Food Market Demand & Competitiveness

Southern Africa Region Report

Analyzing food demand trends, competitiveness of domestic supply chains to develop strategies in enhancing trade flows of key food crops in Southern, East, and West Africa.

JULY 2021

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Acknowledgement

This report was prepared by Cardno in consortium with International Economics Consulting Ltd. The authors of the report are Veepin Bhowon, Paul Baker, Neetish Hurry, and Pablo Quiles.

The objective of this consultancy is to inform AGRA (and indirectly its partners) on prioritizing and better targeting its interventions in terms of geography, food commodities, and points of leverage in the market system per region to capitalize on latent opportunities to grow intraregional food trade.

We acknowledge that this consultancy was funded by the UK Government's Foreign, Commonwealth & Development Office (FCDO)[1] through the Africa Food Trade & Resilience Programme. The opinions expressed in this report are those of the authors and do not reflect the official policy or position of the UK Government's FCDO, the Alliance for a Green Revolution in Africa (AGRA) and PIATA partners, their employees, or its affiliates in any way. While AGRA has made every effort to ensure the accuracy and completeness of the information entered in this report, we assume no responsibility for any errors, inaccuracies, omissions or inconsistencies included herein.

The authors would like to gratefully acknowledge AGRA staff, whose contribution in stimulating comments, suggestions and support has helped to improve this report. In particular, we would like to thank Dr. Apollos Nwafor (Vice President – Policy & State Capability, AGRA), Daniel Njiwa (Head – Regional Food Trade, AGRA) and Sunil Dahiya (Senior Program Officer – Markets Regional Food Trade & Resilience, AGRA) for their useful comments and suggestions throughout the study.

The Cardno team would also like to thank Watipaso Mkandawire and Dave Watson from FCDO team who has been instrumental in providing useful comments and suggestions throughout the study.

Finally, we would like to thank all other people and institutions who have provided support in various ways towards the preparation of this report.

1 The programme started in 2019 under the Department for International Development, which merged with Foreign and Commonwealth Office to become FCDO on Sept 2 2020.

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Acronyms

AfDB	African Development Bank
AGP-LMDP	Agricultural Growth Project – Livestock Market Development Programme
AGRA	Alliance for a Green Revolution in Africa
ARDP	Agriculture and Rural Development Policy
ARDS	Agriculture and Rural Development Strategy
ARIA	Assessing Regional Integration in Africa
ASAL	Arid and Semi-Arid land
ATNR	Agriculture, Tourism and Natural Resources
AU	African Union
AU-IBAR	African Union Inter-African Bureau for Animal Resources
CAADP	Comprehensive Africa Agriculture Development Programme
CAGR	Compound annual growth rate
COMESA	Common Market for Eastern and Southern Africa
DFID	Department for International Development
DP	Development Partners
DRC	Democratic Republic of Congo
EDF	European Development Fund
ESA REC	Eastern and Southern Africa Regional Economic Community
EU	European Union
EWURA	Energy and Water Regulatory Authority
FAO	Food and Agriculture Organization
FAW	Fall armyworm (Pest)
FSAP	Food Security Action Plan
FSNP	Food Security and Nutrition Policy
GAP	Good Agriculture Practices
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
HS	Harmonised System
IFPRI	International Food Policy Research Institute
IGAD	Intergovernmental Authority on Development
ILRI	International Livestock Research Institute
ITC	International Trade Centre
JEOP	Joint Emergency Operations Partners
JICA	Japan International Cooperation Agency
LGAs	Local Government Authorities
MLN	Maize Lethal Necrosis (Pest)
NARCO	National Ranching Corporation
NDRMC	National Disaster Risk Management Commission
NEPAD	New Partnership for Africa's development

PSNP	Productive Safety Net Program
RASIP	Regional Agricultural Sector Investment Plan
RCA	Revealed Comparative Advantage
RISP	Regional Integration Strategy Paper
SAAFI	Sumbawanga Agricultural and Food Industries Limited
SADC	Southern African Development Community
SME	Small and medium-sized enterprises
SPS	Sanitary and Phytosanitary
SSA	Sub Saharan Africa
UAE	United Arab Emirates
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USD	United States Dollar
VC	Value Chain
WB	World Bank
WFP	World Food Program
WTO	World Trade Organization

1. Introduction

Agriculture forms a significant portion of the economies of all African countries, and as a sector, it can therefore contribute towards major continental priorities, such as eradicating poverty and hunger, boosting intra-Africa trade and investments, rapid industrialization and economic diversification, sustainable resource and environmental management, and creating jobs, human security, and shared prosperity. This is critically true today since close to 70 percent of the African population is involved in agriculture as smallholder farmers working on parcels of land that are, on average, less than 2 hectares. As such, agriculture remains Africa's surest bet for growing inclusive economies and creating decent jobs, especially for the youth. While its importance to the rural population is well documented, recent surveys suggest that agriculture is also the primary source of livelihood for 10 percent to 25 percent of urban households.

Agricultural exports are also a key source of revenue and foreign exchange earnings, as well as of inputs for the manufacturing sector. The agro-food sector is the biggest direct employer of all manufacturing industries in the region. Population growth, rapid urbanization, rising income, and shifting diet habits suggest that demand for food in the region will increase as well. Despite the potential and vast opportunities, intra-regional trade in agriculture products remains consistently low compared with inter-continental trade. Market fragmentations (such as insufficient infrastructure, monetary, tax, and trade fragmentation; red tape for traders) are some of the major constraints that limit the region's trade potential. There is a need to boost agriculture trade in the region to counter any negative impact from the international market.

The present study is carried out to support Alliance for a Green Revolution in Africa (AGRA) in exploring its future work plan with regard to the Africa Food Trade and Resilience Initiative. The objective of this consultancy is to inform AGRA and its partners on prioritizing and better targeting its interventions in terms of geography, food commodities, and points of leverage in the market system to capitalize on latent opportunities to grow intraregional food trade. The outcomes of this assignment aim to provide the basis for a framework for prioritizing work on trade, infrastructure, energy, and investment along promising economic corridors with strategic significance to food and agriculture.

The methodology relies on a meta-analysis of publicly available information while mapping all relevant elements of the value chains of the agriculture products in the selected countries. The geographical focus of the study is on the 14 countries[1] that possess natural complementarities in terms of agro-ecologies; complementary market sheds and the existence of trade infrastructure. The selection of product focus is based on a combination of several available or constructed indexes to create a balance between demand and supply. They include the current and forecasted demand, supply, imports, exports, price volatility, etc. The objective is to cater for food security, promotion of intra-regional trade as well as considering essential aspects such as resistance to climate change and change in consumption patterns in the selection of the top value chains to consider.

This report is one of the three regional reports under this study, covering three countries in Southern Africa.[2] It is divided into nine sections. Section 2 provides an overview of the broader intra-regional trade and food security in the region, highlighting the key trends and challenges experienced. Section 3 provides an overview of the major trade corridors as well as the planned development. Section 4 explains the methodology behind the selection of the top five value chains of interest for the region. Sections 5-9 delve deeper into the selected value chains by exploring the key patterns in production, consumption, and trade, the regional trade routes (where information is available), the stakeholders, key findings on competitiveness, and constraints. From there, recommendations are made in view of coping with the challenges.

1 Within the scope of this study, the focus countries are Mozambique, Malawi, Zambia, Kenya, Tanzania, Uganda, Ethiopia, Rwanda, Nigeria, Ghana, Mali, Burkina Faso, Ivory Coast, and Togo.

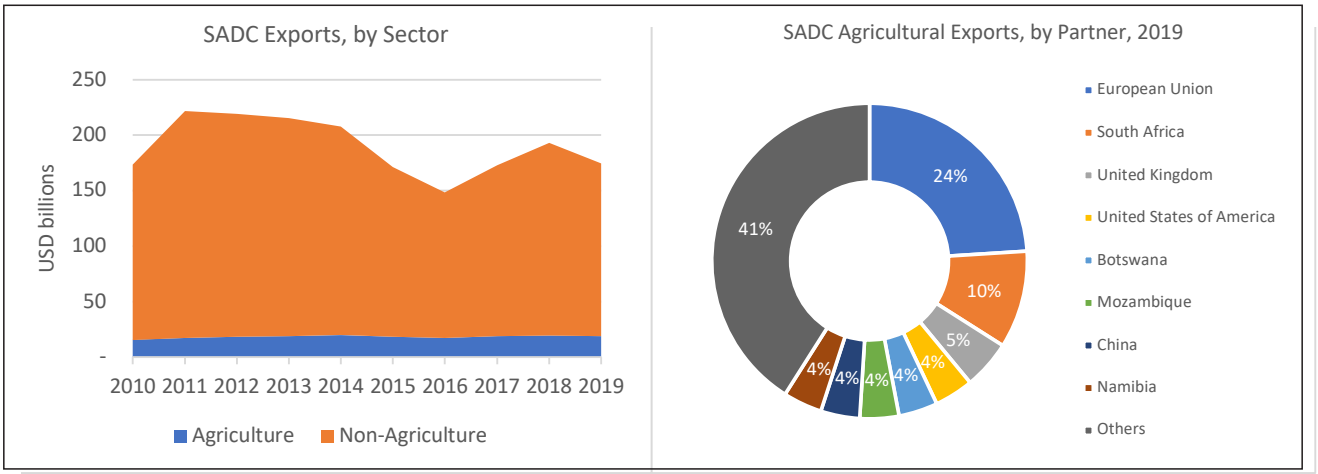
2 The three countries are Malawi, Mozambique, and Zambia.

2. Status of Intra-regional Trade and Food Security

Agriculture is essential to economic growth and improved food security in many Southern Africa countries. Over 70 percent of rural populations depend on agriculture for their livelihoods. Among the three studied countries, agriculture contributes as high as 25.5 percent to the GDP.[3] However, poor performance in the agricultural sector over the years, especially due to the impacts of climate change, has constrained regional economic growth. In 2018/19, the region experienced an unusual dichotomy of severe drought and flooding resulting in widespread crop failures in Zimbabwe, southern Zambia, northern Namibia, and southern Botswana. The World Food Programme (WFP) *End-of-Season Update for 2018/19 and Overview of the Food Security Situation in 2019/20* for Southern Africa estimated that over 41 million people would be food insecure, the highest figure reported in the past ten years.[4]

Agricultural trade, however, contributes insignificantly to the regional total trade value. Reaching approximately USD 19 billion in 2019, agricultural exports (HS 01 to HS 24) represent less than 11 percent of the region's total exports. The European Union (EU) remains the top importer of SADC agricultural exports, accounting for USD 4.5 billion, or 24 percent of all agricultural exports. Other major partners for the region's agricultural exports are the United States, the United Kingdom, and China. Intra-regional trade of agricultural products is notably high, accounting for 34 percent of all exports by value. South Africa is the top regional importer of agricultural products, absorbing around 10 percent of the regional exports, while Botswana, Mozambique, and Namibia also contributed 4 percent each. The higher level of intra-SADC trade compared to intra-Africa trade, including trade on agricultural products, could be attributed to the trade-creating effect of the SADC Free Trade Agreement (SADC-FTA), as found by Oluwatoba et al. (2014).[5]

Figure 1. Southern Africa Exports and Agriculture Exports Overview



Source: ITC Trademap

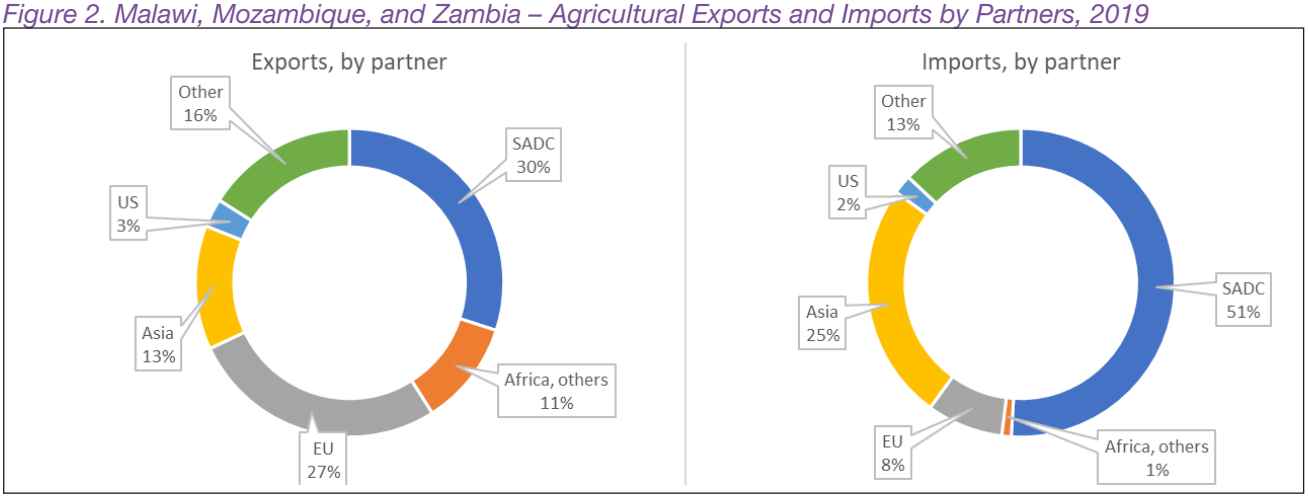
3 According to World Bank (2020). Agriculture, forestry, and fishing, value added (percent of GDP) (database). Available at https://data.worldbank.org/

4 WFP (2019). End-of-Season Update for 2018/19 and Overview of the Food Security Situation in 2019/20. Issue No. 9 - July 2019, WFP Regional Bureau for Southern Africa (RBJ).

5 Oluwatoba, A. F., T. Y. Bahta, A. A. Ogundeji, and B. J. Willemse. 2014. "Impacts of the SADC Free Trade Agreement on South African Agricultural Trade." Outlook on Agriculture 43 (1): 53– 59.

The three studied countries show different patterns regarding agricultural trade. Malawi is the only net exporter of agricultural products, although its trade surplus has been on a downward trend. Mozambique is a net food importer with an increasing food bill, and Zambia experienced a deficit in agricultural trade for the first time in 2019. Similar to the patterns observed in the larger region, the SADC is the largest trading partner for both agricultural exports and imports of the three studied countries, accounting for 30 percent of total exports and 51 percent of total imports. Trade with the rest of Africa (excluding SADC), however, remains low. Some of the trade-limiting factors, as identified by Viljoen et al. (2018), include a mismatch in supply and demand; supply-side bottlenecks such as input shortages, obsolete technology, and lack of knowledge transfer; inefficient infrastructure in transportation, communications, electricity, and warehousing facilities; and trade barriers and non-trade barriers.[6]

Figure 2. Malawi, Mozambique, and Zambia – Agricultural Exports and Imports by Partners, 2019



Source: ITC Trademap

Trade affects all dimensions of food security as it impacts, through competition, incomes, prices, and inequality, stability of supply, linkages between food-deficit areas with food-surplus areas, as well as food safety, variety and, quality of food products. All of this helps determine the food security and nutrition of individuals.[7] Trade barriers can result in delays in production and the overall value chain. Box 1 identifies some of the challenges to trade across the corridors (including agricultural trade). Annex 1 provides an overview of the common challenges facing the agricultural sector in Southern Africa.

Box 1. Identified Challenges to Trade Across the Corridors (Including Agricultural Trade)

Identified Challenges to Trade across the Corridors

Major challenges to intra-regional trade in Southern Africa include:

- Overlapping membership of regional economic communities.
- Lack of policy coordination and harmonization of regulations.
- Lack of an in-depth understanding of the pros and cons of regional agricultural trade.
- Transport and information issues.
- The multiplicity of non-tariff barriers to trade.
- The poor state of transport infrastructure.
- Poor post-harvest preservation infrastructure.
- Inadequacy of quality assurance infrastructure.

6 Viljoen, W., Sandrey, R. and Potelwa, Y. 2018. Intra-African agriculture trade – an overview. In Agriculture and the African Continental Free Trade Area (forthcoming). Stellenbosch: tralac. Available at https://www.tralac.org/documents/events/tralac/1845-willemien-viljoen-intra-africa-agricultural-trade-tralac-poster-presentation-2018/file.html

7 FAO and ECA (2018). *Regional Overview of Food Security and Nutrition. Addressing the threat from climate variability and extremes for food security and nutrition.* Accra. 116 pp.

Removing these barriers offers African farmers the opportunity to benefit from the rapid population growth, urbanization, and income growth.[8] Effective regional integration would create larger markets for farmers and agro-processors, increasing regional sourcing, processing, and economies of scale while lowering food costs and preventing food price volatilities that affect both farmers and consumers.

Removing barriers to intra-regional trade in agricultural inputs can also stimulate production and lower prices. Surplus production and stability in the supply chain encourage investments and the development of processing industries that require a reliable supply to operate effectively. Furthermore, in addition to allowing rural households to sell surplus commodities to cater to other needs such as healthcare and education, removing barriers to intra-regional trade promotes equal food access to all, as food surplus from food-abundant areas can be linked to food-deficit areas within a country and a region.

Appropriately considered, formulated, and implemented national and regional trade policies are crucial in ensuring both national and regional market growth while serving the development objectives. It is important to align public, private, and development partners' intentions in the area of food security. In addition to improving intra-regional trade, the alignment of national and regional agricultural policies will go a long way in improving regional trade in agriculture. The governance of food markets and commodity chains is a crucial element for efficiency and distribution, hence for growth and food security. For the maize sector in Zambia and Malawi (and several other regions in Africa), misalignment of policies results in *"uncertainty about government intentions, which coupled with the fear of being undercut by subsidized public sales, induces private grain traders to remain on the sidelines or to limit their exposure by bringing in only small lots. In response, governments complain that they cannot rely on the private sector to import adequate quantities of food in times of need. And where private traders and African governments fail to solve staple food supply problems themselves, food aid donors stand ready to fill the gap (sic)"*.[9] In the end, this significantly undermines incentives for private sector participation in the development of marketing systems.

Supported by complementary domestic and regional policies, intra-regional trade presents numerous benefits, ranging from employment creation, market expansion, greater economies of scale, and improved competition for domestic firms. Box 2 outlines some strategies to boost intra-regional trade in Southern Africa (SADC).

The private sector's participation in agricultural trade in Southern Africa is severely constrained by some of the identified challenges to trade across the corridors and an unfavorable policy environment, both regionally and domestically. However, the private sector can play a key role in agricultural trade and food security in Southern Africa, especially in ensuring that production surplus reaches food deficit areas. In many ways, it can also contribute to overall economic growth in the region. The private sector can support agricultural trade in Southern Africa through:

- Partnerships with the small-scale subsistence farms, for example by offering training and technical assistance in view of increasing productivity.
- Providing the much-needed funding for expansion in the agricultural value chains.
- The private sector is directly engaged in trade across the corridors and can identify barriers to trade in agricultural products and make recommendations to improve regulations.
- Partnering with national, regional, and development institutions to develop the trade-related infrastructure in the region, for example through public-private partnership (PPP) models; and
- Investing in agribusinesses engaged in large-scale farming, processing, and distribution, hence developing market systems benefiting farmers and consumers.

8 FAO and ECA (2018) ibid

9 Morrison, J., and Sarris, A., (eds.). (2010). Introduction. Food Security in Africa: Market and Trade Policy for Staple Foods in Eastern and Southern Africa. FAO: Rome. http://www.fao.org/docrep/018/i0714e/i0714e.pdf

An overview of the regional policy for agriculture trade and development in Southern Africa is presented in Annex 2.

Box 2. Overall Strategies to Boost Intra-regional Trade in Southern Africa (SADC)

Overall Strategies for Boosting Intra-regional Trade in SADC

The elimination of non-tariff barriers (NTBs) makes trade costlier and difficult. The simplification of customs procedures could reduce trade costs in the region, address delays, support the flexible movement of goods at the borders, and encourage the participation of small businesses in cross-border trade. Additionally, the elimination of NTBs would stimulate competition, creating a fair playing ground for businesses, which would, in turn, promote economic development.

Establishing effective trade-related infrastructure and investment policies. These play an important role in enhancing intra-regional trade by improving regional connectivity and systems. The SADC RIDMP Vision 2027 and its associated infrastructure projects will go a long way in supporting intra-regional trade.

Broadening the scope and improving implementation of existing trade agreements (e.g., Trade and Services Protocols). Broadening the scope of trade to include services by implementing the SADC Protocol on Services (2012), which is aimed at establishing an integrated regional market for services.

Strengthening institutional frameworks. Relevant national and regional institutions could be made in charge of implementing and coordinating the regional agenda. As such, they should be strengthened to hold the Member States accountable for non-compliance. Tied to this is the need for coherent regulatory policies across sectors – tax, finance, and investment. These would allow for the creation of an integrated market. Coherence to regulatory policies would create confidence in the legal system due to predictability and legal certainty.

Developing stable funding mechanisms: Developing stable internal funding systems to finance the regional agenda and trade-related projects would go a long way in improving the development and effective implementation of regional integration objectives, and in effect, support intra-regional trade.

Addressing challenges relating to overlapping membership in regional bodies which complicate regional integration as with confusion surrounding different rules of origin.

3. Transport and Logistics across the Region

Although infrastructure in Southern Africa is more developed compared to other regions in Africa, the region still faces numerous challenges. These include, among others, insufficient energy supply, highly-priced and unpredictable transport systems (which in recent times have suffered from damages resulting from effects of climate change), and lack of low-cost access to information and communication technologies, especially in the focus countries – Malawi, Mozambique, and Zambia. There is, therefore, an urgent need for further investments in infrastructure development and maintenance. Recognizing the urgent and evolving infrastructural needs, the SADC has embarked on the fundamental task of creating an enabling environment by addressing infrastructure requirements by 2027, within the framework of the SADC Infrastructure Vision 2027.[10]

The Regional Infrastructure Development Master Plan (RIDMP) Vision 2027 guides the development and implementation of priority infrastructure projects for the Southern Africa region. The RIDMP serves as the framework for planning and cooperation with development partners and the private sector. The RIDMP has identified six priority sectors for development: energy, transport, tourism, information and communication technologies, meteorology, and transboundary water infrastructures. The RIDMP aims to address trade facilitation issues concurrently to ensure a more effective and linked infrastructure. In addition to the transport infrastructure networks, trade facilitation projects include one-stop border posts (OSBP) projects such as the Chirundu OSBP, linking Zimbabwe and Zambia, and the Tunduma OSPB, linking Zambia and Tanzania.

Within RIDMP, **the Transport Sector Plan (TSP) is the guiding framework for transport infrastructure development.** The TSP links to the overall framework of the African Union's 2020 Programme for Infrastructure Development in Africa (PIDA) which seeks to consolidate and streamline infrastructure initiatives into linkages that align with Africa's long-term objectives for integration. It identifies salient issues and infrastructure concerns across all sub-sectors: the lack of maintenance; poor conditions; missing links between key origins and destinations; delays at cities where by-passes have not yet been built; capacity and safety constraints; delays at border posts; trade and transport facilitation delays; poor reliability; lack of continuity and inter-regional connectivity; poor modal integration; the need for modernization; and skills and capacity constraints.[11]

Regional transport infrastructure development in Southern Africa follows either the Development Corridors or Spatial Development Initiatives (SDIs), which are, by design, partnerships between the public and private sectors. The SADC Regional Transport Plan identifies several Corridors in line with PIDA's Priority Action Programme (PAP) for transport programmes in the SADC region, namely: (i) the North-South Multimodal Corridor; (ii) the Central Corridor; (iii) the Beira and Nacala Multimodal Corridor; and (iv) the Southern African Hub Port and Rail Programme. The corridor concept is particularly important to landlocked countries as it leads to improved transport networks as well as more efficient border post operations and, therefore, more efficient movement of the trade of these countries.

Significant projects are focused around the North-South Multimodal Corridor and the Beira and Nacala Multimodal Corridor in Mozambique. These corridors link the port of Durban with the DRC–Zambia copper belt via Zimbabwe and Botswana while connecting with Malawi via Harare and connecting to the Lobito, Trans Caprivi, Nacala, Beira, Maputo, and Trans-Kalahari Corridors. On the other hand, projects in the Central Corridor are centered around Dar-es-salaam (linking the port of Dar es Salaam with the copper belt in the Democratic Republic of Congo (DRC) and Zambia). How-

10 SADC (2012). Regional Infrastructure Development Master Plan. https://www.sadc.int/files/7513/5293/3530/Regional_Infrastructure_Development_Master_Plan_Executive_Summary.pdf

11 SADC (2012), ibid.

ever, most projects are concentrated in the Southern Africa Port and Rail Programme, as illustrated.

