benefits and business models	Private sector, investors, financial institutions, media, general public

Knowledge Management Outputs and Activities

The Child Project will carry out the following KM-specific activities to ensure full integration with the Global Knowledge Management Hub:

Output 1: Knowledge Generation and Documentation

- Conduct baseline studies and ongoing research on CSA practices, HHP alternatives, and farmer adoption patterns
- Document best practices and lessons learned from pilot initiatives and BOT arrangements
- Develop case studies on successful transitions by agrochemical manufacturers to green production
- Generate evidence on the economic, environmental, and social impacts of CSA adoption

Output 2: Knowledge Products Development

- Produce farmer-friendly manuals, infographics, and video content in local languages (Yoruba, Pidgin, English)
- Develop policy briefs and technical reports for government and development partners
- Create training modules for extension workers, agro-dealers, and private sector partners
- Design digital content for mobile platforms and social media channels

Output 3: Knowledge Sharing and Dissemination

- Establish digital knowledge platform with multi-channel accessibility (web, mobile app, SMS, USSD)
- Organize farmer field days, demonstration sessions, and peer-to-peer learning exchanges
- Conduct national and state-level policy dialogues and stakeholder workshops
- Participate in regional and international knowledge-sharing forums under FARM+ program coordination

Output 4: Capacity Building and Training

- Train extension workers and lead farmers as knowledge ambassadors
- Build capacity of agrochemical manufacturers on green production technologies
- Strengthen institutional capacities of IITA, OYSADA, NASC, and other partners in knowledge management
- Provide digital literacy training for smallholder farmers, women, and youth groups

Resilience of the Knowledge Management Systems

The FARM+ knowledge management system builds resilience through multiple interconnected pathways that ensure continuity and adaptability. The framework establishes institutional resilience by embedding M&E capacities across all implementing partners including IITA, OYSADA, NASC, and farmer organizations, rather than centralizing functions, ensuring knowledge systems persist beyond individual staff changes. Technical resilience is achieved through a hybrid approach combining digital platforms (PMIS dashboards, mobile data collection apps, SMS/USSD systems) with community-based mechanisms (lead farmers, local monitors, participatory assessments), allowing continued functionality even when technology access is limited.

Social resilience is strengthened through systematic capacity building of diverse actors such as extension workers, farmer groups, women's organizations, and youth networks, this creating distributed expertise that can adapt knowledge sharing to local contexts and emerging challenges. Finally, adaptive resilience is built into the system through continuous feedback loops via monthly M&E meetings, quarterly coordination reviews, and semi-annual stakeholder learning events that enable real-time course corrections based on evidence. This guarantees that the knowledge management system evolves responsively to changing farmer needs, environmental conditions, and market dynamics while maintaining accountability to all stakeholders.

This comprehensive knowledge management framework ensures that data, insights, and best practices generated through the FARM+ project are systematically captured, packaged appropriately for diverse audiences. They need to be made accessible through multiple channels, particularly reaching smallholder farmers, women, and youth in rural areas of Oyo State and Nigeria at large.

Alignment with Global Knowledge Management Frameworks

At the global level, the FARM+ project's knowledge management framework aligns with and contributes to Nigeria's commitments under several key international environmental agreements. These include the Paris Agreement, the Convention on Biological Diversity (CBD), the United Nations Convention to Combat Desertification (UNCCD), and the Stockholm Convention on Persistent Organic Pollutants (POPs). This alignment ensures that knowledge products, learning platforms, and capacity-building initiatives systematically integrate global best practices while addressing local contexts.

Nigeria's Nationally Determined Contributions (NDCs) under the Paris Agreement emphasize reducing greenhouse gas emissions from agriculture and enhancing climate resilience. The FARM+ knowledge management strategy supports these commitments by systematically documenting, disseminating, and scaling climate-smart agricultural practices including conservation tillage, crop rotation, and agroforestry through accessible knowledge platforms, farmer training modules, and demonstration sites that showcase emission mitigation and climate adaptation strategies.

The project's knowledge products align with Nigeria's obligations under the CBD by promoting awareness and adoption of practices that conserve biodiversity and ensure sustainable use of natural resources. Knowledge materials on organic farming, integrated pest management, and habitat restoration within the Ijaiye SAPZ and Fasola Hub as well as farm settlements and estates contribute to biodiversity protection while demonstrating that agricultural productivity and ecosystem conservation can be mutually reinforcing through evidence-based practices.

The FARM+ knowledge management framework directly supports Nigeria's commitments under the UNCCD by creating and sharing technical guidance on sustainable land management, soil conservation, and land restoration. Knowledge products targeting soil erosion control, reforestation techniques, and land rehabilitation provide farmers and extension workers with practical tools to combat desertification and enhance soil fertility, with documented case studies demonstrating successful restoration of degraded lands.

The project's knowledge dissemination on reducing Highly Hazardous Pesticides (HHPs) contributes to Nigeria's efforts under the Stockholm Convention by providing evidence-based information on safer pest management alternatives and integrated approaches that minimize persistent organic pollutants. Training materials, policy briefs, and farmer guides systematically document the health, environmental, and economic benefits of transitioning away from harmful chemicals, creating a knowledge base that supports regulatory frameworks and informed decision-making across the agricultural sector.

Through this integrated approach, the FARM+ knowledge management framework serves as a bridge between global environmental commitments and local agricultural practices, ensuring that international obligations are translated into accessible, actionable knowledge that empowers farmers, policymakers, and private sector actors to implement sustainable solutions at scale.

Regional Engagement and Alignment of Knowledge Management and Practices

Regionally, the FARM+ project's knowledge management framework aligns with the African Union's Agenda 2063, supporting sustainable agriculture as a driver of economic transformation and food security. Knowledge products on SAPZs, public-private partnerships, and climate-smart practices contribute to regional goals of enhancing agricultural value chains and agro-industrialization, providing replicable frameworks for other African countries.

Water management represents a critical knowledge domain within the FARM+ project, particularly regarding transboundary resource governance. The pilot phase focuses on the Ogun River, which flows through the Fasola farm communities into the Lagos Lagoon before reaching the Atlantic Ocean, generating transferable knowledge on Integrated Water Resources Management (IWRM) practices.

The project incorporates collaboration opportunities with the Niger Basin Authority (NBA) to develop knowledge resources on sustainable water management applicable to broader transboundary contexts, supporting the GEF International Waters Focal Area objectives of enhancing water security in shared freshwater ecosystems and accelerating joint actions for sustainable blue economies.

Knowledge products address water use efficiency in agro-industrial activities, agricultural runoff reduction, and ecosystem restoration, directly supporting improved governance of transboundary water resources. While the immediate pilot focuses on Oyo State, the knowledge framework recognizes Nigeria's broader engagement with the Niger River Basin states and develops resources supporting the NBA's 'Integrated Development Plan of the Basin,' ensuring agricultural activities maintain long-term waterway health.

The FARM+ project engages with West African regional initiatives through participation in forums, working groups, and communities of practice, facilitating exchange of best practices across countries. Knowledge products on CSA adoption, HHP reduction, PPP frameworks, and IWRM approaches are shared through regional platforms to create synergies, foster collaboration, and enable scaling of successful interventions across West Africa, ensuring locally generated knowledge contributes to broader continental objectives.

[1] <https://www.jrfarmsgroup.com/en>

Institutional Arrangement and Coordination with Ongoing Initiatives and Project.

Please describe the Institutional Arrangements for the execution of this child project, including framework and mechanisms for coordination, governance, financial management and procurement. This should include consideration for linking with other relevant initiatives at country-level (if a country child project) or regional/global level (for coordination platform child project). If possible, please summarize the flow of funds (diagram), accountabilities for project management and financial reporting (organogram), including audit, and staffing plans. (max. 500 words, approximately 1 page)

Figure 11 below highlights the project's institutional arrangements at global, national and community levels, leveraging coordination mechanisms structured and integrated in the project.

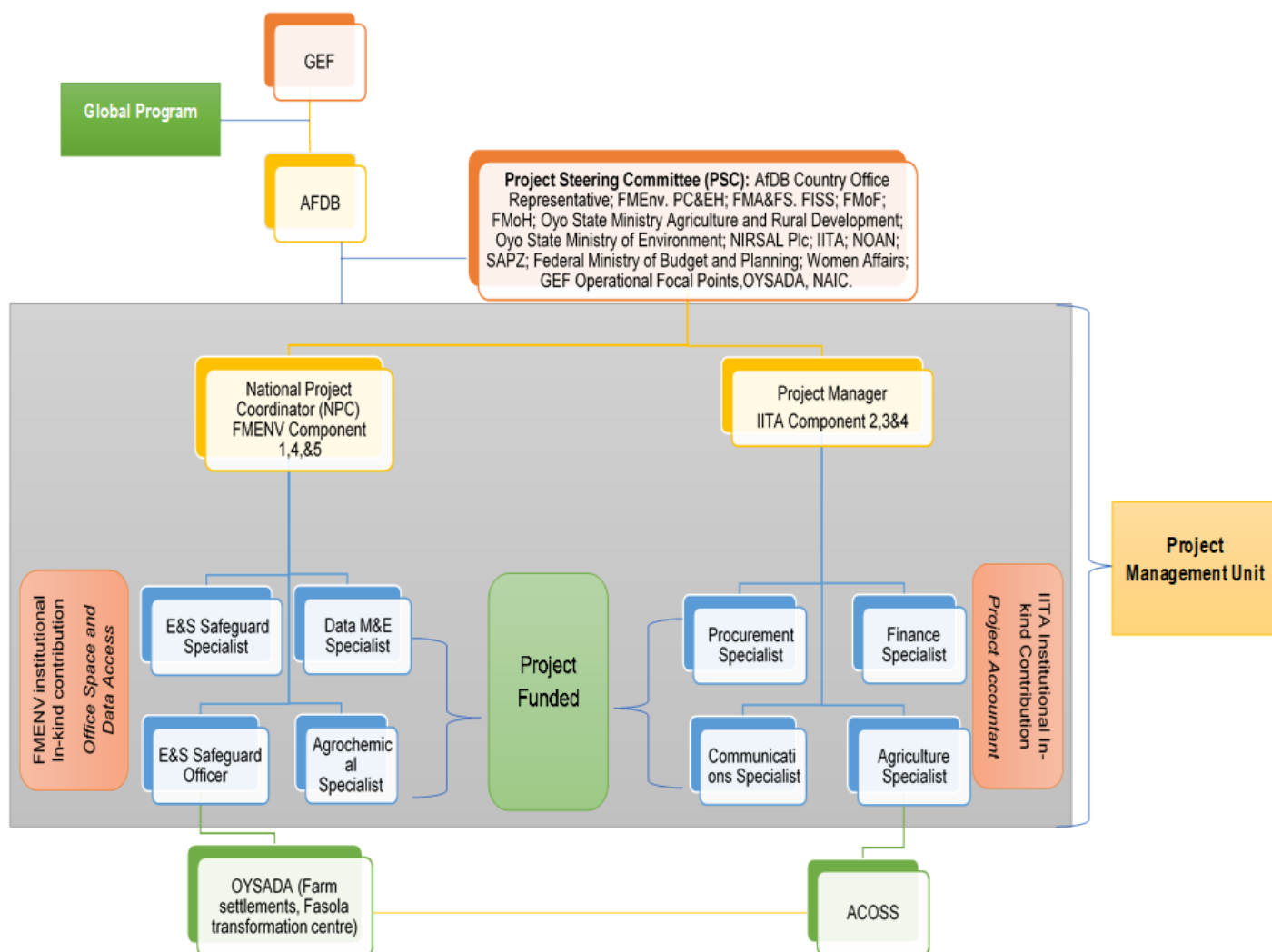


Figure 11: FARM+ Project Implementation Arrangement

1. The project will be implemented collaboratively between the National Focal Point (NFP) Institutions of the Stockholm and Minamata Convention, and the SAPZ/anchor Project in Oyo state
2. The SAPZ/anchor projects are Bank investment projects (loans and grants). They will provide co-financing to the FARM+ project in the form of PIU services including fiduciary and non-fiduciary support.
3. The project will finance recruitment of consultants as 'Technical advisor or assistant' to respective PMUs coordinators, with contracts not exceeding 6 months per year. The engagement modalities distinguish between consultancy assignments and full-time employment. All personnel classified as consultants operate under time-bound, output-based contracts consistent with Nigerian Labour Law. Where roles require continuous on-site supervision and dedicated full-time commitment, such positions shall be formally restructured as fixed-term employment arrangements, with applicable statutory obligations including pension contributions and applicable tax deductions duly reflected in the project budget.
4. The beneficiary institution that is hosting the SAPZ/anchor project is the IITA which is the Baseline Project PIU to provide co-financing support through fiduciary functions. The Federal Ministry of Environment of Nigeria will be the Executing Agency, for the FARM+ project, and as the host institution for the National Focal Points for the Stockholm and Minamata Conventions will be responsible for the day-to-day

implementation of the project as executing partners because of their statutory mandate for management of chemicals and waste in Nigeria.

5. A clear division of roles between the Executing Agency, the Conventions NFPs and the baseline project has been ascertained in a manner that ensure that the NFP, being the agency with national mandate concerning chemicals, retains ability to implement the project, while the baseline project provides PIU services and is accountable to the Bank.

6. Table 7 below presents the Division of Functions between the SAPZ Project PMU and the NFP.

Table 7: Division of functions between Baseline Project PIU and National Focal Point

Baseline SAPZ/Anchor Project functions for FARM+	Executing Agency and NFP Key functions in implementing FARM+
<i>As Executing Agency for the Project in a co-financing model -</i> 1. Provide fiduciary services such as Procurement and Financial Management. 2. Provide fiduciary services to the NFP. 3. Provide non-fiduciary specialist functions to NFP, as needed. 4. Work with NFP to develop procurement plan and cost tables. Support with experience in developing procurement plans and cost tables for AfDB-funded projects. 5. Handle flow of funds from the AfDB to the project 6. Undertake fiduciary and technical reporting to Bank. 7. Coordinate with NFP on implementation timelines and Bank Project reporting requirements. 8. Participate in bid evaluation. 9. Participate as Member of National Project Committee. 10. Nominate relevant Agro-chemicals specialists to support M&E of certain activities as required.	<i>As Executing Agency for the Project in a co-financing model -</i> 1) Develop project workplan. 2) Implement workplan based on result framework outputs. 3) Ensure compliance with implementation timeline. 4) Coordinate implementation timelines. 5) Develop Terms of Reference, and activity concepts. 6) Submit procurement requests, and activity financing requests to Bank. 7) Participate in bid evaluation 8) Certify outputs for payment of consultants 9) Submit activity reports to Bank 10) Report on workplan outputs to the Bank 11) Convene and Chair Project Steering Committee. 12) Appoint and maintain a project team (chemicals experts) to implement activities 13) Undertake M&E of the project. 14) Provide specialist functions, as needed. For example, Gender mainstreaming, and Implementation of ESMP, and GAP.

Detailing Institutional Arrangements To Guide Implementation

The Global Environment Facility (GEF) provides the overarching funding framework for the FARM+ program, channelled through the African Development Bank (AfDB) as the GEF Implementing Agency. A

dedicated Global Child Project, linked directly to AfDB, coordinates program-level activities across all participating countries and ensures alignment with GEF strategic objectives.

- The African Development Bank (AfDB) serves as the Lead Agency for the FARM+ program and will execute the global child project, ensuring strategic coordination among participating GEF Implementation Agencies including the Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), and United Nations Industrial Development Organization (UNIDO).
- Recognizing the complexity and resource requirements for effective program management, AfDB will identify additional executing partners based on comparative advantages and institutional mandates during the preparatory phase to support global coordination and knowledge dissemination.
- AfDB shall coordinate consultations with the Federal Ministry of Environment through the PMU to support the management of the FARM + project's knowledge platform while drawing lessons from AfDB's Sustainable Finance Hub to formalize partnership arrangements.

