



**African  
Food Systems  
Transformation  
Collective**



African Food Systems Transformation Collective  
**BRIEF SERIES | 06**

The Status of Food Storage, Transport and Logistics Infrastructure  
in Africa: Experiences from Uganda, Kenya and Ghana



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# SUMMARY

Food systems are critical to many African economies but face significant challenges due to underdeveloped or non-existent food storage, transport and trade infrastructures. This results in high post-harvest losses, inefficient supply chains, health hazards and limited market access for farmers – problems worsened by climate change. Integrating storage, transport and trade practices through agroecological transitions can enhance food security, reduce waste and support sustainable food systems, which would align them with sustainable development goals (SDGs). Smallholder farmers in rural areas rely on efficient local storage, intermediate transport and simple logistics systems to access markets, generate income, and improve livelihoods. Agroecological transitions empower farmers, boost productivity and promote economic growth. Climate-resilient practices, such as agroforestry and crop diversification, enhance resilience to climate shocks. These transitions also emphasise social equity by empowering local communities, preserving indigenous knowledge systems, and resolving poverty, inequality and land-tenure issues.

Agroecological transitions in Sub-Saharan Africa – particularly in Uganda, Kenya and Ghana – should focus on food-storage improvements, efficient transportation

networks and sustainable trade infrastructures. Food-storage improvements aim to increase food security and reduce food waste. Food transportation focuses on efficient distribution networks based on intermediate transport that reduces emissions and connects local producers with markets. Stakeholders all play vital roles in the supply chain; they include government bodies, private-sector companies, non-governmental organisations (NGOs), farmers, transporters, academics, researchers, and traders. Efficient local infrastructure enhances productivity, food security and public health. Investments in modernising storage facilities respond to challenges such as outdated technology and climate impacts. Collaborations among governments, the private sector, and local communities reduce post-harvest losses and strengthen local food security.

Philanthropic support for local infrastructure aligns well with the goals of alleviating hunger, reducing poverty, improving health, promoting sustainability and advancing social equity. Investments in intermediate transport facilities (motorbikes, 'tuk-tuks' and bicycle taxis) and community storage infrastructure such as granaries and warehouses can lead to transformative changes, which improve lives and set a model for sustainable development.



# INTRODUCTION

## What is at stake?

Food systems are the backbone of most African countries' economies yet they face enormous challenges. In most African countries, food storage, transport and trade infrastructures are either poorly developed or non-existent; this poses a significant challenge to those countries' economies and people's livelihoods. Inadequate or no food storage, transport and logistics infrastructures have caused high post-harvest losses, inefficient supply chains, health hazards and limited market access for farmers in most of Africa. These have been exacerbated by climate-change conditions that have also affected the food security in those countries.

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### *Smallholder farmers depend on efficient food storage, transport and logistics systems to access markets*

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Integrating appropriate storage and transport as a process of agroecological transitions ensures that these transitions deal with key challenges such as food loss, waste, security, nutrition, sustainable agriculture, rural livelihoods, climate resilience, social equity and global sustainability goals. Food 'loss' occurs before food reaches consumers, often caused by challenges in production, storage, processing and distribution. Food 'waste' refers to food fit for consumption that is intentionally discarded at the retail or consumer level. Tackling both food loss and waste aligns with the Sustainable Development Goals (SDGs), addressing food security, reducing waste, and enhancing the livelihoods of small-scale farmers, especially in rural communities. Appropriate food storage, transport and logistics systems are crucial to safeguarding food security and ensuring adequate nutrition. These systems minimise post-harvest losses, enhance food quality, and broaden access to nutritious options, as a result preventing food shortages, malnutrition and food-borne illnesses in vulnerable communities.

Smallholder farmers depend on efficient food storage, transport and logistics systems to access markets, generate income and enhance livelihoods. An examination of the Warehouse Receipt System (WRS), which has been established in the three countries, offers valuable insights into food-storage dynamics. Designed to enable farmers to store produce in certified warehouses and receive receipts as proof of ownership, the WRS aims to stabilise prices, reduce post-harvest losses, and improve access to credit. Successes include greater farmer empowerment and market access, as farmers can delay sales of produce until prices become more favourable. However, challenges such as limited awareness, logistical constraints and insufficient certified storage facilities have hindered broader adoption of the WRS. This examination of WRS provides a grounded reference for understanding the potential and gaps of food storage.

Agroecological transitions empower farmers with the tools, knowledge and infrastructure to engage in value chains, boost productivity and achieve greater economic growth and prosperity. Farmers are increasingly using cooperatives that provide on-farm cold-storage solutions, such as solar-powered systems, and pooled transportation to reduce costs and ensure sufficient product volumes to meet market demand. Climate-resilient farming practices, including agroforestry and crop diversification, are essential to strengthening food systems against climate shocks. Paired with efficient storage, transport and trade systems, these practices support sustainable food production, reduce waste and enhance resilience, which ensure long-term food security amid increasing environmental challenges.