Table 1. SADC Regional Transport Corridors – Mainland

Member States	Corridors
Angola	1. Lobito (Benguela); 2. Namibe; 3. Trans-Cunene; 4. Malange; 5. Bas Congo
Botswana	1. Trans-Kalahari (TKC); 2. North-South (NSC)
DRC	1. North-South (NSC); 2. Malange; 3. Walvis Bay – Ndola – Lubumbashi, (Trans-Caprivi); 4. Dar-es-Salaam; 5. Central; 6. Bas Congo; 7. Lobito (Benguela)
Lesotho	1. Maseru – Durban
Malawi	1. Nacala; 2. Beira; 3. Mtwara; 4. Dar-es-Salaam; 5. North-South (NSC)
Mozambique	1. Maputo; 2. Beira; 3. Nacala; 4. Mtwara; 5. North-South (NSC); 6. Limpopo
Namibia	1. Trans-Kalahari (TKC); 2. Trans-Orange; 3. Trans-Cunene; 4. Walvis Bay – Ndola – Lubumbashi (Trans-Caprivi); 5. Namibe
South Africa	1. North-South (NSC); 2. Maputo; 3. Trans-Kalahari (TKC); 4. Trans-Orange; 5. Maseru – Durban; 6. Manzini – Durban
Swaziland	1. Maputo; 2. Manzini – Durban
Tanzania	1. Dar-es-Salaam; 2. Mtwara; 3. Central
Zambia	1. North-South (NSC); 2. Dar-es-Salaam; 3. Mtwara; 4. Beira; 5. Walvis Bay – Ndola – Lubumbashi (Trans-Caprivi); 6. Lobito (Benguela)
Zimbabwe	1. Beira; 2. Maputo; 3. North-South (NSC); 4. Limpopo

Source: SADC RIDMP, TSP (2012)

Specifically, to the three focus countries, the Nacala Regional Corridor was designed with the specific objective of providing Malawi, Zambia, and the interior of Mozambique with a land transport linkage to the port of Nacala (in Mozambique) to improve transport services by reducing transport and delay costs at border crossings. In addition to SADC-wide projects, Malawi and Mozambique have signed a Spatial Development Initiative Trilateral Agreement to strengthen their cooperation within the framework of the SADC. The 1,650 km long Nacala Regional Corridor is part of the Spatial Development Initiative and its rehabilitation remains a priority for both Zambia, Malawi, and Mozambique. For Zambia, it provides an alternative route to the Beira Corridor which leads to the Mozambican coastline, though via Zimbabwe.

4. Value Chain Selection

The selection of value chains for the focus countries is based on a combination of several available or constructed indexes. The chosen indexes are a balance between demand and supply. They include the current and forecasted demand, supply, imports, exports, price volatility, etc. The objective is to cater for food security and promotion of intra-regional trade, as well as consider essential aspects such as resistance to climate change and change in consumption pattern in the selection of the top value chains to consider.

The rationale behind this methodology is threefold:

- **Capture production**: production-related indicators ensure that only those products have been cultivated by the countries and prioritize those with (1) high production values and (2) high growth rates.
- **Capture trade:** export-related indicators highlight the potential that the commodities have in the international market, prioritizing those with high demand abroad. Import-related indicators showcase the internal demand for food products, which indicates a potential opportunity for increased production. Similarly, the revealed comparative advantage indicator targets those value chains that have a distinct advantage in front of international competition.
- **Capture volatility:** the volatility indicator is instrumental in revealing the price-stable commodities.

The different indicators are presented below:

1. **Production Value Index**

   The current *value* of *production* measures value in the prices relating to the period being measured. Thus, it represents the market *value* of food and agricultural products at the time they were *produced*. The data set includes data on production values (gross and net). Our score for the commodity was the percentage of the production over the total production value of all products for the country.

2. **Production Growth Index**

   The production growth index measures change in projected value production from 2015 to 2025 (IFPRI), taking into account increased population and income growth, increases in productivity, and some amount of climate change that affects crop production according to whether it is irrigated or not. The scores are attributed to the overall change in production between the two above-mentioned years.

3. **Exports Value Index**

   The latest export values for the different value chains were analyzed. International reliable sources, such as UN Comtrade or ITC Trademap, provided data for the year 2018 for most countries. Otherwise, data for 2016 or 2017 were available and used. The score attributed to the commodity was a ratio of the value of exports for the product sector over the total value of exports.

4. **Demand Growth**

   The demand growth index is the absolute change in the value of the total demand for the commodity from 2015 to 2025 (IFPRI). Forecasted data on the increase in demand measured in tonnes and value is available from IFPRI. For this index, the value was considered.

5. **Imports Growth**

   The index identifies the projected growth absolute change in imports in the region in which each country is located. The data is from IFPRI.

6. Imports Value Index

The same approach as to the export value index is used for the Imports value index. Conversely, the index looks at imports as compared to exports for the Exports Value index.

7. Volatility Index

The volatility of the price data was taken into consideration in the selection criteria. A coefficient of variation was derived from FAO's monthly producer price data. From the coefficient, a measure of volatility was derived. The least volatile products are given the highest scores.

8. Revealed Comparative Advantage

This index helps to identify value chains where the targeted country has an obvious advantage in international competition. This is of special importance to promoting the trade of commodities that are more likely to be competitive.

The results from applying the methodology are highlighted below:

Production Value %

Commodity	Production Value
Maize	28.46
Cassava	26.80
Pork	12.75
Dairy	8.12
Poultry	6.50
Pigeon peas	6.00
Sugar	6.00
Vegetables	6.00
Bananas/Plantains	5.00
Potato	5.00
Sweet Potato	5.00

Production Growth

Commodity	Production Growth
Bananas/Plantains	177
Pork	163
Vegetables	121
Beef	115
Sweet Potato	114
Lamb	110
Maize	110
Cassava	102
Other	75
Fruits	71
Sugar	67

Exports %

Commodity	Exports
Tobacco	46.32
Sugar	16.07
Tea	11.57
Beans	8.41
Bananas/Plantains	7.20
Maize	5.99
Cotton	5.19
Total Other Oilseeds	4.90
Nuts	3.33
Poultry	1.91
Other Pulses	1.84

Imports %

Commodity	Imports
Tobacco	18.80
Wheat	15.11
Palm Oil	13.79
Rice	13.43
Maize	8.50
Vegetables	6.55
Tractors	5.81
Poultry	5.73
Beans	5.60
Sugar	4.61
Other Cereals	3.05

Demand Growth

Commodity	Demand Growth
Potato	447,847
Pork	429,645
Cassava	354,877
Vegetables	322,324
Sweet Potato	277,645
Beef	245,765
Bananas/Plantains	245,755
Maize	219,299
Fruits	186,123
Lamb	137,185
Poultry	108,702

Import Growth

Commodity	Imports Growth
Wheat	2,575
Maize	2,105
Beef	1,786
Bananas/Plantains	1,720
Vegetables	1,698
Beans	1,583
Palm Oil	1,475
Fruits	1,258
Potato	1,196
Other Pulses	1,022
Sweet Potato	897

Volatility

Commodity	Volatility
Rice	14
Sweet Potato	17
Beans	22
Nuts	22
Millet	22
Cow peas	23
Sorghum	23
Beef	24
Cassava	31
Dairy	33
Maize	44

The overall 5 top Value Chain selection approach.

For each country and region, the top five value chains with the highest scores were selected for our analysis. There were a series of considerations in the selection.

Re-alignment of commodity coding structure

Since data from different sources were used, mainly from UN Comtrade, ITC TradeMap, IFPRI, and FAO, there was the necessity to use a common commodity identifier. Since IFRPI has already developed a mapping table to FAO, all codes were re-aligned and mapped to a common FAO description. Thus, we developed our own HS to FAO mapping table.

Scoring and Ranking

The scores of the indexes varied in scale since some of them were absolute changes while others were ratios or percentages. In this methodology, the top ten commodities in each index were given a score ranging from 1 to 10 with 10 for the highest ranked item. For simplicity of analysis, an un-weighted aggregation of the rank of the commodities in each index was used as selection criteria for the topmost value chains.

Based on the above methodology and discussion with AGRA, it was decided that Cassava, Beans, Maize, Poultry, and Vegetables should be those products on which Southern Africa should focus to increase intra-regional trade and food security.

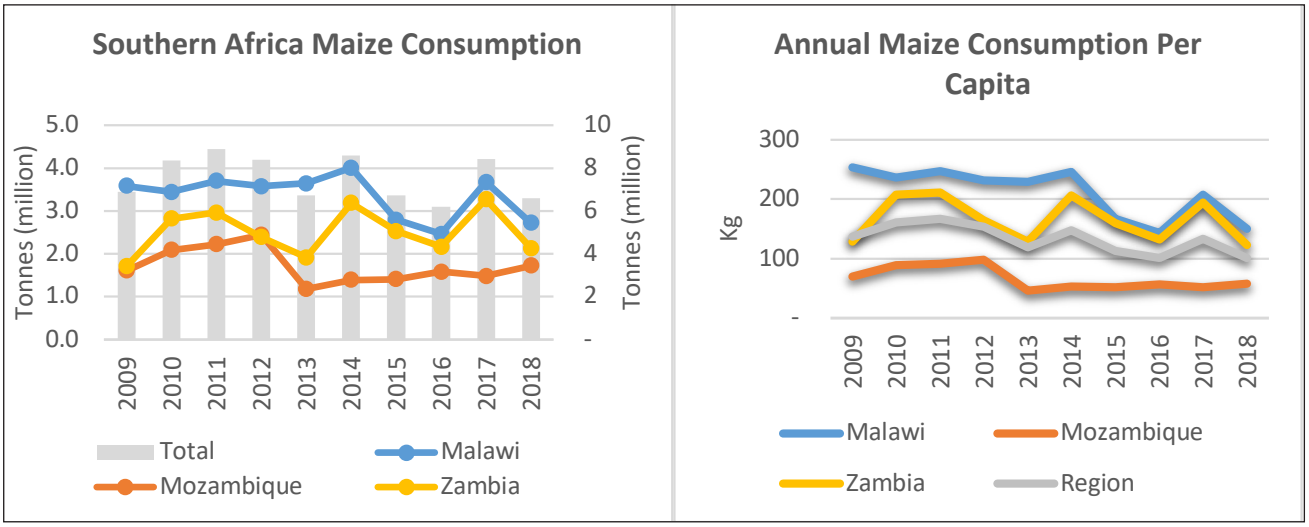
5. Maize Value Chain

5.1. Key consumption, production, and trade trends

Southern Africa is the largest maize-producing region in Africa, accounting for 35 percent of the total production in 2018.[12] South Africa is the dominant player, while Zambia and Malawi also feature among the ten largest producers on the continent. Maize is the most important staple and the main source of calorie intake from cereals in this region. The average consumption for the three target countries was estimated at 120 kg per capita per year, varying between 55kg for Mozambique to 183 kg for Malawi as the highest consumer. It accounts for much higher amounts among the rural, poorer population[13]. Maize is also used as an input for animal feed and an intermediate product for industrial use. Given the high production levels in these three countries, this sector plays an important role in agriculture as a whole and also in terms of extension services, annexed services, and commodity exchanges. According to W. Grant et al. (2012),[14] most of the maize produced in the region is meant for direct human consumption (52 percent) and animal feed (47 percent). The type of maize that is preferred for human consumption is the White Maize.

The region's maize consumption is high but is on a declining trend. Maize consumption in the three focus countries amounted to an average of 7 million tonnes per year over the last five years. Since 2009, the total consumption has been varying from 6.9 to 8.8 million tonnes with peaks in 2014 and 2017. Malawi has been the largest market in the region with 43 percent of the total consumption, followed by Zambia at 36 percent, and Mozambique at 21 percent. However, there has been a declining trend in the consumption levels in all three countries over the last three years (Figure 3). This could be attributed to a mix of elements, including an increase in standards of living and increasing urbanization. These two factors imply substituting maize for rice or changing the composition of food demand for cheaper staples as a result of high maize prices.

Figure 3. Maize Consumption in Southern Africa



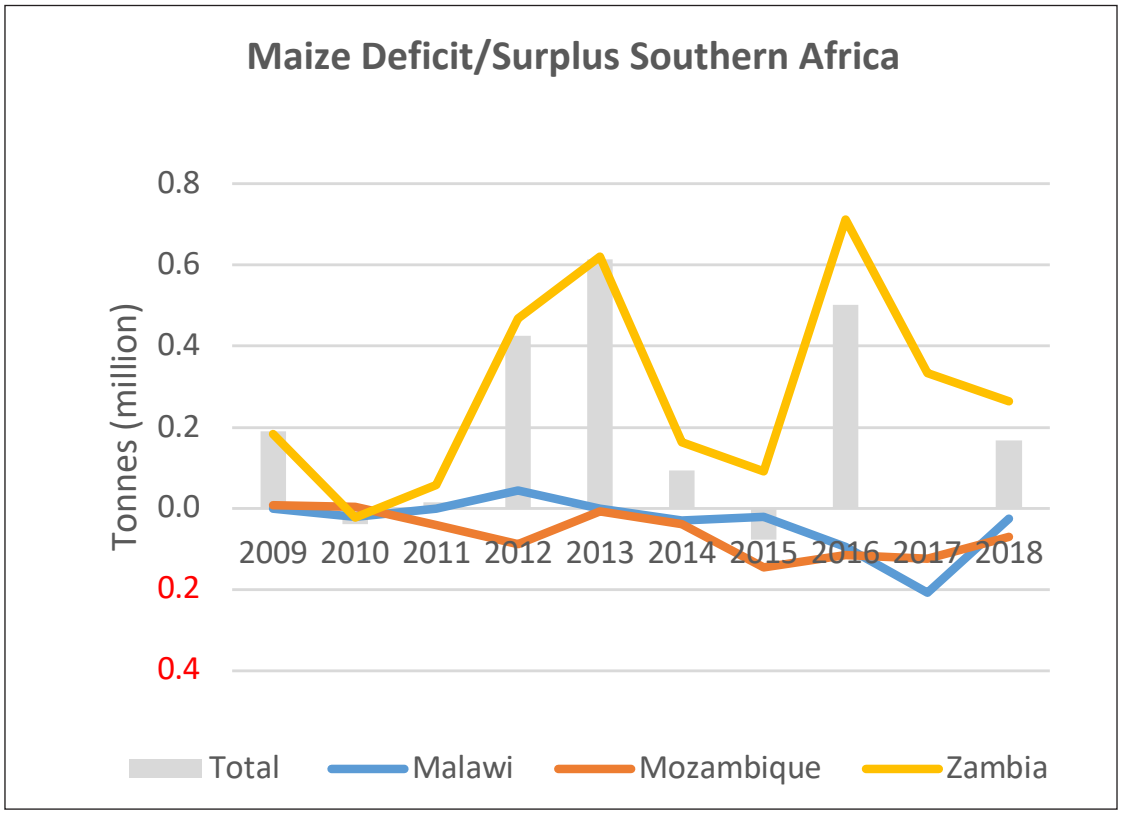
Source: FAO Stats

Southern Africa is typically self-sufficient in maize. Malawi and Mozambique had small deficits in maize which averaged 2 percent and 7 percent of the total production, respectively, during the aforementioned period. These deficits, which are mainly due to weather variations, are compensated by imports of maize from Zambia and South Africa. According to FEWS NET,[15] the region is expected

12 FAO Stats
13 W. Grant, A. Wolfaardt and A. Louw, AECOM International development, SA Trade Hub Feb 2012.
14 W. Grant et al (2012) Ibid
15 FEWS NET, SOUTHERN AFRICA Regional Maize Supply and Market Outlook July 10, 2020

to have an above-average surplus of maize in 2020/21. Despite the adequate availability of food in the region, food access to market-dependent households is expected to remain constrained due to COVID-19 lockdown measures.

Figure 4. Maize Balance in Southern Africa

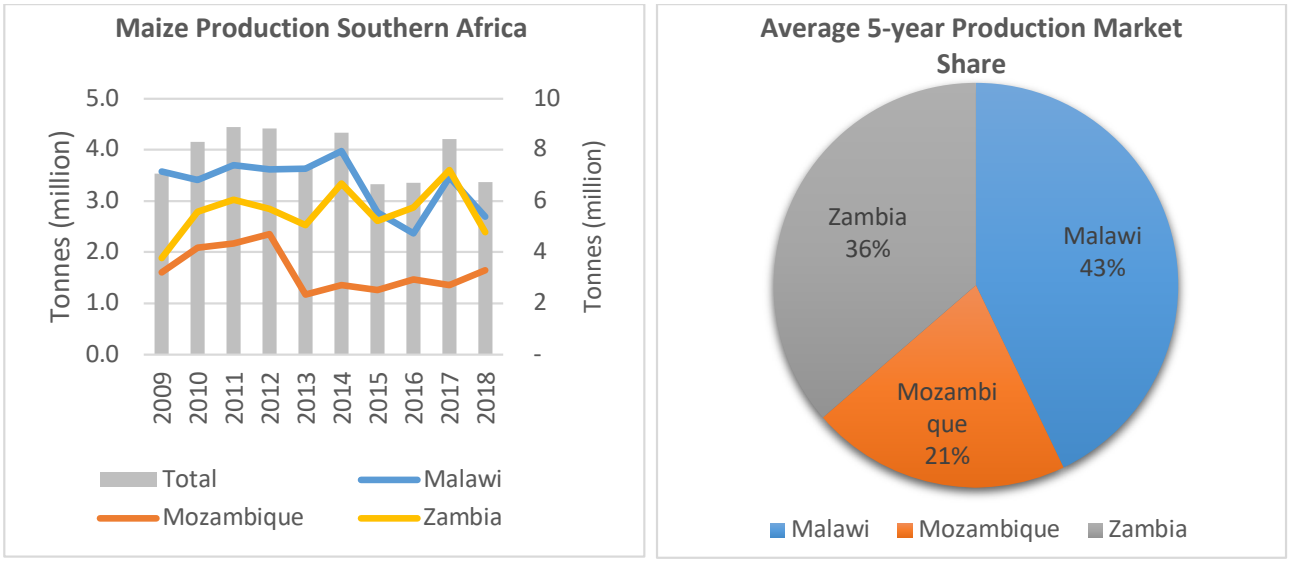


Source: FAO Stats

Regional maize production seems to be decreasing with some fluctuations. The region had produced a total annual average of 7.5 million tonnes of maize over the last five years. The total production of maize has been subject to variations since 2009, ranging from 6.5 million tonnes to peaks of 8.8 million tonnes in 2011 and 2012 and 8.4 million in 2017 (Figure 5). Maize cultivation is highly dependent on rainfall levels which consequently determine variations in annual production levels. Malawi and Zambia accounted for 79 percent of the maize production, amongst the three focus countries, with almost equal production volumes (Figure 5).

The region maize production is dominated (more than 50 percent) by small farmers with plots of land of less than 1 ha. There are also a small number of medium to large commercial producers. The smaller farmers' production is aimed at subsistence. Their objective is to minimize risk and they usually operate on communal land systems and holdings. Large commercial farmers tend to produce a few specialized products with a high level of mechanization and intensification.

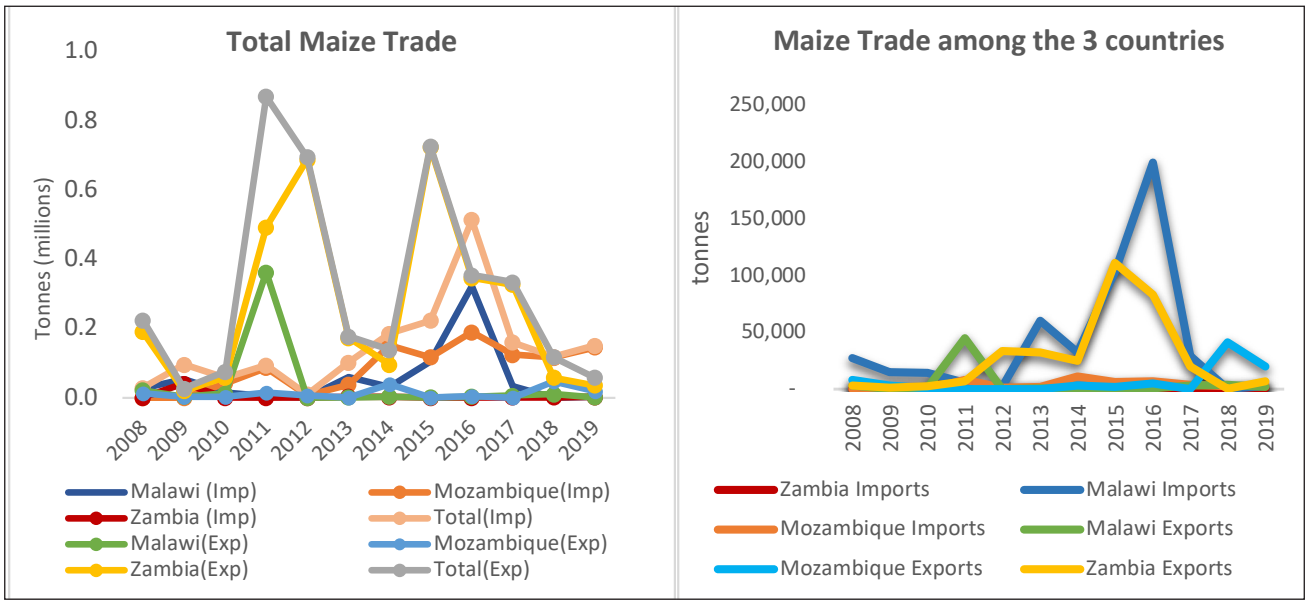
Figure 5. Maize Production in Southern Africa



Source: FAO Stats

Maize trade in Southern Africa has mainly been regional, representing 99 percent of the maize exports to immediate surrounding deficit countries and regions. Zambia has been the largest exporter of maize, with 95 percent of its exports destined to countries such as Kenya, Tanzania, Malawi, and Zimbabwe. Most of Malawi's imports come from Zambia (an average of 70 percent over the last five years), while Mozambique has been importing mainly (78 percent of its imports) from South Africa. Being the main maize producer in the region, South Africa also plays a significant role in providing maize to the regional countries. With some exceptions of the trade between Malawi and Zambia, trade among the three studied countries is quite low due to the self-sufficiency/low deficit situations, with an annual average export level of 72 thousand tonnes. Statistics over the last ten years indicate significant trade fluctuations among the countries, which are mainly explained by variations in the demand levels following the production shortages. For example, the trade peaks in 2011 and 2015 for total exports from the region (Figure 6) were due to high demands in Zimbabwe. Similarly, the peak observed in 2016 related to trade among the three countries for Malawi is linked to the drop in production level that year.