Initial consultations shall be held with the Federal Ministry of Environment which manages the FARM program knowledge platform and AfDB's Sustainable Finance Hub to formalize partnership arrangements.

The International Institute of Tropical Agriculture (IITA) serves as the GEF Project Manager (PM) , managing fiduciary responsibilities and fund disbursement with an overarching technical responsibility for Components 2, 3, and 4.

- In this capacity, IITA manages the day-to-day operational and financial accountability of the project's agricultural and innovation components, overseeing procurement, financial reporting, and work plan execution.
- Through its Agriculture Specialist, IITA provides direct technical leadership on the design and implementation of climate-smart agriculture pilots, post-harvest loss reduction technologies, and agro-processing interventions, drawing on its extensive research infrastructure and field presence across Nigeria.
- IITA's Finance Specialist and Procurement Specialist ensure that GEF resources are deployed in accordance with AfDB fiduciary standards, while its Procurement Specialist manages competitive selection processes for goods, services, and consultancies under the relevant components.
- Beyond operational delivery, IITA contributes institutional in-kind support including research staff, laboratory facilities, and knowledge networks that substantially augments the project's technical capacity.
- IITA also serves as the primary technical backstop on agricultural best practices for beneficiaries in Fasola farm settlements, bridging the gap between research evidence and farmer-level application through structured engagement with OYSADA and ACOSS cooperative networks.

The Federal Ministry of Environment (FMEnv) functions as the National Project Coordinator and Executing Agency, providing strategic oversight and national policy alignment with a technical focus on Components 1, 4, and 5.

- As NPC, FMEnv is the principal interface between the project and Nigeria's national development agenda, ensuring that FARM+ interventions are embedded within the country's National Adaptation Plans (NAPs), Nationally Determined Contributions (NDCs), and environmental regulatory frameworks.
- FMEnv's Data M&E Specialist leads the project's monitoring, evaluation, and learning system, tracking progress against the results framework and generating evidence for adaptive management and GEF reporting.

- The E&S Safeguard Specialist ensures that all project activities comply with AfDB's environmental and social safeguard requirements and national environmental law, conducting regular assessments and maintaining the project's environmental and social management plan.
- The Agrochemical Specialist, embedded within the FMEnv PMU stream, coordinates the regulatory and field dimensions of highly hazardous pesticide (HHP) reduction, liaising with NAFDAC, state agricultural extension services, and farmer organisations to operationalise safer input transitions.
- FMEnv also manages the project's secretariat functions through its existing pool of Secretaries, ensuring documentation, reporting timelines, and PSC meeting logistics are maintained. The Secretary shall be supported by the Communications Specialist domiciled in IITA and offering crosscutting project services. This collaboration is essential to keep the collaboration between IITA and FMEnv effective.
- Beyond its executing role, FMEnv provides institutional in-kind support including office infrastructure, national policy data, and access to inter-ministerial coordination platforms that strengthen the project's policy influence and sustainability prospects.

A Project Steering Committee (PSC) comprising representatives from key stakeholders including AfDB country office, FMEnv, Federal Ministries of Agriculture, Finance and Water Resources, Oyo State Ministry of Environment, IITA, NIRSAL Plc, SAPZ, NAIC, Federal Ministry of Budget and Planning; Women Affairs; GEF Operational Focal Points; and NOAN provides quarterly strategic guidance and workplan/work plan approval.

- Day-to-day implementation is executed through a Project Management Unit that encompasses both the IITA-led and FMEnv-led management streams. Under IITA, the PMU includes a Finance Specialist, Agriculture Specialist, Procurement Specialist, and Communications Specialist, who shall all be supported by the Project Accountant from IITA institutional in-kind contributions through the SAPZ program.
- Under FMEnv, the PMU includes a Data M&E Specialist, E&S Safeguard Specialist (who shall act as a Consultant), E&S Safeguard Officer to manage day to day activities, and Agrochemical Specialist, who shall all be supported by FMEnv institutional in-kind contributions through existing Ministry responsibilities.
- The Nigeria Agricultural Insurance Corporation (NAIC) shall serve as a standing member of the Project Steering Committee, responsible for advising on agricultural insurance product design and uptake, validating climate risk parameters used in the Green Agribusiness Fund's de-risking model, and coordinating subsidised premium schemes for project beneficiary farmers. NAIC's participation formalises the linkage between FARM+ financing instruments and Nigeria's national agricultural insurance framework.
- Project-funded positions bridge both management streams and are centrally financed.
- At the beneficiary interface, two institutions anchor the project's direct engagement with farming communities in Oyo State.
 - The Oyo State Agricultural Development Agency (OYSADA) serves as the primary state-level implementation partner, coordinating field activities across the Fasola farm settlements and the Fasola Transformation Centre.
 - OYSADA mobilises farmers for training and demonstration activities, facilitates access to improved inputs and technologies, and provides the logistical and extension infrastructure through which IITA's technical guidance reaches smallholder producers.

- The Agricultural Cooperative Society of Oyo State (ACOSS) complements OYSADA's extension role by organising farmers through cooperative structures that enable collective action on input procurement, market access, and adoption of safer agrochemical practices.
- Together, OYSADA and ACOSS form the community-level delivery architecture through which the project translates national policy objectives and research-backed innovations into tangible outcomes for farm families in the project area.
- Additionally, they also both coordinate with specialized experts in policy, monitoring and evaluation, innovations scaling, communications, gender, and environmental safeguards who are recruited on a demand-driven basis to support the PMU. Their ToRs are detailed in an n Annex as part of this report.
- This arrangement ensures integrated governance, efficient fund management, national ownership, and direct farmer engagement for sustainable implementation of the water-agricultural-marine nexus pilot.

Beyond its PSC membership, the Federal Ministry of Agriculture and Food Security (FMA&FS FISS) plays a strategic role in coordinating with IITA on the piloting and scaling of priority interventions across three interlinked areas. Together, these three dimensions position FMA&FS FISS as a strategic anchor for translating project-level pilots into policy-backed, scalable national programmes.

- First, in climate-smart agriculture, FMA&FS FISS provides the national policy framework and institutional linkages through which IITA-led field pilots in Fasola and surrounding farm settlements are validated, endorsed, and mainstreamed into federal agricultural programmes.
- Second, on post-harvest loss reduction and agro-processing, the Ministry facilitates coordination between IITA's technical expertise and existing value chain infrastructure, enabling the scale-up of post-harvest management practices and processing technologies that reduce losses and improve market access for smallholder farmers.
- Third, and critically, FMA&FS FISS leads the national regulatory and extension coordination effort to reduce the use of Highly Hazardous Pesticides (HHPs), working alongside IITA and the Agrochemical Specialist embedded in the FMEnv PMU stream to promote integrated pest management approaches, strengthen agrochemical registration oversight, and support farmer transitions to safer, climate-adapted inputs.

Cross-program learning and knowledge exchange between FARM+ participating countries, FARM participating countries, and non-participating countries will be facilitated through the FARM+ Global Child Project (GCP) in close collaboration with the FARM global coordination child project. The GCP serves as the primary mechanism through which GEF-level reporting, cross-country learning, and program-wide knowledge dissemination are coordinated. Both programs will benefit from a common Knowledge Exchange Platform, with FARM+ expected to leverage the existing FARM knowledge platform managed by UNIDO. Final arrangements for platform integration and knowledge-sharing mechanisms will be concluded during the program preparatory phase.

FARM+ will strategically leverage AfDB's extensive adaptation and resilience portfolio to enhance program effectiveness. The program will benefit from documented lessons in implementing sustainable landscape approaches for climate resilience enhancement, proven best practices in climate information dissemination to agricultural producers, and experience aligning agricultural interventions with National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs). Notably, AfDB's ongoing Special Agro-Industrial Processing Zones (SAPZ) initiative which is now formally represented on the PSC which is currently operational in Oyo state as the pilot and planned for expansion to eight states and later 26 states implementing

agricultural climate adaptation and mitigation plans presents valuable opportunities for learning, collaboration, and programmatic complementarity.

At the national level, implementing partners will facilitate coordination across multiple government ministries (Agriculture, Environment, Finance, and Health), regulatory agencies, professional organizations, trade associations, private sector entities, and farmer organizations to ensure policy coherence and multi-sectoral engagement. At the global level, FARM+ will establish strategic coordination with ongoing initiatives presenting significant synergies and collaborative opportunities, prioritizing close coordination and co-delivery with the FARM program to maximize complementarity and operational efficiency.

While many implementing partners and program initiatives support agricultural commodities and food crop production, most lack targeted interventions addressing harmful agrochemical and plastic reduction and waste management. Strategic coordination and co-delivery with these initiatives will create synergies by integrating activities that generate additional Global Environmental Benefits (GEBs) and adaptation benefits not currently reported under existing programs, thereby amplifying overall development impact and environmental outcomes. An analysis of some key programs being implemented in Nigeria also provided an insight into potential collaborations and areas needed further strengthening while avoiding duplication. These are highlighted here below with a focus on IITA and ILRI programs as entry points for the FARM+ child project. To ensure structured and accountable coordination with these existing programs, lead responsibility for inter-program engagement is assigned as follows.

FMEEnv, as National Project Coordinator, will lead coordination with environment- and chemicals-focused initiatives, ensuring regulatory coherence and alignment with national obligations under relevant multilateral environmental agreements. IITA, as Project Manager, will lead coordination with agricultural research and development programs, including ILRI and other CGIAR-affiliated initiatives, leveraging its institutional relationships to avoid duplication and identify opportunities for joint delivery. FMA&FS FISS will anchor coordination with government-led agricultural programs and value chain initiatives, ensuring that FARM+ activities complement rather than duplicate ongoing federal agricultural investments. The PMU, under joint oversight of IITA and FMEEnv, will maintain a live coordination register tracking engagement with each program, reporting progress to the PSC on a quarterly basis.

Key Highlights from IITA and ILRI Innovative Programs

1. IITA BIP Programs include:

- Aflasafe biocontrol reducing aflatoxin by 80-100%, used on over 315,000 hectares
- NoduMax increasing soybean yields by 35-40%
- IITA GoSeed, West Africa's first e-commerce platform for seeds
- Black Soldier Fly entrepreneurship program for sustainable protein production

2. ILRI Programs include:

- High-Quality Cassava Peel (HQCP) technology training over 1,100 individuals
- Livestock Master Plan providing strategic investment roadmap for Nigeria's sector
- Forage Genetic Resource centre with 80+ improved forage varieties launched in 2024
- Capacity development benefiting over 3,300 youth in goat production and 100 entrepreneurs in poultry

Joint initiatives demonstrate strong collaboration between both institutes, particularly in cassava peel processing combining IITA's cassava expertise with ILRI's livestock feed research [FAOSDG Knowledge Hub](#), creating potential for a significant alternative feed industry while addressing environmental waste. All programs emphasize sustainable alternatives to chemical pesticides, climate resilience, and integrated food systems approaches aligned with Nigeria's agricultural transformation goals.

In addition to the initiatives by the two organisations, a detailed list of the main programs (Table 6) in Nigeria's food systems focusing on climate-smart agriculture and reduced use of highly hazardous pesticides is provided below,

Table 6: Top Programs in Nigeria's Food Systems: Climate-Smart Agriculture and Reduced HHP Use

#	Program Name & Description	Major Stakeholders	Impact So Far
1	AfDB Special Agro-Industrial Processing Zones (SAPZ) Links smallholder farmers to agro-processing zones using climate-resilient value chains. Portfolio includes market-based climate-smart agriculture approaches	• African Development Bank (AfDB) • Federal Ministry of Agriculture and Food Security • IFAD • Private sector partners • Focus on Kano and Ogun states	• AfDB agricultural portfolio in Nigeria • Promotes climate-resilient agricultural production • Links smallholders to larger agro-processors • Empowers smallholders to access new market opportunities
2	IFAD Value Chain Development Programme (VCDP) A \$334 million initiative focusing on rice and cassava value chains with climate-smart agriculture training, digital weather tools, and Adaptation for Smallholder Agriculture Programme (ASAP) integration	• International Fund for Agricultural Development (IFAD) • Federal Government of Nigeria • 9 implementing states (Niger, Nasarawa, Kogi, Benue, Enugu, Ebonyi, Taraba, Anambra, Ogun) • NiMet	• Farmers earned over \$40 million in agricultural sales • Rice yields increased to 5-6 MT/ha (vs national average of 2-2.5 MT/ha) • 39,000+ beneficiaries trained (12,000 youth, 22,000 women) • Climate-smart practices scaled across participating states
3	National Agricultural Growth Scheme-Agro-Pocket (NAGS-AP) Nationwide program supporting climate-resilient wheat and other crop production with improved varieties and climate adaptation	• African Development Bank • Federal Government of Nigeria • Federal Ministry of Agriculture and Food Security	• Wheat production expanded from 15 states (2023/24) to broader coverage • Breakthrough in rainfed wheat cultivation in Plateau, Taraba, Cross River • Moving Nigeria closer to meeting national wheat demand domestically

4	HarvestPlus Biofortification Program Scaling climate- and nutrition-smart crops in northern Nigeria (2022-2024), promoting drought-tolerant biofortified varieties and natural resource management	• HarvestPlus • UK Aid/Propcom+ • Implemented in Kano, Kaduna, Jigawa, Adamawa, Gombe states	• 432,500 hectares under climate and nutrition-smart agriculture • 391,000 people with improved incomes from biofortified markets • Climate-resilient varieties distributed to smallholders
5	USAID Feed the Future Nigeria Agricultural Extension & Advisory Services Activity (AEAS) Private sector-embedded extension models providing climate-smart practices, improved inputs, and advisory services through SMEs	• USAID • Winrock International • Federal Ministry of Agriculture • 300 SMEs • Implemented in 7 states: Benue, Cross River, Delta, Ebonyi, Kaduna, Kebbi, Niger	• 2 million smallholder farmers reached (2020-2025) • \$300 million in increased sales expected • \$33.6 million private sector investment leveraged • \$120 million in agriculture financing mobilized • Focus on maize, rice, soybean, cowpea, aquaculture
6	Climate-Smart Agribusiness Partnership for Resilience (CSAPR) Project Proposed project integrating climate information services into SAPZ value chains, providing early warnings, climate advisories, and risk management tools	• Federal Government of Nigeria • IFAD • Nigeria Meteorological Agency (NiMet) • Private sector agribusinesses • Financial institutions	• Under development (consultations held 2025) • Will embed climate-smart practices in agro-industrial hubs • Target: Transform climate challenges into economic opportunities • Digital Climate Advisory Services (DCAS) planned
7	Gates Foundation Climate Adaptation Investment \$1.4 billion commitment (2025-2029) for sub-Saharan Africa including Nigeria, focusing on digital advisory services, climate-resilient crops, and farmer-led innovations	• Bill & Melinda Gates Foundation • Alliance for a Green Revolution in Africa (AGRA) • FARA • CGIAR	• Investment targeting smallholder climate adaptation • Digital tools and climate-resilient varieties being scaled • Focus on farmer-led, evidence-based innovations

8	Nigeria Postharvest Systems Transformation Programme (NiPHaST) Partnership program addressing post-harvest losses estimated at \$10 billion annually through improved storage, processing, and handling technologies	• Federal Ministry of Agriculture and Food Security • Alliance for a Green Revolution in Africa (AGRA) • Private sector partners	• Recently launched (2024/2025) • Targets \$10 billion annual post-harvest loss reduction • Focus on storage facilities, processing technology • Complements climate adaptation by reducing waste
9	Innovate UK Climate-Smart Agriculture Partnership (UK-Brazil-Africa) Trilateral program promoting technology transfer and climate-smart practices between UK, Brazil, Nigeria and Ghana	• Innovate UK • Brazilian Government/Embrapa • UK universities and research organizations • Nigerian private sector • CGIAR	• 30 projects funded promoting climate-smart agriculture • Scoping projects building trilateral networks • Innovation Awards for technology transfer and development • Travel grants strengthening research-private sector engagement
5	HHP Phase-Out Projects Projects to strengthen chemical safety and phase out highly hazardous pesticides through stakeholder capacity building, identifying safer alternatives, and promoting biopesticides and IPM	• Federal Ministry of Environment • Federal Ministry of Agriculture and Food Security • NAFDAC • Alliance for Action on Pesticides in Nigeria (AAPN)	• Target: By 2035, phase out HHPs where risks unmanaged and safer alternatives available • Data collection on pesticide poisoning initiated • Promoting biopesticides and IPM as sustainable solutions

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Key Trends across Programs

1. **Climate Information Services (CIS) integration:** Multiple programs now include weather forecasting, seasonal predictions, and climate advisories
2. **Shift toward ipm and bio-pesticides:** Growing emphasis on reducing HHP use through biological control and integrated pest management
3. **Private sector engagement:** Increased focus on public-private partnerships for sustainability

4. **Focus on women and youth:** Most programs explicitly target women and youth empowerment

5. **Digital tools:** Mobile apps, SMS platforms, and AI-powered advisory services becoming standard

Will the GEF Agency play an execution role on this child project?