The purpose of this issue brief is to highlight the critical challenges and opportunities in food storage, transport and logistics that are essential to enhancing food security, minimising food loss and raising economic resilience in Sub-Saharan Africa. This brief aims to inform policymakers and philanthropies of the current gaps and to propose solutions

that support a robust, sustainable food system that is able to adapt to growing demand and climate impacts.

## Key concepts and issues

The key concepts being dealt with in the agroecological transition are the challenges to food storage, transport and the logistics faced in Sub-Saharan Africa, based on experiences in Uganda, Kenya and Ghana. These are the issues that are leading to food insecurity in those countries.

- I Food storage** focuses on practices to reduce food waste by improving local storage techniques, reusing materials for packaging and storage, and recycling nutrients through composting food waste.
- I Food transport** involves developing efficient intermediate transport vehicles that reduce food miles and carbon emissions, connecting local producers to local markets so as to minimise transportation needs, and promoting fair trade practices that support smallholder farmers and equitable market access.
- I Food logistics infrastructure** focuses on designing and constructing trade facilities that are appropriate to local communities and which minimise environmental impact. This entails ensuring that infrastructure development does not compromise agricultural land or natural resources and promoting the use of renewable energy sources in trade infrastructure.

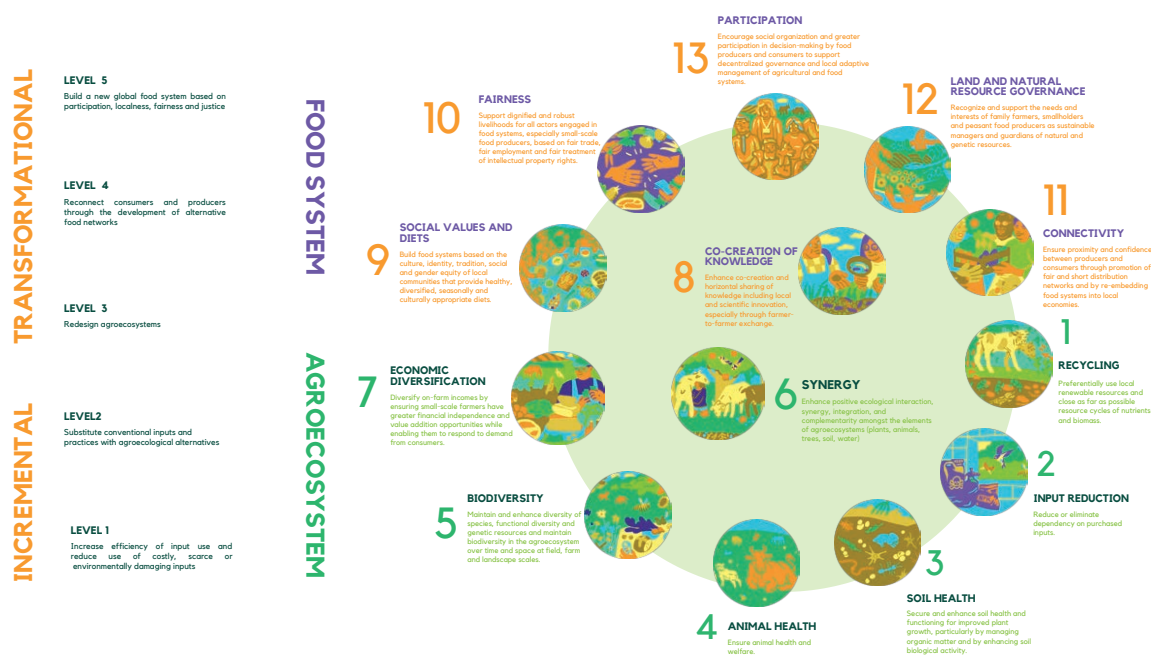
## Relationship to the 13 principles of agroecology

Each agroecological principle is linked to a specific operational principle; however, these agroecological principles frequently contribute to multiple operational principles (see Figure 1).

The six agroecological principles most directly linked to the food systems are: 2, 7, 8, 10, 11 and 12; seven others have an indirect impact on food systems: 1, 3, 4, 6, 8, 9 and 12 (Wezel et al. 2020).

