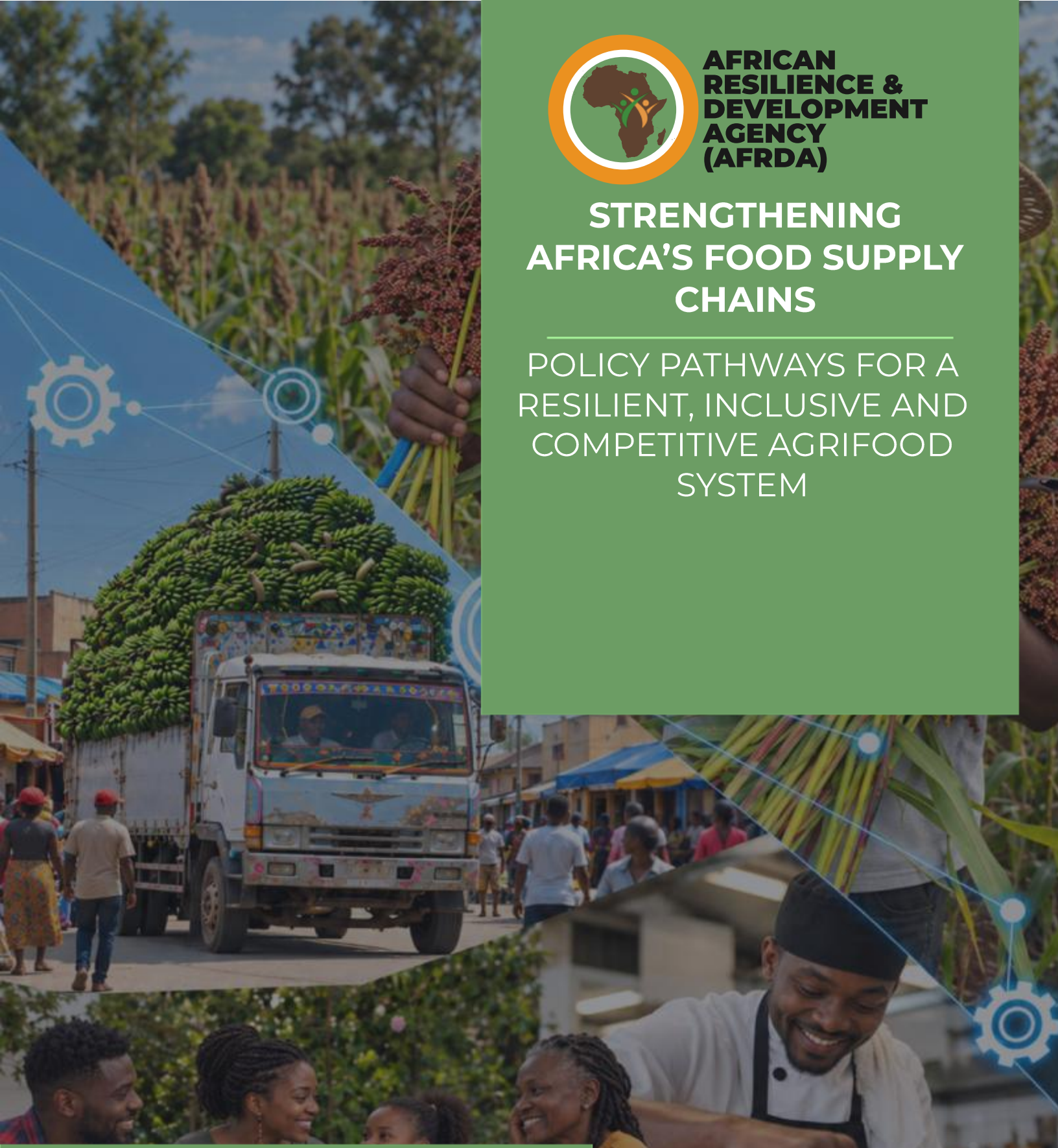


AFRICAN RESILIENCE & DEVELOPMENT AGENCY (AFRDA)

STRENGTHENING AFRICA'S FOOD SUPPLY CHAINS

POLICY PATHWAYS FOR A RESILIENT, INCLUSIVE AND COMPETITIVE AGRIFOOD SYSTEM

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PUBLICATION DATE	January 18, 2026

CONTENTS

FOREWORD i

EXECUTIVE SUMMARY ii

1. Introduction and Analytical Context 1

2. Structure and Performance of African Food Supply Chains 3

3. Systemic Risks and Emerging Pressures 2

4. Institutional Responsibilities and Implementation 4

5. Policy Objectives for Supply Chain Transformation 7

6. Binding Constraints and Policy Pathways 9

7. Implementation Priorities and Accountability 14

8. Conclusions and Recommendations 17

9. References 20

FOREWORD

Food security depends on the institutions and infrastructure that connect production with consumption. A harvest acquires economic and social value through safe storage, reliable transport, predictable trade procedures and affordable delivery. Seasonal road damage, long border clearance and weak temperature control can convert available food into lost income, reduced quality and local scarcity.

African governments have often concentrated agricultural policy on land, seed, water and farm productivity and these foundations remain central to output but the performance of the wider system determines the share of that output that reaches markets, the price received by producers and the price paid by households. Roads, ports, warehouses, standards, finance, information and public coordination therefore form part of the productive base of agriculture.