If so, please describe that role here and the justification.

•

Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing (max. 500 words, approximately 1 page)

- From a strategic positioning perspective, FARM+ Nigeria is deliberately designed as a catalytic layer within Nigeria's existing agricultural investment ecosystem and not as a standalone intervention. By anchoring activities within infrastructure, networks, and platforms already operational across Oyo State and beyond, the project adds the targeted dimensions of HHP elimination, biodiversity protection, and climate adaptation that current programmes lack, while avoiding duplication of effort or parallel institutional structures.

a) Global GEF Architecture and Continental Alignment

FARM+ Nigeria is a child project within the GEF-8 global FARM+ programme, with the AfDB as global Lead Agency and IITA as GEF Implementing Agency, ensuring strategic coherence across participating countries and with the continental SAPZ portfolio. At the global level, the project contributes to the Kunming-Montreal Biodiversity Framework, the Stockholm Convention, and SAICM, with Nigeria's regulatory reforms and HHP reduction pathway feeding into international reporting. The Federal Ministry of Environment manages Nigeria's interface with the global FARM knowledge platform, enabling South-South learning and positioning Nigeria as a replication model for other African contexts.

b) Flagship Programme Partnerships

Five operational programmes provide the primary co-location and integration opportunities:

Partner	Programme Scope	FARM+ Integration
AfDB SAPZ	Active in 6 Nigerian states; infrastructure investment in agro-processing zones	Project anchored at Ijaiye SAPZ (7,000 ha) & Fasola Hub (1,200 ha). Layers HHP elimination, bio-alternative, and supply chain interventions onto existing roads, processing facilities, storage warehouses, and quality testing infrastructure. This eliminates the need for parallel development.
IITA	GEF IA & Fund Manager; Business Incubation at Fasola Hub; active agronomic R&D portfolio	Aflasafe biocontrol (315,000+ ha deployed) and NoduMax soybean inoculant integrated into IPM demonstration plots. ILRI's High-Quality Cassava Peel technology supports circular economy pathway. Shared field staff and co-facilitated farmer training minimise duplication.
IFAD VCDP	USD 334M initiative across 9 states in rice & cassava value chains	Leverages established farmer networks, climate-smart agriculture training infrastructure, and digital weather tools. Extends HHP reduction objectives into VCDP's broader operational footprint without duplicating farmer mobilisation.

NiPhaST	Launched 2024–25 to address USD 10B annual post-harvest losses	Coordinates with Component 4 on shared investment in storage technologies, processing equipment, and cold chain infrastructure. This maximises combined impact on Nigeria's post-harvest challenge.
USAID FtF Extension	Reached 2M smallholders across 7 states (concluded May 2025)	Established extension architecture and trained networks used as delivery channel for bio-alternative guidance and organic certification content at scale.

c) Government Ministry and Agencies Coordination

Government ministries provide the institutional architecture for policy coherence and cross-sectoral coordination. Key roles are as follows:

- **Federal Ministry of Agriculture and Food Security:** Anchors the policy reform agenda through existing sector working groups, National Food Systems Dialogue platforms, and agricultural value chain coordination committees. This is strengthened rather than duplicated by the project.
- **Federal Ministry of Environment:** Serves as Overall Project Coordinator and Executing Agency, hosting the Project Management Unit and managing the FARM programme knowledge platform through which FARM+ outputs are disseminated nationally.
- **NESREA:** Contributes its environmental enforcement mandate to quarterly federal-state policy harmonisation forums, linking national chemical management frameworks with Oyo State implementation.
- **NAFDAC:** Regulatory authority leveraged through the bio-pesticide streamlining pathway, working within existing approval systems to accelerate registration of safer bio-alternatives.
- **FMITI & Federal Ministry of Finance:** Provide complementary entry points for green procurement reform, circular economy product standards, and agricultural subsidy restructuring. This is a core instrument of Component 1.
- **CBN Anchor Borrowers' Programme / NIRSAL:** Existing financial infrastructure through which credit guarantee mechanisms are operationalised for participating smallholders.
- **NEPC:** Facilitates international market access for HHP-free commodities through tripartite farmer–OYSADA–exporter contracts.

d) Community and Gender-Focused Delivery

Women's farmer groups across the five primary farm settlements namely Fasola, Ijaiye, Lalupon, Eruwa, and Akufo are formally organised as Community Health and Agriculture Monitors. This co-delivery model positions women simultaneously as beneficiaries, field monitors (documenting pesticide poisoning incidents), and peer educators (advocating for bio-alternatives at community, church, and market level), thus maximising grassroots reach without requiring parallel staffing. Gender-disaggregated training materials are embedded directly into existing women's cooperative structures, and strategic partnerships with women's economic empowerment organisations expand this reach further.

Youth and women entrepreneurs are linked to the Green Agribusiness Fund Africa through SMEDAN, providing access to concessional finance at 5% interest for bio-alternative production enterprises, with business incubation co-located at the Fasola Hub innovation centre.

e) Value Chain and Industry Partnerships

Agro-dealer associations (FEPSAN): Engaged as co-delivery partners for bio-alternative supply chain development, receiving business model training to transition from HHP supply toward certified sustainable input provision.

Off-taker companies (NEPC, Shoprite, and SPAR): Enter tripartite agreements with farmer cooperatives and OYSADA to purchase HHP-free produce at premium prices, embedding market demand signals directly into the project's sustainable agriculture incentive structure.

Farmer cooperatives (9 Oyo State farm settlements): Serve as both primary implementation units and peer compliance systems, with cooperative leaders trained in HHP identification and equipped with rapid test kits for internal monitoring.

CropLife Nigeria: Engaged as a strategic industry partner and not an adversary within the policy review architecture. CropLife co-designs transition pathways from harmful to safer agrochemicals, conducts gap analysis of pesticide regulations against international standards, and leads side-by-side demonstration trials on Component 4 plots, converting potential industry resistance into active demonstration leadership.

Alliance for Action against Pesticides in Nigeria (AAPN): Participates in biannual stakeholder forums, co-designing policy solutions and providing civil society accountability.

Table On Core Indicators

Core Indicators

Indicate expected results in each relevant indicator using methodologies indicated in the GEF-8 Results Measurement Framework Guidelines. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCC.

Indicator 3 Area of land and ecosystems under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
10000	10000	0	0

Indicator 3.1 Area of degraded agricultural lands under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
Cropland	10,000.00	10,000.00		

Indicator 3.2 Area of forest and forest land under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.3 Area of natural grass and woodland under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.4 Area of wetlands (including estuaries, mangroves) under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
10000	10000	0	0

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
10,000.00	10,000.00		

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)

Documents (Document(s) that justifies the HCVF)

Title

Indicator 5 Area of marine habitat under improved practices to benefit biodiversity (excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
	40,000.00		

Indicator 5.1 Fisheries under third-party certification incorporating biodiversity considerations

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
40,000			

Type/name of the third-party certification

Indicator 5.2 Large Marine Ecosystems with reduced pollution and hypoxia

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
0	1	0	0

LME at PIF	LME at CEO Endorsement	LME at MTR	LME at TE
	Guinea Current		

Indicator 5.3 Marine OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
Guinea Current Large Marine Ecosystem					

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	150400	150400	0	0
Expected metric tons of CO ₂ e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	150,400	150,400		
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting	2027	2029		
Duration of accounting	15	10		

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
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Indicator 9 Chemicals of global concern and their waste reduced

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
90,153.00	187,635.00	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
Aldrin	250.00	250.00		
Alpha hexachlorocyclohexane	250.00	250.00		
Chlorpyrifos	10,000.00	10,000.00		

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
1	1		

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.6 POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
2,500.00			

Indicator 9.7 Highly Hazardous Pesticides eliminated

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
79,653.00	177,135.00		

Indicator 9.8 Avoided residual plastic waste

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
830.00	58,455.00		

Indicator 10 Persistent organic pollutants to air reduced

Grams of toxic equivalent gTEQ (Expected at PIF)	Grams of toxic equivalent gTEQ (Expected at CEO Endorsement)	Grams of toxic equivalent gTEQ (Achieved at MTR)	Grams of toxic equivalent gTEQ (Achieved at TE)
	2.10		

Indicator 10.1 Number of countries with legislation and policy implemented to control emissions of POPs to air (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 10.2 Number of emission control technologies/practices implemented (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female		1,500,000		
Male		2,000,000		
Total	0	3,500,000	0	0

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

According to the "FARM_Nigeria_CoreIndicators_Mapping.docx", Nigeria stands as the largest importer of pesticides in Africa, with an annual import volume of 177,135.465 metric tons as of 2021. This baseline figure is a critical component of the FARM+ Project's strategic logic, particularly concerning the GEF-8 Chemicals and Waste focal area.

- Indicator 3.1: Area of land and ecosystems under restoration (hectare). To achieve the 10,000 hectares target for Nigeria, 2 SAPZ Project sites (Fasola and Ijaye) are planned with each covering 3,100 and 1250 hectares respectively. Half (50%) of the total land shall be allocated to the pilots, thus generating a total of 2,175 hectares. Additionally the findings from stakeholder engagements also shows opportunities for including other well managed Farm Settlements supported by OYSADA as pilot testing sites for some of the interventions. These are Ijaye, outside the SAPZ providing 3,500 hectares; Akufo (880 hectares and providing 450 hectares for the pilots); Aruwa (3,250 hectares and providing 1,000 hectares for the project). The rest of farm settlement in Oyo state under Ministry of Agriculture, Ilora (675 hectares); Iresaadu (500 hectares); Otiiri (500 hectares); Lalupon (700 hectares); Adetola (500 hectares).

- Indicator 4: Area of landscapes under improved practices (hectares; excluding protected areas). The same methodology used in CI 3 above was used for CI 4. The game changer for Nigeria's approach is that it focuses on eliminating harmful chemical inputs through the SAPZ and farm settlements framework, which significantly reduces the carbon footprint associated with agrochemical production and application. Climate-Smart Agriculture (CSA) also serves as a primary driver for the FARM+ Project's environmental impact by fundamentally decoupling agricultural productivity from chemical intensity. Through the systematic integration of agroforestry, conservation tillage, and water harvesting across 10,000 hectares, the project transforms SAPZ hubs and farm settlements into low-carbon landscapes.

- Indicator 5: Area of marine habitat under improved practices to benefit biodiversity (excluding protected areas). The 40,000 ha marine habitat target is achieved through the combined effect of on-land agrochemical elimination and near-shore coastal management improvements. Reduced pesticide application on this footprint translates to measurably lower organochlorine, organophosphate, and nitrogen loads in receiving waterbodies. This figure (4x the land area) is justified by the amplification effect of the Ogun River basin hydrology: each hectare of protected upstream farmland protects approximately 4 ha of downstream and coastal habitat from agrochemical contamination and eutrophication.

- Indicator 5.2: Large marine ecosystems with reduce pollution and hypoxia: 1 (Guinea Current Large Marine Ecosystem (GCLME)). The project directly targets this LME through a source-to-sea pollution reduction pathway. By eliminating the use of 177,135 MT/year of pesticides (of which 10% are classified POPs/HHPs) across 10,000 ha of farmland in the Oyo State SAPZ and farm settlements, the project directly interrupts this pollution pathway.

- Indicators 6.1: Greenhouse gas emissions mitigated [metric ton of CO₂e]. Nigeria's direct contributions amount to 150,400 metric ton of CO₂e. The carbon sequestration potential was estimated assuming that emission reductions would be achieved by the projects by reducing diesel-based electricity consumption through transitioning to green energy using solar systems for processing and reduced emissions associated with the production of inputs such as fertilizers, herbicides, pesticides as the project will significantly reduce the use of these harmful inputs.

- Indicator 9.4: Number of legislations revised/enacted. Under this child project 3 legislations are expected to be revised making sure that the changes integratively cover all the five components. This includes the National Environmental (Chemicals and Pesticides) Regulations, 2023, National Fertilizer Quality Control Act, 2019 (Act No. 23), and National Water Resources Policy. This would provide the legal mandate to specifically ban the active ingredients currently used in Nigeria that are already prohibited in the European Union. This revision would also support the project's goal of establishing rapid pesticide testing laboratories at border controls to curb illegal HHP imports, design riparian buffer zones, streamline waste management, and finance bio-alternatives.

- Indicator 9.6: POPs pesticides and HHPs avoided (177135.465 MT). To calculate the GEBs: 177135.465 MT of total annual imports of all pesticides (based on data reported by FAO Stats) multiplied by 5 years = 885677.325 MT of pesticides. The AfDB baseline interventions will double the farming activities in Nigeria, which could result in doubling the use of pesticides to 177135.465MT (over five years). Assuming 10% of all pesticides are POPs and HHPs, we have 177135.465 MT of POPs pesticides and HHPs (over five years). Since the AfDB GEF interventions will eliminate the use of POPs pesticides and HHPs in Nigeria, this measure will result in 177,135.465 MT of POPs pesticides and HHPs to be avoided.
- Indicator 9.8: Marine litter avoided: The plastic estimates are based on the assumption that plastic packaging accounts for 3% of total weight of POPs pesticides avoided. 3% of 177135.465 x 50% captured by the project = 2,657.032MT. If we assume that 2.2% of the plastic enter the marine environment (as per FAO's latest guidance) then 2,657.032 * 2.2% = 58.455 MT. By preventing these plastics from entering the Ogun River basin, the project directly reduces the volume of micro-fragments and solid waste that would otherwise contaminate coastal mangroves and estuarine zones.
- Indicator 10: UPOPs emissions avoided: The assumption is that 50% of the agricultural plastics generate uPOPs. Therefore, 2,657.032 * 0.00078859857 (based on GEBs figures from FARM for Vietnam (1.66 g/TEQ / 2,105 MT) = 2.095 gTEQ. This reduction is primarily driven by the diversion of agricultural plastic packaging away from open burning and into circular waste streams such as composting centres while providing incentivized waste disposal pathways.
- Indicator 11: 1,500,000 Women and 2,000,000 men are expected to be beneficiaries from this child project. Aligning with standard gender mainstreaming benchmarks, the project is strategically engineered to be gender-transformative, ensuring that 42% of its 3.5 million beneficiaries are women. This focus is operationalized through targeted access to the project's revolving fund and grants, specifically designed to empower women and youth in bio-alternative enterprise development.