Considering these principles indicates that efficient food storage and transport innovations, such as cold storage and shared transportation, enhance synergies across the food system by reducing losses and waste, ensuring that resources are used more effectively, and connecting production to consumption seamlessly – in these ways supporting livelihoods at each stage. Diverse storage and transport methods, such as solar-powered cooling and cooperative-based logistics, preserve a wide variety of foods with minimal spoilage; this enables agroecological diversity and encourages farmers to diversify their production. Climate-resilient storage solutions and adaptable transport systems increase resilience to climate shocks, protecting food supplies and stabilising incomes amid environmental fluctuations. These community-driven innovations, such as cooperative transport and shared storage, foster

**FIGURE 1: THE FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND THE RELATED 13 PRINCIPLES OF AGROECOLOGY**



Source: HLPE (2019)

circular economies by pooling resources and cutting costs, promoting economic resilience and strengthening community-centred development. Implementing these systems requires knowledge-sharing across communities, especially through cooperatives and partnerships, which builds local capacity for sustainable agroecological practices. Finally, prioritising equitable access to storage and transport resources enhances human and social values by fostering inclusivity and supporting small-scale farmers. This approach ensures fair market access, improves social well-being and strengthens the food system overall.

## Key stakeholders that are affected, and how are they contributing

Food storage, transport and trade infrastructure in Uganda, Kenya and Ghana involve multiple key stakeholders, each of which plays a vital role in ensuring the efficient functioning of the supply chain. These stakeholders include government bodies, private-sector companies, NGOs, farmers, transporters, academics, researchers and traders.

**TABLE 1: KEY STAKEHOLDERS AFFECTED BY THE FOOD STORAGE, TRANSPORT AND TRADE ISSUES AND HOW THEY CONTRIBUTE TO THEM**

STAKEHOLDER GROUP	HOW THEY ARE AFFECTED	HOW THEY CONTRIBUTE
<b>Government agencies</b>	They face challenges such as infrastructure deficits, regulatory enforcement, and the need for policy adaptation in response to climatic change and market dynamics.	They create and enforce policies and regulations that shape the food storage, transport and trade landscape. They invest in infrastructure development, provide subsidies or incentives for private-sector investment, and establish standards for food quality and safety.
<b>Private-sector companies</b>	They face risks related to infrastructure inadequacies, market volatility and regulatory changes.	They drive efficiency through supply chain management, offer market access for farmers, and often provide training and resources to improve agricultural practices. Their investments in logistics and processing facilities enhance the overall supply chain.
<b>NGOs</b>	They operate within the constraints of existing infrastructure and policy environments, affecting their ability to implement programmes effectively.	They play a crucial role in capacity-building, providing training and support to farmers and other stakeholders. They advocate policy changes, promote sustainable practices and often bridge gaps between different sectors.
<b>Farmers</b>	They are directly affected by the availability and quality of the storage and transport infrastructure.	Farmers contribute to the supply chain by producing food. Farmers' participation in cooperatives and associations can strengthen their bargaining power and facilitate better access to markets and resources.
<b>Transporters</b>	They are influenced by the condition of the infrastructure, fuel costs and regulatory requirements.	They ensure the movement of goods from farms to markets and storage facilities. They adopt logistics solutions to optimise routes and reduce transit times.
<b>Traders</b>	They are affected by fluctuations in supply and demand, infrastructure quality and regulatory environments.	They connect farmers with markets, provide market information, and often invest in storage and processing capabilities.
<b>Education and research institutions</b>	These institutions are affected by the changing environment of food systems.	They are able to provide knowledge, ways and means of addressing emerging challenges in the sector.

# MOTIVATION

Agriculture is vital to Sub-Saharan Africa's economy, significantly contributing to the gross domestic product (GDP) and employment in countries such as Kenya, Uganda and Ghana. In Kenya, agriculture accounts for 34% of GDP and employs 60% of the workforce; in Uganda, it is 24% of GDP and 68% of the workforce; and in Ghana, it is 20% of GDP and 40% of the workforce (see Banda 2022; Benonia 2023).

Efficient food storage, transport and trade infrastructure are crucial to enhancing agricultural productivity, ensuring food security and stabilising the food supply. These infrastructures mitigate high post-harvest losses, which can reach 30–40% for perishable goods in the three countries due to various factors such as produce characteristics, environmental conditions and inadequate infrastructure.

Improved infrastructure connects rural areas to urban markets, reduces transportation costs and time, and enhances competitiveness and export growth. It also supports public health by ensuring the availability of fresh, nutritious food and maintaining food safety standards. Investments in modernising storage facilities and infrastructure serve to resolve challenges such as outdated technology and climate impacts.

There are compelling reasons for supporting local food storage, intermediate transport systems and trade

infrastructure in Sub-Saharan Africa. First, doing so aligns closely with the goals of reducing hunger, poverty and health disparities while promoting sustainability, social equity and innovation. Second, investing in these areas can improve food security directly by minimising post-harvest losses, ensuring food reaches markets fresh and supporting stable incomes for farmers. Third, by funding local storage solutions, community-based warehouses and transport initiatives, it is possible to create efficient and affordable pathways that enable small-scale farmers to access markets and earn fairer incomes. Fourth, investing in training and technology adoption fosters resilience, which builds local capacity and empowers communities to manage their resources sustainably.