Climate pressure raises the value of this wider system. Drought, flooding, heat and severe storms influence yields and damage the routes, power systems and storage facilities used after harvest. Resilience arises from assets designed for foreseeable hazards, alternative routes, diverse sources of supply, timely information and institutions able to act before disruption develops into a food crisis.

Regional integration offers a larger scale for action as the African Continental Free Trade Area can connect areas of surplus with areas of demand and enlarge markets for processed food. The practical value of this framework rests on border performance, compatible standards, competitive logistics and investable infrastructure. These conditions determine the speed, cost and reliability of food movement between African countries.

AFRDA presents this report to advance the implementation agenda. The analysis treats food supply chains as strategic assets that require clear public responsibility and sustained investment. It identifies the mechanisms that produce delay, loss and high cost, then develops policy pathways that connect diagnosis with feasible action. The intended result is an agrifood system that supports producer incomes, affordable diets, enterprise growth and resilience across the continent.

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EXECUTIVE SUMMARY

African food supply chains operate under growing pressure from population growth, urbanisation, dietary change, climate hazards and volatile international markets. Agriculture remains a major source of work and income, and the continent holds extensive agricultural resources. Food insecurity remains widespread. More than one fifth of the population is undernourished in the estimates used for this report, and broader food insecurity measures produce a much higher share. African food imports approached USD 100 billion in 2023. These outcomes arise from production constraints and from the systems that move food between producers and consumers.

Transport, storage, processing, trade rules and market organisation shape the conversion of harvests into accessible food. World Bank analysis cited in this report estimates that African food supply chains extend about four times the length of comparable European chains when distance and logistical stages enter the calculation. Transport, distribution and related logistics account for up to 45 per cent of the consumer price of selected staples in some markets. Modern storage covers a limited share of annual production, cold chains remain thin, and many ports and border posts operate below the level required for efficient food handling. These conditions create high costs for farmers, traders, processors and households.

Post harvest loss requires commodity specific and location specific analysis. Continental estimates frequently place loss at 30 to 40 per cent of production. Farm surveys for maize in several countries report self-declared losses equal to 1.4 to 5.9 per cent of national harvests. The figures measure different stages, commodities and methods. Effective policy requires evidence from farms, transport, wholesale, processing and retail, with close attention to perishable products and routes where repeated handling raises damage.

Climate change intensifies these weaknesses. Research cited for the report estimates a reduction of about 34 per cent in African agricultural total factor productivity from anthropogenic climate change since 1961. Droughts reduce harvests and extend sourcing distances. Floods damage roads, bridges, storage facilities and ports. The COVID 19 pandemic and the war in Ukraine exposed further risks associated with dependence on imported food, fertiliser, fuel and other inputs. Strong regional systems increase the options available during disruption.

The African Continental Free Trade Area creates a framework for larger regional markets and more diverse sources of supply. Available simulations associate tariff removal with an increase of 20 to 30 per cent in intra-African agricultural and food trade. Fuller implementation scenarios project growth above 30 per cent in overall intra-African trade. These gains depend on workable rules of origin, compatible sanitary and phytosanitary systems, digital procedures, competitive logistics services and infrastructure that links production zones with regional demand.

The report identifies six policy pathways. Governments and regional institutions can concentrate infrastructure spending on food security corridors; reduce loss through storage, cold chains, structured markets and processing; make regional trade procedures operational; use public and development finance to address specific investment risks; embed climate resilience in production and logistics; and establish data governance with authoritative coordination. Each pathway addresses a distinct mechanism. Their interaction determines the scale of the result.

Implementation can proceed through a sequenced programme. Short-term action covers critical road maintenance, priority non-tariff barriers, pilot warehouse receipt and cold storage systems, and national coordination. Medium-term investment covers strategic corridors, storage networks, standards alignment and climate-resilient infrastructure. Long-term action covers multimodal cross-border networks, deeper regional value chains, traceability and advanced analytics linked to defined operational needs. Accountability should track travel time, logistics cost, storage utilisation, food quality, loss, border clearance and participation by smaller enterprises.

The central conclusion concerns institutional connection. Farm productivity, logistics, trade, finance and climate policy form one food security system. Progress depends on investment decisions guided by the locations and stages where cost, delay and loss accumulate. A reliable supply chain can improve returns to producers, expand the operating space of smaller firms and informal traders, and stabilise household access to food. Sustained political direction and clearly assigned responsibility provide the basis for delivery.

1. INTRODUCTION AND ANALYTICAL CONTEXT

1.1. Africa's Food Security and Market Connection Challenge

Africa possesses extensive agricultural land, varied ecological zones and a large labour force. Frequently cited estimates place about 60 per cent of the world's uncultivated arable land on the continent. Agriculture contributes up to 15 per cent of continental gross domestic product in the evidence used for this report and supports a substantial share of employment and household income. Food import dependence has continued to rise alongside these resources. Estimates from the middle of the 2010s placed the annual import bill near USD 50 billion, and later data place the 2023 value close to USD 100 billion.

The continental figure reflects major differences in population, income, climate and trading structure. Egypt, Algeria, Morocco, South Africa and Nigeria account for a substantial share of the total. Lower-income countries frequently purchase smaller absolute volumes and carry heavier financing pressure. Exchange rate depreciation, international price increases and shipping disruption therefore transmit through public budgets and household food expenditure with different intensity across countries.