The mapping of core indicators for the FARM+ Project in Nigeria as shown in Table 2 below establishes a clear, auditable link between localized interventions and the delivery of broad Global Environmental Benefits.

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Substantial	Nigeria's agriculture faces severe climate vulnerabilities including rising temperatures, erratic rainfall, floods in the south, and northern droughts that threaten crop productivity while conventional practices generate significant GHG emissions. FARM+ Nigeria addresses this through climate-smart demonstrations at Fasola Hub and farm estates, post-harvest infrastructure reducing losses by 30-50% and emissions by 40%, financial incentives via revolving loans and grants making sustainable practices economically viable, and insurance products protecting farmers during transition to resilient agriculture.

Environmental and Social	Moderate	Project interventions carry risks across governance, environmental integrity, and operational safety requiring proactive management. Mitigation includes rigorous environmental and social safeguards screening during PPG phase, mandatory gender-sensitive consultations ensuring 40% women and 30% youth participation, M&E tracking of gender-disaggregated data and environmental indicators across 100,000 farmers, and embedded Safeguards Officer providing continuous oversight and grievance mechanism management.
Political and Governance	Moderate	Political transitions at federal and state levels threaten implementation continuity despite agriculture's policy priority. Risk is mitigated through multi-level institutional embedding across Agriculture, Environment, Finance ministries and Central Bank; anchoring activities within OYSADA and Oyo ADP structures; building capacity among permanent technical staff who ensure continuity beyond political cycles. This is reinforced by quarterly steering committee meetings maintaining broad stakeholder ownership and accountability.

INNOVATION

Institutional and Policy	Moderate	Significant policy incoherence exists where agricultural productivity targets conflict with environmental goals, subsidy systems incentivize harmful practices, and financial flows support conventional farming. Mitigation involves comprehensive assessment quantifying economic losses from current policies, advocacy for subsidy repurposing piloting redirection toward bio-inputs and post-harvest infrastructure. The Inter-Ministerial Task Force shall also be mandated with harmonizing policies across sectors, and partnership with Central Bank developing climate-smart agricultural lending guidelines incorporating ESG criteria.
Technological	Moderate	Climate-resilient technologies exist but face adoption barriers of accessibility, affordability, and awareness rather than technical viability. Solutions include demonstration sites at Fasola Hub showcasing proven technologies, grant facility providing 30-50% cost subsidies and equipment leasing with 20% down payments, training extension agents and lead farmers for knowledge transfer, mobile platforms delivering localized information in Yoruba, and university-private sector partnerships commercializing innovations through SMEDAN-supported start-ups.
Financial and Business Model	Moderate	Agricultural finance landscape presents critical barriers where subsidies support harmful chemicals, banks exclude smallholders lacking collateral, insurance is minimal, and high interest rates (18-25%) prohibit sustainable practice adoption. Comprehensive mitigation establishes a robust revolving loan fund with 3-5% interest buy-down and grant facility, trains bank staff in sustainable agriculture appraisal while co-designing 3-5 new financial products. The project shall also develop insurance coverage targeting 10,000 farmers, facilitate tripartite value chain agreements with 10-15% premiums for HHP-free produce, and advocates subsidy reform piloting in Oyo State.

EXECUTION

Capacity	Moderate	Local institutional capacity gaps exist across underfunded extension services, weak farmer field school infrastructure, limited financial institution experience with SCRA products, and nascent circular economy enterprises. Targeted interventions shall train Oyo ADP agents and recapitalize Farmer Field Schools, and deliver responsible investment training to financial staff with hands-on coaching. The project will also certify equipment technicians and NAFDAC testing officers, while establishing SME incubation providing loans at 5% interest for youth and women enterprises. Additionally, it shall deploy long-term technical advisors in post-harvest technology, financial product design, and organic certification.
Fiduciary	Moderate	Execution through multiple partners and management of substantial fund facilities creates heightened risks of misuse, inadequate record-keeping, procurement irregularities, and fraud. Strong mitigation includes AfDB maintaining complete fiduciary responsibility with daily monitoring and quarterly reviews, comprehensive partner due diligence requiring adherence to AfDB procedures. The project shall also establish a dedicated Fund Management Unit led by the Project Accountant with transparent eligibility criteria, and independent annual external audits with spot checks. This shall also benefit from mandatory anti-corruption training with anonymous reporting hotline and zero-tolerance policy, and quarterly public financial reports with beneficiary lists and annual accountability meetings.
Stakeholder	Moderate	Failure to meaningfully engage stakeholders particularly women (40% target), youth (30%), smallholders, and informal actors risks elite capture, exclusion from benefits, and insufficient private sector buy-in. Mitigation involves detailed Stakeholder Engagement Plan defining roles across all groups, gender mainstreaming ensuring women's participation and addressing land tenure barriers, and youth-specific interventions creating jobs with preferential financing. This will also involve multi-level coordination through quarterly steering committees and monthly commodity forums, capacity building for farmer group leaders in financial literacy and value chain engagement, and accessible grievance mechanism with transparent investigation and public reporting.
Other	Moderate	Macroeconomic instability including currency volatility, inflation, foreign exchange restrictions, and liquidity constraints could affect budget adequacy and fund effectiveness. Mitigation includes daily expenditure tracking with monthly variance analysis and quarterly budget reviews, maintaining fund portions in hard currency with 15-20% contingency for imports. Additionally, the project will also prioritize local sourcing of equipment and bio-inputs reducing forex exposure, while building inflation adjustment mechanisms into multi-year commitments. The strategy also focuses on conducting annual comprehensive budget revisions with adaptive reallocation

		flexibility, and leveraging AfDB Country Office oversight for real-time monitoring and emergency liquidity support.
Overall Risk Rating	Moderate	The moderate rating reflects combined challenges of policy incoherence, financial sector gaps, fiduciary complexity, and stakeholder engagement requirements. However, comprehensive mitigation measures including blended finance mechanisms, multi-level capacity building, rigorous fiduciary controls, and inclusive stakeholder engagement position FARM+ Nigeria to successfully navigate these risks while achieving transformational impact in sustainable agriculture transition. The Safeguards Rating is Moderate due to the handling of hazardous agrochemicals, potential environmental impacts from agricultural intensification, and the need for safe pesticide disposal and regulatory oversight. This rating is supported by concurrent strong mitigating mechanisms including rigorous environmental and social screening during project preparation, mandatory gender-sensitive stakeholder consultations, comprehensive monitoring frameworks tracking environmental and health indicators, and dedicated safeguards expertise providing continuous oversight throughout implementation.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Explain how the proposed interventions are aligned with GEF- 8 programming strategies, including the specific integrated program priorities, and country and regional priorities, Describe how these country strategies and plans relate to the multilateral environmental agreements, such as through NDCs, NBSAPs, etc.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how.

(max. 500 words, approximately 1 page)

FARM+ contributes to the sustained sound management of chemicals and wastes through comprehensive interventions that transform behaviors, practices, and technologies across the agricultural value chain—engaging farmers, agri-businesses, and public and private sector stakeholders. The program's innovative approach centers on designing and operationalizing financial mechanisms at sub-national, national, and regional levels, with particular emphasis on facilitating access for smallholder farmers and small and medium enterprises (SMEs) who face the greatest financial barriers to adopting sustainable practices.

FARM+ prioritizes farmer and private sector engagement while creating and strengthening the enabling environment necessary to reduce hazardous chemical use and prevent harmful waste generation across agricultural systems and value chains. The program supports policy coherence across national institutions to facilitate the phase-out and improved management of hazardous chemicals and waste, building strategically upon existing networks and leveraging regional, national, and sub-national institutional frameworks for sustained impact.

FARM+ directly aligns with GEF Chemicals and Waste Focal Area Objective 1: *Creation, strengthening and supporting the enabling environment and policy coherence to transform the manufacture, use and sound management of chemicals and to eliminate waste and chemical pollution*. The program will support Nigeria in developing coherent legislation and policies across national institutions and/or amending existing policies that hinder transition toward sustainable and climate-resilient agriculture. Specifically, FARM+ will support:

- **Financial innovation and access:** Development and implementation of financial instruments and mechanisms at the national level enabling farmers and agri-businesses to access finance for sustaining and scaling adoption of green and sustainable approaches, practices, and safer alternatives to hazardous chemicals.
- **Green procurement systems:** Establishment of green procurement frameworks that facilitate elimination of products and materials containing or contributing to hazardous chemical emissions and prevent accumulation of hazardous chemical-containing materials in agricultural supply chains.
- **Innovation in regenerative design:** Design of financial mechanisms and instruments supporting innovation in clean and regenerative product and material design, particularly those incorporating Indigenous peoples' and local communities' traditional knowledge systems.
- **Circular economy models:** Development of reverse logistics and supply chain systems enabling material and product recovery for reuse, alongside promotion of regenerative design principles ensuring products and materials are environmentally sound and safe throughout their lifecycle.
- **Biological alternatives promotion:** Systematic promotion and adoption of biological alternatives to Persistent Organic Pollutants (POPs) pesticides and Highly Hazardous Pesticides/Severely Hazardous Pesticide Formulations (HHPs/SHPFs), reducing chemical dependency while maintaining agricultural productivity.

Under GEF-8, the International Waters strategy supports countries in addressing critical stressors identified in regional Strategic Action Programmes (SAPs), including land-based sources of pollution originating from agricultural activities. FARM+ provides comprehensive support to all three key objectives of the GEF-8 International Waters strategy: Objective 1 (Accelerate joint action to support a sustainable blue economy); Objective 2 (Advance management in areas beyond national jurisdiction); and Objective 3 (Enhance water security in shared freshwater ecosystems).

Objectives 1 and 2: Sustainable blue economy and transboundary water management

FARM+ interventions will contribute to strengthening sustainable and healthy blue ecosystems through multiple pathways. The program shall utilize Transboundary Diagnostic Analysis (TDA) and Strategic Action Programme (SAP) approaches to inform revision processes for legal and institutional frameworks governing sustainable and climate-resilient agriculture.

FARM+ addresses multiple anthropogenic pressures including nutrient pollution in open oceans from agricultural runoff and upstream plastic contamination from agricultural value chains. Additionally, the program stimulates private sector engagement and investment in water protection through relevant sectoral roundtables, coordination groups, and market-based incentives that align business practices with marine and coastal ecosystem health.

Objective 3: Enhanced water security in shared freshwater ecosystems

FARM+ interventions directly contribute to freshwater ecosystem protection and water security enhancement through targeted activities including:

- **Water-efficient supply chains:** Implementation of supply chain approaches that increase water use efficiency and reduce pressures on freshwater ecosystems through improved agricultural practices, water-smart technologies, and value chain optimization.
- **Pollution source reduction:** Promotion of increased water efficiency, water reuse systems, and reduction of both point and non-point sources of pollution. This addresses primary pollutants (pesticides, fertilizers) and emerging contaminants along the source-to-sea continuum from agricultural landscapes to marine environments.
- **Innovation de-risking:** Mobilization of incremental finance and pilot initiatives to de-risk adoption of innovative water management technologies, precision irrigation systems, and water treatment solutions appropriate for smallholder and commercial farming contexts.
- **Nature-based solutions:** Integration of Nature-based Solutions (NbS) to improve water quality and freshwater ecosystem health, including wetland restoration and protection, flood and drought mitigation, climate change adaptation, prevention of river and lake shoreline deterioration, and aquifer recharge enhancement through sustainable land management practices.
- **Water-energy-food-ecosystem nexus:** Ensuring the ecosystem dimension is systematically incorporated into water-energy-food nexus planning and decision-making processes, advancing integrated approaches that enhance both environmental sustainability and water security across agricultural landscapes and watersheds.

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed during Project Preparation as per GEF Policy and are clearly articulated in the child Project Description (Section B).

Yes

1) Does the project expect to include any gender-responsive-measures to address gender gaps or promote gender equality and women's empowerment?

Yes

If the child project expects to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment, please indicate in which results area(s) the project is expected to contribute to gender equality:

Closing gender gaps in access to and control over natural resources;

Yes

Improving women's participation and decision-making; and/or

Yes

Generating socio-economic benefits or services for women.

Yes

2) Does the child project's results framework or logical framework include gender-sensitive indicators?

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during Project Preparation as required per GEF policy, their relevant roles to project outcomes has been clearly articulated in the Child Project Description (Section B) and that a Stakeholder Engagement Plan has been developed before CEO endorsement.

Yes

Select what role civil society will play in the Project:

Consulted only; Yes

Member of Advisory Body; Contractor; No

Co-financier;

Member of project steering committee or equivalent decision-making body ; Yes

Executor or co-executor;

Other (Please explain)

Private Sector

Will there be private sector engagement in the Child project?

Yes

And if so, has its role been described and justified in section B "Child project description"?

Yes

Environmental and Social Safeguards

We confirm that we have provided information regarding Environmental and Social risks associated with the proposed child project or program, including risk screenings/ assessments and, if applicable, management plans or other measures to address identified risks and impacts (this information should be presented in Annex E).

Yes

Please provide overall Project/Program Risk Classification

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
	Low		

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described during Project Preparation in the Project Description and that these activities have been budgeted and an anticipated timeline for delivery of relevant outputs has been provided. This includes budget for linking with and participation in knowledge exchange activities organized through the coordination platform.

Yes

Socio-economic Benefits

We confirm that the child project design has considered socio-economic benefits to be delivered by the project and these have been clearly described in the Project Description and will be monitored and reported on during project implementation (at MTR and TER).

The FARM+ child project design has comprehensively considered and articulated substantial socio-economic and environmental benefits across its five components: policy development, financing and insurance mechanisms, designing climate-smart alternatives, strengthening food supply chains, and knowledge management, as detailed in the Project Description. These benefits demonstrate the project's transformative potential for agricultural sustainability, environmental protection, and inclusive economic development in Nigeria.

Key Socio-Economic and Environmental Benefits

The project's design is deliberately aligned with eleven targets of the Kunming-Montreal Global Biodiversity Framework (KM-GBF), reflecting the recognition that agricultural transformation in Nigeria cannot be achieved without simultaneously addressing the biodiversity consequences of current farming practices.

Target 7 (Reduce pollution harmful to biodiversity): is captured through the project's elimination of HHPs including Paraquat, Chlorpyrifos, Atrazine, and Dichlorvos, avoiding 177,135 MT of HHPs/POPs over the project lifecycle and 58 MT of marine litter, directly protecting the 40,000 hectares of Lagos Lagoon marine habitat.

Target 8 (Minimise climate change impacts on biodiversity): is accounted for through climate-smart practices including conservation tillage, agroforestry, cover cropping, and drought-resilient varieties. These reduce ecosystem stress, build landscape resilience, and cut agricultural GHG emissions through elimination of synthetic nitrogen fertilisers.

Target 11 (Restore nature's contributions to people): is addressed through restoration of 10,000 hectares across the SAPZ and farm settlements using regenerative agriculture and integrated soil fertility management, rebuilding soil health, water retention, pollination, and natural pest regulation degraded by decades of chemical-dependent farming.

Target 14 (Integrate biodiversity in decision-making): is captured under Component 1's reform of Nigeria's agricultural subsidy architecture, redirecting public finance from harmful agrochemicals toward bio-alternatives and establishing institutional mechanisms to mainstream biodiversity objectives into agricultural policy at state and national levels.