By these actions, interventions are able to facilitate long-lasting transformative impacts; these in turn foster collaborative self-sustaining food systems that contribute to regional stability and prosperity. Improved infrastructure reduces food waste, enhances distribution and reduces post-harvest losses, boosting food security and availability. Upgraded logistics increase productivity, farmers' incomes and local economic growth, which supports poverty reduction. Enhancing rural infrastructure bridges gaps between urban and rural areas, supports social equity and fosters innovation through multi-stakeholder collaboration.



# CONTEXT

## Uganda

Uganda faces significant challenges in the areas of food storage, transport and trade infrastructure, but these also present opportunities for improvement. The prevalent traditional storage methods used, such as granaries and baskets, are inefficient, which leads to high levels of food loss: 17.6% for cereals and up to 40% for fruit and vegetables (Ranganathan & Foster 2012). Maize farmers lose approximately UGX393 billion (US\$104 million) each year, which exceeds the crop's export value. However, the adoption of modern storage solutions is limited due to high costs and limited awareness among farmers. In addition, rural transport and market infrastructure are underdeveloped, lacking essential amenities such as sanitation, storage facilities and cold chains, which compromises food quality and safety. Studies by the Partnership for Aflatoxin Control in Africa (PACA) in 2017 revealed that Uganda's maize, sorghum and groundnuts contained aflatoxin levels that exceed the national maximum limit. This limits Uganda's competitiveness in the trade in food products both regionally and globally. For example, in 2021, Kenya banned Uganda's maize for fear of the high levels of aflatoxins. The ban resulted in a decline in maize exports in Uganda from 94,382 MT in the January–March quarter of 2021 to 2,765 MT by the close of 2021 (TradeMark Africa 2024).

Climate change exacerbates these issues, as Uganda's rain-fed agriculture is susceptible to droughts and floods, which cause crop failures and infrastructure damage. The country's population is projected to reach 100 million by 2050, putting further strain on food demand and infrastructure. This growing human population will undoubtedly lead to increased urban migration, which will in turn create a greater need for sustainable food storage infrastructure and transport to support the population. Furthermore, conflicts and refugee crises in neighbouring countries have increased the refugee population in Uganda to over 1.5 million, which is likely to place increasing pressure on the food systems and the overall food security in the country. But opportunities do exist to find solutions to these challenges that will enhance food security, prevent post-harvest losses and increase

the income of millions of rural farmers. Some of these solutions include infrastructure development (modern storage and transport), the adoption of new technology (digital platforms, mobile phones), implementing a policy and regulatory framework (supportive policies, regulatory harmonisation), capacity-building and education (training programmes, awareness), financial mechanisms (access to credit facilities), market linkages, innovation and research, sustainability and resilience, governance and coordination, and gender and inclusivity. Experience has shown that the traditional food-storage facilities are ineffective against the new pests, weevils or moulds caused by climate change. Also, the use of bicycles (the most common mode of transport) in transporting food products is insufficient and inefficient, unlike the motorised transport used to convey larger quantities of goods.

Cross-cutting issues include the inadequacy of the traditional storage methods against new pests and the limited local knowledge in scaling transport and market infrastructure. Social and local barriers such as attitudes towards women and youths are important considerations for the food systems issues in Uganda. There is a need to empower women and youths in Sub-Saharan Africa, as they often face social barriers such as having limited access to affordable storage facilities and the transport infrastructure. By funding local storage solutions and through training women farmers are enabled to reduce post-harvest losses, to access markets and to earn stable incomes, which serves to foster equity and economic resilience. Improved policies and investments in infrastructure are essential to enhancing food security, reducing waste and supporting economic development in Uganda.

Sustaining infrastructure investments in Uganda's food systems sector hinges on filling the gaps mentioned above in food storage, trade and transport; doing so will both ensure and maximise economic returns and ensure food security in Uganda. This will have a great impact on the storage, transport and trade investments sustainability.

## Kenya

In Kenya, a food storage infrastructure, especially for perishable goods, is severely lacking. Rural areas often depend on traditional storage methods that fail to maintain food quality, leading to significant post-harvest losses. The transportation network is uneven, with well-maintained major roads contrasting with poor-quality rural roads, and this hampers the movement of goods and increases costs and delays. The limited use of advanced logistics technologies such as a Global Positioning System (GPS) and data analytics, exacerbates these inefficiencies.

Estimates suggest that 30–40% of perishable foods are lost due to inadequate infrastructure and this has a negative impact on food security and farmers' economic returns (FAO 2024). Factors contributing to these losses include poor handling practices, insufficient cold-chain facilities, transportation delays and problems with pests (Kimiye 2015). Improving local food storage and intermediate transport infrastructure could enhance agricultural productivity, especially with regard to moving inputs and products, and this would benefit both Kenya's economy and smallholder farmers. Enhancements could also reduce

rural–urban disparities by improving market access and connecting rural areas to economic opportunities. There is a growing interest in renewable energy solutions such as solar-powered cold storage and also in digital technologies that could help with gathering market information and demand forecasting. Community-based storage and transport solutions, such as cooperatives, are emerging as effective strategies with which to cut costs and boost resilience.