Food insecurity extends beyond the aggregate quantity available at continental level. Estimates used in this report place undernourishment at about 250 to 260 million people, representing more than one fifth of the population. Broader measures place food insecurity near 58 per cent. Each measure captures a different condition. Their combined implication concerns access, affordability, quality and stability across time.

Government performance frameworks often emphasise cultivated area, yield and output. These measures establish the productive side of agriculture. Aggregation, storage, transport, processing, standards and trade determine the movement of output after harvest. An expansion in production can generate a local glut, falling farm-gate prices and spoilage when these connecting functions remain weak. Supply chain performance therefore links agricultural policy with industrial policy, trade policy and social protection.

1.2. Evidence and Analytical Scope

This report synthesises published research, institutional reports and policy analysis listed in the references. The evidence covers continental trends and selected country or commodity examples. It supports analysis of recurring

mechanisms across production zones, logistics systems, markets and borders. Country-level decisions require additional assessment of local geography, commodity flows, institutional capacity and fiscal conditions.

Several indicators vary by source and method. Post harvest loss estimates provide the clearest example. Farm surveys of one grain capture a narrower segment than system-wide estimates covering handling, transport, wholesale, processing and retail. Import statistics also vary with commodity classification and reporting year. The analysis therefore uses ranges where the underlying evidence supports a range and treats each figure within its stated scope.

The central analytical question concerns the relationship between Africa's productive potential and the food security outcomes experienced by households. The report examines the actors, rules, assets and financing arrangements that shape this relationship. It gives particular attention to mechanisms that increase cost, extend delay, reduce quality or limit the movement of food across territories.

1.3. Supply Chains as Productive Infrastructure

A food supply chain joins producers, aggregators, transporters, warehouse operators, processors, laboratories, border agencies, wholesalers, retailers, financial institutions and consumers. Each actor controls a part of the journey. Performance depends on the relationship among these parts. A high-quality warehouse produces limited value when access roads remain impassable during harvest, and a modern border facility produces limited gains when several agencies repeat documentation and inspection.

This interdependence changes the way policy priorities should be selected. Individual projects require appraisal within the chain that supplies their demand and receives their output. A road project should consider freight volumes, seasonal food flows, storage capacity and market destinations. A cold facility should consider electricity reliability, maintenance, product throughput and buyer requirements. A trade reform should consider compliance costs and the capacity of smaller firms to use the new procedure.

The strategic value of supply chains also increases during crisis. Diverse routes, protected storage and timely information permit the rapid transfer of food from areas of availability to areas of shortage. These capabilities reduce the speed at which a production or trade shock develops into a household access crisis. Food supply chains therefore serve efficiency, resilience and social stability.

2. STRUCTURE AND PERFORMANCE OF AFRICAN FOOD SUPPLY CHAINS

2.1. Demand Across Rural and Urban Markets

African food demand is changing across the rural and urban continuum. Analysis covering 11 countries shows that rural households purchase a substantial share of the food they consume, and processed foods have spread through towns and rural markets (Dolislager et al., 2023). Rural families therefore participate in food markets through sales, purchases and wage income. Their welfare depends on producer prices and consumer prices during the same year.

Historical growth in supply has trailed growth in demand. Between 1980 and 2007, per capita food production increased by less than 0.1 per cent per year in the figures used for this report. Per capita consumption rose by about 1 per cent per year. This difference contributed to import growth. Farm productivity explains part of the pattern. Infrastructure, policy and market organisation also determine the share of additional production that reaches consumers.

Urbanisation changes the scale, regularity and composition of demand. Large cities require frequent deliveries of staples and perishable food. Consumers increasingly seek consistent quality, safer handling and processed products. Smaller towns create similar requirements at a different scale. The growth of these markets can support jobs in transport, warehousing, processing, quality assurance and retail when firms can obtain reliable inputs and reach customers at manageable cost.

2.2. Post Harvest Loss and Storage

Post harvest loss reduces food availability, producer income and the productive use of land, labour and water. Programme documents frequently cite losses of 30 to 40 per cent, with higher exposure among fruit, vegetables, meat and dairy. The Comprehensive Africa Agriculture Development Programme has estimated annual losses near 100 million metric tonnes with a value around USD 4 billion. These figures have drawn policy attention to the period after harvest.

Farm-level evidence gives lower estimates for selected grains. World Bank-supported surveys of maize in several countries report self-declared losses equal to 1.4 to 5.9 per cent of national harvests. The narrower values cover a

particular commodity and stage. They leave transport, wholesale, retail and processing outside the measurement. The evidence therefore points towards differentiated intervention guided by crop, location, season and stage of the chain (World Bank, n.d.; Stathers et al., 2024).

Modern storage reportedly receives less than 30 per cent of annual food production. Traditional systems remain important and can perform well under suitable conditions. Moisture, pests and heat reduce safe holding periods in many settings. Limited cold chain coverage creates a severe constraint for perishable products. Producers then face a compressed selling period and reduced access to buyers that require consistent quality.

The economics of storage vary across sites. Warehouses require sufficient throughput, grading, stock controls and market demand. Cold rooms add electricity, maintenance and specialised management. Small-scale technologies such as hermetic bags, improved drying and solar cooling offer a different cost structure. Policy effectiveness depends on matching each technology with the commodity, user capability and market opportunity present at the chosen location.