Figure 6. Total Maize Trade in Southern Africa Intraregional Trade among Malawi, Mozambique, and Zambia



Source: Trademap

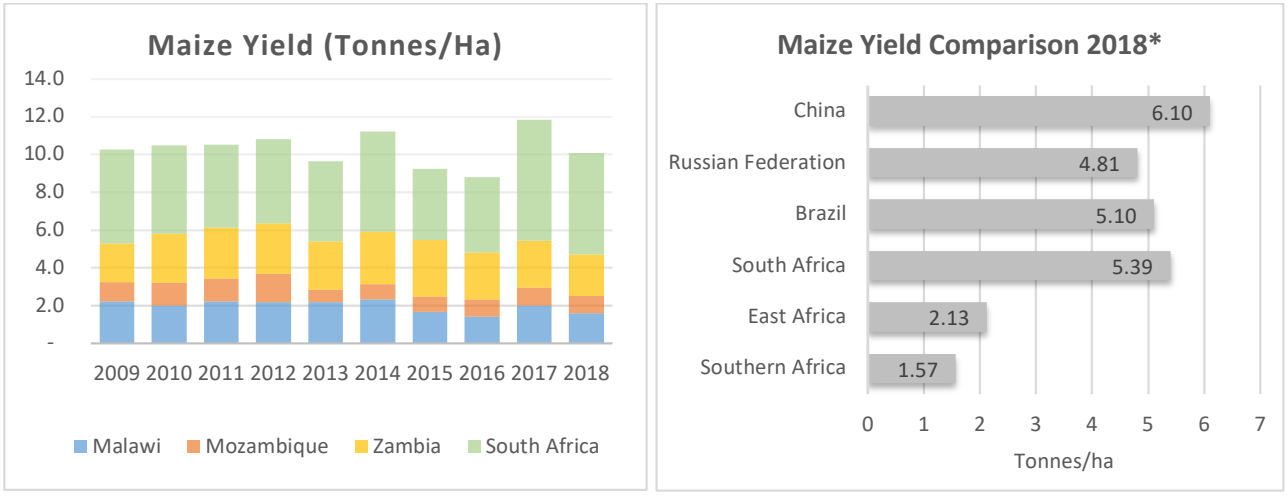
There are a number of factors inhibiting the intra-regional trade in maize. All three countries grant duty-free access to imports from COMESA and zero-tariff rate for SADC member states. However, a number of nontariff barriers affect imports and exports, such as high regulatory costs associated with obtaining permits and trade certificates (such as phytosanitary permits or export permits for maize), and government subsidies and intervention in the market such as the Food Reserve Agency (FRA) and the Farmer Input Support Programme (FISP).[16] Since 2019, Zambia has maintained a formal maize export ban, although informal exports are ongoing.

Informal trade flows are another characteristic of the region. The Southern African region has a certain level of informal trade regarding maize and more so with the existence of import bans from Zambia since 2019. Informal trade flows can vary from very small quantities carried by bicycle across small border crossing areas or via barge in large volumes exchanged over long distances[17].

5.2. Key regional competitiveness drivers and challenges

Overall, productivity in the region has stagnated, except for South Africa. The average maize yield has been 1.8 tonnes/ha for the region over the last five years. Among the three focus countries, Zambia has had the highest yield with 2.6 tonnes/ha, followed by Malawi with 1.8 tonnes/ha, and Mozambique with 0.9 tonnes/ha on average. These figures are quite low compared to South Africa's average yield of 5 tonnes/ha. Maize yield in Malawi and Mozambique has not changed much over the last 20 years. Zambia has, however, seen an improvement of 47 percent in its productivity, growing from 1.77 to 2.8 tonnes/ha over the same period. A comparison with other parts of the world in 2018 (Figure 7) indicates that, except for South Africa, this region has one of the lowest maize yields in the world. According to W. Grant et al. (2012), given the high consumption per capita of maize in the region,[18] it is quite surprising that there have been no increases in productivity. The reasons for sluggish productivity growth are most likely tied to the structure of agricultural production in the region, dominated by small farmers, which drives the technologies that are in use.

Figure 7. Maize Yield in Selected Countries



Source: FAO Stats (*Southern Africa refers to Malawi, Mozambique, and Zambia)

16 FEWS Net (2017). Zambia Maize Market Fundamentals Oct 2017
17 W. Grant et al (2012) Ibid
18 Which doubles the rest of Africa as a whole

Ac vmong other factors, the post-harvest loss can be attributed as a major cause of low maize productivity. FAO statistics[19] for Malawi indicate that high quantitative and qualitative losses of 58 percent and 22 percent, respectively, occur in the production chain where harvesting and subsequent on-farm operations are done. In Zambia, post-harvest losses amounted to 50 percent in 2015. Post-harvest losses of maize in Mozambique range from 20-40 percent depending on crop and geographical location.[20] This signifies an important area that needs addressing to improve maize production in the region.

5.3. Regional transportation and logistics routes

The maize value chain, similar to other agricultural products, faces a number of issues related to transport. Given that feeder roads are not graded, it becomes expensive to hire trucks to reach these rural areas, especially given the fact that maize is a bulk produce. Truckers face high repair costs as a result of these ungraded roads. Some of these areas are not reachable during the rainy season. The mobile phone network is also poor in these remote farming areas, thereby disadvantaging farmers in terms of accessing vital information such as the prices of maize.

Table 2 indicates maize trade flows from the production regions to consumption/deficit regions.

Table 2. Trade corridors for Maize in selected Southern African countries

Starting Point	Corridor(s) / Roads Used	Destination
Mozambique		
Tete - Angonia	Beira corridor and EN1	Southern region
Tete - Tsangano	Beira corridor and EN1	Southern region
Tete - Macanga	Beira corridor and EN1	Southern region
Niassa - Cuamba	Nacala corridor and EN13	Coastal areas (Nampula and Cabo Delgado)
Sofala - Gorongosa	EN1	Southern region
Manica - Sussundenga	Beira corridor and EN1	Southern region
Zambezia – Alto Molocue	EN1 and EN13	Southern region and Coastal areas (Nampula and Cabo Delgado)
Zambezia - Gurue	EN1 and EN13	Southern region and Coastal areas (Nampula and Cabo Delgado)
South Africa	Maputo corridor and EN2	Southern region
Zambia		
Lusaka	Great North Road/Zambia Railways/TAZARA	Central and Copperbelt provinces and DRC & Tanzania
Copperbelt	Great North Road/Zambia Railways/TAZARA	Copperbelt, Central, Lusaka, Tanzania, Angola, DRC
Central Province	Great North Road/Zambia Railways/TAZARA	Copperbelt, Lusaka, Angola, Tanzania, and East Africa
Eastern Province	Great East Road	Malawi, Mozambique, Lusaka, and Copperbelt Provinces
Muchinga/ Northern Province	Great North Road	Copperbelt/Luapula & East Africa
Southern Province	Great North Road/Zambia Railways	Central and Western regions, Southern Zimbabwe

Source: Author, based on fieldwork

19 FAO (2018) Food loss analysis: Causes and solutions, Maize supply in Malawi.
20 FANRPRAN (2017). Cost Benefit Analysis of Post-Harvest Management Innovations in Mozambique Report. 18 March 2017

5.4. Value chain stakeholder analysis

The maize value chain in southern Africa is complex and involves multiple actors, both private and public, large and small-scale, formal as well as informal. The public sector is a major player and is involved in providing extension services in the maize market, being engaged in both purchasing and selling on the market, as well as setting trade policy.

Table 3 provides details on the different stakeholders involved in the maize value chain at the various stages in the VC.

Table 3. Actors in the Maize Value Chain in Southern Africa

VC Stages	Actors	Functions / Characteristics
Production	· Small-size farmers (composed of the subsistence and the surplus farmer).	• Constitute the majority of farmers (an estimated 75 percent of maize production) • Characterized by cultivation on small farm sizes, the use of basic production technology (hand hoe), and inconsistent use of inputs, thus low yield levels. • The primary objective is consumption (in Malawi, 86 percent is retained for consumption[21]); any surplus is marketed in small quantities through local traders or sold to neighbors as they need cash.
	· Emerging commercial farmers	• They consist mainly of small- to medium-sized farmers who produce for commercial purposes and represent a small percentage of the total population of farmers (1-2 percent in Malawi and Mozambique, a larger percentage in Zambia) • They are often organized into cooperatives, which then provide them with various services and aspire to move into the formal commercial channel to take advantage of the access to formal services. • They are highly dependent on medium to large-scale traders.
	· Medium to Large farmers (full commercial farmer)	• The farming is carried out on large plots. • Farmers operate with a formal and organized commercial channel with sound vertical relationships among the farmers, traders, and processors. • It is strong forward and backward integration of the actors at the storage, milling, and processing levels. • Production is carried out on a contractual basis for profitability maximization and by taking advantage of economies of scale and increased productivity. • Large farmers have better access to the supporting services (finance, inputs, equipment) and institutional arrangements to stimulate improved marketing of the products (commodity exchanges, good infrastructure, access to storage facilities, grading, and sorting, etc.).
Trading	· Small traders	• They collect small quantities at the farm level and can get deep into the rural areas. They often use bicycles, motorcycles, or small trucks as means of transportation. • The small traders are geographically focused and act as collectors for the medium and large traders.
	· Medium Traders/ Collectors	• These traders collect maize from the deepest rural areas and then aggregate it to meet the needs of large processors, Food Reserve Agencies (FRAs), and international buyers. • They handle volumes of 500-2000 tonnes annually and sell to large traders who would handle much larger quantities or directly to processors and feed mills.

21 FAO, Food loss analysis: causes and solutions, Maize supply chain in Malawi, 2018

VC Stages	Actors	Functions / Characteristics
	· Large traders	• The large traders include the Food Reserve Agencies, parastatals, large private trading companies that handle exports. They purchase from medium traders or directly from the largest farmers and farmer associations to bulk and hold the maize. • They sell to the millers and the larger traders who will handle exports, if any, as well as to the bulk grain markets where maize makes its way back to the villages, unmilled. • The more formal traders will often combine storage with the purchasing and collection of the crop. • The most organized of these traders are also integrating backward into production or forwards into processing.
Storage	· On-farm	• Smallholder farmers who produce for their consumption tend to dominate the overall volume stored in most countries, as less than half of production is marketed.
	· Privately Owned Storage	• Large traders and processors tend to dominate most of the storage of commercialized crops, though few have formal storage facilities. • The shortage of good warehousing stands out as a constraint in the region. • Storage facilities range from small godowns (warehouses at the medium trader level) to storage in bags under tarps to more formal warehouses holding bagged maize in silos. The latter requires significant investment and is rarely owned by traders unless it is for export.
	· Publicly owned Storage	• Managed by the government (FRAs) or parastatal agencies • Agencies like the FRAs or parastatal marketing agencies (like ADMARC) tend to dominate the ownership of formal storage facilities (silos), which have required significant investment from the government. • These sheds are, however, used at sub-optimal levels (low-capacity utilization) or with poor management, leading to high rates of spoilage. There is limited detailed information on the specific levels of capacity utilization rate, and so increased research is required in this area.
Processing	· Hammer (grist) mills	• These are operated at the village or neighborhood level and usually grind maize for a service fee with the capacity of up to a few tonnes per day.
	· Large flour mills	• The large milling companies dominate the maize meal industry, providing zmilling operations, including wheat, so maize is another important part of their overall business equation.
	· Feed Mills	• They can either be standalone mills, producing feed for commercial sale, or they can be linked into the animal fattening process, depending on location.
End Markets	· Maize flour · Animal feed	• Most of the maize is used as maize flour which is sold by retailers such as shops and supermarkets directly to consumers. • Animal feed is mainly sold by processors to buyers involved in animal production.
Support Services	· Input and equipment suppliers	• Consist of suppliers of inputs (seeds, fertilizer, etc.) and equipment to farmers (maize and all other crops).
	· Pure services	• Management services to operate storage silos.
	· Extension services	• Mainly governmental and parastatal entities which provide advice to the farmers.
	· Financial services	• Including investment capital, working capital, or insurance, which cut across each function of the value chain.

Source: Fieldwork and AECOM International development, SA Trade Hub Feb 2012.

A list of stakeholders and contact details is presented in Annex 3.

5.5. Key findings on value chain

Maize represents a high potential sector, being the second-largest revenue-generating agro-industry. The region produces sufficient quantities of maize to feed households at costs that are lower than the market price of food staples. Maize is also a source of income, even at subsistence levels of production. More than 60 percent of the maize produced is for the producers' consumption. Promoting maize production through different subsidy/assistance schemes available for households can be part of the solution to poverty alleviation. There are opportunities to develop more maize in the region by improving the yield levels and upgrading the sector. With a suitable strategy, this sector has the potential to grow and supply the feed industry in the region.

However, the maize sector in Southern Africa still faces various challenges and threats. Maize production is highly dependent on weather patterns and, therefore, subject to large variations between seasons. Most of the region's production structure is still dominated by small farmer operations with a low skill base, low input levels, and operating at uneconomic levels. The barriers to entry at the producer level are high due to the cost of land, equipment, and input. Small farmers have limited access to machinery. The majority of them still use livestock and hoes for cultivation and have little knowledge on issues of climate change, pest, and disease control. The high costs of imported herbicides and pesticides also represent an additional burden on maize production. Limited access to financial services represents an additional constraint. In Zambia, for example, most small-scale farmers have insufficient capital and therefore have to depend on the government-funded Farmer Input Support Program (FISP), which regrettably is heavily politicized and inadequate.[22] The high cost of production deters farmers from producing for commercial purposes, and therefore maize is grown for their consumption. In Malawi, farmers have limited access to technical assistance and rural storage facilities.[23] Government extension services and research capacity for high-quality seed inputs are still quite weak, thus are unable to spur stronger development of this sector. Maize production is also subject to imported inputs such as fertilizers, chemicals, and mechanization, resulting in high production and maintenance costs.

Policies for the maize sector are inadequate. In Zambia,[24] government restrictions on maize exports, under the pretext of first satisfying national food security, represent a commercial disadvantage to local farmers. This has led to increased instances of maize smuggling across the borders into Angola, DRC, Malawi, Mozambique, and Zimbabwe. The Government policy of promoting maize as the main food crop has grossly undermined the development of other food crops such as cassava, rice, millet, sorghum, and potatoes. As a result of this maize food policy, the prices of mealie-meal have become political too. In Malawi, major policy gaps include the absence of updated national food laws, standards, and specifications for food products and quality control. The implementation of national policies that highlight maize as a strategic crop such as the Action Plan for Food Production (PAPA 2008 – 2011) and Strategic Plan for the Development of the Agricultural Sector (2011 – 2020), is also weak.

According to Kornher (2018),[25] due to the strategic importance of maize, markets are characterized by significant public intervention in the form of price stabilization programmes, domestic price policies, border measures, and input subsidy programmes. These policies are helpful to increase food availability and accessibility in the short run, but they also stimulate inefficient production in the long run, which conflicts with the goal of sustainable intensification of agricultural production. Additionally, non-tariff barriers to intra-regional trade due to government intervention and/or involvement also create uncertainty, thus impacting private sector involvement.

22 According to Zambia Fieldwork
23 According to Malawi Fieldwork
24 Data from field work
25 Kornher, L. (2018), Maize markets in Eastern and Southern Africa (ESA) in the context of climate change. The State of Agricultural Commodity Markets.

5.6. Recommendations

Based on the findings on the obstacles and challenges highlighted in the previous section, the below table identifies recommendations specific across the maize value chain in Southern Africa.

Table 4. Recommendations for Maize Value Chain

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Investment Level **	Timeline ***	Potential Partners
Improve access to extension services; establish inputs sale points (agro-dealers) countrywide to facilitate access to inputs by smallholder farmers. Provide training for smallholders on grain production and storage to improve maize quality.	Improved quantity and quality of production.	Producers.	Medium	High	Low	Short	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Private Sector
Promote collective action through the creation and strengthening of farmer/ agro-processing associations or cooperatives, such as Rotating Credit and Savings Groups to facilitate access to credit, and innovation platforms to discuss maize issues.	Improved bargaining power of the value chain actors; Better-integrated value chain.	Producers; Processors.	Medium	Medium	Low	Short/ Medium	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Afreximbank, Private Sector
Scale-up outgrower schemes at the national level to increase the participation of smallholder farmers in the value chain. Establish market price information services for price transparency and support of commodity exchanges.	Enhanced market linkages and access to information to allow all actors to actively participate in the value chain.	Producers, processors, traders.	High	High	Medium	Short/ Medium	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Private Sector

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Investment Level **	Timeline ***	Potential Partners
Capacity building on quality standards and specification for maize products required at regional and international levels.	Improved quality and harmonized standards to meet market requirements.	Producers, processors, exporters.	High	High	Low	Short	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF
Rehabilitate and build feeder/rural roads to improve mobility between maize production zones and consumption areas. Facilitate the establishment of warehouse and storage networks across the region; promote the use of grain storage facilities and warehouse receipt systems to reduce post-harvest losses and improve grain quality.	Reduced post-harvest loss incurred along the value chain; Enhanced linkage from producers to end-consumers.	Aggregators, wholesalers, retailers, exporters.	High	Medium	(Very) High	Medium/ Long	Departments of Agriculture, World Bank, IFC, IFAD, Afreximbank, Private Sector
Review national policies on export restrictions. Facilitate access to transport license or transit permits for carrying cargo and address cross-border transport constraints to reduce NTBs related to maize transport/trade.	Reduced NTBs and overall trade costs to support intra-regional trade.	Aggregators, exporters.	High	High	Medium	Short/ Medium	Departments of Agriculture, World Bank, IFC, IFAD

*For Regional Food Trade; ** Investment level: Low (0-5 million); Medium (5-15 million); High (>15 million); ***Timeline (Short 0-2 years, Medium 3-5, Long 5+). Notes: BMGF = Bill & Melinda Gates Foundation. Source: Author's compilation

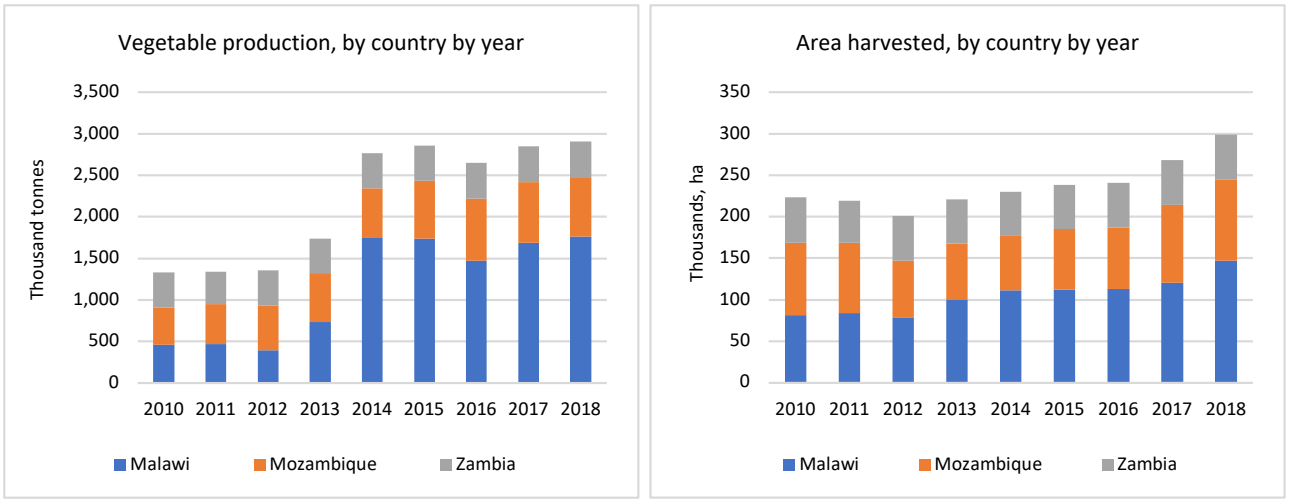
6. Vegetables Value Chain

6.1. Key consumption, production, and trade trends

Vegetables are a source of supply for self-consumption and generation of extra income for households in Southern Africa. In Malawi, about 21 percent of traditional vegetables produced are for home consumption, while the surplus is sold in traditional green markets without any value addition. It was found that traditional vegetable sales contributed about 35 percent of smallholders' income in the country.[26] In Mozambique, 36 percent of farmers produce vegetables, and 8 percent of them sell vegetables. "Emerging commercial," medium-scale farmers are responsible for only three percent of vegetable areas, while large-scale farmers are responsible for the remainder.[27] In Zambia, an estimated 20 percent of the 1.5 million smallholder farmers engage in horticulture production.[28]

Despite some fluctuations, total vegetable production in the three countries is generally on an increasing trend. According to FAOSTAT data, Malawi's total vegetable production has increased significantly over the years, almost quadrupling from 0.46 million tonnes to 1.7 million tonnes in the 2010-2018 period.[29] Mozambique's vegetable production has seen a slower but stable increase, while Zambia's vegetable production has shown sluggish growth. The increases in vegetable production concur with the patterns of cultivating area expansion in each country, as shown in Figure 8. The main vegetables cultivated are tomato, onion, and cabbage.

Figure 8. Vegetable Production and Area Harvested, by Country by Year, 2010-2018



Source: FAOSTAT

Vegetable farming is mainly conducted on a small scale. In Mozambique, 83 percent of the total area under vegetable crops is exploited by smallholder farmers who cultivate on average 0.25 hectares. Medium and large-scale commercial farmers exploit the remaining 17 percentage of the total vegetable fields. In terms of production area, the Beira corridor (Tete, Manica, and Sofala) has

26 Chagomoka, T.; Afari-Sefa, V. & Pitoro, R. (2014). Value Chain Analysis of Traditional Vegetables from Malawi and Mozambique. International Food and Agribusiness Management Association. 17. 57-83.

27 USAID (2016). Mozambique Agricultural Value Chain Analysis. LEO Report #31, June 2016, pp50. Available at http://www.acdivoca.org/wp-content/uploads/2016/09/Report-No31-Mozambique-VCA-Report.pdf

28 Mumba M., Mwanamambo B., Mwale M., Sichivula I. & Musaba (2015). Horticulture Sub-Sector Study Report 2015: Mapping Investment Opportunities in the Horticulture Sub-Sector: The Case of Vegetable Value Chains in Zambia. AgBIT (Agribusiness Incubation Trust Limited).

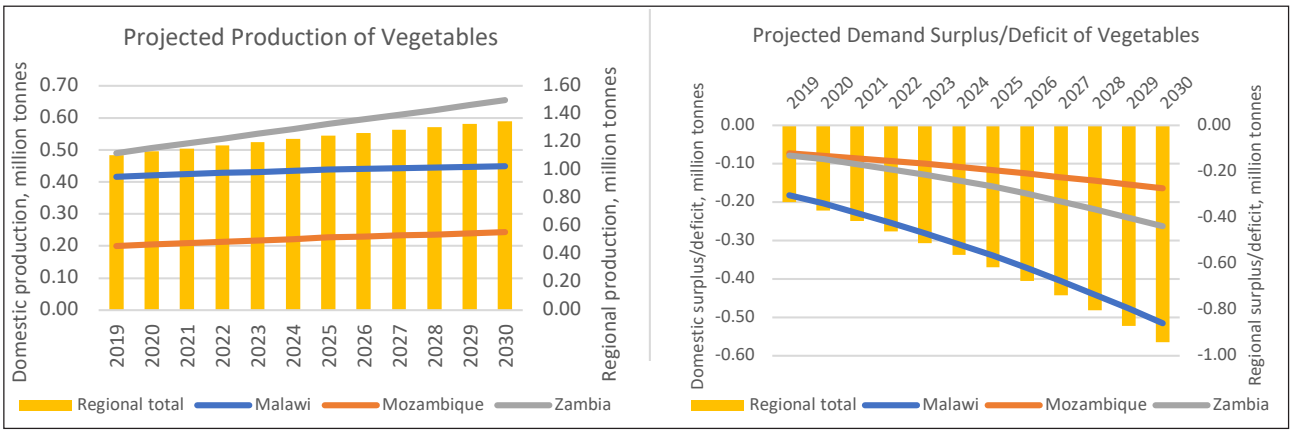
29 Aggregated data from FAOSTAT and thus might cover different vegetable categories. This grouping also differs from international trade classifications for vegetables that includes melons and watermelons, which are normally considered to be fruit crops, according to FAO.

the largest area under vegetable production, accounting for 57.4 percent of all horticulture cultivating areas. The Nacala corridor (Nampula province) and Maputo corridor follow with 25.5 percent and 17.1 percent of the total horticulture area, respectively. In Zambia, smallholders constitute 83 percent of vegetable producers. Vegetables are grown throughout the country with varying quantities; however, only four provinces (i.e., Central, Copperbelt, Lusaka, and Southern provinces) are said to have enough volumes for aggregators.[30] In Malawi, although vegetables are grown almost everywhere in the country, Thyolo and Zomba in the Southern region are major vegetables producing localities for sale to the urban population.[31]

Vegetables are generally sold in markets close to production areas given the high perishable nature, weak transport infrastructure, and limited cold chain. For example, in Mozambique, small-scale vegetable farmers typically sell their products directly to consumers at local markets, local traders, or semi-commercial farmers who aggregate produce for transport to urban markets. There is little processing or value addition to vegetables as they pass through the value chain. Meanwhile, most retailers sell at informal spot market locations, ranging from small, roadside locations to medium-sized crossroad retail clusters to village-based informal markets. The retailers at smaller locations are often farmers themselves or small-scale traders, while produce in village green markets will often change hands at least twice before arriving at the market. In Zambia, most of the farmers take their produce to open markets in all the country's districts, such as Soweto Market in Lusaka, while some farmers simply sell their vegetables on open vans or trucks along the streets.[32]

In terms of future trends, domestic demands in the three countries are expected to grow by 50 to 60 percent during the 2019-2030 period. The regional demand for vegetables is projected to reach 2.3 million tonnes in 2030. Projected production, on the other hand, is expected to grow at a much slower pace during the same period, from just eight percent in Malawi to around 34 percent in Mozambique. This would lead to a deficit in vegetable production in all three countries, totaling 0.9 million tonnes in 2030, according to IFPRI data (Figure 9).