The Kenyan government is investing in rural transport development and agricultural storage infrastructure, but progress is often slowed by regulatory and bureaucratic challenges. Food storage infrastructure for smallholder producers is hardly provided for, with the transport infrastructure resorting in different agencies that may not prioritise those areas requiring urgent transport infrastructure development. But streamlining regulations and fostering public–private partnerships could accelerate infrastructure improvements. Enhanced data collection and analysis are needed to guide policy and investment, with interdisciplinary research being crucial to developing comprehensive solutions to these challenges.

## Ghana

Agroecological practices are increasingly being promoted in Ghana to respond to climate change and build resilient agricultural systems. However, smallholder farmers face significant challenges due to their limited access to resources, technology and information, which is compounded by their receiving inadequate support from national and NGO initiatives. This lack of effective collaboration and local involvement has led to increased poverty, food insecurity and poor nutrition.

In response, some rural communities have adopted traditional agroecological methods and migration to adapt to climate change. However, rural–urban migration complicates the situation, with resultant high population density and an increasing demand for food. This trend has exerted pressure on the food supply system, leading to the temptation of compromising food safety through the inappropriate use of chemicals in food production, storage and processing. This not only leads to food contamination, but also pollutes water bodies, degrades land and causes the loss of biodiversity.

Despite the potential of traditional agroecological knowledge to resolve these problems, challenges remain, particularly in the areas of food storage, transportation and trade infrastructure. Ghana's food-storage systems prioritise national-level enhancement, especially of grains and nuts, while focusing less on household storage for fruit, vegetables and other perishable foods. The national warehouse system is mostly challenged by financial difficulties and this has led to a lack of interest among most farmers in storing their produce in warehouses. Poor road and vehicle conditions in rural areas hinder the connection between rural communities and urban centres and markets, leading to a more than 20% food loss in Ghana (Action Aid Ghana 2019). High transport costs cause price discrepancies between urban consumers and farmers in low-income countries, particularly Ghana.

Establishing effective monitoring evaluation systems, strengthening policies, fostering collaboration and providing training to farmers on best practices for food product storage, handling and transportation are crucial to overcoming these challenges and supporting sustainable food security in the face of urbanisation and climate change.

## Relation to broader food systems transitions in Africa

Food storage, transport and logistics systems should be viewed in the broader food systems context. These systems connect producers to markets, enhance food security and support sustainable practices. Efficient logistics support smallholder farmers by improving market access and fostering local economic development. They also promote agroecological practices by reducing waste and conserving resources.

At the farm level, appropriate storage and transport reduce post-harvest losses, preserve quality and ensure timely delivery, which boosts profitability. In Uganda, Kenya and Ghana, for instance, traditional storage methods often lead to quality problems and losses, while technologies such as cold storage and GPS tracking improve inventory management and route optimisation. Integrated systems at the landscape scale manage resources, reduce waste and support biodiversity, with community-level storage aggregators enhancing local resilience.

In city regions, effective logistics could ensure that fresh produce reaches urban markets, supporting economic growth and food security. Nationally, robust logistics networks stabilise food availability and support economic development. However, challenges such as poor warehouse maintenance and minimal access to finance for the construction of storage infrastructure at the local level persist.

Sub-Saharan Africa often focuses on national-level storage, overlooking household and perishable food storage, with financial challenges dissuading the participation by farmers in storage projects. Intermediate technology in rural transport and storage is vital to improving food security, reducing post-harvest losses and enhancing smallholder farmers' livelihoods in Kenya, Uganda and Ghana. In Kenya, solar-powered cold storage and small-scale grain silos help to preserve produce, which reduces spoilage and improves market access. Uganda uses community-managed storage and solar dryers to minimise spoilage, while small trucks and motorcycles navigate poor roads in an effort to provide efficient transport. In Ghana, metal silos and solar storage facilities preserve crops like maize and cassava, and affordable transport solutions help farmers to reach markets. These innovations foster sustainable and inclusive food systems, which lead to increased incomes and promote economic development. Dealing with cross-cutting issues

such as local knowledge, gender dynamics, governance and waste management, can enhance practices, equity and food safety; this can ensure that better infrastructure and resource efficiency are implemented across the continent. This holistic approach to improving food logistics is crucial to advancing transitions in food systems in Africa, which will promote sustainability and foster inclusive economic development.

## Regional differences in food systems: Kenya, Uganda and Ghana

Kenya's food systems are shaped by its diverse geography and culture. Fertile highland regions grow crops such as tea and coffee, while the arid lowlands face water scarcity, which affects crop choices and storage. Cultural diversity – there being more than 40 ethnic groups in the country – influences agricultural practices. For example, the Kikuyu grow maize and beans, whereas the Maasai focus on livestock. Infrastructure disparities between urban and rural areas hinder food storage and transport, with the highland areas benefitting from cold-storage solutions and the arid regions needing drought-resistant crops and improved storage.