2.3. Transport and Market Connectivity

Transport provides a direct mechanism linking supply chain structure with food prices. World Bank analysis estimates that African food supply chains extend about four times the length of European chains after physical distance and logistical stages enter the calculation (World Bank, 2025). Each additional transfer introduces handling, delay, spoilage risk and transaction cost. In some markets, transport, distribution and related logistics represent up to 45 per cent of the retail price of rice, grain and cassava.

The same analysis associates weak storage and long or unreliable routes with the loss or waste of around 37 per cent of locally produced food. It identifies 10 ports, 20 border crossings and 20 strategic road segments where improvement could yield wide food security benefits. This concentration reflects the volume passing through key nodes. Feeder roads remain essential because they connect farms and local aggregation points with the trunk network.

Road condition affects more than travel time. Seasonal closures alter the set of buyers able to reach a production area. Vehicle damage and uncertain journey length raise freight charges. Traders may reduce purchases from locations carrying high return-trip risk. These responses lower farm-gate prices and can

increase consumer prices in deficit markets. Maintenance therefore has a direct role in market participation and price formation.

Modal choice also shapes cost and resilience. Roads provide reach and flexibility. Rail and inland waterways can carry large volumes over suitable routes at lower unit cost. Ports connect regional systems with international trade. A multimodal strategy selects each mode through freight volume, geography, reliability, emissions and total cost across the full journey.

2.4. Ports Borders and Regional Trade

Port and border performance reveals the institutional component of logistics. The evidence used for this report assesses 52 of 138 African ports as capable of handling large food volumes efficiently. Congestion raises dwell time and the cost of imported inputs, imported food and exports. Perishable consignments carry an additional quality risk during each delay.

Land borders often combine customs procedures, food safety controls, immigration functions and security checks. Repeated documents and inspections extend clearance time. Informal charges and unpredictable interpretation increase uncertainty. Physical upgrading achieves its expected return when agencies also simplify processes, exchange data and apply risk-based inspection.

Intra-African agricultural and food trade remains below 20 per cent of total African agricultural trade in the evidence assembled for this report. Standards differences, limited market information, weak corridor infrastructure and variable border administration fragment nearby markets. Countries can therefore purchase from distant suppliers during periods when African producers hold relevant surpluses.

The African Continental Free Trade Area offers a framework for changing these incentives. Its market covers more than one billion consumers and a combined gross domestic product estimated near USD 2.5 trillion in the sources used here. Simulations associate tariff removal with growth of 20 to 30 per cent in intra-African agricultural trade. Fuller implementation scenarios project growth above 30 per cent in total intra-African trade (Fusacchia et al., 2022; Simola et al., 2022; United Nations Economic Commission for Africa, 2021). Rules of origin, sanitary and phytosanitary systems, customs procedures and logistics determine the commercial value of the formal preferences.

3. SYSTEMIC RISKS AND EMERGING PRESSURES

3.1. CLIMATE CHANGE AND ENVIRONMENTAL STRESS

Climate change affects production, infrastructure and the timing of trade. Research cited in the source report estimates that anthropogenic climate change has reduced African agricultural total factor productivity by about 34 per cent since 1961. Modelled outcomes vary across crops and locations. The evidence establishes substantial exposure and a continuing requirement for adaptation (Muller et al., 2011; Masipa, 2017; Liu et al., 2025).

Drought reduces output and can increase the distance from which deficit areas source food. Flooding damages crops, roads, bridges, railways, warehouses and port facilities. Heat raises cooling requirements and accelerates deterioration in perishable products. A production shock therefore travels through logistics assets and market prices. Strong routes, diverse suppliers and protected storage limit this amplification.

Infrastructure decisions have long consequences. A road, bridge or warehouse may operate through several decades of changing hazard exposure. Design standards based on location-specific projections can reduce repeated repair and disruption. Maintenance plans, drainage and emergency access carry similar importance because asset resilience depends on operating practice throughout the life of the investment.

3.2. Population Growth Urbanisation and Dietary Change

Africa's population is projected to approach twice its present size around the middle of the century. Urban areas will absorb a large share of this growth. The resulting markets require greater food volumes, regular delivery and stronger safety systems. Dietary change will also raise demand for processed food, animal products, fruit and vegetables, each carrying distinct storage and handling requirements.

These trends create commercial opportunities across aggregation, transport, storage, processing, packaging, testing and retail. They also increase the consequences of disruption. Dense urban markets can transmit a corridor closure or port delay rapidly through prices. System performance therefore becomes an element of economic stability and urban governance.

The spread of processed food into smaller towns and rural areas adds a further dimension. Firms require dependable electricity, transport and standards

systems beyond major capitals. Public infrastructure priorities should reflect this wider geography of demand and enterprise development.

3.3. External Shocks and Import Dependence

The COVID 19 pandemic and the war in Ukraine exposed vulnerabilities linked to imported wheat, rice, edible oils, fertiliser, seed, fuel and other inputs. Shipping disruption, export restrictions and international price increases reached African markets through freight rates, exchange rates and commodity prices. Fiscal pressure rose during a period of constrained household incomes.

Regional production can expand the range of available choices. Diverse international suppliers, functioning regional trade and strategic storage also provide time for adjustment. The principal risk concerns the limited set of practical alternatives available during disruption. Supply chain reform therefore contributes to efficiency and to risk management.