Figure 9. Projected Production and Demand of Vegetables in Malawi, Mozambique, and Zambia



Source: IFPRI

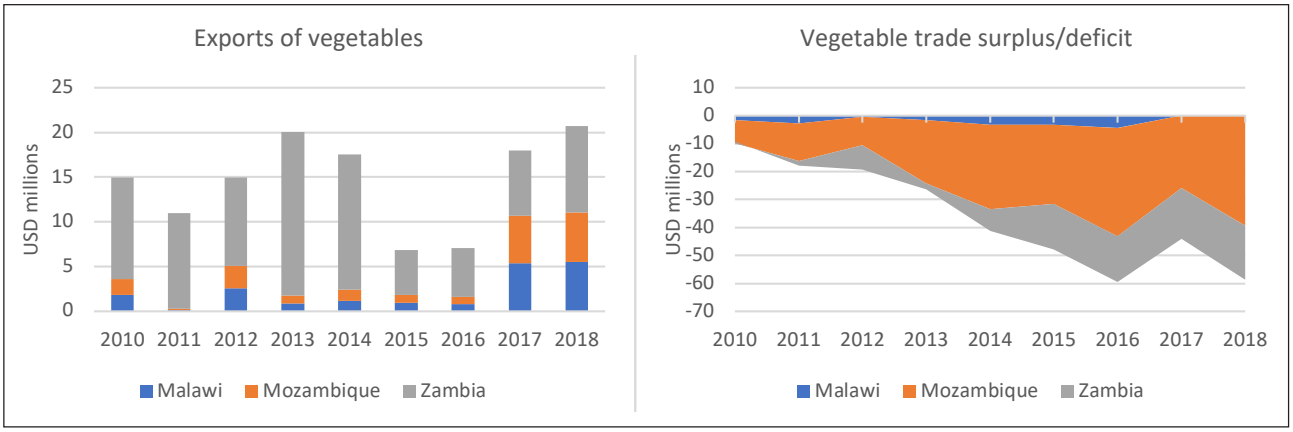
Increased demand for processed vegetable products indicates development potential in the processing industry. For example, total imports of tomato ketchup and other tomato sauces (HS 210320) in the three countries have increased by 76 percent during the 2010-2019 period. Though the figures are still small compared to other countries in the larger region, this increasing trend indicates an opportunity for investment in the processing industry.

In terms of trade, only Malawi has a trade surplus of vegetables. However, the balance is quite small (approximately USD 0.2 million in 2018). Mozambique has the largest trade deficit in this sector

30 According to field work consultation
31 Chagomoka, Afari-Sefa,& Pitoro (2014), ibid.
32 According to field work consultation

as it imports the most vegetables in the region, reaching USD 39.6 million in 2018. Zambia's exports of vegetables amounted to USD 9.6 million in 2018 (Figure 10). Interestingly, more than 90 percent of the imported vegetables in the three countries are sourced mostly from South Africa, while the export markets for these countries include the wider SADC group and the EU.

Figure 10. Vegetable trade in Malawi, Mozambique, and Zambia



Source: ITC Trademap

6.2. Key regional competitiveness drivers and challenges

The vegetable value chain in Southern Africa has been facing a number of challenges that have impeded the realization of this sector's potential and limiting its competitiveness at national and regional levels. For example, low seed availability and quality are affecting the productivity of vegetables and consequently limiting availability in the market. This results in high prices for consumers. Pests and diseases and the inability to procure fertilizers and other inputs by the farmers lead to loss or low productivity of vegetable crops. Limited access to irrigation water and lack of post-harvest facilities nullify the possibility of marketing products during the shortage period (the hot season). The weak enabling environment for vegetable production and marketing puts local vegetable producers at a disadvantage compared to other vegetable-producing countries such as South Africa. Prolonged water shortage is another challenge that has resulted in the poor generation of electricity and thereby affecting mechanized irrigation of vegetables. Additionally, there are some long-term challenges, such as the deteriorating impacts of climate change. The above factors, combined with the lack of policies to facilitate trade, reduce the potential of vegetable exports from the region.

Most of the region's vegetables are sold in informal markets by the producers themselves or by the collectors. This informal, traditional channel, which has been used for centuries, does not provide incentives to producers to conform to good agricultural practices (GAP) or other certified schemes that could provide access to high-priced markets, such as supermarkets or exports. Underdeveloped transportation and logistics infrastructures (such as cold chain facilities) affect the commercialization of vegetables. High transport costs and unreliable connectivity emerged as significant additional constraints for expanding intra-regional trade of vegetable products.

6.3. Regional transportation and logistics routes

The national logistics services in the region for the vegetable value chain are not well organized. According to fieldwork research, there are no specialized service providers to transport vegetables from production to consumption zones in Mozambique. Wholesalers and retailers use conventional trucks (with a capacity of 1.5 – 2.0 tonnes) to transport the vegetables to markets that are located near the production zones. In the Maputo' Green belt area, individual transporters' lower capacity vehicles are used to transport vegetables to the city. A combination of the high perishable

nature of fresh vegetables, weak transport infrastructure, and limited cold chain vehicles create a challenging situation for long-distance transportation of fresh vegetables. This situation limits the supply of vegetables to markets located outside the provinces. As a result, local producers represent the main suppliers of vegetables to these markets.

Table 5 presents the main roads and corridors on the vegetable value chain.

Table 5. Transport roads and corridors for vegetables value chain

Country	Starting Point	Corridor(s) / Roads Used	Destination
Mozambique	Maputo Green Belt - Maputo	EN1	Local retailers' market
	Moamba – Maputo	Maputo corridor and EN4	Maputo city – Zimpeto Wholesale market
	Boane - Maputo	Maputo corridor and EN2	Maputo province
	Chokwe - Gaza	Limpopo corridor and EN1	Maputo city – Zimpeto Wholesale market
	Manica	Beira corridor, EN6 and EN1	Beira, Tete and Zambezia
	Angonia - Tete	Beira corridor, EN6 and EN7	Tete city and Beira
	Ribaue - Nampula	Nacala corridor	Nampula city
Zambia	Lusaka	Great North Road	Central and Copperbelt provinces and DRC
	Copperbelt	Great North Road	Central, Lusaka, and DRC
	Central Province	Great North Road	Copperbelt, Lusaka, DRC
	Southern Province	Great North Road/Zambia Railways	Lusaka and Copperbelt regions.

Notes: Information on Malawi transportation routes is unavailable. Source: IEC, based on fieldwork.

6.4. Value chain stakeholder analysis

In Malawi and Mozambique, the vegetable value chains comprise two market segments: traditional vegetables and exotic vegetables. The domestic traditional vegetable market is driven by localized production and consumption, comprised mostly of amaranth, Ethiopian mustard, blackjack (Malawi), African eggplant, and mallow (Mozambique). The exotic vegetable market is focused on domestic markets, including restaurants and supermarkets, and comprises tomato, onion, pumpkin, okra, etc. The vegetable value chain in the region is quite simple with three main market player groups: support/inputs actors (suppliers, finance providers, government, etc.); production actors (farmers); and markets (trading, marketing, consumption).

The vegetable value chain is composed of non-structured informal markets, which are major outlets for traditional vegetables in Malawi and Mozambique. In general, produce is mainly marketed through three channels: (i) farmers produce and sell their traditional vegetables directly to consumers as market retailers or street vendors; (ii) farmers sell to retailers; and (iii) farmers sell to middlemen (collectors). Processing of traditional vegetables is rudimentary (i.e. only sun-drying and/or blanching). Only 12 percent of retailers in Malawi and 6 percent of retailers in Mozambique indicated that they process their products before selling. Formal retail distribution channels (i.e., grocery stores, supermarkets) as well as exports exist but are generally underdeveloped.[33,34]

33 Chagomoka, Afari-Sefa,& Pitoro (2014), ibid.
34 USAID (2016), ibid.

In Zambia, vegetable distribution channels have larger participation of processors. The first two distribution channels of vegetables in Zambia are (i) *open markets* (Soweto in Lusaka, Chisokone in Kitwe, and Kasumbalesa on the border with DRC); and *(ii) formal markets* (comprising retailers such as Foodlovers market, Freshmark, Fruit and Veg City and P N' P supermarkets). The third channel includes processors such as Rivonia, Freshpikt, and Ronipam Enterprise located in Lusaka. These main processes tomatoes, onion, and chili.[35]

Table 6 below illustrates the major actors and their activities across the vegetable value chains in the three Southern Africa countries.

Table 6. Key Actor in Southern Africa Vegetables Value Chain

Actor	Description
Input suppliers	Mainly stockist distributors who provide production inputs such as agrochemicals, farm implements, and seeds for production. Most inputs supplied by these providers are imported and delivered through local distributor networks. Some individual farmers also act as input dealers. Government outlets supported by the Ministry of Agriculture provide inputs such as fertilizers in some villages.
Farmers	Mostly small-scale farmers who cultivate on areas of less than one hectare, based on conventional production practices without application of good agricultural practices such as the use of improved cultivars, integrated pest management, and drip irrigation. Farmers are not involved in supplying inputs, but some of them participate in retail and middlemen activities.
Middlemen/ Collectors	These consist of operators who buy goods from producers and sell them to retailers or consumers also referred to as collectors and transport contractors. The main activities of these actors include the collection of traditional vegetables (36 percent), ownership and management of grocery shops (29 percent), street vending (21 percent), and farming (14 percent). Most transporters vertically integrated their activities by also engaging in the production and selling of vegetables.
Outlets/ Consumers	These are local consumers for traditional vegetables, restaurants, tourist establishments, and supermarkets for exotic vegetables, who use different channels: directly in open markets, through middlemen, etc.

Source: Author's compilation based on USAID (2016), Chagomoka, Afari-Sefa,& Pitoro (2014), and Mumba et al. (2015)

A list of stakeholders and contact details is presented in Annex 3.

6.5. Key findings on value chain

Similar to other agricultural sectors, vegetable production in the three studied Southern African countries is hindered by multiple challenges across the value chain. Generally, these include lack of access to quality production inputs, old farming practices, insufficient access to market information, underdeveloped market structure, limited access to finance, etc.[36] Table 7 highlights the challenges specifically faced by actors along the vegetable value chain in Southern Africa.

35 Mumba M., Mwanamambo B., Mwale M., Sichivula I. & Musaba (2015). Horticulture Sub-Sector Study Report 2015: Mapping Investment Opportunities in the Horticulture Sub-Sector: The Case of Vegetable Value Chains in Zambia. AgBIT (Agribusiness Incubation Trust Limited). Available at https://www.rvo.nl/sites/default/files/2016/08/Final-Report-Horticulture-Subsector-in-Zambia.pdf

36 For an overview of existing market information systems, see Annex 4.

Table 7. Challenges across the Vegetables Value Chain

Areas	Challenges
Production	· High cost of inputs such as seed, fertilizers, herbicides, and pesticides. · Low seed availability and quality. · Limited access to and use of inputs. · Limited access to irrigation water. · Limited access to technology, especially among small-scale farmers. · Difficulties in pest management: regular outbreaks of diseases and stubborn pests. · Limited information to manage drought, pests, and diseases for small-scale farmers. · Lack of title to land by most small-scale farmers leads to challenges in accessing loan facilities from banks and other financial institutions. · Lack of machinery such as tractors to increase productivity and production to meet the demand by retail stores. · Lack of transport (vehicles) with many depending on oxcarts and bicycles to deliver products to urban markets. · The high cost of electricity (for commercial farmers); unreliable supply of electricity has negative effects on mechanized farming and irrigation. · Lack of staff for agricultural extension services to guide farmers; where they are available, there is a lack of transport to visit farms.
Processing	· Unreliable supply, unpredictable quality, and seasonality of production. · Inadequate facilities to process vegetables resulting in limited added value. Some of the valuable vegetables, such as tomatoes, end up rotting due to a lack of processing. · Lack of financial resources for most farmers to set up mini-processing facilities
Marketing	· Most major distribution channels, e.g., supermarkets which buy in bulk, are not accessible to small-scale producers. Limited direct access to stores, farmers must go through the stores' registered supplier. · Unstructured markets with most vegetables being sold at markets or along the streets, which distort prices and make production planning difficult. · Most small-scale farmers have no capacity to advertise or brand their vegetables as required by major buyers. · Most markets are located very far from the farms (for example, farmers in Mumbwa district travel about 200 km to Lusaka's Soweto Market to sell their vegetables). · Limited use or lack of cargo vehicle with cooler (cold chain facilities) for vegetable transport. · Lack of distributional channels to cut down on the long distances from production to consumption areas · Export restrictions, cumbersome and lengthy process of obtaining permits. · Lack of information on market demands and potential buyers.

Areas	Challenges
Transport & Communication	· Most feeder roads are not graded regularly, thereby making accessibility difficult. · High cost of transport due to high fuel cost and poor road networks in most rural areas. · High cost to obtain a leading truck license for vegetable transport (e.g., in Mozambique). · Transportation to rural areas becomes difficult during the rainy season due to the poor condition of roads as a result of rain. · The mobile phone network is unreliable in some areas, therefore making it difficult for farmers to obtain market information.[37]
Policy Gaps	· Lack of enabling environment for vegetable production and marketing. · Absence of updated national food laws and safety, standards, and specifications for food products and quality control. · Most farmers are not aware of the export policy for vegetables. · Exporting process is bureaucratic, with many authorities involved in processing export papers. · The covid-19 outbreak affected demand and supply for vegetables generally, resulting in loss of revenue and market for many farmers. Lack of government policies for the sustainability of farmers as well as inadequate assistance has severely affected farmers.

Source: IEC based on fieldworks

Regional policies

Agro-processing is considered one of the six prioritized value chain clusters for potential development under the SADC Industrialisation Strategy and Roadmap 2015-2063. The roadmap recognizes regional value chains as an important tool in driving structural change and industrialization. Within the agro-processing cluster, ten potential value chains have been identified, along with several countries that have the potential for value chain enhancement. Amongst those are meat (poultry and beef), cassava, and horticulture.[38]

Malawi, Mozambique, and Zambia have overall agriculture policies but lack a specific policy framework for the vegetable sector. However, there have been some actions to promote this sector across the countries. Malawi has put priority focus on research to address challenges in vegetable cultivar and breeding. The research focuses on increasing availability of high-yielding cultivars, adaptability of improved cultivars to both biotic (pest and disease resistance) and abiotic stresses (heat tolerance), improvement of soil fertility, good on-farm agricultural practices, and minimization of postharvest losses. It also made efforts to undertake regional harmonization of laws and policies to enhance the growth of the seed industry in terms of certification and commercialization, though with limited enforceability recorded. However, public sector breeding activities to produce good quality seeds are almost non-existent and are limited due to lack of funding as well as private sector involvement.[39]

Zambia has also promoted horticulture by participating in high-level regional and global meetings to promote the agro sub-sector, share experiences, stimulate investments, and exploit trade opportunities among participants from across the east and southern African regions.[40] The Zambia National Agriculture Policy (NAP) 2012-2030 focuses on, among others, improved access to productive re-

37 For an overview of existing market information systems, see Annex 4.

38 SADC (2015). SADC Industrialisation Strategy and Roadmap 2015-2063. Available at https://www.tralac.org/documents/resources/sadc/1147-sadc-industrialisation-strategy-and-roadmap-2015-2063-english/file.html

39 Chagomoka, Afari-Sefa & Pitoro (2014), ibid.

40 Zambia Daily Mail Limited (2016). Zambian economy turns to horticulture. Available at http://www.daily-mail.co.zm/zambian-economy-turns-horticulture/

sources and services for small-scale farmers to enable them to increase production of staple foods, including fruits and vegetables, for their consumption with the surplus for income generation. [41]

6.6. Recommendations

Key recommendations specific to the vegetables value chain in the three studied Southern Africa countries include:

Table 8. Recommendations for Vegetables value chain

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Invest-ment Level**	Time-line***	Potential Partners
Expand agricultural research in high-yield vegetable varieties. Establish coun-trywide input sale points to facilitate access to inputs.	Improved quantity and quality of production; Higher val-ue-added for producers.	Producers	Medium	High	Low	Long	Departments of Agricul-ture, FAO, IFAD, USAID, FCDO, BMGF
Promote the estab-lishment of associ-ations and cooper-atives in vegetable production and agro-processing to promote commer-cial production and access to credits, especially for small-scale producers. Promote the out-grower scheme to enhance the participation of smallholder farmers in the value chain and availability of vegetables in the market.	Enhanced market link-ages to allow all actors to actively participate in the val-ue chains; Better inte-grated value chain.	Producers, processors, traders.	High	High	Low	Short/ Medium	Departments of Agricul-ture, FAO, IFAD, USAID, FCDO, BMGF, Private Sector

41 Government of Zambia (2011). The National Agriculture Policy 2012-2030, August 2011, Published by Ministry of Agriculture and Co-Operatives.

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Invest-ment Level**	Time-line***	Potential Partners
Provide capacity building on good practices for production, storage, ecological pest management practices (IPM), low-cost and efficient post-harvest technologies for cooling, cleaning, sorting, and packing to increase added-value, quality standards, and food safety, especially for small-scale producers and processors.	Improved quality of products to match market re-quirements and potential exports.	Producers, aggrega-tors, pro-cessors, traders.	High	High	Medium	Short/ Medium	Departments of Agricul-ture, FAO, IFAD, USAID, FCDO, BMGF
Rehabilitate and develop infrastructure (rural roads, irrigation systems) to facilitate production and improve mobility between production and consumption areas. Facilitate access to cargo vehicles with cooler to conserve vegetables during transportation.	Reduced post-harvest loss incurred along the value chain; Reduced overall trade costs; Enhanced linkage from producers to end-consumers.	Aggrega-tors, whole-salers, retailers, exporters.	High	Medi-um	(Very) High	Long	Departments of Agriculture, World Bank, IFC, IFAD, Afreximbank, Private Sector

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Invest-ment Level**	Time-line***	Potential Partners
Review and update laws and regulations on food safety, standards, specifications, and quality control for food products. Clarify and simplify export procedures for vegetables as perishable goods to be consistent and in line with international/ regional standards. Remove tariff and non-tariff barriers to facilitate imports of inputs to increase input use.	Harmonized standards and regulations; Reduced NTBs and overall costs to support intra-regional trade.	Producers, processors, exporters.	High	High	Medium	Medium -Long	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF

*For Regional Food Trade; ** Investment level: Low (0-5 million); Medium (5-15 million); High (>15 million); ***Timeline (Short 0-2 years, Medium 3-5, Long 5+). Notes: BMGF = Bill & Melinda Gates Foundation. Source: Author's compilation

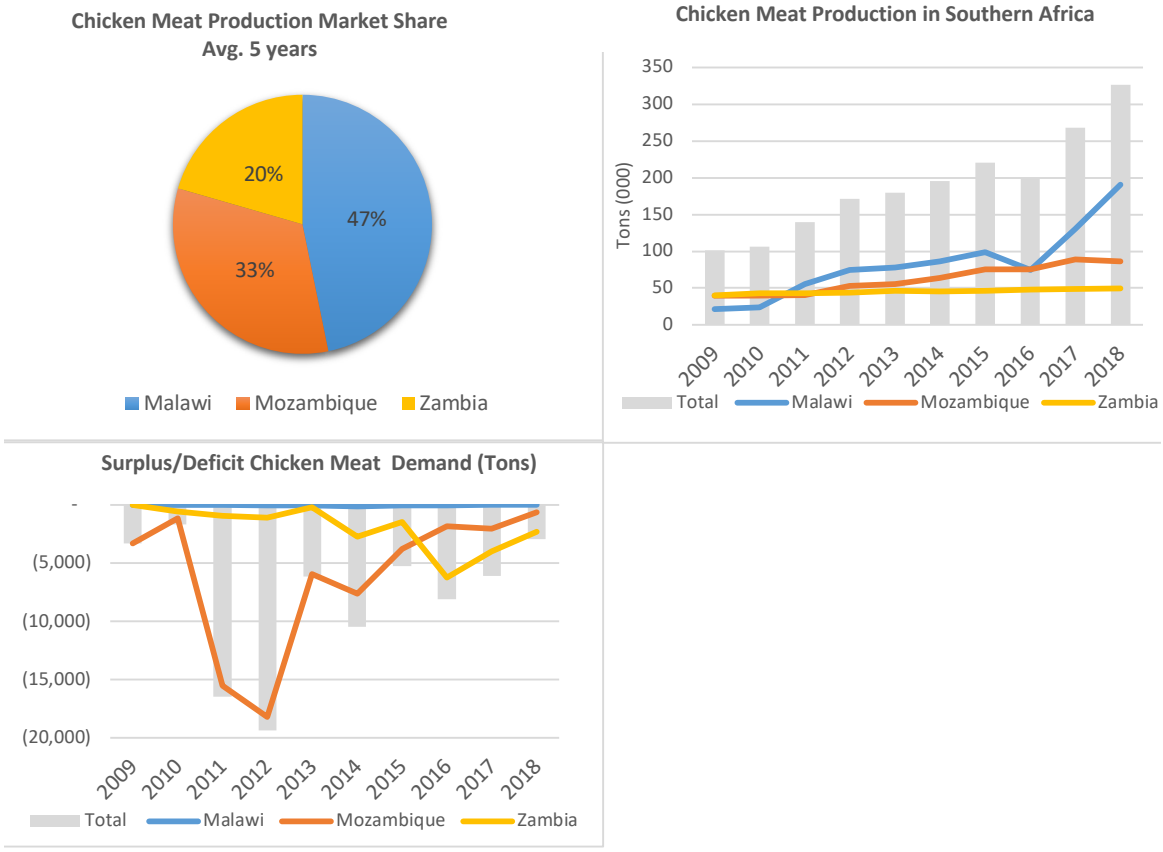
7. Poultry Value Chain

7.1. Key consumption, production, and trade trends

In Southern Africa, poultry is among the major livestock products, contributing to the food security situation and economic growth. The poultry sector is a major source of meat protein for the population in these countries. In Mozambique, 65 percent of rural families rear chicken. Rural poultry has multiple roles in Malawi's society as it contributes to the food supply, household income, and is also a kind of asset.[42] According to the Zambian Ministry of Fisheries and Livestock, [43] poultry is currently the main meat consumed by the population, totaling an estimated 50 percent of the total meat consumption in the country.

The production and consumption of poultry have been increasing by an average of 14 percent and 13 percent over the last five years in these three countries. The region has produced an average of 242 thousand tonnes of chicken over the last five years, with 326 thousand tonnes produced in 2018. Malawi has been the largest producer with 47 percent of the total production, followed by Mozambique (33 percent) and Zambia (20 percent). With a demand of 248 thousand (5-year annual average) slightly exceeding production, most of the countries in the region had to import around 2.7 percent of the production. Data from the last five years indicates that countries are becoming more self-sufficient. Deficits have generally been low, with a peak, however, for Mozambique in 2011-2012 of 20 thousand tonnes (Figure 11).

Figure 11. Production and Consumption of Poultry Meat in Southern Africa



Source: FAO, ITC Trademap, and calculations from both sources.