Target 15 (Businesses disclose and reduce biodiversity risks): is tackled through Output 5.3's private sector advocacy programme and Component 4's traceability pathway, which introduces HHP-free certification and QR-code supply chain tracking to embed biodiversity accountability into business procurement decisions.

Target 16 (Enable sustainable consumption and reduce waste) is addressed through the post-harvest loss prevention pathway reducing food losses by 30–50% without expanding the agricultural footprint, and the circular economy pathway converting agricultural waste into bio-packaging, animal feed, and biochar.

Target 18 (Reduce harmful incentives): is directly served through a structured subsidy restructuring programme across Components 1 and 2 that redirects Nigeria's agricultural financing from degenerative agrochemical inputs toward bio-alternatives, NIRSAL credit guarantees, and climate-smart insurance. This contributes to the global imperative of eliminating perverse incentives that make biodiversity-damaging practices artificially competitive.

Target 19 (Mobilise finance for biodiversity): is advanced through Component 2's blended finance instruments including NIRSAL credit guarantees at 90–95% coverage, revolving loan funds, climate-smart insurance products, and tripartite financing arrangements. These are designed to crowd in private sector investment and demonstrate the commercial viability of biodiversity-positive agriculture.

Target 20 (Strengthen capacity-building and technology transfer): is operationalised through Components 3 and 5, which train 200 Farmer Field School facilitators, retrain state extension agents, certify lead farmers, and contribute validated innovations to the Global FARM+ knowledge platform for transfer across the programme's country network.

Target 21 (Ensure availability of biodiversity data and knowledge): is delivered through the integrated digital agriculture platform, real-time M&E dashboard, and Fasola Hub pesticide residue testing laboratory which is the first in Southwest Nigeria. This is underpinned by open data-sharing protocols and systematic documentation of bio-alternative efficacy and ecosystem regeneration outcomes under Component 5.

Target 23 (Ensure gender-responsive implementation): is embedded across all five components through a comprehensive gender action plan targeting 1.5 million women beneficiaries, prioritising women's cooperatives for organic certification, and committing to gender-disaggregated monitoring of all GEF-financed investment outcomes.

The project's innovative approaches include Build-Operate-Transfer (BOT) arrangements for bio-pesticide facilities, private sector partnerships for green agrochemical production, NAIC integration through private insurance companies, multi-channel digital knowledge platforms (web, mobile, SMS, radio), and strategic anchoring at Fasola Hub (1,200 ha) within Ijaiye SAPZ (7,000 ha). These maximize impact across smallholder farmers, women and youth groups, agrochemical manufacturers, private sector actors, government agencies, and research institutions (IITA, OYSADA, and NASC). Several socio-economic benefits are anticipated including:

- Landscape Restoration and Sustainable Livelihoods (10,000 hectares): Climate-smart practices across 2 SAPZ project sites and 8 farm settlements to enhance soil fertility and crop productivity, increasing farmer incomes by 20-30%, reducing production costs, and creating employment in sustainable land management services.
- Land Restoration (10,000 hectares) and Greenhouse Gas Emissions Mitigated (50,400 metric ton of CO₂e avoided): Improved soil health through enhanced organic matter content and nutrient cycling, and restored water retention capacity reducing drought vulnerability. This results in increased biodiversity through the recovery of beneficial insects and pollinators critical for crop productivity, and reduced pollution of surface and groundwater sources.

- Marine Ecosystem and Coastal Community Resilience (40,000 hectares; Guinea Current LME): Reduced agricultural pollution protects fisheries sustaining coastal livelihoods, ensures food security for fishing communities, safeguards tourism revenues, and preserves ecosystem services for millions of Nigerians.
- Policy Environment for Green Growth (3 legislations revised or enacted): Reformed regulatory framework attracts green investments, stimulates private sector innovation, generates formal sector jobs, and positions Nigeria as a regional leader in agricultural sustainability.
- Public Health Protection (177,135.465 MT POPs and HHPs avoided): Elimination of hazardous pesticides prevents acute poisonings and chronic diseases, reduces healthcare costs for 3.5 million direct beneficiaries, enhances labour productivity, and protects children's cognitive development.
- Ocean Conservation and Blue Economy (58.455 MT marine litter avoided): Prevention of pesticide plastic waste protects fisheries worth billions of naira, supports sustainable blue economy development, and reduces coastal clean-up costs.
- Air Quality and Climate Co-Benefits (2.095 gTEQ uPOPs emissions avoided): Reduced emissions improve air quality in farming communities, lower respiratory health risks, and contribute to Nigeria's climate mitigation commitments.
- Gender-Transformative Impact (1,500,000 women; 2,000,000 men): Targeted interventions empower women economically through resource access and decision-making roles, strengthen household resilience, improve children's nutrition and education, and reduce gender inequalities in agriculture.
- Enhanced Farm Profitability: Transition to cost-effective biological alternatives reduces input costs by 20-30%, improves crop quality and yields, provides premium market access, and builds long-term farm business viability.
- Food Security and Consumer Safety: Diversified cropping and resilient food supply chains increases dietary diversity, eliminates toxic residues, enhances production stability, and protects against food price shocks.
- Youth and Women Employment Ecosystem: Green jobs in bio-pesticide production, digital platforms, and sustainable value chains provide attractive livelihood pathways, reduce rural-urban migration, and build the next generation of agricultural leaders including young women.
- Financial System Deepening: Expanded agricultural finance, insurance integration with NAIC, and BOT arrangements mobilize private capital, de-risk investments, and enable farmer asset accumulation.
- Climate Adaptation and Resilience: Diversified practices, improved water management, and soil conservation reduce vulnerability to climate shocks, protect livelihoods, and support Nigeria's NDC commitments.

These benefits are embedded in the project's results framework with indicators disaggregated by gender, age, location, and vulnerability status, ensuring equitable distribution. Benefits will be systematically monitored through the integrated M&E system's three clusters (Environmental Performance and CSA Adoption; Gender

Equality and Social Inclusion; Social Cohesion, Knowledge Access, and Livelihood Improvements) at Mid-Term Review (MTR) and Terminal Evaluation Report (TER). This ensures accountability, enabling adaptive management, and documenting the project's contribution to Nigeria's sustainable agricultural transformation, international environmental commitments (Paris Agreement, Stockholm Convention, CBD, UNCCD), regional priorities (AU Agenda 2063, Niger Basin Authority), and inclusive socio-economic development in Oyo State and beyond.

ANNEX A: FINANCING TABLES

GEF Financing Table

Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non- Grant	GEF Project Grant(\$)	Agency Fee(\$)	Total GEF Financing (\$)
AfDB	GET	Nigeria	Chemicals and Waste	POPs	Grant	6,500,000.00	585,000.00	7,085,000.00
AfDB	GET	Nigeria	International Waters	International Waters: IW-1	Grant	1,000,000.00	90,000.00	1,090,000.00
Total GEF Resources (\$)						7,500,000.00	675,000.00	8,175,000.00

Project Preparation Grant (PPG)

Was a Project Preparation Grant requested? true

PPG Amount (\$) 200000

PPG Agency Fee (\$) 18000

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	PPG(\$)	Agency Fee(\$)	Total PPG Funding(\$)
AfDB	GET	Nigeria	Chemicals and Waste	POPs	174,000.00	15,660.00	189,660.00
AfDB	GET	Nigeria	International Waters	International Waters: IW-1	26,000.00	2,340.00	28,340.00
Total PPG Amount (\$)					200,000.00	18,000.00	218,000.00

Please provide Justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
Total GEF Resources					0.00

Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing(\$)	Co-financing(\$)
CW-1	GET	6,500,000.00	166688312
IW-1-1	GET	1,000,000.00	33311688
Total Project Cost		7,500,000.00	200,000,000.00

Confirmed Co-financing for the project, by name and type

Please include evidence for each co-financing source for this project in the tab of the portal

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
GEF Agency	African Development Bank	Loans	Investment mobilized	200000000
Total Co-financing				200,000,000.00

Please describe the investment mobilized portion of the co-financing

The investment for the Special Agro-Industrial Processing Zones (SAPZ) programme in Nigeria was mobilised through a phased and programmatic engagement led by the African Development Bank (AfDB), beginning with SAPZ Phase I and subsequently scaled up through a Multi-Tranche Financing (MTF) structure. Under SAPZ I, AfDB provided catalytic sovereign financing to support pilot agro-industrial hubs, including the demonstration site in Oyo State, establishing core infrastructure, institutional arrangements, and delivery mechanisms that validated the SAPZ model. Building on these results, AfDB structured SAPZ Phase II as a Multi-Tranche Financing programme, allowing a sequenced mobilisation of resources aligned with state readiness and implementation performance. Phase II is designed to progressively expand SAPZs across the country, with three tranches covering up to 28 states in total, reflecting the national scale-up ambition of the programme. This MTF approach provides a robust platform for scaling up complementary initiatives such as the FARM+ project, enabling it to transition from a single demonstration site in Oyo State to replication and integration across all SAPZs nationwide. By embedding FARM+ interventions within the AfDB-financed SAPZ infrastructure and institutional framework, the programme allows for systematic learning, standardisation, and rapid replication of climate-smart, inclusive agro-industrial solutions across Nigeria, while maintaining strong oversight, risk management, and results-based progression across tranches

ANNEX B: ENDORSEMENT

GEF Agency(ies) Certification

GEF Agency Coordinator	Date	Project Contact Person	Telephone	Email
Project Coordinator	12/19/2025	Chukwuma Ikechukwu Ezedinma		c.ezedinma@afdb.org
GEF Agency Coordinator	12/19/2025	Ayanleh Daher Aden		a.daheraden@afdb.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Please attach the Operational Focal Point endorsement letter(s) with this template.

Name of GEF OFP	Position	Ministry	Date (MM/DD/YYYY)
Jonah Stanley	Director Planning, Research and Statistics and GEF Operational Focal Point	Federal Ministry of Environment	9/3/2024

ANNEX C: PROJECT RESULTS FRAMEWORK

Please indicate the page number in the Project Document where the project results and M&E frameworks can be found. Please also paste below the Project Results Framework from the Agency document. For the Integrated Programs' global/regional coordination child project, please include the program-wide results framework, inclusive of results specific to the coordination child project. For any country child project, please ensure that relevant program level indicators are included.

The project results and the M&E framework are located on pages 52-69 and 93-101 respectively. Table 11 below shows the Project M&E Framework while Table 12 is the Gender Action Plan (GAP) Mapping Table GAP showing how the activities are mapped to project components, outcomes, outputs, gender indicators, and responsible parties as per GEF guidance on gender mainstreaming.

Table 11: FARM+ Nigeria Project M&E Framework

Objective	KPI	Measure	Source of Performanc e Information	Responsi ble Institutio n	Freque ncy of Reporti ng	Targets			
						UOM	Baseline (2025)	Mid-Term (2028)	LoP (2030)
Goal: Transform Nigeria's agricultural sector toward sustainable and climate- resilient practices while eliminating	(1) Reduction in HHP usage volumes	Volume of HHPs used annually (metric tons)	(1) National pesticide import statistics (2) Agro- dealer inventory records (3) Farm- level usage surveys	PMU	Annual	Metric tons	177,135 MT/ <u>yfyr.</u>	106,281 MT/ <u>yfyr.</u> (40% reduction)	35,427 MT/ <u>yfyr.</u> (80% reduction)

hazardous pesticide use	(2) % of farmers adopting Climate-Smart Agriculture practices	Farmers practicing CSA as fraction of all project beneficiaries	(1) Field verification reports (2) Extension agent records (3) Farmer self-reporting surveys	PMU M&E Unit	Semi-annual	%	<5%	50%	100%
Project Purpose: Improve agricultural sustainability and reduce chemical pollution through integrated policy reform, financial innovation, technical assistance, and value chain strengthening	(1) Policy implementation status	Number of implemented policy reforms as fraction of targeted reforms	(1) Government gazettes (2) Policy implementation reports (3) Independent compliance audits	PMU	Semi-annual	%	<10%	75%	100%
	(2) Extent of sustainable financing access	Volume of loans disbursed for CSA/HHP-free agriculture as fraction of target	(1) Financial institution reports (2) NIRSAL credit guarantee records (3) Beneficiary loan tracking	PMU	Quarterly	%	0%	60%	100%
	(3) Extent of sustainable food supply chains	% reduction in post-harvest losses across targeted value chains	(1) Supply chain audits (2) Storage facility records (3) Farmer loss assessments	PMU M&E Unit	Semi-annual	%	40% losses	25% losses	15% losses
GEF CORE INDICATORS									
Core Indicator 3: Area of land and ecosystems under restoration	Hectares of degraded agricultural land restored through soil health improvements	Area verified through soil testing and field assessments	(1) IITA soil laboratory analysis (2) GPS field mapping (3) Farmer land records	PMU M&E Unit, IITA, Universities	Annual	Ha	0	5,000 ha (50%)	10,000ha (100%)
Core Indicator 4: Area of landscapes	Hectares under Climate-Smart	Area verified through GPS	(1) Satellite imagery analysis	PMU	Semi-annual	Ha	0	5,000 ha (50%)	10,000 ha (100%)

under improved practices (hectares)	Agriculture practices across SAPZ sites	mapping and practice adoption surveys	(2) OYSADA field verification (3) Extension agent records						
Core Indicator 5: Area of marine habitat under improved practices	Hectares of Guinea Current LME benefiting from reduced agricultural pollution	Area estimated through pollution reduction modelling and coastal monitoring	(1) NESREA water quality monitoring (2) Coastal fisheries assessments (3) Pollution load calculations	PMU	Annual	Ha	TBD	20,000 ha (50%)	40,000 ha (100%)
Core Indicator 6: Greenhouse gas emissions mitigated	Metric ton of CO ₂ e avoided by transitioning to CSA and green energy	GHG emissions estimated using soil laboratory tests to determine carbon sequestration	(1) Universities and IITA soil analysis (2) Federal Ministry of Agriculture reports	PMU, IITA, Universities	Seasonal	Metric ton of CO ₂ e	0	75,200 (50%)	150,400 (50%)
Core Indicator 9: Chemicals of global concern and their waste reduced	(9.6) POPs pesticides and HHPs avoided through project interventions	Metric tons of HHPs prevented from entering agricultural system	(1) Import substitution data (2) Agro-dealer sales records (3) Farmer purchasing surveys	PMU	Semi-annual	Metric tons	0 MT avoided	88,568 MT (50% of 5-year target)	177,135 MT (100% of 5-year target)
	(9.8) Marine litter avoided from pesticide plastic packaging	Metric tons of plastic packaging waste prevented	(1) Packaging material tracking (2) Waste collection records (3) Circular economy impact assessments	PMU M&E Unit	Annual	Metric tons	0 MT avoided	29.23 MT (50%)	58.46 MT (100%)
Core Indicator 10: Persistent organic pollutants to air reduced	Grams of toxic equivalent (gTEQ) of uPOP emissions avoided	uPOPs avoided through elimination of agricultural plastic burning	(1) Agricultural plastic waste tracking (2) Emission factor calculations (3) Circular	PMU	Annual	gTEQ	0 gTEQ avoided	1.05 gTEQ (50%)	2.10 gTEQ (100%)

			economy assessment s						
Core Indicator 11: People benefiting from GEF-financed investments (disaggregated by sex)	Number of direct beneficiaries accessing project services and benefits	Count verified through beneficiary registration and activity participation	(1) Beneficiary database (2) Training attendance records (3) Financial service access logs (4) Household surveys	PMU M&E Unit	Quarterly	Count (disaggregated)	0	Women: 750,000 Men: 1,000,000 Total: 1,750,000	Women: 1,500,000 Men: 2,000,000 Total: 3,500,000
COMPONENT 1: POLICY, REGULATIONS & ENFORCEMENT									
Output 1.1.1: National policies promoting sustainable agriculture drafted, enacted, and disseminated	(1) No. of national and state-level policies drafted and enacted	Number drafted and implemented as fraction of number targeted	(1) Policy documents (2) Government gazettes (3) Stakeholder validation reports	NPIU	Annual	% / Count	0 policies	2 policies enacted (50%) ^[1] ³	3 policies enacted (100%) ^[2] ⁴
Output 1.1.2: Agricultural subsidy systems restructured toward bio-alternatives	(2) % of agricultural subsidies redirected to sustainable inputs	Subsidies for bio-alternatives as fraction of total agricultural subsidies	(1) Federal budget documents (2) Subsidy disbursement records (3) Ministry of Finance reports	PMU, Consultants	Annual	%	0% redirection Baseline: 100% to chemical inputs	15% redirection to bio-alternatives	30% redirection to bio-alternatives
Output 1.2.1: Regulatory frameworks for HHP phase-out and bio-pesticide approval strengthened	(3) Number of HHPs phased out and bio-alternatives approved	Count of HHPs banned and bio-pesticides registered with NAFDAC	(1) NAFDAC regulatory decisions (2) Customs enforcement reports (3) Market surveillance data	Consultants, PMU	Semi-annual	Count	HHPs: 0 phased out Bio-alt: 5 registered (baseline)	HHPs: 5 phased out Bio-alt: 15 registered (10 new)	HHPs: 15 phased out Bio-alt: 30 registered (25 new)
	(4) Legislations revised/enacted for sustainable agriculture (Core Indicator 9.4)	Count of substantive legislative reforms operationalized	(1) Legislative texts (2) Implementation guidelines (3) Enforcement reports	PMU	Annual	Count	0	2 legislations revised	3 legislations revised/enacted
COMPONENT 2: FINANCE, INVESTMENT & INSURANCE									