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### *Kenya's food systems are shaped by its diverse geography and culture*

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Uganda's food systems vary from the fertile Lake Victoria regions supporting bananas and fish farming to the northern and eastern areas being affected by insecurity and climate variability. Cultural diversity demands tailored storage and intermediate transport solutions, with interest in solar-powered storage increasing and improved processing being introduced to reduce post-harvest losses.

Ghana's food-storage, transport and trade infrastructure varies between regions, with the northern regions benefitting from hot, dry weather, while the southern regions face challenges such as insect infestations and moulds. Cultural beliefs, confidentiality and trust influence storage practices and transactions, which leads to farmers' prioritising immediate sales over long-term storage. This regime also limits women's access to resources, which has an impact on their storage and distribution decisions.

## Key levers for food systems transition

Investing in physical and technological infrastructure is crucial to food systems transitions. Building and upgrading warehouses and cold-storage facilities can reduce post-harvest losses and improve food preservation. Advanced technologies such as climate-controlled storage and GPS tracking enhance the efficiency and reliability of the supply chain. Developing climate-resilient storage and transportation systems is vital to adapting to environmental changes. Effective policies that support infrastructure and technology adoption are necessary, together with community engagement, to ensure culturally appropriate

solutions. Public–private partnerships can accelerate progress, while comprehensive research and data collection should guide informed policy decisions and track the effectiveness of interventions.

For Kenya, diverse infrastructure solutions are needed, including cold storage and improved roads that are suited to both the highland and the arid regions. Uganda should enhance the post-harvest handling and storage, particularly those in rural areas. Ghana must fill the infrastructure gap between its north and south to ensure equitable access to storage and market facilities. Adaptation strategies should include intermediate technologies that are adaptable to the various local environments.



# HURDLES TO TRANSITION

## Resource or capability gaps challenging transitions

Food systems transitions in Uganda, Kenya and Ghana face significant challenges, particularly in food storage, transport and logistics:

- Outdated infrastructure and technology, including poorly developed road networks and a lack of modern storage facilities, are hindering progress.
- Financial constraints, low domestic savings, and high levels of debt are limiting investment in infrastructure improvements.
- Insufficient education and limited technological innovation are preventing the adoption of efficient food storage and transport solutions.
- Poor governance, corruption, and limited market access are also restrict opportunities for smallholder farmers.
- Environmental issues, such as climate change, are also threatening ecosystems.

Resolving these challenges requires upgrading infrastructure, enhancing energy access and fostering knowledge-sharing to support sustainable agricultural development that will minimise food loss and ensure food security.

## Key levers currently receiving philanthropic attention and support

Philanthropic efforts in Uganda, Kenya and Ghana have targeted key areas such as agricultural technologies, infrastructure support, education, market access, policy advocacy, climate adaptation, gender equalit, and health. A few organisations have been providing support in the areas of food storage, transport and logistics. These include the following:

- **World Food Programme (WFP):** While primarily a United Nations (UN) agency, WFP partners with private philanthropists to strengthen food transport networks, storage solutions and emergency logistics. They lead the logistics cluster, which coordinates humanitarian logistics in disaster and conflict zones, working with local suppliers to build resilient supply chains.
- **Milken Institute's Feeding Change Programme:** This programme promotes investments in food storage, transport infrastructure and cold-chain logistics to minimise food waste and improve access to food. Philanthropists engaged through this initiative often support innovative solutions to reduce spoilage and increase food security.
- **Rockefeller Foundation:** The foundation supports food systems transformation, including enhancing cold-chain logistics and reducing food waste. Their efforts include collaborations on energy-efficient storage solutions and improving access to nutritious food in Sub-Saharan Africa, including Kenya.
- **ARCH Cold Chain Solutions Fund:** This initiative focuses on large-scale energy-efficient cold-chain storage to reduce food losses. Funded by the European Investment Bank and operating in Kenya and other East African countries, it aims to expand the logistics and distribution network across the region.
- **UNEP and WeTu Initiative:** Supported by the UNEP Copenhagen Climate Centre and other partners, this initiative provides off-grid solar-powered cold-storage facilities to deal with food spoilage in Kenya. Their modular cold rooms are designed to support small traders, especially those in rural areas such as Mbita Market, by reducing post-harvest losses.
- **The Global Cold Chain Alliance (GCCA):** This is an international association representing all major industries engaged in temperature-controlled warehousing, logistics and transportation. GCCA unites all partners to be innovative leaders in the movement of perishable products globally.

However, short-term project focus, a lack of consideration of local contexts and power imbalances can lead to unsustainable outcomes. To deal with these persistent gaps, increased coordination is needed between stakeholders, as are sustained investments. Emphasising gender-sensitive approaches, developing new agri-chains, leveraging indigenous knowledge, integrating food storage into the broader system, and supporting local food systems are crucial to fostering sustainable development and innovation in Africa.