42 Gondwe, T. & Wollny, C. (2000). The State of Poultry Production and Breeding Systems in Malawi.
43 *Bukasa, J. (2019).* The Zambian Poultry Industry. Available at https://www.mfl.gov.zm/?p=5405

Malawi is experiencing a growing market demand for poultry products driven by rapid urbanization and a growing middle class with increasing disposable income. This increase in demand has, in turn, given rise to commercial poultry production systems and the supposed need for a dual-purpose bird production system. Poultry farming is still predominantly traditional, and inputs remain a challenge or non-existent for most smallholders. Large commercial producers are vertically integrated and control between 70 percent and 80 percent of the market.[44] Commercial poultry production is concentrated around urban areas, especially Blantyre, Zomba, Lilongwe, and Mzuzu. Some commercial production systems are completely automated, environmentally controlled, or semi-automated with open houses. The sector uses mostly improved exotic strains for broilers and layers. The traditional sector is mainly in rural areas, with a few urban and peri-urban households keeping chickens in their backyards.[45]

Poultry, together with seafood, is one of the main sources of animal protein and also contributes to food security for the Mozambique population.[46] The poultry sector represents an important source of income for poultry producers and other businesses, along with the various segments of the value chain. It is also suited to small-scale operators and poor households in rural areas to increase their resilience by reducing vulnerability to rainfall and other shocks. Poultry production in Mozambique is increasing in line with growing consumer demand for chicken, but most of these producers are informal and source their feed in informal, local markets.[47] Poultry meat production is concentrated in the southern part of the country, with Maputo province accounting for 48 percent of total live chicken produced while Manica and Inhambane produce 18 percent and 20 percent of live chicken, respectively. In addition to these provinces, Zambezia, Cabo Delgado, and Niassa can be considered more as consumption areas of table eggs and chicken meat.

Growth has triggered investments by local and multinational firms in both animal feed and poultry, with major investments (and plans) occurring from 2012 to 2015. Primary producers (mainly with a South African footprint) of broiler parent breeding stock and day-old chicks have also invested in animal feed production and account for 65–70 percent of produced poultry feed in Zambia.[48] Poultry production is concentrated in the Lusaka and Copperbelt region, which account for 76 percent of the volume produced.

Poultry meat external trade volumes are relatively low in these three countries. Most of the chicken produced is consumed locally, with the annual demand variations compensated with imports. Overall imports have been fluctuating on a reducing trend since 2016. Imports, mainly from South Africa and Europe, represented only an annual average of 6.6 thousand tonnes. Intra-regional trade of poultry among the three countries is almost non-existent. A mix of import restrictions and government policies encouraging the poultry industry seems to have had an impact on the reduction of imports.

44 Malawi Commercial Agriculture for Smallholders and Agribusiness (CASA) (2020). Poultry Sector Strategy, Malawi Country Team, DFID, April 2020

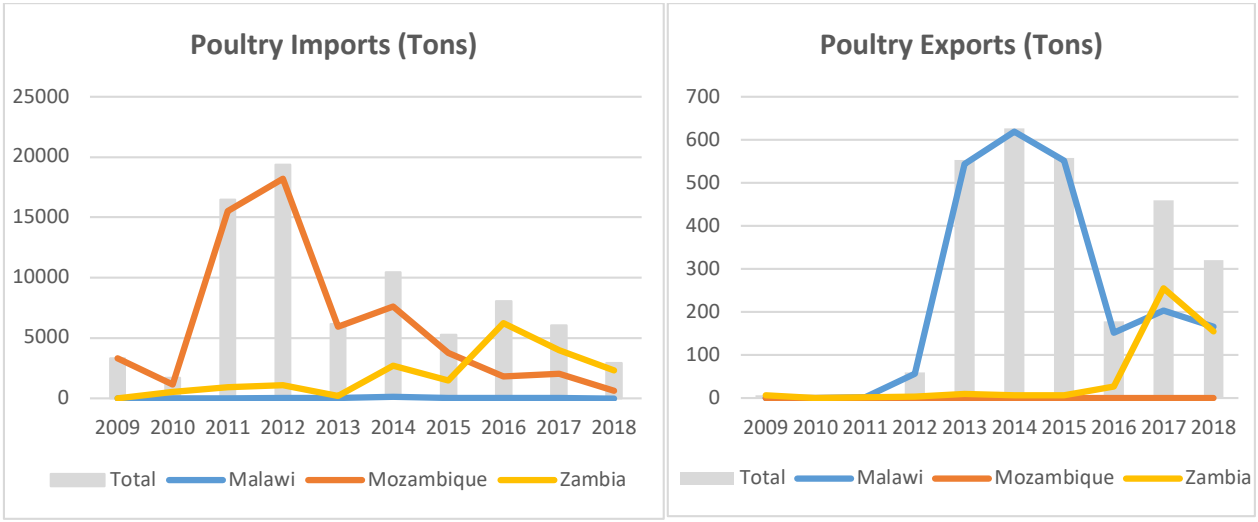
45 CASA (2020), Ibid

46 Bah, E. & Gajigo, O. (2019), Improving the Poultry Value Chain in Mozambique, Working Paper Series N° 309, African Development Bank, Abidjan, Côte d'Ivoire

47 Ledger, T. (2017). TIPS report for the department of trade and industry - Case study on the agricultural inputs regional value chain in Southern Africa: South Africa, Mozambique, Tanzania and Zambia. Published by Trade and Industrial Policy Strategies, December 2017.

48 Samboko, P. C., Zulu-Mbata, O. & Chapoto, A. (2018) Analysis of the animal feed to poultry value chain in Zambia, Development Southern Africa, 35:3, 351-368, DOI: 10.1080/0376835X.2018.1480932

Figure 12. Poultry Trade in Southern Africa

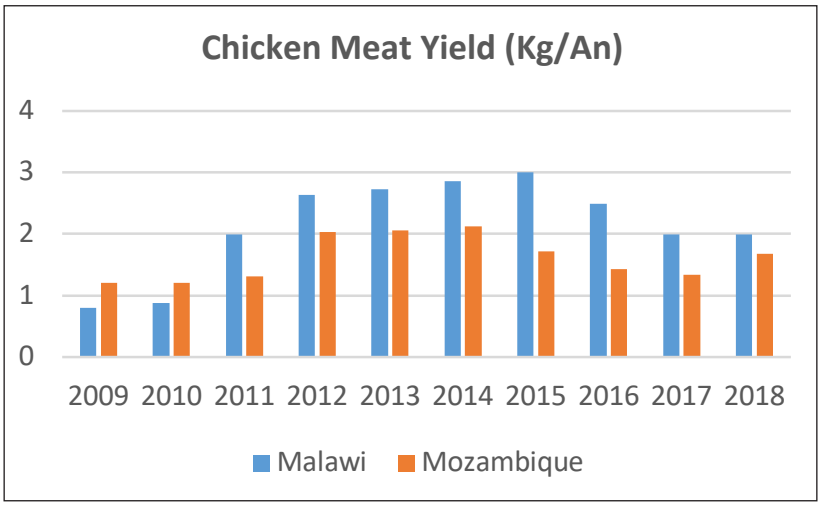


Source: ITC trademap

7.2. Key regional competitiveness drivers and challenges

A comparison of yield levels of poultry meat production indicates that these are slightly lower than the world's best producers. However, the producer prices for chicken meat were much higher than the world producers (1.82 times higher than Brazil, 2.12 times higher than South Africa, and 2.54 higher than the U.S.).[49] Available data from FAO for the year 2013 for all countries indicate that the cost of production is higher in Malawi and lower in Zambia. One of the factors that affect poultry productivity is affordable feed. This still seems to be a problem in the three focus countries and affects mainly the smaller producers. As an example, the cost of feed per chicken produced is higher in Zambia due to their inefficiency in converting feed to meat (i.e., a feed conversion ratio of 1.65 compared with 1.54 for South Africa). Consequently, the price of live chickens in Zambia was 7.4 percent higher than that in South Africa in 2015.[50]

Figure 13. Poultry Yield by Country



Source: FAOSTAT (data was unavailable for Zambia)

49 According to FAOSTAT data for the year 2013.
50 Samboko, P. C., Zulu-Mbata, O. & Chapoto, A. (2018) Ibid.

7.3. Regional transportation and logistics routes

Given that most of the consumption is carried out nationally, the transport of chicken in these three countries is limited to national routes.[51] In Mozambique, there are no specialized (refrigerated/cooler) transport services dedicated to poultry products (chickens and eggs). Wholesalers and retailers use normal trucks (their own or private transport companies) with cargo capacity (less than 1.0 - 1.5 tonnes) to transport live chicken to abattoirs and for distribution. Large processors use their own or hire higher capacity vehicles between production sites, slaughterhouses, and distribution sites. Table 9 below shows the corridors used to transport chicken.

Table 9. Poultry products trade corridors and volume traded in Mozambique

Starting Point	Corridor(s) / Roads Used	Destination
Maputo	Maputo corridor, EN1, EN2, EN4	Local market, Supermarket, and National markets
Manica	Beira corridor, EN6, EN7, EN1	Tete, Beira, Inhambane and Zambezia
Nampula	Nacala corridor, EN13, EN1	Local market, Cabo Delgado, Niassa
Tete	Beira corridor, EN7	Local markets and Supermarkets

Source: Fieldwork

In Zambia, large chicken growers subcontract to smallholder growers. They have their trucks - truck and trailer - fitted with crates which are used to collect chickens from the out-growers. In the poultry sector, there are no farmer-led aggregators as in, say maize, although small farmers have been unsuccessfully exploring the idea of setting up a farmers' cooperative. As a result, big processors dominate the market and engage in contracting agreements with farmers growing 10,000 chickens and above. The growers with direct access to markets transport live chickens to private/'freelance' abattoirs mainly in open trucks/vans and then to the markets.

Table 10. Poultry Products Trade Corridors and Volume Traded in Zambia

Starting Point	Corridor(s) / Roads Used	Destination
Copperbelt	Great North Road	Lusaka (mainly for eggs) and North West region
Lusaka	Great East Road	DRC/Copperbelt region
Central region	Great East Road	Southern and Copperbelt regions
Lusaka	Great South Road	Southern region
Lusaka Great East Road Western and Eastern regions		
Lusaka	Great North Road	Kasama

Source: Fieldwork

51 Information for Malawi is unavailable.

7.4. Value chain stakeholder analysis

The value chain of the poultry sector in Southern Africa comprises the following operators whose roles and activities are described below.

Table 11. Key Actors along Poultry Value Chain in Southern Africa

Actors	Description of activities
Input suppliers/ Primary Producers	This category consists of producers of day-old chicks, animal feed, vaccines, and vitamins. Day-old chicks are produced by international breeding companies which provide parent stock to producers of hatching eggs for layers and broilers. These are the only firms owning grandparent breeding stock imported from Europe. Few firms control the broiler industry's production parameters. In Mozambique, for example, the distribution of poultry inputs is dominated by large and vertically integrated companies, which produce and sell feed and chicks.
Secondary producers	This category consists of broiler producers and is divided into small and large-scale commercial producers. Commercial producers include contract growers and out-growers. The proportion of commercial and small-scale producers varies between countries. While in Zimbabwe and Mozambique the production is dominated by small producers, in Malawi large producers have a larger share of the market. Production is also carried out by vertically integrated firms which have a collaborative value chain structure. Under this collaborative structure, different units engage in mutually beneficial long-term strategic partnerships, linking with their feed production unit, processing facilities, and chain stores across the country. Integrated companies in Mozambique often use out-grower systems, providing inputs (seeds, fertilizer, and pesticides, chicks, and feed) to smaller producers, and collecting grown chicken for marketing. In rural markets, aggregators usually buy from the producers and resell in bulk on the market.[52] In Malawi, village poultry farmers tend to cater to local demand for chicken meat and eggs in rural towns and villages and their consumption.[53]
Aggregators	These consist mainly of agents, vendors, and middlemen who operate both at rural and urban levels. Aggregators mainly buy from chicken producers by collecting at farms and selling in specified markets, either as live birds or after slaughter. Farmers rarely deliver directly to consumers. A significant number of aggregated poultry products are traded through the informal markets as live birds, dressed whole birds, and eggs. In some out-growers schemes, the collection is carried out from household to household and consists of a supply channel between rural and urban markets. With no contract farming arrangements in Malawi, there is a significant dependency on aggregators to link smallholders to markets, while commercial producers are vertically or horizontally integrated from inputs to processing.[54]

52 Bah & Gajigo (2019), ibid.
53 CASA (2020), ibid.
54 CASA (2020), ibid.

Actors	Description of activities
Processing	The large processing firms only account for 3.42 percent of the processed output in Zambia. Other smaller processors account for the remaining market share.[55] Mozambique has 6 officially registered poultry slaughterhouses that supply slaughtered and processed chickens to the main urban centres.[56] In Malawi, most of the processing is carried out by a mix of small manual abattoirs (slaughter slabs), independent abattoirs, and integrated company abattoirs and processing units. The number of poultry slaughterhouses and processing plants is increasing, and integrators are developing national distribution networks.[57]
Wholesale and retail traders	In Malawi, 80 percent of chicken production is sold through informal markets as live chickens, while the remaining 20 percent goes through formal markets.[58] In Zambia, most of the branded chicken (i.e., those coming from established producers) is mainly sold to supermarkets. Unbranded chicken coming from the smaller and medium producers is sold to the smaller stores and supermarkets owned by locals or individual foreigners. Approximately 2-3 percent of the processed chicken is exported to the DRC. Smaller producers tend to sell their chicken live, mostly at local open markets or directly to consumers. Anecdotal evidence from fieldworks suggests that a significant percentage of live birds is sold through informal markets (e.g., Kasumbalesa) into DRC. In Mozambique, companies involving in large-scale production (such as Highest (Maputo) and Empresa Avicola Abilio Antunes (Manica)) sell mainly to the major supermarkets in the country. Supermarkets also get supplies from medium chicken producing companies, especially those in the Northern and Central regions. In urban areas, chickens are sold by a group of women called “Muskeristas”, who buy (often under contract) large quantities of live chicken (more than 200 broilers) for selling at urban retail markets. Some small farmers have slaughterhouses and cold storage facilities at their farms, and therefore they supply the broilers already processed and frozen to the markets and restaurants, while other farmers use the services of the slaughterhouses to process their products and sell them to the market.

Source: Bah & Gajigo (2019), Samboko et al. (2018), CASA (2020), and compilation of observations from the fieldwork

A list of stakeholders and contact details is presented in Annex 3.

7.5. Key findings on value chain

The poultry value chains in the region share similarities in the production structure with a mix of household, small scale, medium, and large-scale players. The industry seems to be getting more organized with an increasing number of large players. Restrictions on imported chicken and encouragement from the government to produce local chicken are also helping smaller scale operators to participate in poultry production. This sector, however, still faces a number of challenges at all stages in the value chain, as identified in Table 12.

55 Samboko et al (2018), ibid
56 Bah & Gajigo (2019), ibid.
57 CASA (2020), ibid.
58 CASA (2020), ibid.

Table 12. Challenges across the Poultry value chain

Areas	Challenges
Production	· Low availability, high cost, and frequent price changes of inputs (including day-old chicks and poultry feed). · Fluctuating exchange rates affecting input prices. · Disease threats; Inadequate access to medicines and veterinary services. · Weak technical capacity of extension agents. · Lack of food safety knowledge. · Erratic and high cost of power supply for heating, especially in Zambia, leading to the seasonality of production. · Competition with large integrated producers; Existence of dominant players which tend to control prices and have easier access to feed. · Higher production costs for small producers compared to large operators. · The poor linkage between poultry feed industries and production zone. · Lack of finance limiting chicken production.
Processing	· Seasonality of chicken meat production (due to high cost for heating in cold months). · Limited food safety knowledge and difficulty to implement biosafety in small-scale processing. · Low availability of slaughterhouses at the local level. · Lack of competitive markets for the broiler. · Large commercial producers operate their abattoirs for slaughtering and processing poultry. · Erratic and high cost of power supply, especially in Zambia.
Marketing	· Uncompetitive trading practices. · Seasonality on chicken meat production. · The high volume of informal imports of broilers and eggs. · Inadequate transport of chicken meat and eggs. · Lack of competitive markets for the broiler. · The lack of organization of smallholder poultry producers excludes them from commercial supply chains. · Commercial producers see no value in developing contract farming mechanisms for the industry. · Smallholders are confined to an informal marketing system that is often exploitative at the farm gate. · Limited possibilities for a small-scale producer to access main supermarkets.
Transport	· Limited use or lack of cargo vehicles with coolers. · Poor quality of roads and market infrastructure (bad roads affecting the connection between production and consumption zones). · High cost of transport license.
Policy Gaps	· Absence of updated national food laws and safety, standards, and specifications for food products and quality control. · Weak implementation of National Policies and the SADC protocol to protect the poultry sector. · Unfavorable policy environment and weak regulatory institutions. · NTBs such as fines and bribes paid to police agents. · Business Development Services (BDS) are largely inadequate or lacking in the poultry sector, as a result of weak farmer organizations and unproductive or uncompetitive smallholders.
Finance	· Limited access to agricultural credit for production processing and marketing.

Source: Compilation of fieldwork observations and responses

7.6. Recommendations

Based on the challenges existing in this sector, the following recommendations are proposed.

Table 13. Recommendations for the Poultry Value Chain

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Invest-ment Level**	Time-line***	Potential Partners
Establish fit-for-purpose hatcheries, feed mills, veterinary services, and input sale points (agro-dealers) across the country to provide day-old chicks, chicken feed, vaccines, and medicines available at lower costs to smallholders growers. Provide fiscal incentives for the purchase of generators and solar energy equipment to address electricity shortages and the high cost of power.	Lower produc-tion costs; Improved quantity and quality of production.	Producers; Processors.	Medium	High	Medium	Short/ Medium	Depart-ments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF
Strengthen associations and cooperatives in production and agro-processing to benefit from economies of scale and reduce costs of inputs. Encourage poultry farmers to operate in the formal sector to benefit from various facilities provided (training, financial incentives, etc. Scale-up countrywide out-grower programmes to increase the participation of small-scale producers in the value chain, promote sustained poultry supply.	Better structured market and integrated value chain; Enhanced market link-ages to allow all actors to actively par-ticipate in the value chains.	Producers, processors, traders.	High	High	Medium	Short/ Medium	Depart-ments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Pri-vate Sector

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Investment Level**	Timeline***	Potential Partners
Develop capacity building for extension agents, producers, and processors on poultry quality standards and biosafety, production, and marketing.	Improved sector performance, product quality, and harmonized standards to meet markets' requirements.	Producers, processors, exporters.	High	High	Low	Short/ Medium	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF
Rehabilitate and build rural roads to improve mobility between poultry production and consumption zones. Provide incentives for investment in and access to vehicles equipped with freezer/cooler for the conservation of poultry products during transportation.	Reduced loss incurred along the value chain; Reduced overall trade costs; Enhanced linkage from producers to end-consumers.	Processors, wholesalers, retailers, exporters.	High	Medium	(Very) High	Long	Departments of Agriculture, World Bank, IFC, IFAD, Afreximbank, Private Sector
Strengthen cross-border control structures to reduce informal trade of poultry products. Assess and address impacts of the adoption of restrictions on imports of poultry products according to SADC protocol. Harmonize regional regulations on quality standards and biosafety related to poultry.	Harmonized standards and regulations; Reduced NTBs and overall costs to support intra-regional trade	Producers, processors, exporters.	High	High	Medium	Medium-Long	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF

*For Regional Food Trade; ** Investment level: Low (0-5 million); Medium (5-15 million); High (>15 million); ***Timeline (Short 0-2 years, Medium 3-5, Long 5+). Notes: BMGF = Bill & Melinda Gates Foundation. Source: Author's compilation

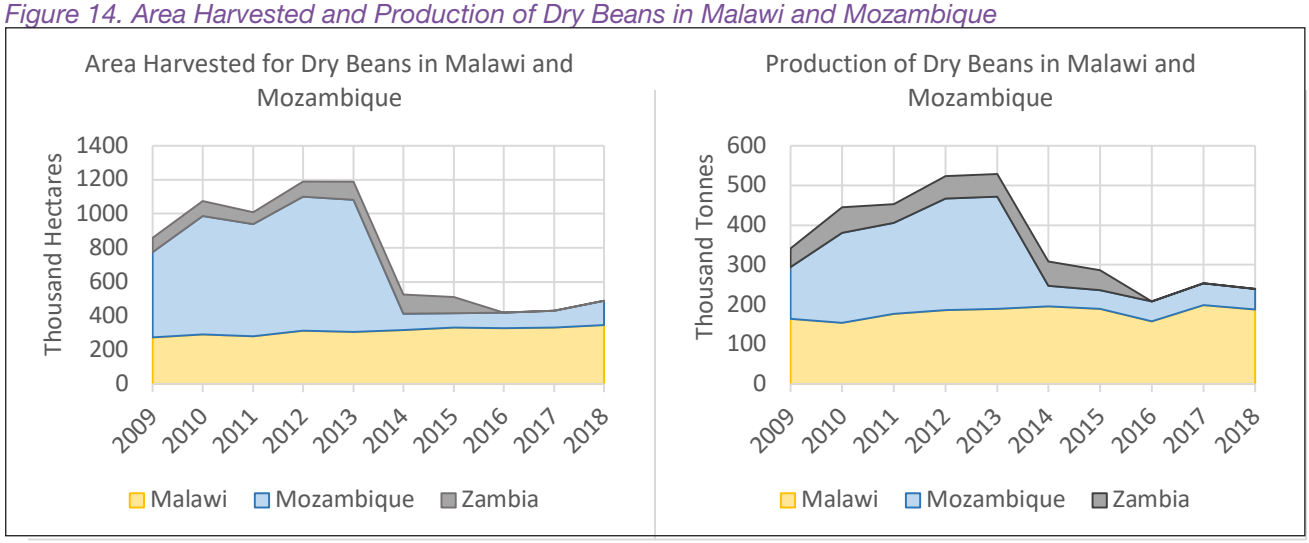
8. Beans Value Chain

8.1. Key consumption, production, and trade trends

Common beans are one of the important food crops grown in Southern Africa. In Malawi, beans are consumed by all the Malawian people and are highly valuable in terms of protein supply. This crop is therefore even more important to the poor households who have limited capability to consume the costlier animal protein. In the heavily maize-based farming systems, beans rank as the second most important food security crop after maize for 50 percent of the households and the third most important for 30 percent of the households. [59] In Mozambique, beans are well established in the food culture and are considered a good source of protein and nutrients by the locals. Bean production is also given high importance as 80 percent of the value chain is carried out by Mozambican women.[60] In Zambia, beans rank second after maize in food security and are considered a profitable cash crop due to increased demand by consumers.[61]

However, longstanding challenges such as lack of seed, lack of appropriate production technologies and knowledge among the farmers, soil infertility, and lack of fertilizers have led to a decline in the production of the crop. Cultivation areas and production volumes of beans drastically declined in 2014 in Mozambique and have remained constant in Malawi. In Mozambique, the production of dry beans fell from around 280 thousand tonnes in 2013 to just over 50 thousand tonnes in 2014 and has seen insignificant growth ever since. The major bean production zones of Mozambique are Zambezia Nampula, and Niassa, which together accounted for almost 50 percent of total production in 2016/17 (Table 14). In Malawi, production remained stagnant over the ten years from 2009 to 2018, ranging from around 170 to 190 thousand tonnes per year. Data up to 2016 for Zambia suggest a similar trend as Mozambique, where production fell by over 600 metric tonnes in 2016 as compared to 2013.

Figure 14. Area Harvested and Production of Dry Beans in Malawi and Mozambique



Source: FAOSTAT 2019

59 Katungi, E., Magreta, R., Letaa, M., Chirwa, R., Dambuleni, K., & Nyamwaro, S. (2017). Adoption and Impact of Improved Bean Varieties on Food Security in Malawi: Research Technical Report, 2017. Pan-Africa Bean Research Alliance (PABRA).

60 USAID (2016). Mozambique Agricultural Value Chain Analysis, LEO report number 31. Available at: http://www.acdivoca.org/wp-content/uploads/2016/09/Report-No31-Mozambique-VCA-Report.pdf

61 Birachi, E. (2012). Value chain analysis of beans in eastern and southern Africa: Building partnerships for impact through research on sustainable intensification of farming systems, International Institute of Tropical Agriculture.