Output 2.1.1: Financial mechanisms for CSA and HHP-free agriculture developed and deployed	(1) Value of loans disbursed through revolving fund and grant facility	Total financing accessed by farmers and SMEs (revolving + grants)	(1) Financial institution loan records (2) Grant facility disbursement tracking (3) Beneficiary registration database	PMU M&E Unit	Quarterly	USD Million	0	Loans: USD 2M Grants: USD 10M Total: USD 12M	Loans: USD 5M Grants: USD 10M Total: USD 15M
	(2) Interest rate buy-down impact	Average effective interest rate for CSA loans vs. market rates	(1) Loan agreement terms (2) Interest subsidy records (3) Comparative market rate analysis	PMU and Finance partner	Semi-annual	% reduction	Market rate: 20-25%	Effective rate: 15-17% (3-5% buy-down)	Effective rate: 12-15% (sustained reduction)
Output 2.1.2: Financial institutions trained and equipped to assess CSA loans	(3) No. of bank staff trained in sustainable agriculture lending	Number trained as fraction of target financial institution staff	(1) Training attendance records (2) Certification documents (3) Post-training competency assessments	PMU	Semi-annual	Count / %	0 staff trained	200 staff (50%) from 10 institutions	500 staff (100%) from 20 institutions
	(4) Number of new agricultural financial products developed	Count of tailored products for CSA/HHP-free agriculture	(1) Product design documents (2) Bank approval records (3) Market launch announcements	PMU M&E Unit	Annual	Count	0 products	5 products piloted	3 products scaled
Output 2.2.1: Agricultural insurance products for climate-resilient practices developed	(5) No. of farmers enrolled in climate-smart insurance products	Farmers insured as fraction of target beneficiaries	(1) NAIC enrollment records (2) Private insurer policy data (3) Premium payment tracking	PMU and Finance partner	Quarterly	Count / % / USD	<1,000 (<0.3%) Baseline premiums: minimal	5,000 (50%) Total premiums: USD 500K	10,000 (100%) Total premiums: USD 1.5M

	(6) Premium discount for HHP-free certified farmers	Average premium reduction for sustainable practice adopters	(1) Insurance policy terms (2) Premium comparison analysis (3) Claims ratio data	PMU M&E Unit	Semi-annual	% reduction	0% discount	10-15% discount for certified farmers	15-20% discount sustained
Output 2.2.2: Premium market linkages established for HHP-free produce from financed production	(7) Volume of financed HHP-free produce sold through premium contracts	Metric tons sold with premium pricing as fraction of total production	(1) Offtaker purchase records (2) Certification body reports (3) Digital traceability platform data	PMU M&E Unit	Quarterly	Metric tons / % / USD	0 MT 0% premium	15,000 MT (40%) ^[3] ⁵	40,000 MT (100%) ^[4] ⁶
	(8) Number of financed offtaker agreements with HHP-free procurement commitments	Count of formalized purchasing contracts	(1) Tripartite agreement documents (2) NEPC facilitation records (3) Contract performance reports	PMU, M&E Unit, Consultants	Semi-annual	Count	0 agreements	5 offtakers ^{off} takers with 3-year commitments	10 offtakers ^{off} takers with long-term commitments
COMPONENT 3: TECHNICAL ASSISTANCE AND ALTERNATIVES									
Output 3.1.1: Extension systems strengthened with CSA and IPM capacity	(1) No. of extension agents and lead farmers trained and certified	Number trained and certified in IPM/CSA methodologies	(1) NAERLS training records (2) Certification documents (3) Field competency assessments	PMU, Consultants	Semi-annual	Count	Extension: 0 Lead farmers: 0	Extension: 500 (50%) Lead farmers: 1,000 (50%)	Extension: 1,000 (100%) Lead farmers: 2,000 (100%)
	(2) Extension officer-to-farmer ratio improvement	Effective extension coverage ratio achieved through agents + lead farmers	(1) Extension deployment records (2) Farmer registration data	PMU M&E Unit	Annual	Ratio	Baseline: 1:10,000 ^[5] ⁷	1:2,500 (with lead farmers)	1:1,500 (sustained coverage)

			(3) Service delivery logs						
Output 3.1.2: Digital advisory platforms deployed and utilized	(3) No. of active users on mobile/digital platforms	Registered and active users accessing advisory services monthly	(1) Platform analytics dashboard (2) SMS/USSD usage logs (3) User satisfaction surveys	PMU M&E Unit	Monthly	Count / Engagement rate	0 users	50,000 users 60% monthly engagement	100,000 users 70% monthly engagement
	(4) Advisory content delivered (weather, pest alerts, market prices)	Number of actionable advisories sent and farmer response rate	(1) Platform messaging logs (2) Weather alert tracking (3) User feedback surveys	Consultants and PMU	Monthly	Count messages / % response	Not applicable	200,000 messages/month 40% response rate	500,000 messages/month >50% response rate
Output 3.2.1: Farmer Field Schools established and operational	(5) No. of functional FFS demonstrating bio-alternatives	Count of FFS with active farmer participation and practice adoption	(1) FFS registration records (2) Field visit reports (3) Farmer attendance logs (4) Practice adoption verification	PMU, Consultants	Quarterly	Count / Average participants	0 FFS	50 FFS 30 farmers/FFS ¹ 618	100 FFS 30 farmers/FFS ¹ 719
	(6) Demonstration plot results (yield and cost comparisons)	Comparative productivity and profitability of HHP vs. bio-alternatives	(1) Field trial data (2) Economic analysis reports (3) Farmer testimonials	PMU M&E Unit	Annual	% yield difference / % cost reduction	Baseline chemical farming data	Bio-alternatives: 90-100% of chemical yields 20-30% lower input costs	Bio-alternatives: 100-110% yields 30-40% lower costs
Output 3.2.2: Bio-alternative supply chains established through youth/women SMEs	(7) Volume of locally-produced bio-inputs manufactured and sold	Metric tons of neem oil, botanicals, microbials microbial produced annually	(1) SME production records (2) Agro-dealer sales data (3) Quality certification reports	PMU M&E Unit	Quarterly	Metric tons / USD value	0 MT 0 SMEs	500 MT 30 SMEs USD 1.5M sales	2,000 MT 75 SMEs >USD 6M sales

	(8) Number of agro-dealers certified in bio-alternative handling	Count of dealers trained and stocking bio-alternatives	(1) FEPSAN certification records (2) Dealer inventory audits (3) Sales tracking data	PMU, Consultants	Semi-annual	Count	0 certified dealers	100 certified dealers Stocking 5+ bio-products	250 certified dealers Stocking 10+ bio-products
COMPONENT 4: FOOD SUPPLY CHAINS									
Output 4.1.1: Post-harvest infrastructure established and operational	(1) Storage capacity added through project interventions	Metric tons of cold/hermetic storage capacity installed	(1) Infrastructure completion reports (2) Equipment commissioning certificates (3) Facility usage logs	PMU, Consultants	Semi-annual	Metric tons capacity / Facilities count	Baseline capacity: minimal cold storage	10,000 MT capacity 6 facilities operational 60% utilization	25,000 MT capacity 15 facilities operational 80% utilization
	(2) Solar dryer and hermetic container distribution	Count of equipment distributed and farmers utilizing	(1) Equipment distribution records (2) Beneficiary surveys (3) Adoption verification	PMU M&E Unit	Quarterly	Count equipment / Count farmers	0 equipment	Solar dryers: 500 Hermetic: 2,000 5,000 farmers using	Solar dryers: 1,500 Hermetic: 6,000 15,000 farmers using
Output 4.1.2: Post-harvest losses reduced through improved handling	(3) % reduction in post-harvest losses for targeted crops	Pre/post-harvest loss rates for cassava, vegetables, maize, soybean	(1) Loss assessment surveys (2) Storage facility records (3) Farmer self-reporting (4) Value chain audits	PMU M&E Unit	Semi-annual	% / USD value saved	40% baseline loss USD 0 saved	25% loss (37.5% reduction) USD 50M saved annually	15% loss (62.5% reduction) USD 100M+ saved annually
	(4) GHG emissions reduction from reduced food waste	Metric tons of CO2e avoided through loss prevention	(1) Loss reduction data (2) Emission factor calculations (3) Cold chain energy audits	PMU	Annual	Metric tons CO2e	TBD	1,908,435 MT CO2e (50% of target)	3,816,870 MT CO2e (100% of target)

Output 4.2.1: Traceability systems for HHP-free value chains operational	(5) No. of farmers enrolled in digital traceability platform	Farmers with QR-coded batches linked to buyers	(1) Platform registration data (2) Transaction records (3) Buyer verification reports	PMU, Consultants	Quarterly	Count / MT tracked	0 farmers 0 MT	25,000 farmers 50,000 MT traced	50,000 farmers 150,000 MT traced
	(6) Export rejection rate for Nigerian agricultural products	% of export consignments rejected due to pesticide residues	(1) NEPC export statistics (2) International buyer reports (3) NAFDAC quality control data	PMU M&E Unit	Semi-annual	% rejection rate	>70% rejection (baseline)	40% rejection (43% improvement)	<15% rejection (79% improvement)
Output 4.3.1: Youth and women-led circular economy enterprises established	(7) No. of SMEs manufacturing waste-derived products	Count of operational enterprises processing agricultural waste	(1) SME registration documents (2) Business performance reports (3) Product sales records	PMU M&E Unit	Quarterly	Count SMEs / Employment created	0 SMEs 0 jobs	30 SMEs 450 jobs (60% women/youth)	75 SMEs 1,125 jobs (60% women/youth)
	(8) Volume of agricultural waste converted to value-added products	Metric tons of cassava peels, crop residues, etc. processed	(1) Waste collection records (2) Processing facility reports (3) Product output tracking	PMU, Consultants	Quarterly	Metric tons / USD revenue	0 MT processed	5,000 MT processed USD 500K revenue	15,000 MT processed USD 2M revenue
Output 4.3.2: Private sector engagement in sustainable sourcing	(9) No. of companies adopting sustainable procurement policies	Count of off-takers with HHP-free sourcing commitments	(1) Corporate policy documents (2) Procurement contracts (3) Supply chain audit reports (4) Volume commitments	PMU M&E Unit	Semi-annual	Count companies / MT committed	0 companies 0 MT commitment	5 companies 20,000 MT/year commitment	15 companies 60,000+ MT/year commitment
COMPONENT 5: KNOWLEDGE MANAGEMENT									
Output 5.1.1: Baseline assessments completed and disseminated	(1) Comprehensive baseline data published and accessible	Availability of baseline reports covering all project components	(1) Published baseline study (2) Data accessibility on KM platform (3) Stakeholder	PMU, AfDB, UNDP	One-time (Year 1) + Updates	Observation Score / Downloads	Not applicable	Baseline complete: 5 comprehensive reports 2,000+ downloads	Baseline updated at MTR: Regular indicator updates 5,000+ total downloads

			dissemination events						
Output 5.1.2: Knowledge Management Platform operational and utilized	(2) Knowledge products uploaded per component per quarter	Count of case studies, briefs, manuals, videos published	(1) KM platform analytics (2) Document repository logs (3) Download/view statistics	PMU, AfDB, UNDP	Quarterly	Count per quarter / Total views	Not applicable Platform under development	5 uploads/quarter (60 annually) 10,000 views/month	10 uploads/quarter (120 annually) >25,000 views/month
Output 5.2.1: Peer-to-peer learning events and exchanges conducted	(3) No. of cross-country/cross-site learning events	Count of facilitated learning events with documented outcomes	(1) Event attendance records (2) Trip reports (3) Participant feedback surveys (4) Lessons learned documentation	PMU, AfDB, UNDP	Semi-annual	Count events / Participants	Not applicable	4 events (2 national, 2 regional) 200 participants	10 events (6 national, 4 regional) 600 participants
KEY SOCIO-ECONOMIC BENEFITS									
Benefit 1: Enhanced farm profitability through cost-effective inputs	Average net income increase for farmers adopting CSA/bio-alternatives	% change in net farm income compared to baseline	(1) Household economic surveys (2) Farm budget analysis (3) Comparative profitability studies	PMU M&E Unit	Annual (baseline, midterm, <u>endline</u> , <u>end line</u>)	% increase / USD	Baseline net income	20-25% increase USD 300-400/farmer	30-40% increase USD 500-700/farmer
Benefit 2: Public health protection from reduced chemical exposure	Reduction in acute pesticide poisoning incidents	Count of reported poisoning cases among farming communities	(1) Health facility records (2) Community health surveillance (3) Farmer health surveys	PMU, AfDB, UNDP	Semi-annual	Count cases / % reduction	Baseline poisoning cases	40% reduction in reported cases	70% reduction in reported cases
Benefit 3: Food security improvements through production stability	Household dietary diversity and food security scores	Average household dietary diversity score (HDDS)	(1) Household food security surveys (2) Nutrition	PMU M&E Unit	Annual	HDDS score (0-12 scale)	Baseline HDDS: 4.5	HDDS: 6.0 (33% improvement)	HDDS: 7.5+ (67% improvement)

			assessment (3) Food consumption analysis						
Benefit 4: Youth and women employment in green value chains	Total employment generated in bio-alternatives and circular economy	Count of jobs created (disaggregated by age, sex)	(1) Employment records from SMEs (2) Beneficiary surveys (3) Labour Labour force participation data	PMU M&E Unit	Quarterly	Count jobs (disaggregated)	0 jobs	900 jobs Total: 450 women, 450 youth	2,400 jobs Total: 1,200 women, 1,200 youth
Benefit 5: Climate adaptation and resilience enhancement	Farming households reporting improved resilience to climate shocks	% of farmers reporting reduced vulnerability to droughts/floods	(1) Household resilience surveys (2) Climate shock impact assessments (3) Coping strategy analysis	PMU M&E Unit	Annual	% / Resilience score	Baseline vulnerability: high	50% report improved resilience	75% report improved resilience
Benefit 6: Soil health restoration and ecosystem services	Soil organic matter content increase in project areas	% change in soil organic carbon and nutrient levels	(1) Soil laboratory analysis (2) Field soil testing (3) Farmer observations	PMU, AfDB, UNDP	Annual	% increase / Soil health score	Baseline soil health metrics	15-20% increase in organic matter	30-40% increase in organic matter
Benefit 7: Water quality improvements in farming communities	Reduction in pesticide residues in water sources	Parts per billion (ppb) of pesticide contamination	(1) Water quality testing (2) Laboratory analysis (3) NESREA monitoring data	PMU M&E Unit	Semi-annual	ppb / % reduction	Baseline contamination levels	50% reduction in detected residues	80% reduction in detected residues
Benefit 8: Biodiversity conservation through reduced chemical use	Population indices for beneficial insects and pollinators	Relative abundance of key indicator species	(1) Biodiversity field surveys (2) Pollinator counts (3) Beneficial insect assessments	PMU, AfDB, UNDP, Consultants	Annual	Index score / % recovery	Baseline biodiversity metrics	30% increase in beneficial species	60% increase in beneficial species