## The state of transition funding

Transition funding in Africa aims to shift from traditional development models to sustainable and resilient pathways, tackling poverty, inequality, environmental degradation and climate change. This funding, supported by international donors, multilateral organisations and philanthropic foundations, is aligned with the SDGs and the Paris Agreement. African governments are integrating sustainability into national policies (Economic Commission for Africa 2016), focusing on renewable energy, sustainable agriculture and resilient infrastructure. Public-private partnerships and new financing methods such as green

bonds and impact investing are crucial to mobilising resources. Challenges include limited access to finance, weak institutional capacity, regulatory barriers and the impact of the COVID-19 pandemic on public finances. Efforts are increasingly becoming inclusive, involving grassroots and marginalised communities to respond to local needs.

## Current philanthropic funding strategies and mechanisms

Philanthropic funding can be fragmented and short-sighted, leading to inefficiencies, competition, and neglect of root causes. Top-down approaches may undermine local empowerment and perpetuate power imbalances. Siloed funding limits collaboration, while a lack of transparency and accountability hinders effective evaluation. To improve the effectiveness of such funding, donors should focus on collaboration, equity, transparency and long-term sustainability. Embracing participatory approaches, supporting local leadership, fostering partnerships, adopting appropriate technologies and investing in capacity-building are crucial to maximising the impact and overcoming systemic challenges.



# RECOMMENDATIONS TO PROMOTE TRANSITIONS

Effective donor funding for food storage, transport and logistics systems should align with National Development Plans and global agendas such as the SDGs, focusing on food security, food loss and climate resilience. It is essential to prioritise local stakeholder participation to ensure that marginalised groups such as women and rural farmers are empowered and included.

Funding should support evidence-based research with proven effectiveness and scalability, emphasising sustainability and resilience through long-term projects. Partnerships between governments, donors, civil society, academia and the private sector are crucial in addition to ensuring transparency and accountability, with robust monitoring and evaluation to minimise food loss during storage and transportation and to ensure food security.

Mechanisms include supporting affordable storage infrastructure, financing large-scale projects such as

warehouses and transportation networks, strengthening food value chains and mobilising resources for renewable energy and digital technology solutions.

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*Funding should support evidence-based research with proven effectiveness and scalability, emphasising sustainability and resilience through long-term projects*

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Mitigating investment risks through insurance schemes can attract private-sector investment. Key initiatives needing more recognition and support are modern storage infrastructure, intermediate transportation systems, supply chain technologies, training programmes, farmer research collaborations and policy advocacy for sustainable development with an emphasis on minimising food loss during storage and transportation.



# CASE STUDIES

Below are three case studies of current philanthropic initiatives in Uganda, Kenya and Ghana that are focused on improving food storage, transport and logistics systems

that would have a greater impact should they be afforded recognition and support.

## Uganda

**The Grain Warehouse Receipt System (WRS)** was established in Uganda in 2006. It is governed and regulated through the WRS Act of 2006. Recently, WRS has gained in importance due to its ability to reduce post-harvest losses significantly in areas where it was established. However, significant loopholes exist in the structure of WRS since these are concentrated in the central parts of Uganda,

yet a large share of the maize and beans are produced in the western part of the country. Furthermore, the system is hampered by the high costs of adherence, the absence of appropriate post-harvest handling technologies, the computer illiteracy of rural farmers and fierce competition from the informal traders who are not stringent on quality and yet provide quick cash to the farmers.



## Kenya

**Cycling out of Poverty** (COOP Africa) provides bicycles to students, health volunteers, farmers and small entrepreneurs in developing regions to enhance their access to education, healthcare and economic opportunities. COOP Africa demonstrates how bicycles can transform livelihoods, particularly in rural or low-income settings, by enhancing mobility and efficiency in food transport and trade. Bicycles enable farmers and vendors to access markets faster and more affordably, ensuring fresher produce and reducing transportation costs. They allow for larger volumes to be transported