Emergency measures require careful design. Export controls can protect a domestic market for a short period and can reduce supply for neighbouring countries. Sudden import rules can delay food already in transit. Regional information and agreed response protocols help governments evaluate these effects before action, improving the collective management of scarcity.

4. INSTITUTIONAL RESPONSIBILITIES AND IMPLEMENTATION

Supply chain performance emerges from institutions with distinct mandates and resources. Effective implementation requires clear responsibility within each mandate and coordination at the points where responsibilities meet. The actor analysis below connects formal roles with the practical conditions that shape delivery.

4.1. National Governments

National governments hold primary responsibility for public strategy, regulation and investment. Transport ministries manage major networks. Agriculture ministries support production and post harvest services. Trade agencies negotiate commitments and oversee market access. Standards and food safety bodies protect quality. Finance ministries allocate public capital and shape investment incentives. Local governments manage roads, markets and services close to producers and consumers.

Fragmentation weakens this division of labour when institutions pursue separate planning cycles and datasets. Production targets can rise during a period of limited storage. Corridor projects can overlook seasonal food flows. Regional trade commitments can advance during continued use of lengthy national procedures. These outcomes arise from coordination gaps at the junction of formal mandates.

A national coordinating mechanism can address this problem when it has legal authority, data access, a defined decision function and senior political support. Its task is to identify cross-institutional bottlenecks, assign action and track results. Existing agencies retain delivery responsibility. The coordinating mechanism provides direction at the points where separate mandates influence one outcome.

4.2. Regional Institutions and the African Union

Regional economic communities and the African Union address constraints that cross national boundaries. Corridors require coordinated planning and maintenance. Food safety systems require compatible procedures and trusted laboratories. Emergency response requires shared information on production, prices, stocks and trade measures. Regional institutions provide the forum and rules for these functions.

The AfCFTA supplies a continental framework for market integration. Its practical implementation occurs through tariff schedules, rules of origin, customs systems, standards bodies, border agencies and commercial decisions. Regional institutions therefore translate agreements into procedures used by officials and firms. Their influence depends on national adoption, administrative capability and monitoring of actual border performance.

Regional bodies also have a role in prioritising shared infrastructure. A cross-border route yields value through connected segments in every participating country. Joint project preparation and common performance indicators can align investment and reduce gaps along the route.

4.3. Private Firms and Financial Institutions

Private firms provide a large share of transport, storage, processing, distribution and retail. The group ranges from informal traders and individual vehicle owners to major processors, banks and multinational logistics companies. Each responds to expected demand, regulation, competition and the reliability of public infrastructure.

Investment requires revenue prospects that can be assessed. A warehouse needs predictable throughput. A refrigerated vehicle needs sufficient utilisation and reliable servicing. A processor needs stable input supply, power and market access. Public policy influences these conditions through infrastructure, licensing, standards, competition rules and risk sharing.

Financial institutions determine the availability and terms of capital. Conventional collateral and repayment structures often fit agrifood firms poorly because cash flow follows seasons and assets may be movable or specialised. Better assessment tools, warehouse receipts, guarantees and longer-term capital can address defined constraints. Credit discipline and transparent risk allocation protect the sustainability of these instruments.

4.4. Development Partners and Development Finance Institutions

Development partners and development finance institutions can support project preparation, concessional capital, guarantees, technical assistance and climate resilience. Their resources are especially relevant where social returns exceed the revenue captured by an investor or where early risk limits entry into a viable market.

Additionality provides the central test for public support. A guarantee should address a specific risk that constrains a credible project. Concessional finance should expand access, improve resilience or accelerate a socially valuable investment. Transparent terms, performance conditions and disclosure protect public resources and reduce unmanaged liabilities.

Technical support also shapes investment quality. Freight analysis, climate appraisal, environmental safeguards, financial modelling and procurement design improve the readiness of projects. Strong preparation can reduce delay and prevent expensive assets from operating below planned capacity.

4.5. Civil Society Research and Producer Organisations

Farmer organisations, trader associations, consumer groups, research institutions and civil society contribute information that aggregate indicators can conceal. They can document the experience of smaller producers, women, young people and informal traders. Their evidence helps identify compliance costs, service gaps and distributional effects.

Research organisations can improve measurement of loss, freight flow, price transmission and climate exposure. Producer organisations can aggregate demand and strengthen commercial bargaining. Civil society can monitor procurement and access. Consultation strengthens accountability when it informs decisions and public reporting.

5. POLICY OBJECTIVES FOR SUPPLY CHAIN TRANSFORMATION

A coherent policy agenda requires objectives that guide investment across sectors and levels of government. Four objectives organise the analysis in this report: efficiency, resilience, inclusion and sustainability. Each addresses a different source of weak performance, and each can be translated into measurable results.

Efficiency concerns the cost, time and reliability of moving food. Resilience concerns continuity during climate, market and political shocks. Inclusion concerns access to infrastructure, finance, standards systems and market opportunity. Sustainability concerns the environmental and climate consequences of current investment. Policy choices should identify the principal objective and the relationships with the other three.