[1] (i) Subsidy restructuring framework (ii) Organic agriculture promotion law

[2] Plus (iii) HHP phase-out regulation

[3] 10-15% price premium USD 2.25M premium value

[4] 10-15% premium USD 6M+ premium value

[5] Government only

[6] 1,500 direct participants

[7] 3,000 direct participants

Table 12: Gender Action Plan (GAP) Mapping Table

Overall gender targets: 1,500,000 women beneficiaries | 2,000,000 men beneficiaries | ≥40% women in all project governance structures | 100% gender-disaggregated M&E reporting

Component and Outcome	Output	GAP Activity	Gender Indicator	Responsible
Component 1: Policy, Regulations and Enforcement				
C1: Coherent policies support sustainable agriculture	Output 1.1: Revised national policies promote sustainable agriculture	- Mandate gender parity in policy review bodies and inter-ministerial coordination platforms - Include gender-responsive chemical safety standards in revised regulations	% of women represented in Policy Review Sessions and technical working groups (target: ≥40%)	FMEEnv / FMAFS / NESREA
C1: Coherent policies support sustainable agriculture	Output 1.2: Organic agriculture policy operationalised	- Ensure organic certification subsidy schemes prioritise women-led cooperatives with 50% cost subsidy - Include gender-responsive land-use security provisions in organic agriculture law	% of organic certification beneficiaries who are women (target: ≥50%) # women cooperatives certified	OYSADA / FMEEnv
C1: Coherent policies support sustainable agriculture	Output 1.3: Enforcement capacity strengthened	- Train female enforcement officers and NAFDAC quality control staff on rapid residue testing - Sensitise women Community Health and Agriculture Monitors on enforcement reporting	# female enforcement officers trained # pesticide poisoning incidents documented by women monitors	NAFDAC / NESREA / OYSADA
Component 2: Finance, Investment and Insurance				
C2: Increased access to finance for sustainable agriculture	Output 2.1: Finance mechanisms assessed and redesigned	- Assess gender barriers in existing finance mechanisms - Design finance products that do not require land ownership as collateral, removing primary barrier for women	% of financial products redesigned with gender-responsive collateral requirements	NIRSAL / CBN / PMU Gender Specialist
C2: Increased access to finance for sustainable agriculture	Output 2.2: Blended finance mechanisms operational	- Ring-fence minimum 40% of Green Agribusiness Fund (GAF) disbursements for women and youth-led enterprises - Link women's VSLAs and savings groups to NIRSAL credit guarantee system	% of GAF loans disbursed to women-led enterprises (target: ≥40%) # women accessing NIRSAL-guaranteed credit	NIRSAL / SMEDAN / JR Farms Nigeria

C2: Increased access to finance for sustainable agriculture	Output 2.3: Agricultural insurance products improved	- Co-design climate-smart insurance products with women farmers to address time poverty and mobility constraints - Deliver insurance literacy training through women's groups and community radio	% of climate-smart insurance policy holders who are women # women trained in agricultural insurance products	NAIC / PMU Gender Specialist
C2: Increased access to finance for sustainable agriculture	Output 2.4: Farmers access sustainable value chains	- Facilitate tripartite off-taker contracts prioritising women-led cooperatives - Support market access for women-led cooperatives including branding, packaging, and buyer identification	# women-led cooperatives with active off-taker contracts - value of sales by women-led cooperatives (USD)	OYSADA / NEPC
Component 3: Technical Assistance and Introduction of Alternatives				
C3: Sustainable practices reduce HHP reliance	Output 3.1: Enhanced farmer support systems	- Deliver modular, practical training adapted to women's schedules, education levels, and mobility - Train female para-extension workers as last-mile community agents - Provide illustrated materials in local languages	% of Farmer Field School (FFS) participants who are women (target: ≥50%) # female para-extension workers trained # of materials produced	IITA / Oyo ADP / NAERLS
C3: Sustainable practices reduce HHP reliance	Output 3.2: Farmers access mobile climate advisory platforms	- Ensure digital advisory platforms are accessible to low-literacy women through SMS, voice notes, and illustrated content in local languages - Mandate gender-disaggregated user registration	% of platform users who are women # women receiving local-language climate advisories via SMS	NiMet / IITA / PMU M&E Officer
C3: Sustainable practices reduce HHP reliance	Output 3.3: Sustainable practices validated through demonstration plots	- Include women farmers as lead farmers in IPM demonstration plots; document women's knowledge of traditional pest management in participatory trials - Provide gender-appropriate PPE to all participants	% of lead farmers in demonstration plots who are women # women receiving gender-appropriate PPE	IITA / University of Ibadan / OYSADA
C3: Sustainable practices reduce HHP reliance	Output 3.4: Bio-alternative ecosystem established	- Support women and youth-led SMEs to manufacture and distribute neem oil, botanical extracts, and microbial agents through SMEDAN-supported incubation at Fasola Hub - Mentorship connecting successful women entrepreneurs with young women	# women-led bio-alternative SMEs established and operational # women accessing SMEDAN incubation support	SMEDAN / IITA BIP / Fasola Hub
Component 4: Improving Agricultural Supply Chains				
C4: Supply chain practices minimise waste and pollution	Output 4.1: Supply chain management reduces losses	- Prioritise women post-harvest processors in equipment leasing schemes; deliver post-harvest technology training adapted to women's roles in sorting, drying, and storage - Deploy solar cold rooms at Eruwa and Akufo where women's groups are active	% of equipment leasing beneficiaries who are women # women trained in post-harvest technologies	OYSADA / NSPRI / Fasola Hub

C4: Supply chain practices minimise waste and pollution	Output 4.2: Companies adopt value chain approaches reducing HHPs	- Ensure Ijaiye Farm Settlement women's groups are primary suppliers in Shoprite/SPAR organic vegetable programme - Integrate women into QR traceability platform as registered HHP-free producers	# women registered on HHP-free digital traceability platform # women-led supply contracts with retail chains	OYSADA / NEPC / Fasola Hub Lab
C4: Supply chain practices minimise waste and pollution	Output 4.3: SMEs design and market waste-derived products	- Target women and youth-led SMEs for circular economy enterprise development (cassava starch bio-packaging, vermiculture composting, biochar) - Provide dedicated investment and technical assistance through GAF	# women-led circular economy SMEs established - value of waste-derived products commercialised by women (USD)	SMEDAN / ILRI / GAF / JR Farms Nigeria
Component 5: Global Coordination and Knowledge Dissemination				
C5: Global knowledge applied to scale sustainable agriculture	Output 5.1: Baseline assessments completed	- Ensure baseline assessments are fully gender-disaggregated; include women's land tenure security, exposure to HHPs, and decision-making power as baseline indicators - Engage women's groups in participatory baseline data collection	% of baseline indicators disaggregated by sex # women participating in baseline data collection	PMU M&E Officer / Gender Specialist / IITA
C5: Global knowledge applied to scale sustainable agriculture	Output 5.2: Knowledge products consolidated and disseminated	- Document and disseminate gender-transformative lessons on women's Community Health and Agriculture Monitor model - Develop gender-responsive case studies on women-led circular economy and organic enterprises for global FARM+ platform	# gender-focused knowledge products published and shared on global FARM+ platform	PMU Gender Specialist / FMEnv
C5: Global knowledge applied to scale sustainable agriculture	Output 5.3: Private sector advocates for greener practices	- Ensure private sector multi-stakeholder platforms include women's cooperative representatives - Mandate gender-disaggregated reporting in private sector advocacy commitments - Strengthen women's voices in CropLife and FEPSAN policy dialogue	# women's cooperative representatives on private sector MSPs % of private sector advocacy reports gender-disaggregated % of women in policy dialogues	FEPSAN / CropLife / OYSADA

ANNEX D: STATUS OF UTILIZATION OF PROJECT PREPARATION GRANT (PPG)

Provide detailed funding amount of the PPG activities financing status in the table below:

Project Preparation Activities Implemented	GETF/LDCF/SCCF Amount (\$)		
	Budgeted Amount	Amount Spent To date	Amount Committed

Literature review, desktop assessments, policy, institutional and technical analyses, baseline data collection, and technical studies undertaken for the design of the FARM+ Nigeria child project and preparation of the CEO Endorsement Request package	61,225.00	61,225.00	0.00
Stakeholder consultations, validation meetings, stakeholder engagement planning, baseline consultation activities, and multi-stakeholder discussions to refine project components, implementation arrangements and financing mechanisms	40,000.00	40,000.00	0.00
Gender analysis, stakeholder analysis, environmental and social safeguard assessments, climate risk assessment, and preparation of related safeguard instruments, action plans and supporting annexes for the CEO Endorsement package	42,735.00	42,735.00	0.00
Preparation and finalization of the CEO Endorsement Request package and AfDB Project Appraisal Report (PAR) / Addendum, including development of implementation arrangements, procurement planning inputs, basic costing exercises, preparation of Terms of Reference for the Project Management Unit (PMU), Executing Agencies and technical studies, as well as technical revisions and responses to GEF review comments during the CEO Endorsement process	56,040.00	13,635.00	42,405.00
Total	200,000.00	157,595.00	42,405.00

ANNEX E: PROJECT MAP AND COORDINATES

Please provide geo-referenced information and map where the project interventions will take place

Location Name	Latitude	Longitude	GeoName ID
Fasola Agribusiness Industrial Hub	7.8989	3.7797	

Location Description:

SAPZ Site/Agribusiness Hub[A1]

Activity Description:

FARM+ demonstration and sustainable agriculture interventions

Location Name	Latitude	Longitude	GeoName ID
Ijaiye Agro Industrial Hub	7.6775	4.1981	

Location Description:

SAPZ Site/Agribusiness Hub, Oyo State, Nigeria

Activity Description:

FARM+ demonstration and sustainable agriculture interventions

Location Name	Latitude	Longitude	GeoName ID
Onitirin	8.0975	3.8292	

Location Description:

Farm Settlement, Oyo State, Nigeria

Activity Description:

Farmer training and sustainable agricultural practices

Location Name	Latitude	Longitude	GeoName ID
Ipapo	8.1236	3.5111	

Location Description:

Farm Settlement, Oyo State, Nigeria

Activity Description:

Farmer training and sustainable agricultural practices

Location Name	Latitude	Longitude	GeoName ID
Ilora	7.7825	3.9203	

Location Description:

Farm Settlement, Oyo State, Nigeria

Activity Description:

Farmer training and sustainable agricultural practices

Location Name	Latitude	Longitude	GeoName ID
Lalupon	7.4686	4.0739	

Location Description:

Farm Settlement, Oyo State, Nigeria

Activity Description:

Farmer training and sustainable agricultural practices

Please provide any further geo-referenced information and map where project interventions are taking place as appropriate.

Geo Name ID Required field if the location is not an exact site	Location Name Required field	Latitude Required field	Longitude Required field	Location Description Optional text field	Activity Description Optional text field
Oyo State, Nigeria	Fasola Agribusiness Industrial Hub	7°53'56N	3°46'47'E	SAPZ Site/Agribusiness Hub [A1]	
Oyo State, Nigeria	Ijaiye Agro Industrial Hub	7°40'39'N	4°11'53'E	SAPZ Site/Agribusiness Hub	
Oyo State, Nigeria	Onitirin	8°05'51'N	17°49'45'S	Farm Settlement	
Oyo State, Nigeria	Ipapo	8°07'25'N	3°30'40'E	Farm Settlement	
Oyo State, Nigeria	Ilorra	7°46'57'N	3°55'13'E	Farm Settlement	
Oyo State, Nigeria	Lalupon	7°28'07'N	4°04'26'E	Farm Settlement	

Oyo State is situated in the South-Western region of Nigeria, as depicted in Figure 13 “*Map of Nigeria showing Oyo State, Fasola Hub, and surrounding farm settlements*”. It is bordered by Osun state to the East, Ogun State to the South, Kwara State to the North and shares an international border with the Republic of Benin to the West. Covering an area of approximately 28,454 km², Oyo State features a diverse landscape that includes urban centers, rural communities, plateaus, valleys, rivers, and hills. The state has a population density of about 365.6 people per km² as of 2022, with a projected population of approximately 10,368,500, reflecting an annual population growth rate of around 3.7% from 2006 to 2022 [\[1\]](#)¹⁰.

The State has a diverse economy that includes agriculture, trade, manufacturing, and services. The fertile soil makes it an important agricultural hub, with major crops including cocoa, yams, cassava, maize, and tobacco. The state engages in both subsistence and commercial farming, contributing significantly to Nigeria's agricultural output.

In addition to agriculture, Oyo State has developed various sectors such as commerce, textiles, food processing, and artisan crafts, helping to create job opportunities and stimulate economic growth. The

establishment of markets and trade centers in key locations supports the local economy, while industrial parks are also emerging to foster manufacturing and entrepreneurship.