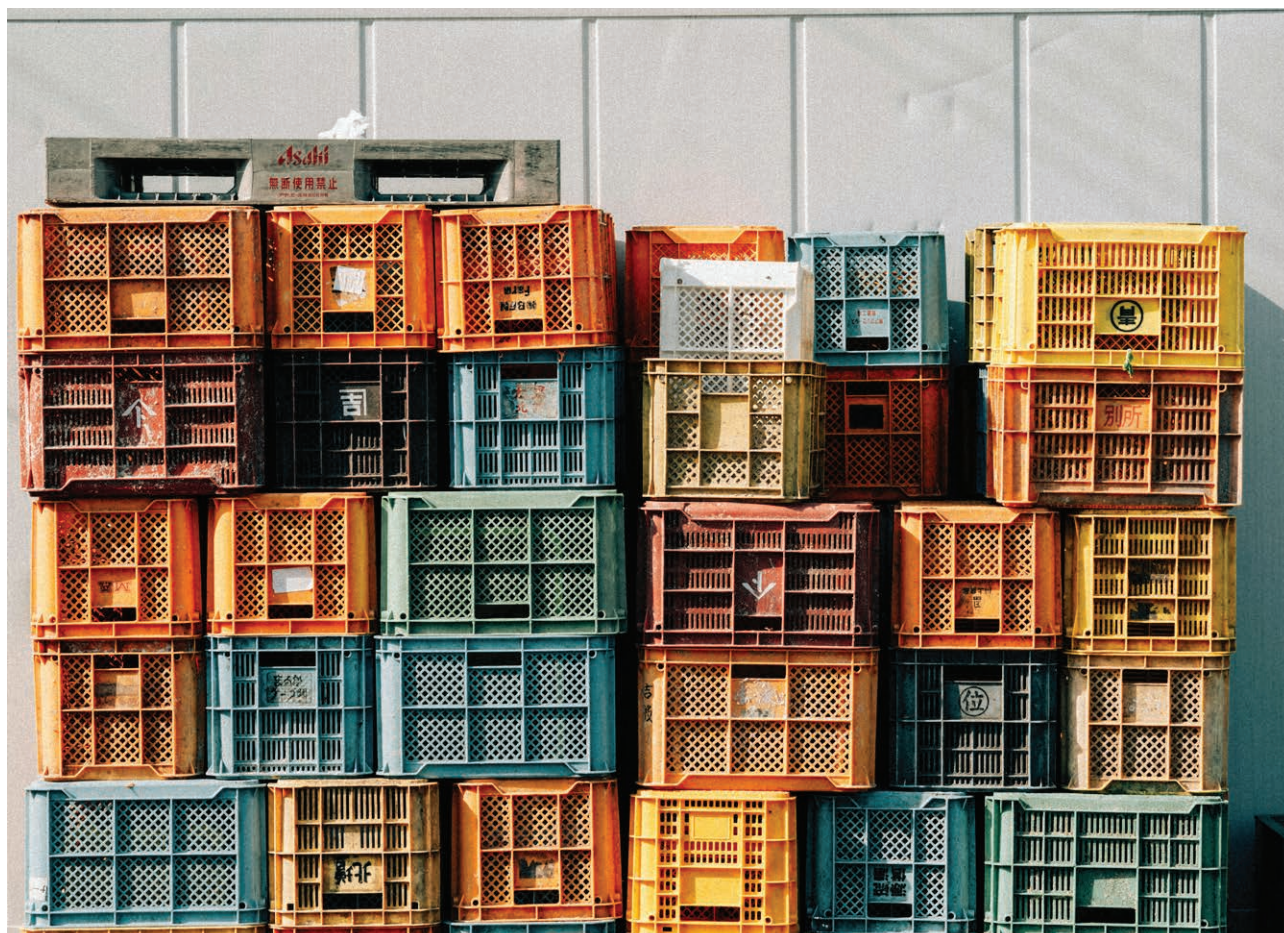
using custom racks or trailers, which leads to improved economies of scale. Traders can expand their reach, offer door-to-door services, and diversify income by transporting goods for others. These benefits save time, allowing for additional income-generating activities or family care.

The transition by many cyclists to motorbikes is an ongoing process that enables riders to move through hilly terrains that are not easy on bicycles with more versatility in the transportation of various goods.

## Ghana

**AkoFresh** has introduced solar-powered refrigerated storage units for perishable crops, extending the crops' shelf life from 5 to 21 days. Farmers can rent space for \$0.30 per 20 kg crate daily or subscribe weekly, with flexible payment options, including using crops instead of cash. AkoFresh also developed a mobile app that connects farmers to food aggregators, which helps to reduce food

losses and expand market reach. Challenges include energy storage reliability during cloudy days or overnight, scaling-up operations, and encouraging farmers to adopt new technologies over traditional methods. There is also the potential for vandalism. Despite these hurdles, AkoFresh offers a practical solution to enhancing food storage and distribution



# ACKNOWLEDGEMENTS

## Kenya

Food Liaison Advisory Council (Kisumu), Maseno University Staff, Boda Boda Association-Kenya.

## Uganda

Farmers from Nyakayojo, Mbarara Food transporters and Market vendors.

## Ghana

Farmers (Northern Region-Tamale), University of Development Studies staff, Staff of the Council of Scientific & Industrial Research (CSIR), Food transporters and Traders and Gunda Produce Company Ltd.

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**African  
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## African Food Systems Transformation Collective

This network of researchers and food systems development experts collaborates to inform philanthropies, governments and development finance organisations on funding strategies to promote transitions to sustainable, equitable and resilient food systems across Africa.

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