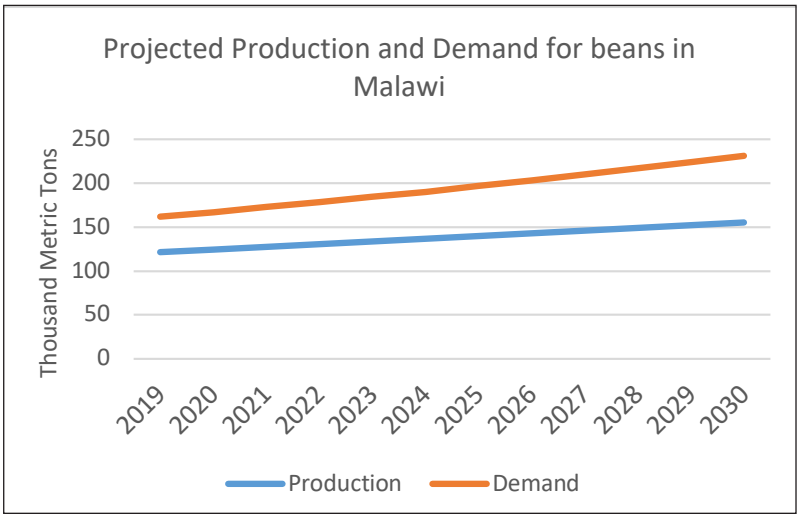
Table 14. Beans production zones and volume produced in Mozambique (2016/2017)

Agroecological Zone	Province	Production		percent of Households on beans farming
		Volume (metric tonnes)	percent of Total	
VII	Niassa	74.7	15.4	67.9
VII	Nampula	71.1	14.7	70.1
VII	Zambezia	92.7	19.1	57.7
VII	Tete	47.6	9.8	67.9
IV	Manica	28.6	5.9	50.2
II	Inhambane	43.0	8.9	74.4

Source: National Agricultural Survey (IAI 2016/2017)

The projected demand for beans is expected to be higher than local production in Malawi. Demand for beans in Malawi is expected to increase by 43 percent by 2030 as compared to 2019. However, local production is projected to grow slower than demand (which will reach 231 thousand tonnes by 2030), resulting in a deficit of 155 thousand tonnes. This suggests that local demand might have to be met by imports in the period between 2019 and 2030.

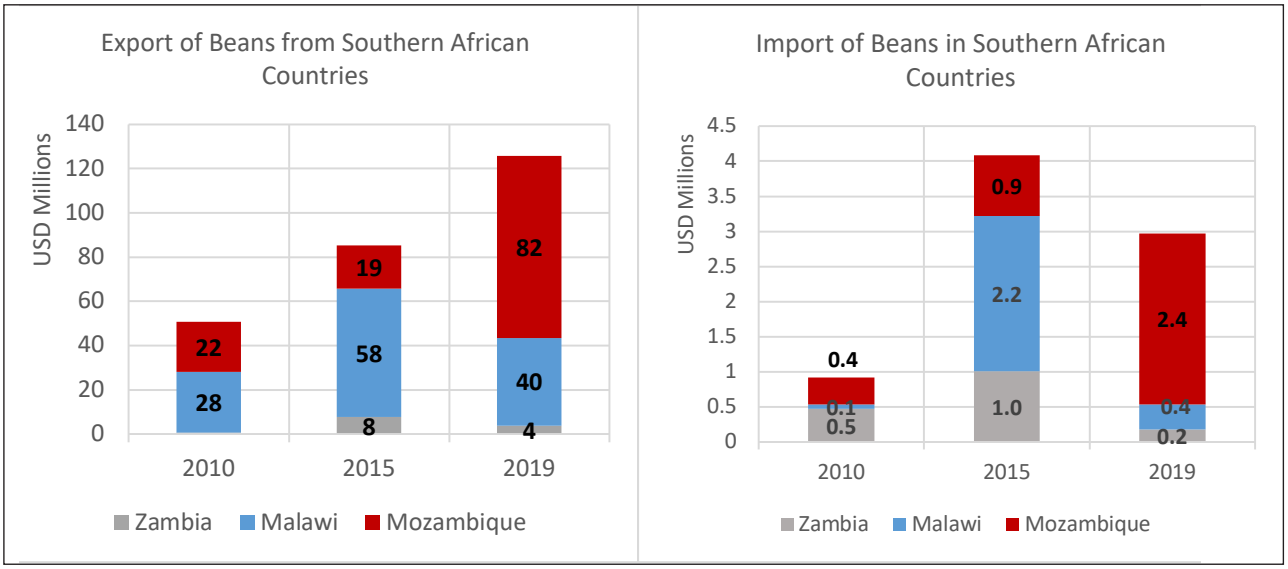
Figure 15. Projected Demand vs. Production in Malawi, 2019-2030



Notes: Data for Mozambique and Zambia are not available. Source: IFPRI

Mozambique and Malawi are net exporters of beans. Beans exports from Mozambique and Malawi have been increasing over the last ten years. In 2019, Mozambique exported USD 82 million worth of beans, with its top export destinations being India, Bangladesh, and the United Arab Emirates (UAE). Malawi exported USD 40 million to UAE, India, and Zimbabwe, in the same year. Zambia's exports of beans have typically been lower than its two neighbors, ranging between USD 4 million to USD 8 million during the 2010-2019 period.

Figure 16. Exports and Imports of Beans in Malawi, Mozambique, and Zambia



Note: Values are for HS 0713- *Dried leguminous vegetables, shelled, whether or not skinned or split.* Source: ITC Trademap

Imports of beans in the region remain low, indicating production for domestic consumption and exports. Mozambique imported the most among the focus countries, worth USD 2.4 million in 2019. Imports of beans surged during 2015, especially due to the fall of production shown in Figure 16.

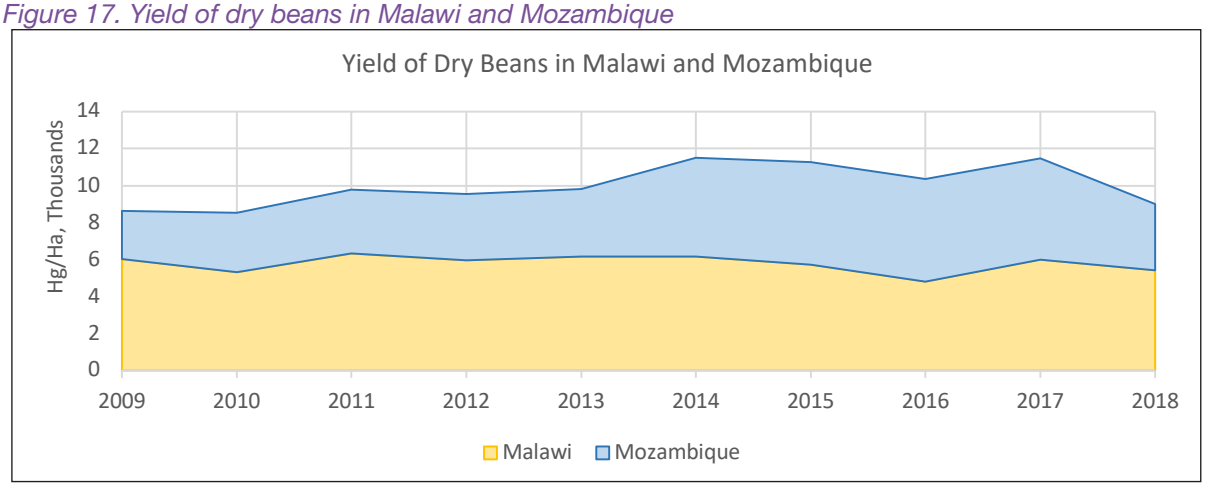
8.2. Key regional competitiveness drivers and challenges

Beans possess characteristics that make them an important crop to mitigate hunger. Those include their ability to be planted up to 2-3 times a year, high consumption rates, and the affordability of the crop. In Malawi and Zambia, hunger recurs every year given the cropping cycles, for which families require substitutes as they await the production of staple food crops such as maize. Beans act as a subsistence crop and are considered as a dependable and complete meal by families in the Southern Africa region. Beans are also served as one of the more affordable foods that freely complement cereal intake, especially for children and the poor. Additionally, the crop is consumed as an active substitute for meat-based proteins.[62]

Bean production in Southern Africa has not matched its stated importance in food security. The yield for beans has not shown positive signs over the past ten years in the region. Malawi's bean yield has been higher as compared to Mozambique, even though the bean cultivation area in Mozambique was higher than that of Malawi. Yield has remained within the range of 0.5 to 0.6 tonnes per hectare in Malawi and around 0.2 to 0.4 tonnes per hectare in Mozambique between 2009 and 2018. This is relatively low compared to more efficient producers in the region, such as South Africa, whose bean yield reached 1.3 tonnes per hectare in the same year.

62 Birachi, E. (2012) "Value chain analysis of beans in eastern and southern Africa: Building partnerships for impact through research on sustainable intensification of farming systems", International Institute of Tropical Agriculture (https://cgspace.cgiar.org/bitstream/handle/10568/24878/aresa_vca.pdf?sequence=6)

Figure 17. Yield of dry beans in Malawi and Mozambique



Note: Data for Zambia is not available. Source: FAOSTAT 2019

8.3. Regional transportation and logistics routes

In Mozambique, there are no specialized service providers for the transport of beans from production to consumption zones. Similar to other value chains in Mozambique, beans are transported through the supply chain with trucks of 30 tonnes in cargo capacity, which are hired by wholesalers or large processor companies such as ETG, IKURU, etc. Logistic services in the beans value chain are not well organized, with cargo trucks being the main transport used by traders and trains used by wholesalers. The main routes used for beans distribution in Mozambique include Beira, Maputo, and Nacala corridors, as well as the national roads EN1, EN7, and EN13. Table 15 presents the main roads and corridors used for beans transportation in Mozambique and Zambia.

Table 15. Beans Trade Corridors in Mozambique and Zambia

Starting Point	Corridor(s) / Roads Used	Destination
Mozambique		
Tete - Angonia	Beira corridor and EN1	Manica
Tete - Tsangano	Beira corridor and EN1	Manica
Tete - Macanga	Beira corridor and EN1	Manica
Niassa - Cuamba	Nacala corridor and EN13	Cuamba and Nampula
Manica - Sussundenga	Beira corridor	Chimoio and Beira
Zambezia – Alto Molocue	EN1 and EN13	Nampula
Zambezia - Gurue	EN1 and EN13	Nampula
South Africa	Maputo corridor and EN2	Southern region
Zambia		
Northern Province	Great North Road/Road and Rail	Copperbelt, central and southern regions
North-western Province	Great North Road/Road	Copperbelt Lusaka,
Central Province)	Great North Road/Road and Rail	Lusaka, Copperbelt, Malawi

Notes: Data for Malawi is missing. Source: National Agricultural Survey (IAI 2016/2017), IEC-Data from fieldwork.

8.4. Value chain stakeholder analysis

A typical beans value chain in Malawi, Mozambique, and Zambia involves the following steps:

Table 16. Key Steps of the Beans Value Chain in Southern Africa

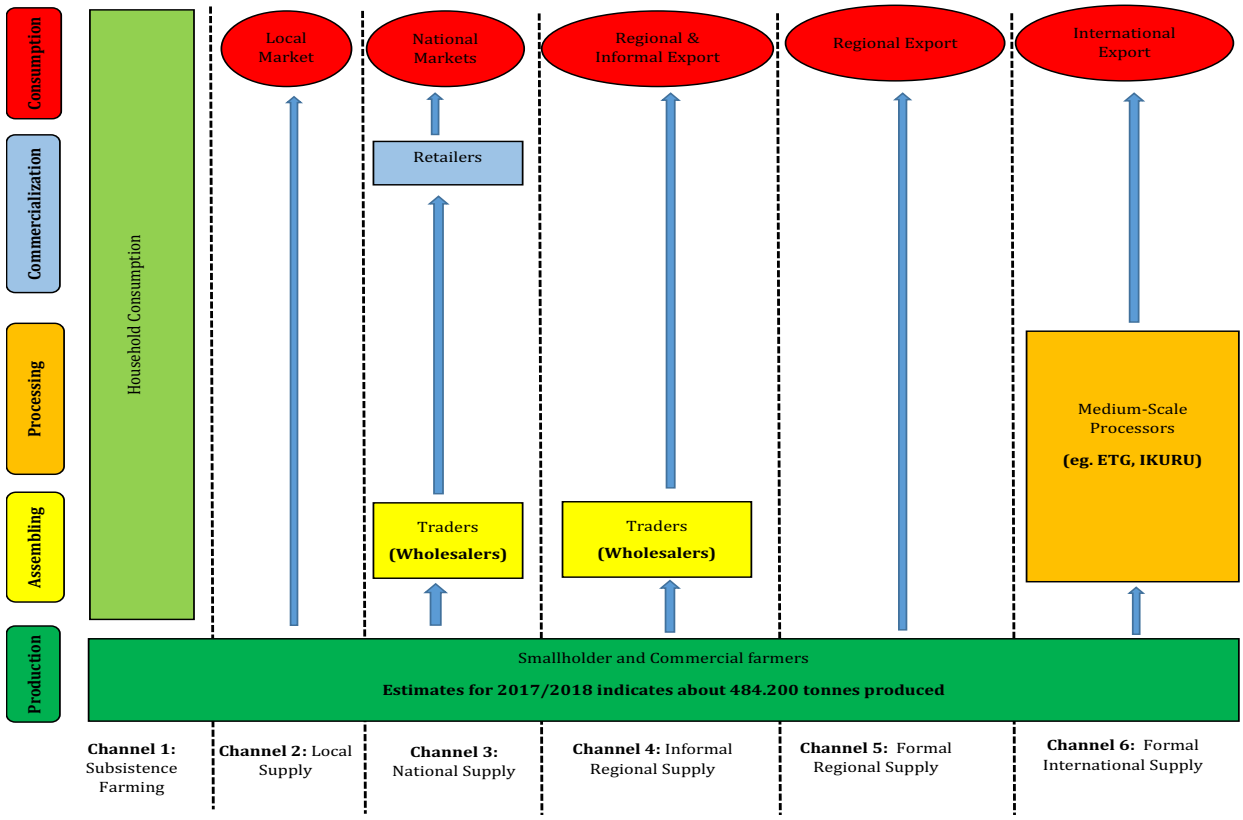
Value Chain Steps	Description
Production	Beans are produced mainly by smallholder farmers across the three countries, and a small number of households grow beans for household consumption. In Malawi, beans are planted mostly by smallholder farmers through mixing/ inter-cropping with major crops such as maize and cassava. Due to access high costs, most farmers in Malawi do not use improved seeds, and resort to recycled seeds or simply grain from the markets. In Mozambique, the majority of beans are produced primarily by smallholder farmers on small plots in the rainfed-based production system, though there exist commercial farmers who produce beans in irrigated conditions. In Zambia, the bean crop is grown as a monocrop in the majority of areas and is intercropped in others. Smallholder farmers produce beans using both improved and recycled seeds.
Post-Harvest	After harvesting, the products are delivered to marketing centres or association warehouses by farmers where they are aggregated. Beans are bagged in propyl-ene bags and loaded manually while other bulk stores in the warehouses. The weights of bags depend on buyers, but 50 kg is common for some of them. Some are kept in the open air or tents; bags of 120 kg are used. The warehouses may be centralized or decentralized. Grading is rarely used other than to ensure that beans are of a single type rather than being mixed. However, for key buyers, beans are usually sorted. Sorted/sin-gle type of beans may be considered as grade 1 while the mixed beans would be considered as a lower grade.
Processing	Limited processing facilities exist for beans across the country. In Mozambique, there is limited domestic value-addition of beans beyond cleaning and drying. Dehulling, splitting, and packaging are done to improve the quality of common beans and pigeon pea used for exporting. In small and medium scale processing, common beans are cleaned and packed in different bags size (e.g., 5 Kg, 50 Kg, etc.). In Zambia, limited processing facilities exist for beans, with only an insignificant amount that is used for biscuits and sweets. Processors only account for about 5 percent of the bean utilized, though this varies from year to year. The beans are mostly used as a relish by consumers, for food, and used with maize and other staples. Some beans are used for relief (WFP).
Aggregation, Assembling, and Marketing	Open markets constitute the main bean markets. In Malawi, up to 60 percent of the bean farmers sell some of their crops to mar-kets; up to 30-40 percent are sold within a month of harvesting, all selling within six months of harvesting. At least 10 percent of the beans are usually sold as fresh pods, while the rest is sold as dry beans. In general, there are no standards (e.g., type, color, or sizes) enforced within the bean marketing system. Some beans are sold as mixed versus single type. In the marketing chain, bean producers are often represented by their associations such as NASFAM, GALA, etc. Some intermediary vendors may also buy beans from producers on behalf of large traders or exporters, and thus connect larger buyers to export markets. When exported, the main export corridors for.

Value Chain Steps	Description
	Malawian beans are the northern corridor towards Tanzania and the southern corridor towards South Africa for certain of the year/season (about 20 percent) In Mozambique, aggregation or assembling is a common function in the bean's value chain. Usually, this function is performed by traders, wholesalers, or large companies (e.g., ETG, IKURU) who established their warehouses, shops, or assembling points in rural villages to buy beans directly from the farmers. Usually, wholesalers buy common beans to sell in the national markets located in deficit production areas such as Xiquelene and Bazooka which are wholesaler markets operating in Maputo city. Common bean is transported to the consumption markets using cargo trucks. In Zambia, over 70 percent of farmers sell some of the crops to markets. Marketed volumes have been increasing across all beans producing regions over the last decade due to increased consumption and demand for beans. Beans are often sold to local traders (60 percent) while distant traders take 40 percent, much of which is exported. Farmers often link up directly to buyers or act as intermediaries among themselves to locate supplies on behalf of buyers. Most aggregators get their produce from the Northern, Central, and North-Western provinces.

Source: Author's compilation, based on Birachi (2012) and information from fieldwork

Figure 18 depicts different marketing channels through which beans vertically flow along the value chain in Mozambique. In total, there are 6 main channels used for beans marketing, one of which is related to household consumption. Channels 1, 2, and 3, as shown in Figure 18, are the most common marketing channels for cowpea and common beans.

Figure 18. Beans Value Chain in Mozambique



Source: Based on fieldwork

8.5. Key findings on value chain

Overall, major constraints facing the bean sector are as follows:

Table 17. Challenges across the Beans Value Chain

Value Chain Steps	Challenges
Production	· Low access to and use of inputs (e.g., improved seed, agrochemicals, etc.), mainly for crops such as common beans and cowpea. · Low productivity of bean varieties, mainly due to the low quality of seed available for the majority of smallholder farmers. · Highly susceptibility to diseases such as rust, angular leaf spot, and anthracnose, which require fungicides for treatment. Beans are also affected by bacterial diseases like common and halo bright, bean common mosaic virus, etc., which all require chemicals for treatment. Unfortunately, some farmers lack the income for chemicals to control these diseases. · Limited knowledge of new farming technologies that help to boost production, especially during drought situations. · Erratic supply of electricity affects irrigation for production.[63] · Inadequate mechanization services lead to significant shortfalls in yields when planting is delayed. · The difficulty of integration of smallholder farmers in the value chain limits the transmission of incentives for farmers to invest in yield-enhancing technologies and management practices. · Lack of private sector engagement in the value chain due to weak overall demand, which limits incentives for farmers and other value chain players to invest in productivity-enhancing inputs and practices. · Difficulties to access financial services (credit and agricultural insurance) to invest in businesses targeted to beans production and processing, as the interest rates are too high.
Post-Harvest	· Limited availability of rural storage facilities increases post-harvest losses and reduces beans quality, mainly for cowpea and common beans.
Processing	· The predominance of small-scale processing and use of manual methods in some steps of beans processing, mainly for cowpea and common beans. · Shortage of processing machinery manufacturers especially for the medium size units · Difficulties to access financial services (credit and agricultural insurance) to invest in businesses targeted to beans production and processing, as the interest rates are too high. · Lack of electricity in the production zones limits the introduction of moderns processing technologies to be used by small-scale processors.

63 For example, farmers in the Kalumbila district of North-Western province of Malawi say that the shortage of electricity has affected production.

Value Chain Steps	Challenges
Aggregation, Assembling, and Marketing	· Weak market information systems (e.g., prices, product availability, the marketplace, etc.) within the chain.[64] · Poor quality of market infrastructures such as bad roads that affect the connection between beans production and consumption zones. · High transport costs due to bad road conditions. · Absence of updated national food laws, standards, and specifications for food products and quality control.

Source: Author's compilation, based on Katungi et al (2017), USAID (2016). Birachi (2012), and information from fieldwork.

A list of stakeholders and contact details is presented in Annex 3.

8.6. Recommendations

In general, the challenges mentioned in section 518.5 are inhibiting the competitiveness of the bean's value chain at national and regional levels. Low access to and use of inputs, including improved varieties, is affecting the productivity of beans, and consequently leads to less availability of these products in the market and high prices charged to consumers. Also, limited access to storage facilities does not allow the value chain actors to take advantage of selling during beans shortage. On the other hand, difficulties in integrating smallholder farmers into the beans value chain have limited the transmission of incentives to motivate farmers to invest in yield-enhancing technologies and management practices that can contribute to increasing production volume and competitiveness of beans in Southern Africa. Considering the discussed challenges, some recommendations for streamlining the beans value chain include:

Table 18. Recommendations for the Beans Value Chain

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Investment Level**	Timeline***	Potential Partners
Extend extension services (agroecological compatibility research, quick maturing bean breeds research) to improve productivity. Encourage the provision of breeder seed (e.g., seed banks) and agricultural inputs by the private sector and farmer organizations to contribute to seed availability and inputs use by smallholder farmers.	Improved productivity and production; Better-integrated value chain with the private sector stakeholders playing a more active role.	Producers.	Medium	High	Medium	Medium/ Long	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Privavte Sector

64 For an overview of existing market information systems, see Annex 4.

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Investment Level**	Timeline***	Potential Partners
Strengthening farmer organizations and linking them to active bean platforms for bean promotion and addressing market-related problems. Promote the use of market information systems (eg. prices, product availability, the marketplace, etc.) within the chain.[65]	Better-integrated value chain; Enhanced market linkages and information to allow all actors to actively participate in the value chains.	Producers, aggregators, processors, traders.	High	High	Low	Short	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Private Sector
Provide incentives (e.g., taxation, credit access) for investing in bean production for commerce, setting up processing industries, and removing restrictions on exports. Facilitate access to agricultural machinery (eg. tractors). Provide capacity building in the adoption of new technologies and investment in beans production to farmers/private sector stakeholders.	Strengthen the production capacity of the value chain actors.	Producers, aggregators, processors, traders.	High	High	High	Short/ Medium	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Afreximbank, Private Sector
Develop irrigation systems to alleviate the negative impacts of droughts and erratic rains on production. Encourage the expansion of rural storage facilities which increase post-harvest losses and reduce beans quality.	Reduced climate impact on production; Reduced post-harvest loss; Reduced production and processing costs.	Producers, aggregators, processors, traders.	High	High	(Very) High	Long	Departments of Agriculture, World Bank, IFC, IFAD, USAID, FCDO, BMGF, Afreximbank, Private Sector

*For Regional Food Trade; ** Investment level: Low (0-5 million); Medium (5-15 million); High (>15 million); ***Timeline (Short 0-2 years, Medium 3-5, Long 5+). Notes: BMGF = Bill & Melinda Gates Foundation. Source: Author's compilation

65 For an overview of existing market information systems, see Annex 4.

9. Cassava Value Chain

9.1. Key consumption, production, and trade trends

Cassava is the second most-consumed staple food and the main food security crop after maize in Southern Africa. It is an important source of starch for countries in the region. For example, cassava is the primary starch consumed in Mozambique, providing over 30 percent of the consumed calories. Cassava is also a major contributor to GDP. Of the 18 percent agricultural contribution to GDP in 2016, over one quarter was from cassava, making an overall share of close to 5 percent of GDP.[66] Production is concentrated in the northern region (85 percent) and along the southern coast. In addition to their labor advantage, the two provinces that make the northern region are adjacent to the three of the country´s main trade corridors, which are Nacala (linking Mozambique to Malawi and Zambia), Beira (linking Mozambique to Zimbabwe), and the EN 1 (a key North-South road, connecting the Nacala and Beira corridors).