Objective	Policy meaning	Illustrative measures
Efficiency	Reduce journey time, handling loss, uncertainty and unit logistics cost between production and consumption.	Travel time, freight cost, border clearance, storage utilisation
Resilience	Maintain food movement and quality during climate, market and political disruption.	Route redundancy, stock integrity, service recovery, price stability
Inclusion	Expand practical access for smallholders, women, young people, informal traders and smaller firms.	User participation, compliance cost, credit access, market entry
Sustainability	Align assets and operations with climate and environmental goals across their economic life.	Climate screening, lifecycle cost, energy use, logistics emissions

These objectives require connection among agriculture, transport, trade, industry, finance and climate policy. Separate plans can retain administrative value. Shared outcomes provide the mechanism for alignment. Corridor policy should use food flow data. Storage policy should reflect transport and energy. Trade policy should reflect border capacity and firm compliance. Climate policy should cover logistics, processing and storage alongside production.

Measurement should follow the mechanism expected to produce change. A corridor project can track travel time, variability, freight cost and seasonal accessibility. A storage programme can track utilisation, quality and loss. A border reform can track clearance time, rejection rates and compliance cost. An inclusion programme can track the participation and performance of its intended users.

6. BINDING CONSTRAINTS AND POLICY PATHWAYS

The six pathways in this chapter respond to the principal mechanisms established in the preceding analysis. Their interaction determines system performance. Corridor access influences storage use. Storage and processing influence the value of market access. Trade rules influence demand. Finance influences the ability of firms to respond. Climate resilience protects assets and operations. Data and coordination guide adjustment across the system

6.1 Concentrate Investment on Food Security Corridors

Scattered projects can improve individual assets and leave the wider chain largely unchanged. Governments should identify a limited set of corridors connecting major production basins with aggregation centres, processors, urban markets, ports and food-deficit areas. Freight flow, price and transport choice analysis can reveal the segments where poor condition or delay imposes the greatest cost on important food commodities.

Corridor selection should include the local network that feeds the trunk route. Farmers require passable roads to reach aggregation points. Traders require loading space, security and market information. Processors require electricity and reliable input delivery. The corridor therefore functions as an economic system extending beyond the paved highway.

6.1.1. Map Flows and Bottlenecks

Transport and agriculture agencies should combine production, freight, market and price data. The analysis should identify seasonal peaks, alternative routes, border delay and the location of storage and processing. Public investment can then target nodes where improvement changes the cost or reliability of a large volume of food.

6.1.2. Develop Multimodal Connections

Feeder roads, secondary roads and strategic highways provide the basic network. Rail and inland waterways can serve suitable high-volume routes. Ports require handling capacity linked to inland transport. Modal selection should use total cost, reliability, freight volume and emissions across the complete journey.

6.1.3. Modernise Ports and Borders

Priority gateways require handling capacity, electronic documentation, coordinated agencies and risk-based inspection. Infrastructure expansion

should proceed with procedural reform. This connection allows new physical capacity to produce shorter dwell times and lower uncertainty.

6.1.4. Improve Logistics Service Markets

Regulators should support entry, safety, fair competition and transparent pricing. Load-matching platforms can reduce empty return journeys where connectivity, trust and payment systems support use. Public-private partnerships can serve suitable ports and logistics parks through explicit risk allocation and transparent public liabilities.

6.2 Reduce Loss Through Storage Processing and Structured Markets

Loss reduction can raise effective food supply from existing production. Investment should follow evidence about the commodity, stage and location where deterioration occurs. Aggregation points with adequate volume, power, road access and market demand provide strong candidates for warehouses, silos and cold facilities.

Warehouse receipt systems can allow farmers and traders to deposit graded commodities and use credible receipts as collateral. Their performance depends on licensed warehouses, verified stocks, enforceable receipts, reliable grading and lender participation. These institutional conditions carry equal importance to the physical building.

Smallholder technologies require a separate delivery model. Hermetic storage, improved drying and small-scale cooling can preserve value in dispersed production areas. Extension services should cover operation, hygiene, maintenance and replacement parts. User finance can widen access where equipment cost creates the principal constraint.

Processing near production can extend shelf life and reduce the transport of bulky raw materials. Milling, oil pressing, fruit processing, vegetable processing, dairy and meat facilities require credible assessments of supply, energy, skills and demand. Incentives should reward operational performance and verified additional investment.

Structured markets, producer organisations and grading systems can support aggregation and price discovery. Their design should protect open participation and accurate weights. Market information can strengthen producer decisions when it reaches users through trusted and timely channels.

6.3 Make Regional Food Trade Work in Practice

Regional trade can diversify supply, enlarge markets and shorten selected sourcing routes. Governments should advance agricultural tariff schedules and establish rules of origin that support regional production and processing. Administrative design should facilitate legitimate commercial movement and maintain credible food safety controls.

Sanitary and phytosanitary systems require compatibility based on Codex Alimentarius, the International Plant Protection Convention and the World Organisation for Animal Health. Mutual recognition can apply where institutions demonstrate equivalent protection. Laboratory capability, certification and traceability give these arrangements practical credibility.

Authorities should simplify permits, licences and inspections, remove arbitrary checkpoints and digitise documentation. Small-scale cross-border traders require procedures proportionate to their consignments and risk. Their participation matters for local food distribution and for the distributional effects of regional integration.

Market opening can expose smaller firms to stronger competition and higher compliance demands. Time-bound finance, technical assistance and market information can help viable firms meet standards and enter regional value chains. Performance measures should include border time, compliance cost, rejection rates and participation by smaller enterprises.

6.4 Mobilise Private Investment Through Clear Risk Allocation

Public budgets carry major responsibilities and face fiscal limits. Private investment is therefore central to storage, transport, processing and logistics services. Investors require assessable demand, regulation, construction risk and revenue. Public action should target a specific barrier associated with a project that has credible commercial demand and substantial social value.