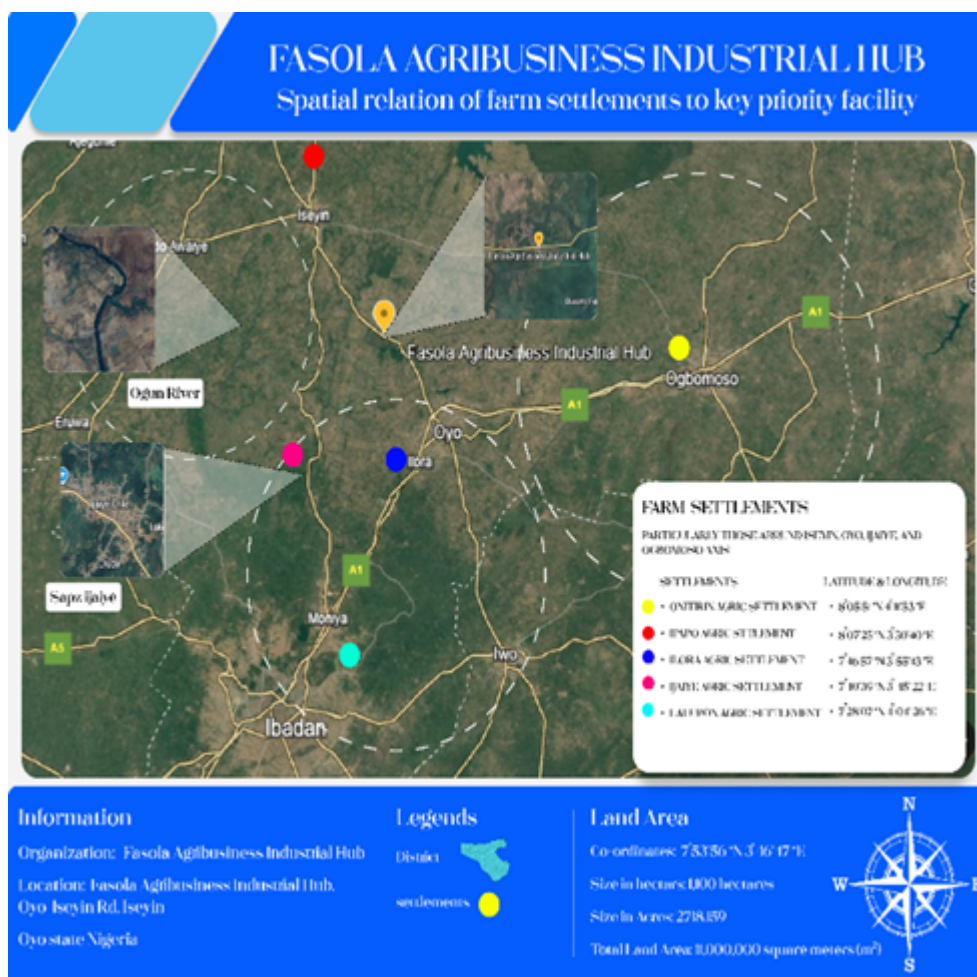


Figure 13: Map of Nigeria showing Oyo State, Fasola Hub, and surrounding farm settlements

The project will be implemented at the Fasola Agribusiness Hub (1,200 hectares) as the primary anchor within the Ijaiye Special Agro-Industrial Processing Zone (7,000 hectares) in Oyo State, extending to surrounding farm settlements and estates. The project area comprises farm settlements with smallholder households and commercial estates clustered around the Fasola Hub, creating an integrated knowledge ecosystem that leverages hub infrastructure and services to enable effective climate-smart agriculture adoption and HHP reduction across diverse farming communities.

The target of 40,000 hectares under **Indicator 5 - Area of marine habitat under improved practices (hectares)** will be systematically tracked and monitored through a geographically focused approach that demonstrates clear linkages to the Ogun River basin. This tracking methodology ensures that all hectares reported under this indicator are directly connected to the Ogun River watershed, providing measurable evidence of the project's impact on river basin management and ecosystem restoration. The monitoring framework will utilize spatial mapping and verification protocols to document how interventions within these targeted hectares contribute to improved water quality, sustainable land management, and enhanced ecosystem services along the Ogun River corridor.

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Figure 14: Agricultural production areas and Ogun River linkages

[1] National Bureau of Statistics of Nigeria

ANNEX F: ENVIRONMENTAL AND SOCIAL SAFEGUARDS DOCUMENTS INCLUDING RATING

Attach agency safeguard datasheet/assessment report(s), including ratings of risk types and overall project/program risk classification as well as any management plans or measures to address identified risks and impacts (as applicable).

Title

ANNEX F_ ESMP_FARM+Nigeria_GEF Child Project_FINAL_REVISED May 2026

ANNEX G: BUDGET TABLE

Please upload the budget table here.

Appendix A: Indicative Project Budget Template

Expenditure Category	Detailed Description	Component (USDeq.)								Total (USDeq.)	Responsible Entity ftn1
		Component 1: Policy, Regulation and Enforcement	Component 2: Finance, Investment and Insurance	Component 3: Technical Assistance and Introduction of Alternatives	Component 4: Improving Food Supply Chains	Component 5: Global Coordination & Knowledge Dissemination	Sub-Total	M&E	PMC		
1. Goods	Equipment for pilot setting up and maintenance			60,000			60,000			60,000	Federal Ministry of Environment
	Essential cold chain infrastructure components: Targeting essential investments in logistics and post harvest handling for highly performing value chains using green technologies			300,000	250,000		550,000			550,000	Federal Ministry of Environment
	Laptops, printer and tonners								10,000	10,000	Federal Ministry of Environment

SubTotal - Goods		-	-	360,000	250,000	-	610,000	-	10,000	620,000	
2. Grants/Sub-grants	Agro-waste processing plants: Grant to support the SMEs to venture into using crop and livestock residues such as cassava peels and biodigester		200,000	360,000	250,000		810,000			810,000	Federal Ministry of Environment
SubTotal - Grants/Sub-grants		-	200,000	360,000	250,000	-	810,000	-	-	810,000	
3. Revolving funds/Seed funds/Equity	Capitalization of revolving fund: Liquidity provided to partner banks and micro finance institutions (MFIs)		1,500,000				1,500,000			1,500,000	Federal Ministry of Environment
	Financial inclusion operational support: Cost-sharing for loan administration		40,000				40,000			40,000	Federal Ministry of Environment
	Interest Rate Buy-Down: Targeted subsidy to ensure loans remain affordable and performing		300,000				300,000			300,000	Federal Ministry of Environment
	Input price subsidy: Seed funds to reduce cost of bio-inputs, precision tools, PPE, regenerative supplies			60,000	60,000		120,000			120,000	Federal Ministry of Environment
	Support to agro-dealers: Seed fund to reduce wholesale cost of inputs and promote stocking of low-HHP products			240,000	50,000		290,000			290,000	Federal Ministry of Environment
	Inventory and safeguarding: Preparation and repackaging	40,000			1,200		41,200			41,200	Federal Ministry of Environment
	Secure transport and legal clearance: Transportation and permits				1,000		1,000			1,000	Federal Ministry of Environment
	Destruction (End-of-Life): Final disposal or incineration fee				10,000		10,000			10,000	Federal Ministry of Environment
	Laboratory analysis of OCPs: Including broad pesticide screen, nutrients (nitrate ions, phosphates), and basic physio-chemical parameters (pH, EC).			15,000			15,000			15,000	Federal Ministry of Environment
	Specialized sampling equipment, consumables (certified sterile bottles),			5,000			5,000			5,000	Federal Ministry of Environment

	preservation chemicals, vehicle rental, fuel, and per diem/labor costs for the field technicians and hydrologists.										
	Quality assurance and Quality Control (QA/QC) samples (duplicates, blanks): Sending samples to an independent audit laboratory, and professional technical report writing.			3,500			3,500			3,500	Federal Ministry of Environment
	Seed fund: To support the use of biofertilizers and biopesticides using insurance			220,000	50,000		270,000			270,000	Federal Ministry of Environment
	Farmer Field Schools set-up fund: Setting up and recapitalising FFSs to act as standardised localised hubs for capacity building and knowledge transfer		20,000	200,000	120,000		340,000			340,000	Federal Ministry of Environment
SubTotal - Revolving funds/Seed funds/Equity		40,000	1,860,000	743,500	292,200	-	2,935,700	-	-	2,935,700	
4. International Consultants	International technical advisors: To align the piloted green agrifood systems models with Global Best Practices, align with export markets, and global funding arrangements	40,000	50,000	40,000	40,000		170,000			170,000	Federal Ministry of Environment
	Curriculum development experts: To design internationally certified training modules for climate-smart agriculture and responsible investment	60,000	75,000	65,000	43,800		243,800			243,800	Federal Ministry of Environment
	Global finance, insurance and private sector development experts: To conduct needs assessment and design of funding and insurance framework		50,000	30,000	50,000		130,000			130,000	Federal Ministry of Environment
SubTotal - International Consultants		100,000	175,000	135,000	133,800	-	543,800	-	-	543,800	
5. Local Consultants	Communication strategist, awareness and knowledge	10,000	10,000	20,000			40,000			40,000	Federal Ministry of Environment

	management expert: To lead the development of frameworks and stakeholder engagements										
	Research, learning, and knowledge management expert: To lead AI integration and support the design and implementation of the knowledge management platform	40,000	20,000	40,000			100,000			100,000	Federal Ministry of Environment
	Gender inclusion and transformation expert: To align the project's gender protocols and framework with national and international policies and practices	30,000	20,000	20,000	15,000		85,000			85,000	Federal Ministry of Environment
	Policy, strategy and regulations expert: To lead the technical review and analysis support, consultations, drafting of revised policy documents	40,000	20,000	20,000	20,000		100,000			100,000	Federal Ministry of Environment
	Agriculture expert: Agri-food systems analyst to develop and deploy locally adapted green food supply chain protocols and management systems for selected value chains	40,000	20,000	50,000	40,000		150,000			150,000	Federal Ministry of Environment
	Environmental and safeguard expert: To develop and deploy the tools and protocols across the entire project pillars	40,000	10,000	70,000	20,000		140,000			140,000	Federal Ministry of Environment
SubTotal - Local Consultants		200,000	100,000	220,000	95,000	-	615,000	-	-	615,000	
6. Salary and benefits/Staff costs	National Project Coordinator						-		132,000	132,000	Federal Ministry of Environment
	Environment and Safeguards Officer								60,000	60,000	Federal Ministry of Environment
	Communication Specialist								60,000	60,000	Federal Ministry of Environment
	Data, Monitoring and Evaluation Specialist							84,000		84,000	Federal Ministry of Environment
	Procurement Specialist								84,000	84,000	Federal Ministry of Environment
SubTotal - Salary and benefits/Staff costs		-	-	-	-	-	-	84,000	336,000	420,000	

7. Trainings, Workshops, Meetings	Trainings of financial Institutions: To enhance policies, credit appraisal for regenerative and agro-smart businesses and product development	65,000	120,000	20,000	20,000		225,000			225,000	Federal Ministry of Environment
	Trainings and awareness of project beneficiaries: Financial management and insurance	70,000	100,000	25,000			195,000			195,000	Federal Ministry of Environment
	Training farmers and cooperatives: Regenerative agriculture, safe use of inputs, transition approaches from HHP use and adoption of CSA	60,000	30,000	40,000	20,000		150,000			150,000	Federal Ministry of Environment
	Training agro-dealers: Product handling, storage, stewardship	30,000	30,000				60,000			60,000	Federal Ministry of Environment
	Capacity building for green energy adoption pathways			50,000			50,000			50,000	Federal Ministry of Environment
	3 Project inception meetings: National project coordination meetings; Annual regional meetings; and trainings	70,000	20,000	40,000	20,000		150,000			150,000	Federal Ministry of Environment
	SubTotal - Trainings, Workshops, Meetings	295,000	300,000	175,000	60,000	-	830,000	-	-	830,000	
8. Travel	Presence costs (travel and accommodation) for project staff and facilitators for workshops and fact-gathering missions	65,000	25,000	20,000	15,000		125,000			125,000	Federal Ministry of Environment
SubTotal - Travel		65,000	25,000	20,000	15,000	-	125,000	-	-	125,000	
9. Office Supplies	Stationery						-		5,000	5,000	Federal Ministry of Environment
SubTotal - Office Supplies		-	-	-	-	-	-	-	5,000	5,000	
10. Other Operating Costs	Monitoring and evaluation : Baseline/midline/endline surveys,						-	85,000		85,000	Federal Ministry of Environment
	External audits and reporting - Annual audit, fiduciary oversight						-	15,000		15,000	Federal Ministry of Environment
	Knowledge Management- Farmer awareness and sensitisation : Campaigns, radio,	50,000		25,000	10,000		85,000			85,000	Federal Ministry of Environment

	demos on low-HHP use, regenerative inputs										
	Knowledge management -ICT and data aggregation, processing and sharing infrastructure and linking to KM platform, while facilitating full local access		20,000	20,000	20,000		60,000			60,000	Federal Ministry of Environment
	Knowledge Management - Verification & Reporting including certification				500		500			500	Federal Ministry of Environment
	Global Coordination & Knowledge Dissemination: Participation, coordination, communication and dissemination of information of FARM+ milestones as well as results					300,000	300,000			300,000	Federal Ministry of Environment
	Office logistics and communication								10,000	10,000	Federal Ministry of Environment
	Office equipment services								5,000	5,000	Federal Ministry of Environment
	Field monitoring and backstopping						-	35,000		35,000	Federal Ministry of Environment
SubTotal - Other Operating Costs		50,000	20,000	45,000	30,500	300,000	445,500	135,000	15,000	595,500	
Grand Total		750,000	2,680,000	2,058,500	1,135,463.5	300,000	6,915,000	220,000	356,036.5	7,500,000	Federal Ministry of Environment

Please explain any aspects of the budget as needed here

ANNEX I: RESPONSES TO PROJECT REVIEWS

From GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF.

Response to GEF Council Comments, 16 January 2025

Council Member	Council Member Comment	GEF Agency Response
United States	Requested a more explicit Theory of Change with clearer causal links between activities, outcomes, and transformational impacts.	The revised CEO Endorsement document significantly strengthens the Theory of Change section by explicitly articulating the causal pathways linking policy reform, finance, technology uptake, value chain transformation, and institutional strengthening to long-term environmental and socio-economic impacts. The document

		now includes dedicated sections on causal assumptions, expected transformation, and pathway to impact.
United States	Requested stronger socio-economic indicators related to farmer livelihoods, income generation, and food security	The revised project document integrates socio-economic co-benefits throughout the Theory of Change and Results Framework narrative, including references to improved farmer livelihoods, food security, women and youth economic empowerment, reduced post-harvest losses, and resilience outcomes.
United States	Requested clearer and more practical transition strategies for farmers dependent on agrochemicals.	The revised document now provides more detail on the practical transition pathway through the SAPZ model, including promotion of Integrated Pest Management (IPM), biopesticides, sustainable water management, access to finance, insurance products, extension services, and private sector-supported sustainable value chains.
Norway	Requested stronger emphasis on Integrated Pest Management (IPM).	The revised project document explicitly incorporates IPM as a core technical approach under the SAPZ integrated agricultural transformation model and sustainable agriculture interventions.
Norway	Raised concerns regarding illegal and counterfeit agrochemicals and weak national enforcement systems.	The revised CEO Endorsement document strengthens language on policy and regulatory reform, institutional coordination, monitoring systems, and enforcement-related capacities linked to agrochemical management and reduction of Highly Hazardous Pesticides (HHPs).
Norway	Requested more information regarding low-risk pesticides and green alternatives.	The revised document now repeatedly references biopesticides, biological alternatives, sustainable pest management systems, agroecological approaches, and financing mechanisms to support farmer uptake of alternatives to HHPs and synthetic chemicals.
Norway	Requested stronger donor coordination and coordination with agriculture and food security platforms.	The revised document strengthens implementation coordination arrangements through integration of the Federal Ministry of Environment, Federal Ministry of Agriculture, IITA, SAPZ structures, financial institutions, and broader stakeholder engagement mechanisms.
Germany	Requested stronger detail on interventions related to biopesticides, HHP reduction, POPs reduction, illegal trade, monitoring, and national policy enhancement.	The revised Nigeria CEO Endorsement document explicitly identifies reduction of HHPs and harmful agrochemicals as the core project problem and embeds interventions relating to biopesticides, POPs pesticide reduction, policy reform, institutional strengthening, monitoring systems, sustainable finance, and circular/regenerative agricultural systems throughout the Theory of Change and project description.

Germany	Requested stronger engagement with private sector platforms and sustainable agricultural value chains.	The revised document substantially strengthens the private sector and value chain dimensions through the SAPZ framework, including investment mobilization, value addition, agribusiness development, sustainable finance, insurance products, market systems development, and private-sector-led scaling.
Germany	Recommended stronger collaboration with existing initiatives and technical partners, including IITA and agricultural finance initiatives.	The revised CEO Endorsement document formally integrates IITA (International Institute of Tropical Agriculture) as an executing partner and embeds collaboration with SAPZs, agricultural finance institutions, and broader agricultural transformation initiatives.