In Malawi, cassava provides a staple food source to over 30 percent of the country's population. According to Malawi's Agriculture Ministry, the crop occupies 41 percent of the cultivated area and 43 percent of the total production of roots and tubers in 2016/2017. The main cassava growing areas in Malawi are along the northern belt, in the lakeshore (Karonga, Rumphi, Nkhatabay, and Nkhotakota), where bitter varieties of the root are predominant; whereas the southern cassava belt (Mangochi, Machinga, Zomba, and the southern Shire Highlands) and the central cassava belt (Dedza, Lilongwe, Kasungu, and Mchinji) are dominated by the have sweet/cool varieties.

Similarly, in Zambia, an estimated 30 percent of the population consumes cassava as part of their diet. Most of the consumption and production takes place in the northern part of the country, in the regions of Northern, Luapula, Copperbelt, North-western, and Western Provinces. A 2019 study on cassava processing and utilization surveying 300 households in Zambia revealed that 4.3 percent of the households were involved in the processing for income, while 34 percent for consumption, and 58 percent for both income and consumption.[67] Levels of awareness and usage of improved cassava processing methods across the districts were low, ranging between 20 percent and 26 percent. Cassava grown for personal consumption accounts for over 90 percent of total cassava utilization in Mozambique and Zambia. In Malawi, farmers market about 30 percent of total cassava produced, whereas on-farm or personal consumption of cassava predominates in the northern region where cassava remains the primary food staple. All through the northern cassava growing regions of Zambia, Malawi, and Mozambique, households consume cassava flour prepared in the form of porridge.[68]

Mozambique and Malawi are both large producers of Cassava in the world. Mozambique was the 9th largest producer of cassava, and Malawi was the 11th largest producer of cassava in the world in 2018**.** According to FAOStat data, the areas dedicated for cassava production were the highest in Mozambique, compared to Malawi and Zambia. However, the yield of the crop was higher in Malawi than in Mozambique (Figure 19). Malawi was the 10th largest in the world in 2018 in terms of cassava crop yield at 227 thousand kg/ha (hectogram per hectare). Though Africa is the main world producer of cassava, the yield is inferior to the other regions, especially in Mozambique, where yields are lower than the African average.[69]

66 Costa, C. (2019), ibid.

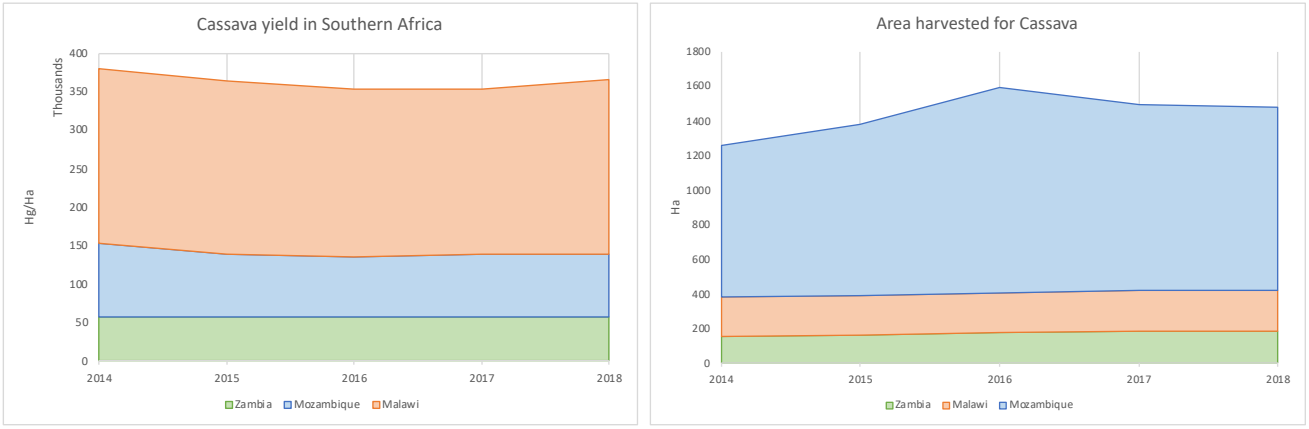
67 Alamu, E. O., Ntawuruhunga, P., Chibwe, T., Mukuka, I. & Chiona, M. (2019). Evaluation of cassava processing and utilization at household level in Zambia. Food Sec. 11, 141–150 (2019). Available at: https://doi.org/10.1007/s12571-018-0875-3

68 Haggblade, S., Andersson Djurfeldt, A., Banda Nyirenda, D., Bergman Lodin, J., Brimer, L., Chiona, M., Chitundu, M., Chiwona-Karltun, L., Cuambe, C., Dolislager, M., Donovan, C., Droppelmann, K., Jirström, M., Kambewa, E., Kambewa, P., Meso Mahungu, N., Mkumbira, J., Mudema, J., Nielson, H., Nyembe, M., Alexandre Salegua, V., Tomo, A. and Weber, M. (2012). Cassava commercialization in Southeastern Africa, Journal of Agribusiness in Developing and Emerging Economies, Vol. 2 No. 1, pp. 4-40. https://doi.org/10.1108/2044083121121921.

69 Costa, C. (2019). "The Cassava Value Chain in Mozambique." World Bank, Washington, DC. Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/31754/The-Cassava-Value-Chain-in-Mozambique.pdf?sequence=5

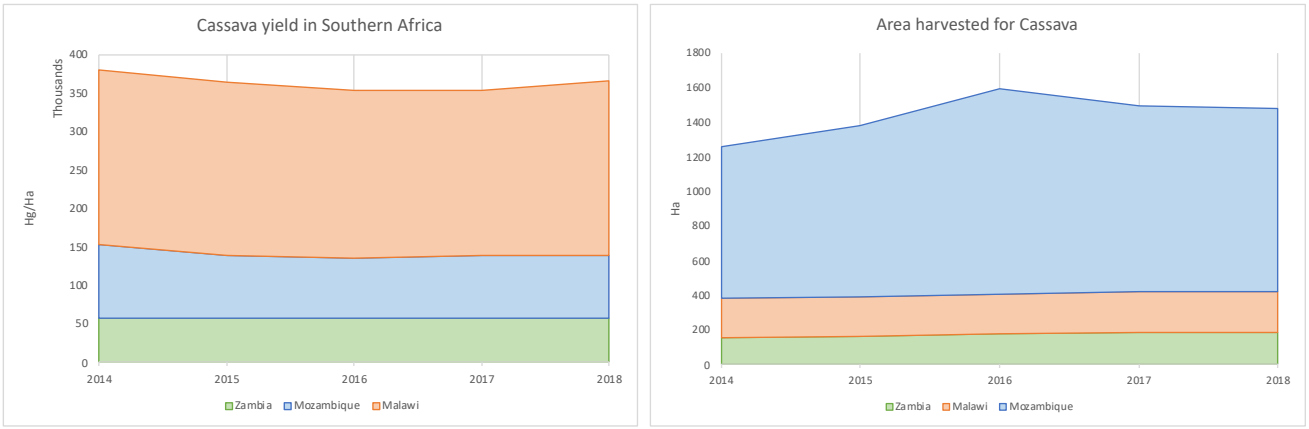
In terms of trade, ITC Trademap data reveals that the amount of cassava traded (both exports and imports) by Malawi, Mozambique, and Zambia are negligible. This further indicates that most of the production is meant for local consumption and presenting a potential area for trade expansion. IFPRI projections show an increase of 2.7 million metric tonnes in demand for cassava during the 2019-2030 period. However, the production forecast shows a more sluggish growth compared to demand, with an increase of 0.6 million metric tonnes over the same period. The increase in demand can mainly be attributed to the widespread recognition of cassava's qualities as a subsistence crop for food security and greater demand as a result of population growth.

Figure 19. Cassava Yield and Cultivation Areas in Southern Africa



Source: FAO Stat

Figure 20. Mozambique's Production and Demand of Cassava, 2019-2030



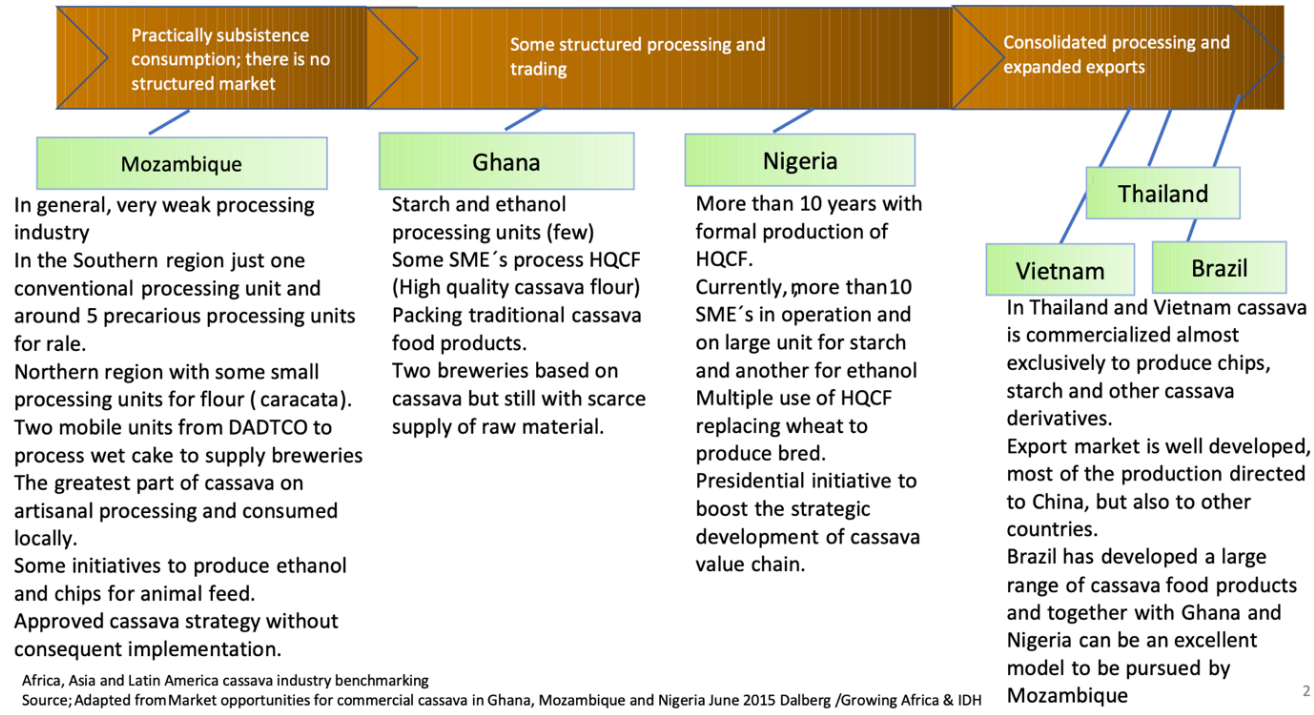
Source: IFPRI

9.2. Key regional competitiveness drivers and challenges

Cassava can be grown by farmers indefinitely without having to depend on seed suppliers, fertilizer distributors, or rural credit programs. This crop's main competitiveness lies in its nature of being easily reproduced and being tolerant to poor soil conditions. Certain new, improved varieties of seeds are being developed that make the crop resistant to pests and high yielding, with no need for chemical inputs. Also, low-input cassava production does not generate acidification or pesticide residue that occurs with other crops, thus keeping the productivity of soil intact.[70]

Though cassava production has not yet been commercialized, the crop has huge potential for serving as industrial inputs and exports. There is substantial demand for cassava as food in neighboring countries, as well as for industrial uses, including for the production of ethanol, starches, and high-quality flour. The cassava sector in Southern Africa is still in its formative stages, with only 10 to 30 percent of products currently being marketed, compared to a more advanced stage of cassava processing and marketing in West Africa.[71] A comparison of Mozambique's cassava sector to leading African and global producers is illustrated in Figure 21. The World Bank (2019) found that there is a rapidly increasing market for cassava derivatives in Southern Africa, which presents a potential market for cassava raw material if a processing facility were to be established. However, interventions will be needed to address the issues of cassava quality and production stability to attract investments to exploit the enormous potential of the industrialization of the cassava value chain.[72]

Figure 21 Mozambique Compared to Major Cassava Producing Countries



Source: Dalberg Global Advisors et al (2015); in Costa and Delgado (2019)

70 Biovision (2019). Cassava in Malawi and Zambia, Agroecology Info Pool. Available at: https://www.agroecology-pool.org/portfolio/promotion-of-cassava-in-malawi-and-zambia/; K. Makaiko et. Al (2015). Analysis of adoption and impacts of improved cassava varieties in Zambia. IITA. August 2015.

71 Haggblade et al (2012), ibid.

72 Costa, C. (2019), ibid.

Despite the importance and potential of the cassava sector in the region, neither Malawi, Mozambique, nor Zambia have a dedicated policy for the development of the cassava value chain. Zambia previously had a 'Cassava Sector Development Policy form 2010-2015' but had not been followed by any similar policy since. Thus, special focus needs to be given to the cassava value chain by designing policies and strategic actions around the development of the sector, especially given its importance to food security.

9.3. Regional transportation and logistics routes

The majority of cassava and its derivatives produced in Mozambique are consumed within the country, and export barely exists. However, there are differences in terms of cassava products consumed in the production zones compared to consumption zones. In the southern region, fresh roots and *rale*[73] are the main products commercialized, and the marketplace for fresh roots is local (rural and urban), while Maputo city is the consumption market at a national level. Usually, fresh roots are sold by retailers located in the production zones. They sell cassava products (fresh roots and *rale*) for local consumers; alternatively, they establish selling points alongside the National Road 1 (EN 1) to sell cassava products for people traveling from other country sites to Maputo province.

In the northern region of Mozambique, flour and dried cassava are the main bi-products of cassava sold in the production zones, as well as in consumption zones such as Nampula city, Zambezia, and Cabo Delgado provinces. Dried cassava is transported to the consumption market in bags of 100 kg using trucks with the capacity to load at least 10 tonnes. In both southern and northern regions, wet cakes are solely produced and sold by DADTCO Mozambique for beer brewing to CDM company on their factory located in Rapale District.

Data from the National Agricultural Survey of Mozambique show the volume of cassava traded in the 2016/2017 agricultural season (*Table 19*).

Table 19. Cassava consumption zones and volume traded in Mozambique (2016/2017)

Agroecological Zone	Province	Commercialization	
		Volume (Tonnes)	percent of Total
II	Maputo	16.0	6.2
	Gaza	5.9	2.2
	Inhambane	49.7	18.6
VIII	Nampula	89.2	33.5
	Zambezia	58.3	21.9
	Cabo Delgado	21.9	8.2

Source: National Agricultural Survey (IAI 2016/2017)

Logistics services in the cassava value chain are not well organized, meaning there are no private transporters who solely work as transporters of cassava and its derivatives in the country. Cassava products are transported from production zones to consumption zones using trucks and trains through the main roads and railways that determine the main corridor in the country. Maputo, Nacala, and Limpopo corridors, as well as the National Road (EN 1), are the main corridors or roads used for the distribution of cassava and its derivatives across the country. Table 20 presents the main roads and corridors used to supply cassava and its derivatives to the deficit or consumption zones of Mozambique and Zambia.

73 Roasted and granulated cassava roots flour

Table 20. Cassava Trade Corridors in Mozambique and Zambia

Starting Point	Corridor(s) / Roads Used	Destination
Mozambique		
Inharrime – Inhambane	National Road (EN 1)	Maputo province
Morrumbene – Inhambane	National Road (EN 1)	Maputo province
Zavala – Inhambane	National Road (EN 1)	Maputo province
Jangamo – Inhambane	National Road (EN 1)	Maputo province
Manjacaze – Gaza	Limpopo corridor (Railway)	Inland districts (eg. Chicualacuala, Chigubo, etc.)
Manjacaze – Gaza	National Road (EN 1)	Xai-Xai city and Maputo city
Malema – Nampula	Nacala corridor (Railway)	Nampula city (Rapale) and Nacala district
Ribaue – Nampula	Nacala corridor (Railway)	Nampula city (Rapale) and Nacala district
Angoche – Nampula	National Road (EN 104)	Nampula city (Rapale)
Moma – Nampula	National Road (EN 104)	Nampula city (Rapale)
Zambia		
Luapula Province	Mansa/Kawambwa Road Mansa/Serenje Road/ Great North Road	Lusaka
Northern Province (Kaputa, Nsama and Mporokoso)	Great North Road	Lusaka
North-western Province	Mwinilunga/Solwezi Road Solwezi/Chingola Road Great North Road	Lusaka

Notes: Data for Malawi is not available. Source: Author, based on fieldwork

9.4. Value chain stakeholder analysis

Multiple cassava value chains exist in the region depending on end-consumer demand, and growing regions. Given the perishable nature of the crop, fresh cassava markets in Southern Africa involve short supply lines and few intermediaries. General characteristics of the cassava value chain in Malawi, Mozambique, and Zambia are provided in Table 21.

Table 21. Characteristics of the Cassava Value Chain in Malawi, Mozambique, and Zambia

Step	Characteristics
Input Supply	In Mozambique, cassava cuttings are the only type of input used by cassava producers, mainly smallholder farmers. Currently, farmers use improved planting material (cuttings) developed by the Agricultural Research Institute of Mozambique (IIAM) and supplied directly by some agricultural projects such as PROSUL in the south (Maputo, Gaza, and Inhambane), NGOs (World Vision, CARE, etc.), and Government institutions (District Services of Economic Activities –SDAE) in the north.
Production	Production is dominated by farmers. Cassava is grown on small areas of land, usually one-quarter to one-half ha, and can be harvested year-round over a period of up to three years, and even longer for some varieties. Most farmers in Malawi, Mozambique, and Zambia grow a mix of different cassava varieties, including both bitter and sweet varieties. Bitter varieties account for the bulk of regional cassava production, while sweet varieties account for a smaller proportion. Bitter varieties account for about 80 percent to 90 percent of national cassava production in Mozambique and Zambia and 70 percent to 80 percent in Malawi.
Post-harvesting handling and storage	After harvesting, the Cassava is transported to local storage places, where it is processed and the final product packed and put in storage. Post-harvest handling mainly includes packaging and storage.
Processing	Cassava is processed for farm household consumption and is marketed as dried cassava roots and flour (including rale), and as processed foods. Cassava processing is still at its initial stages. Mechanized processing is not yet developed. But processing still occurs in two ways: non-mechanized and mechanized. • Non-mechanized production (labor-intensive) includes the traditional methods of cassava processing at the household level. The process involves peeling the roots, grating, dewatering, and fermenting, roasting, and drying. The chips are then soaked, fermented, and dried to produce the fermented flour. For flour production, the dried product is pounded in a mortar. • Mechanized processing typically includes micro and small mechanized processing units which produce rale and flour. There are a few mechanized processing units. Domestic end markets for products like industrial starch and ethanol are small. The few existing industrial processors face high costs to source cassava due to low yields and long distances required to buy enough volumes.

Step	Characteristics
	Only a few mid-scale processors exist, due to several reasons such as lack of reliable access to raw materials and poor availability of financial management and technical skills.
Markets for Cassava products and derivatives	The market for cassava is mainly for traditional foods. Fresh and dried cassava leaves are consumed directly by rural farmers with a small percentage transported to main towns to be consumed by urban residents. This form of cassava represents a tiny market for fresh cassava due to the quick perishability of the root and poor packing. In urban markets of central Malawi, fresh cassava sales account for the majority of marketed cassava in the country. Urban sales of fresh sweet cassava have also grown in Zambia and Mozambique, though more slowly than in Malawi because of longer distances from cassava production zones to the large urban centres. To prevent spoilage, fresh cassava markets everywhere involve short supply lines and few intermediaries. Farmers often sell an entire field of unharvested sweet cassava to an assembly trader. The trader typically arranges harvesting labor and loads trucks or bicycles early in the morning to reach the urban market by first light. In town, the assembly traders sell by the bag to urban retailers who then prepare and hawk fresh cassava to urban customers.

Source: Costa (2019); Haggblade et al. (2012)

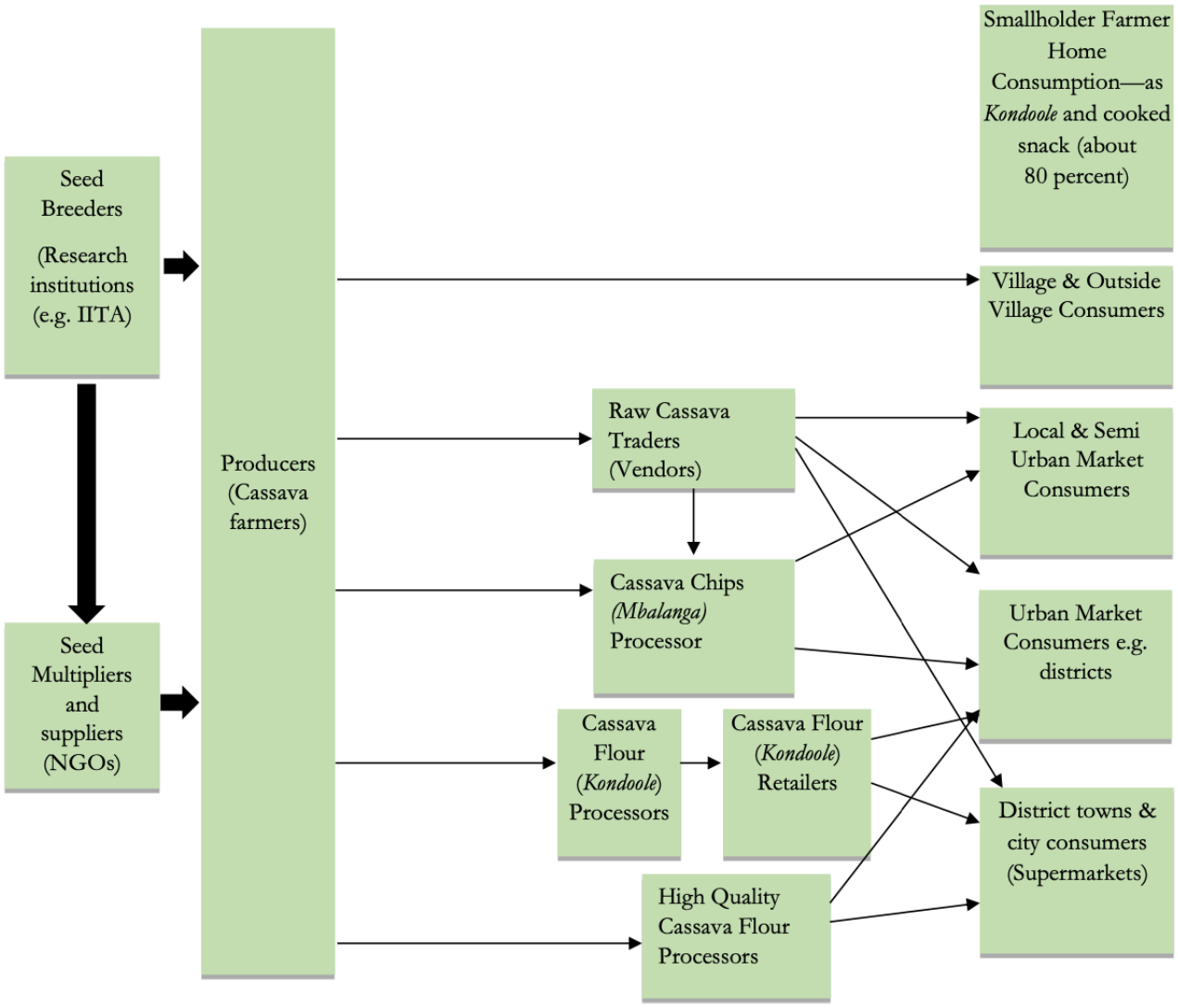
In Zambia, farmers in the maize belt usually grow cassava. They tend to consider cassava not only as a food staple but also as a cash crop and sell about 10 percent of their cassava production mostly to the fresh market. In comparison to farmers, households in the cassava-producing zone sell only about 7 percent of their cassava production, of which three-quarters are sold in dried form and the remainder in the local fresh market.[74]

In Malawi, after harvesting, cassava is mainly sold fresh as raw roots either at farm gate, directly to intermediate vendors and village dwellers, or transported to nearby trading centres, towns and cities. Farmers also sell their surplus cassava to nearby processors. Traders usually buy the whole field of produce from farmers and transport the roots to the nearest retail market for fresh produce. On the other hand, for processed cassava, the largest market is formed by small-scale bakeries and *mandazi* and *kanyenya* producers who procure straight from farmers. The processors cater to the large potential market for High-Quality Cassava Flour (HQCF) used in biscuits, packaging, and breweries.[75] The main distribution channels of Malawi cassava are illustrated in Figure 22

74 Poole, N. (2010). Zambia cassava sector policy: recommendations in support of strategy implementation, AAACP Paper Series – No. 16, FAO. October 2010. Available at: http://www.fao.org/fileadmin/templates/est/AAACP/pacific/07_FAO_AAACP_Paper_Series16_Recommendations_Zambia_Cassava_Strat.pdf

75 Kanyamuka, J. S., Dzanja, J. K. & Nankhuni, F. J. (2018). Analysis of the Value Chains for Root and Tuber Crops in Malawi: The Case of Cassava," Feed the Future Innovation Lab for Food Security Policy Research Briefs 275675, Michigan State University, Department of Agricultural, Food, and Resource Economics, Feed the Future Innovation Lab for Food Security.