Development finance institutions and national development banks can provide guarantees, concessional debt and first-loss capital. Each instrument should demonstrate additionality, transparent terms, measurable use of proceeds and performance conditions. Government accounts should disclose contingent liabilities arising from guarantees and partnerships.

Local lenders need products suited to seasonal cash flow and the assets of agrifood small and medium enterprises. Risk-sharing facilities and technical

support can improve assessment capability. Warehouse receipts and purchase contracts can provide additional information about stock and revenue. Lending standards should reflect realistic repayment capacity.

Agribusiness bonds, climate resilience bonds, green bonds and impact funds may support cold chains, resilient storage and lower-carbon logistics. Credible reporting should connect proceeds with funded assets and measured results. Predictable licensing, land administration, construction approval and competition policy can reduce sector-wide risk beyond the effect of project incentives.

6.5 Build Climate Resilience Into Assets and Operations

Roads, bridges, warehouses, ports and power systems should be designed against location-specific projections for flood, heat, storms and erosion. Higher initial costs can be justified through lower disruption, repair and food loss across the life of an asset. Project appraisal should therefore compare lifecycle costs under relevant hazard scenarios.

Climate risk assessment should guide siting, drainage, materials, maintenance and emergency access. Standards can vary with exposure. Operations also require contingency plans, trained staff and access to timely forecasts. Resilience depends on the physical asset and on the institutions responsible for its use.

Production measures influence the stability of downstream supply. Drought-tolerant varieties, water-saving irrigation, agroforestry and integrated soil fertility management can reduce volatility where local evidence and farmer incentives support adoption. More stable supply improves the use of processing and logistics capacity.

Rail, inland waterways, efficient fleets and gradual electrification can reduce logistics emissions along suitable routes. Energy systems, freight volume and charging infrastructure determine feasibility. Nationally Determined Contributions can recognise food logistics, storage and processing as areas for adaptation and relevant mitigation, creating a clearer basis for climate finance.

6.6 Establish Data Governance and Authoritative Coordination

Food supply chain data are often distributed across agriculture, transport, trade, customs, standards, meteorology and market agencies. Governments should establish arrangements for exchange, quality control and decision use.

Production, prices, stocks, storage capacity, freight performance, post harvest loss and trade flows form the core operational dataset.

Existing platforms provide a foundation. The African Postharvest Losses Information System and transport observatories can connect with national systems through agreed definitions and exchange protocols. Investment should strengthen useful systems and close identified gaps. Clear data stewardship protects quality, access and accountability.

Regional early warning requires meteorological, crop and market information across regional economic communities. Agreed triggers can support the release of reserves, temporary trade facilitation and targeted assistance before shortages intensify. Public communication can reduce uncertainty and support market response.

Coordination mechanisms need budgets, access to data, defined authority and senior political backing. Their performance should be judged by resolved cross-institutional problems, completed decisions and improved system outcomes. Farmer organisations, traders, logistics firms, researchers, consumers and civil society should contribute evidence through structured consultation linked with the decision process.

7. IMPLEMENTATION PRIORITIES AND ACCOUNTABILITY

7.1 Sequencing Reform and Investment

African countries differ in geography, market structure, institutional capability and fiscal space. A continental agenda therefore requires country-level sequencing grounded in a clear baseline. Early action should reduce immediate friction and preserve existing assets. The next phase can expand systems with demonstrated operational viability. Longer-term investment can deepen regional networks and technological capability.

The periods below express a logical sequence and allow adaptation to national conditions. A country with advanced digital customs and weak feeder roads may emphasise physical access. A country with storage capacity and weak warehouse regulation may emphasise licensing, stock verification and finance. Each government should select a limited number of measurable bottlenecks and revise priorities as evidence improves.

Period	Primary purpose	Priority actions
Short term 1 to 3 years	Reduce immediate friction and improve existing assets	Address priority non-tariff barriers; maintain high-traffic road segments; pilot warehouse receipts and cold storage; strengthen national coordination and operational data.
Medium term 3 to 7 years	Expand viable systems and rehabilitate strategic networks	Upgrade food security corridors and logistics hubs; scale storage and structured markets; align standards; apply climate-resilient infrastructure requirements.
Long term beyond 7 years	Build integrated regional systems and continuous capability	Expand multimodal cross-border corridors; deepen regional value chains; extend traceability, connected devices and advanced analytics linked to defined operational problems.

7.2 Financing Principles

Implementation requires public expenditure, private investment, regional finance and development support. Public budgets should prioritise functions with broad public benefits, including feeder roads, border administration, food safety, data, climate protection and selected shared facilities. Commercially viable storage, transport and processing can attract private capital when policy risk and infrastructure constraints reach manageable levels.

Financing instruments should match the underlying constraint. Grants can support public goods and early project preparation. Concessional loans can support viable investments with long payback periods or high social returns. Guarantees can address a defined credit risk. Equity and commercial debt can support enterprises with credible demand and cash flow. Transparent appraisal and disclosure allow governments to compare the fiscal implications of each instrument.

Maintenance deserves protected financing because asset condition determines service over time. A new corridor can lose value rapidly through deferred drainage, bridge repair or surface maintenance. Budgets should therefore cover lifecycle requirements from the start of project approval.

7.3. Accountability and Performance Measurement

Accountability should track the mechanism through which each intervention is expected to work. Corridor programmes should report travel time, variability, freight cost and seasonal access. Border reforms should report clearance time, documentation steps, rejection rates and compliance cost. Storage programmes should report throughput, utilisation, quality and loss. Finance programmes should report additional investment, enterprise performance and repayment.

Distributional indicators should show participation by smallholders, women, young people, informal traders and smaller firms. Aggregate freight growth can coexist with limited access for these groups. User-level evidence therefore helps government assess inclusion alongside system efficiency.

Reporting should connect expenditure with outputs and outcomes. Amounts approved or facilities constructed establish activity. Operational use and service quality establish delivery. Changes in cost, time, loss and access establish the results relevant to food security. Independent evaluation can test causal contribution where programme scale and data permit.

7.4. Managing Distributional Effects and Policy Tensions

Concentrating investment on high-volume corridors can generate rapid returns and can leave remote producers with weak access. Feeder roads, mobile services and targeted aggregation can connect these communities with the main network. Project appraisal should record the geographic distribution of benefits and the services required for wider participation.

Stronger food safety enforcement protects consumers and can raise compliance costs for smaller firms. Phased standards, practical guidance, testing access and time-bound technical support can improve compliance. Enforcement credibility requires clear rules and consistent application across firms.

Large storage and logistics companies may achieve scale and can increase market concentration. Competition authorities should monitor entry conditions, pricing and access to shared infrastructure. Open-access arrangements may be appropriate for facilities supported by public resources.

Climate-resilient construction can raise initial cost and reduce lifetime disruption. Lifecycle appraisal compares this expenditure with expected repair, service interruption and food loss under relevant hazard scenarios.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Conclusions

Africa's food security challenge arises from production conditions and from the conversion of production into accessible supply. Long routes, limited storage, high logistics costs, port congestion, border delay and fragmented standards separate areas of surplus from areas of demand. Climate hazards and external market shocks intensify each weakness.

The analysis establishes a relationship among productivity, logistics, trade, finance and climate policy. Investment in corridors produces greater value when storage and processing absorb the increased flow. Regional trade commitments produce greater value when border agencies, standards systems and firms can apply them. Private finance enters when risks can be assessed and allocated. Climate appraisal protects the economic life of each major asset.

The AfCFTA creates an important opportunity to enlarge markets and diversify supply. Its food security contribution will emerge through measurable changes in journey time, cost, reliability, market access and crisis response. Participation by smaller producers and traders will determine the distribution of these gains.

Implementation can proceed through a sequenced programme focused on a limited set of high-cost bottlenecks. Strong data and accountable coordination allow governments to adjust the sequence and scale investment. The cost of present weakness appears through lost food, reduced producer income, constrained enterprise, high consumer prices and exposure to crisis.

8.2. Recommendations

8.2.1 Adopt National Food Supply Chain Strategies

National governments should establish strategies that connect agriculture, transport, trade, industry, finance and climate policy through shared outcomes. Each strategy should identify priority commodities, production basins, corridors, markets and institutional responsibilities. A coordinating mechanism with authority and data access should track implementation and resolve issues that cross formal mandates.

8.2.2 Prioritise Food Security Corridors

Governments and regional institutions should use freight, production and price data to identify corridors where investment can reduce major food costs and delays. Programmes should combine feeder access, trunk infrastructure, borders, ports and logistics services. Maintenance financing and climate risk assessment should form part of approval.

8.2.3 Build Evidence Led Storage and Processing Systems

Storage and processing support should target measured points of loss and commercially credible aggregation zones. Warehouse receipt systems require licensing, grading, stock verification, enforceable receipts and lender engagement. Small-scale technologies require extension, maintenance and user finance suited to dispersed production.

8.2.4 Make Regional Food Trade Operational

AfCFTA implementation should prioritise agricultural tariff schedules, workable rules of origin, compatible food safety systems, digital documentation and coordinated border procedures. Performance should be assessed through clearance time, compliance cost, rejection rates, trade volumes and participation by smaller enterprises.

8.2.5 Direct Finance Towards Defined Constraints

Public and development finance should address specific risks or public goods. Guarantees, concessional debt, first-loss capital and grants require transparent additionality and measurable performance. Governments should disclose contingent liabilities and protect credit discipline. Sector-wide improvements in licensing, land administration and infrastructure can reduce risk across many projects.

8.2.6 Embed Climate Resilience and Data Governance

Every major logistics, storage and processing investment should use location-specific climate assessment and lifecycle costing. Governments should integrate operational data across production, prices, stocks, freight, loss and trade. Regional early warning should connect agreed triggers with reserves, trade facilitation and targeted assistance.

8.2.7 Measure Results and Distribution

Implementation bodies should report service outcomes alongside expenditure and construction. Indicators should cover time, cost, reliability, quality, loss,

utilisation and market access. Distributional reporting should record use by smallholders, women, young people, informal traders and smaller firms. Independent evaluation should examine contribution to food access and resilience where suitable data are available.

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FOR MORE INFORMATION

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This policy paper represents a comprehensive analysis of the Africa food supply chain. It reflects research from credible sources, consultation with experts and consideration

of existing frameworks and best practices. It is designed to inform policy development and implementation across African countries and regional bodies.

Document Classification: Public

Last Updated: January 2026

Version: 1.0