Figure 22. Cassava Value Chain in Malawi



Source: Kanyamuka et al. (2018).

A list of stakeholders and contact details is presented in Annex 3.

9.5. Key findings on value chain

Numerous constraints hamper the cassava value chain in Southern Africa. The constraints at production, processing, and marketing levels are summarised below.

Table 22. Challenges across the Cassava value chain

Value Chain Steps	Challenges
Production[76]	· Uncontrolled pests and diseases reduce the motivation for farmers to increase cassava production, besides, there is a lack of good quality planting material. For example, in Zambia, levels of awareness and usage of improved cassava processing methods across the districts were low, ranging between 20 percent and 26 percent.[77] · Poor quality of fresh cassava sold, and low yields are due to the way the land is prepared, the use of inappropriate genetic material and, also to the low density of planting. Because of this, farmers incur higher than necessary costs of production and consequently are often not provided effective incentives by the market prices on offer. · Producer organizations are weak, with little management capacity, ineffective or missing production and processing cooperatives. · Very weak commercial links between producers and markets mean fewer sales opportunities, which reduces incentives for increasing production for sale. · The absence of trust among stakeholders at different stages of the cassava value chain inhibits transparency and leads to producers in a weak position for bargaining on prices. · Poor support from the governments for the development of the cassava sector, compared to maize or rice. · Transportation costs make up a large share of the final price due to the bulky nature of the crop and the low value of fresh cassava.
Processing[78]	· Irregular and under-supply of raw material to processing units. · Insufficient business infrastructure, water systems, electricity, and maintenance service providers within rural areas for processing units. · Inefficient transport systems from fields to processing units. · Heavy reliance on sun-drying of cassava for processing of chips and flour creates serious scale issues. · Lack of licensing for product transport. · Poor quality of market infrastructures such as bad roads that affect the connection between cassava production and consumption zones. · Shortage of load availability due to seasonality on cassava production. · High taxes to get a transport license for load carry. · Non-fiscal barriers such as fines and bribes paid to police agents.

76 Cadoni, P. (2010). Value Chain Mapping and Cost Structure Analysis for Cassava in Zambia. AAACP Paper Series – No. 14. All ACP Agricultural Commodities Programme. FAO. April 2010. Available at: http://www.fao.org/fileadmin/templates/est/AAACP/eastafrica/FAO_AAACP_Paper_Series_No_14_1_.pdf

77 Alamu *et al*.(2019). *Ibid.*

78 Meridian Institute (2012). Cassava Value Chain Overview, Innovations for Agricultural Value Chains in Africa: Applying Science and Technology to Enhance Cassava, Dairy, and Maize Value Chains. Available at: shorturl.at/bpLU1, information from field work

Value Chain Steps	Challenges
Commercialization[79]	· Lack of established markets for industrial quality cassava products. Home artisanal production and traditional marketing arrangements prevail · Insufficient diversification of products and lack of adequate market infrastructure. (Example: lack of storage facilities or practices capable of addressing problems with high perishability of raw roots).
Policy Gaps[80]	· Absence of updated national food laws, standards, and specifications for food products and quality control. · Lack of development and investment policies to realize the potential of cassava sectors. For example, in Zambia, investors are concentrated in Lusaka, Central, and Copperbelt provinces, leaving out Luapula, Muchinga, and Northern Provinces which have high rainfall and abundant land. · Where supporting policies are in place, weak implementation of National Policies that highlight cassava as strategic crops such as Action Plan for Food Production (PAPA 2008 – 2011), Cassava Development Strategy (2008 – 2012) in Malawi.

Source: Author's compilation, based on Cadoni (2010), Meridian Institute (2012), Costa (2019), and fieldwork

9.6. Recommendations

Based on the challenges existing in this sector, the following recommendations are proposed.

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Investment Level**	Timeline***	Potential Partners
Extend R&D programmes to introduce new varieties with higher yields, starch content, and disease/pest resistance. Facilitate access to extension services by smallholder farmers by expanding the extension agent network to provide technical assistance to more smallholder farmers. Promote the adoption of better planting material, better dissemination of information, and better agriculture practices.	Improved quantity and quality of production.	Producers.	Medium	High	Low	Medium/ Long	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF

79 Costa (2019), ibid.
80 Information from fieldwork

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Investment Level**	Timeline***	Potential Partners
Encourage the establishment of cooperatives/ associations as platforms for production and agro-processing matters (e.g., business investment and management, supporting access to credit, adopting new processing technologies, acquisition of equipment, etc). Establish schemes for cassava production and promote strong linkages between processors and farmers. Promote contractual partnerships between producers and processors (out-grower schemes).	Better-integrated value chain; Enhanced market linkages and information to allow all actors to actively participate in the value chains.	Producers, aggregators, processors, traders.	High	High	Low	Short	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Private Sector
Support rehabilitation and equipping of small-scale processing factories based on good practice models to reduce post-harvest losses of cassava due to its perishability and increase the availability of cassava derivatives.	Improved processing capacity; Higher-value added for the cassava production sector.	Processors.	High	High	High	Medium	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Private Sector
Include cassava within the existent market information systems. Promote the use of ICT such as mobile applications and messing systems to improve access to market information.[81]	Enhanced access to information to allow all actors to actively participate in the value chains.	Producers, aggregators, processors, traders.	High	High	Low	Short	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF, Private Sector

81 For an overview of existing market information systems, see Annex 4.

Recommended Interventions	Expected outputs	Potential Targets in the VC	Priority Level *	Impact *	Invest-ment Level**	Time-line***	Potential Partners
Rehabilitate and build rural roads to improve mobility between cassava production and consumption areas.	Enhanced market linkages to allow all actors to actively participate in the value chains.	Producers, aggregators, processors, traders	High	High	(Very) High	Long	Departments of Agriculture, World Bank, IFC, IFAD, USAID, FCDO, BMGF, Afreximbank, Private Sector
Reviewing and updating food laws and regulations on cassava products standards to improve quality control. Capacity building on quality standards and specification for cassava products required at regional and international levels.	Harmonized standards and regulations; Reduced NTBs and overall costs to support intra-regional trade.	Producers, processors, exporters	High	High	Medium	Medium -Long	Departments of Agriculture, FAO, IFAD, USAID, FCDO, BMGF

**For Regional Food Trade; ** Investment level: Low (0-5 million); Medium (5-15 million); High (>15 million); ***Timeline (Short 0-2 years, Medium 3-5, Long 5+). Notes: BMGF = Bill & Melinda Gates Foundation.*

Source: Author's compilation

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Annex 1. Common Challenges to the Agricultural Sector

Summary of Challenges	Value Chains
Production by small-holder farmers with a low skill base, low input levels, and operating at uneconomic levels	Maize, Vegetables, Beans, Cassava
High costs of and/or limited access to land, equipment, and inputs (seeds, fertilizer, herbicides, pesticides, etc. for crops, day-old chicks, and feed for poultry) resulting in high production cost	Maize, Vegetables, Poultry, Beans
High cost and unreliable supply of electricity negatively affecting commercial, mechanized farming, irrigation, processing (for crops), and heating (for poultry)	Vegetables, Poultry, Beans, Cassava
Difficulties in pest and disease management	Vegetables, Beans, Cassava
Limited access to machinery, mainly manual cultivation practices	Maize, Vegetables
Lack of or weak producer organizations	Poultry, Beans, Cassava
Limited access to extension services	Maize, Vegetables, Poultry
Limited access to storage facilities, especially in rural areas	Maize, Vegetables, Cassava
Limited access to financial services for the expansion of production, processing facilities	Maize, Vegetables, Poultry, Beans
Unreliable supply, unpredictable quality, and seasonality of production affecting input material for processing	Vegetables, Poultry, Cassava
Inadequate processing facilities resulting in limited added value	Vegetables, Beans
Long-distance from farms to markets; Lack of adequate transport vehicles to deliver products from production areas to consumption markets	Vegetables, Poultry, Beans
Limited use or lack of vehicle with coolers (cold chain facilities) for perishable products	Vegetables
Unstructured markets, lack of or limited access to formal distribution channels (like supermarkets, stores, etc.) for small-scale producers	Vegetables, Poultry, Cassava
Inadequate transport infrastructure leading to difficulties in accessing production areas, high transportation costs	Vegetables, Poultry, Beans, Cassava
High cost to obtain a leading truck license for transport products	Vegetables, Poultry, Cassava
Underdeveloped communication infrastructure limiting access to market information[82]	Vegetables, Beans
Export restrictions representing a commercial disadvantage to producers and leading to informal trade (Zambia)	Maize
Absence of updated national food laws, standards, and specifications for food products and quality control	Maize, Vegetables, Poultry, Beans, Cassava
Lack of or weak implementation of national policies to support the strategic development of the sector	Maize, Vegetables, Poultry, Beans, Cassava
Non-tariff barriers on intra-regional trade due to government intervention and/or involvement creating uncertainty	Maize, Vegetables, Poultry

Source: Author's compilation

82 For an overview of existing market information systems, see Annex 4.

Annex 2. Regional Policy Overview

The SADC Regional Agricultural Policy,[83] endorsed by the SADC Council of Ministers in 2014, set out the path for achieving the SADC Common Agenda's objectives of stimulating equitable and sustainable economic growth whilst promoting socio-economic development at the national and regional level and consequently contributing towards regional integration. More specifically, the policy framework identifies specific objectives as follows:

(i) Enhance sustainable agricultural production, productivity, and competitiveness.

(ii) Improve regional and international trade and access to markets of agricultural products.

(iii) Improve private and public sector engagement and investment in the agricultural value chains; and

(iv) Reduce the social and economic vulnerability of the region's population in the context of food and nutrition security and the changing economic and climatic environment.

The policy further elaborates the strategic interventions to achieve the specified objectives, including, among others:

- improving land administration, use, and management.
- enhancing productivity-enhancing inputs.
- reducing pre-and post-harvest losses.
- provision of adequate water and energy for production.
- strengthening farm support systems and services via promoting agricultural research and development and enhancing regional and national agricultural information systems.
- improving the efficiency and effectiveness of the region's input and output markets and stimulating broad farmers' participation.
- improving the regional and international trade environment for agriculture.
- improving the development of agriculture-related market infrastructure.
- value-chain promotion in agriculture.
- mobilization of financial capital for agriculture, agro-industry, and agri-business.
- addressing climate change, variability, and related vulnerability

At a national level, the three focus countries also have developed their strategic development plan for the domestic agriculture sector.

Malawi

The Malawi Growth and Development Strategy III (MGDS III) (2017-2022), launched in March 2018, recognizes agriculture as one of the priority areas. The sector has seven outcomes: (a) Increased agricultural production and productivity; (b) Increased land under irrigation; (c) Increased agricultural diversification; (d) Improved nutrition and food security; (e) Increased agriculture market development, agro-processing, and value addition among others. Additionally, the **Malawi National Agriculture Policy (NAP) (2016-2021)** provides clear and comprehensive policy guidance in the agriculture sector. The specific objective of the NAP is to guide Malawi to achieve transformation of the agriculture sector. The NAP identified eight policy priority areas: a) Sustainable Agricultural Production and Productivity; b) Sustainable Irrigation Development; c) Mechanisation of Agriculture; d)

83 SADC (2014). Regional Agricultural Policy. Available at https://www.nepad.org/publication/sadc-regional-agricultural-policy-0

Agricultural Market Development, Agro-processing and Value Addition; e) Food and Nutrition Security; f) Agricultural Risk Management; g) Empowerment of Youth, Women and Vulnerable Groups in Agriculture; and h) Institutional Development, Coordination, and Capacity Strengthening. [84]

In addition to the MGD III and the NAP, the **National Agricultural Investment Plan (NAIP) (2017-2022)** provides a framework for guiding investments in the sector ensuring coherence with overall and sectorial policy and investment frameworks. The NAIP adapts the goal of the NAP, namely, to achieve the sustainable agricultural transformation that will result in significant growth of the agricultural sector, expanding incomes for farm households, improved food and nutrition security for Malawians, and increased agricultural exports. Malawi's other agricultural policies include **The National Irrigation Master Plan and Investment Framework (2015-2035)** whose objectives include accelerating economic growth, reducing rural poverty, improving food security, and increasing exports; **The National Rice Development Strategy (2014-2018)** whose objective is to increase rice production and productivity in Malawi. The policies are consistent with the Comprehensive African Agricultural Development Programme (CAADP) and the Development Assistance Strategy, and broader development goals and vision for Malawi, in addition to other sub-sectoral and cross-sectoral policies and strategic documents of the government of Malawi.[85] Full implementation, monitoring, and evaluation of the set policies will go a long way in improving the production and export protentional of the identified value chains and the agricultural sector broadly in Malawi.

Mozambique

The policy environment is quite consistent, as new policies adopted often build on and complement previous ones. FAO (2016) notes that trends in policy decisions surrounding agriculture in Mozambique can be divided into (i) producer-oriented policy decisions such as intermittently input support, enhancement of seed legislation, and increased attention to irrigation); (ii) Consumer-oriented policy decisions such as organizing a national social protection floor, attempts to phase out fuel subsidies, and expanding cash transfer programme; and (iii) Trade- and market-oriented policy decisions including trade-related policy reforms, such moving from centrally planned to a market-oriented economy. Actions in this sector have included the adoption of a restrictive monetary and fiscal policy, lowering import tariffs, and fostering stronger regional integration.[86]

The overarching agricultural strategy in Mozambique is the ***Plano Estratégico de Desenvolvimento do Sector Agrário*** **(PEDSA) 2011-2020**, whose general objective is "*to contribute towards the food security and income of agricultural producers competitively and sustainably, guaranteeing social and gender equity.*" The implementation of PEDSA is regulated by the **National Agrarian Investment Plan (PNISA) 2013-2017**. PNISA was officially launched in April 2013 with the objective (i) to reach an average growth of the agricultural sector of 7 percent per annum in the first 10 years; (ii) to reduce malnutrition, and (iii) to halve the proportion of people suffering from hunger by 2015. Poverty eradication remains a major priority for the Government of Mozambique, where it is seen as a path to economic development. Mozambique's **Agenda 2025** adopted in 2003 represents the long-term development vision of the country. Agriculture is perceived as one of the main means to reduce rural poverty by increasing productivity and access to technology and markets in the vision.

In 2014, the government approved a new **National Development Strategy (*ENDE, Estrategia Nacional De Desenvolvimento*) 2015-2035.** The Strategy provides the framework for the preparation and operational medium-term plans such as the **Government's Five-year Plan (*Plano Quinquenal do Governo- PQG*) 2015-2019** which focuses on inclusive growth through five priorities: peace

84 Republic of Malawi (2016). National Agriculture Policy (NAP) 2016, Ministry of Agriculture, Irrigation and Water Development.

85 These include the National Export Strategy (2012); the Agricultural Extension Policy (2000), the National Nutrition Policy and Strategic Plan (2007); the National Gender Policy (2015), the National Youth Policy (2013), the National Land Use Planning and Management Policy (2005); and the National Climate Change Policy (2012); among others.

86 FAO (2016). Country Fact Sheet on Food and Agriculture Policy Trends – Mozambique, Food and Agriculture Policy Decision Analysis (FAPDA) FAO, Food and Agricultural Policies (FAPDA) Briefing, 2016 I5931E/1/07.16

and sovereignty; development of human and social capital; promotion of employment, productivity and competitiveness; development of economic and social infrastructure; and sustainable and transparent management of natural resources and the environment. The Plan highlights agriculture as a fundamental component of development and industrialization. Furthermore, Mozambique has developed the **Green Revolution Strategy (ERV)**, which aspires in the medium and long term for the development of "*a prosperous, competitive, equitable and sustainable agricultural sector" whose main objective is "to contribute to food security, income and profitability of agricultural producers and to a rapid, competitive and sustainable increase in market-oriented agricultural production*".

Zambia

Zambia has put in place policies that provide public support and investment in agriculture with a view to creating an enabling environment to attract the private sector and smallholder interest in farm production, processing, and trade. These policies have fallen under various National Agricultural Policy (NAP) whose main thrusts have been liberalization, commercialization, promotion of public and private partnerships, and provision of effective agricultural services that will ensure sustainable agricultural growth. Programmes under the NAPs have had the major objective of achieving sustainable food production and enhancing agricultural productivity, farmers' incomes, and as a response to climatic change. For example, programmes have focused on encouraging farmers to diversify into the production of high-value cash crops such as cotton, tobacco, coffee, herbs and spices, floriculture, and horticulture products.

The country recognizes weaknesses facing the prosperity and performance of the agricultural sector that need to be addressed including (i) low agricultural productivity among small scale farmers; (ii) inefficient input and output agricultural markets; (iii) decreasing rate of growth of agricultural exports; (iv) poor small scale farmer access to productive agricultural resources and services to increase production; and (v) the weak public and private sector capacity to facilitate planning, resource mobilization, implementation, monitoring and evaluation of agricultural policy and regulatory provisions.[87]

Zambia's agricultural sector is guided by the **National Agriculture Policy (NAP) 2012-2030,** a revision of the National Agriculture Policy (NAP) (2004-2015)**.** The Objectives of the NAP 2012-2030 are: (i) Promote sustainable increase in agricultural productivity of major crops with comparative advantage; (ii) Continuously improve agricultural input and product markets to reduce marketing costs of agribusiness, including small-scale farmers and farmer groups; (iii) Increase agricultural exports to preferential markets at regional and international levels; (iv) Improve access to productive resources and services for small-scale farmers, especially women and young farmers, for own consumption and the surplus for income generation; and (v) Continuously strengthen public and private sector institutional capabilities to improve agricultural policy implementation, resource mobilization, agriculture research, technology dissemination, and implementation of regulatory services.[88]

87 Government of Zambia (2011). The National Agriculture Policy 2012-2030, August 2011, Published by Ministry of Agriculture and Co-Operatives.
88 Government of Zambia (2011), ibid.

Annex 3. List of Stakeholders in Agricultural Value Chain in Southern Africa

Major Agricultural Traders/Offtakers in Southern Africa

Name	VC Segment	Crop(s)	Website	Contact (Email or Phone)
Tiger Brands	Producer and distributor for food products.	Milling and baking, confectioneries, general foods, edible oils, and culinary fruit veg.	https://www.tigerbrands.com/	https://www.tigerbrands.com/ companysecretary@tigerbrands.com
Pioneer Foods Group	Producer and distributor of branded food and beverage products	Wide range of cereals and juice products	https://www.pioneerfoods.co.za/	consumercare@pioneerfoods.co.za
Tongaat -Hulett	Producer of food products	Sugar cane, raw sugar milling and refining, and specialty starches and sweeteners; biofuel (ethanol) production and electricity generation	https://www.tongaat.com/	info@tongaat.com
Astral Foods	Producer of livestock commodities	Animal feeds, animal feed pre-mixes, broiler chick genetic breeding, and broiler chick operations.	https://www.astralfoods.com/	customercomplaints@astralfoods.com
AFGRI	Producer and Storage facilitator	Handles, stores, and markets grain and livestock; finances grain for a diverse customer base; processes agricultural products into animal feed and other end products	https://www.afgri.co.za/	afgri@afgri.co.za
Illovo Sugar	Producer of Sugar and its by-products	Operates in all areas of sugar production, from growing sugar cane to milling, refining, and packaging sugar; manufactures downstream by-products	https://www.illovosugarafrica.com/home	lsmith@illovo.co.za
Anglovaal Industries	Producer and Distributor	Manufactures, processes, markets, and distributes branded consumer products in the food, beverage, and fashion categories	https://www.avi.co.za/	info@avi.co.za
Rainbow Chicken	Processor and Marketer of Poultry	Operates integrated farming facilities that produce, process, and market broiler chickens under the “Rainbow,” “Farmer Brown” and “Bonny Bird” labels; produces animal feed	https://rainbow-chickens.co.za/	accounts@rcl-food.co.za

Name	VC Segment	Crop(s)	Website	Contact (Email or Phone)
Clover Holdings	Producer and Distributor of Dairy Products	Manufacturing and processing of dairy product (milk, butter, cheese), yoghurt, and other beverages (milo, ice tea, and juice)	https://www.clover.co.za/	+27 0860 117 533
Oceana Group	Producer and Distributor of Fish	Catching, processing, marketing, and distribution of canned fish, fishmeal, fish oil, lobster, horse mackerel, squid and hake	https://oceana.co.za/	Tiana.Fataar@oceana.co.za

List of National Agricultural Unions in Southern Africa

Country	Name	Website	Contact (Email or Phone)
Botswana	Botswana Agricultural Union (BAU)	-	psf@botsnet.bw
Lesotho	Lesotho National Farmers' Union (LENAFU)	https://lenafu.org.ls/	lenaful@gmail.com lawrencemamolise@gmail.com
Madagascar	Coalition Paysanne de Madagascar (CPM)	www.cpm.mg	cpm@moov.mg hajasoa@moov.mg jb.rabefeno@gmail.com
	Confédération des Agriculteurs Malagasy (FEKRITAMA)	https://www.fekritama.mg/	fekritama.mg@fekritama.mg
Malawi	Farmers Union of Malawi (FUM)	https://www.farmersunion.mw/	info@farmersunion.mw
	National Smallholder Farmers' Association of Malawi (NASFAM)	https://www.nasfam.org/	nasfam@nasfam.org info@nasfam.org ceo@nasfam.org
Mozambique	Uniao Nacional de Camponeses (UNAC)	https://www.unac.org.mz/	unac@unac.org.mz
Namibia	Namibia Agricultural Union (NAU)	http://www.agrinamibia.com.na/	nau@agrinamibia.com.na
	Namibia National Farmers' Union (NNFU)	https://www.nnfu.org.na/	info@nnfu.org.na
Seychelles	Seychelles Farmers' Association (SEYFA)	-	seyfa@seychelles.net

Country	Name	Website	Contact (Email or Phone)
South Africa	Agri South Africa (AgriSA)	https://agrisa.co.za/	agrisa@agrisa.co.za
	African Farmers' Association of South Africa (AFASA)	https://afasa.org.za/	info@afasa.org.za
Swaziland	Swaziland National Agricultural Union (SNAU)	-	snau@swazi.net
Tanzania	Agricultural Council of Tanzania (ACT)	https://www.actanzania.or.tz/	act@actanzania.or.tz
Zambia	Zambia National Farmers' Union (ZNFU)	https://znfu.org.zm/	info@znfu.org.zm
Zimbabwe	Commercial Farmers' Union (CFU)	http://www.cfuzim.com/	+263 4 770029/ 770057/ 770059/ 770071/ 771079
	Zimbabwe Farmers' Union (ZFU)	http://www.zfu.org.zw/	info@zfu.org.zw

Chambers/ Associations of Agriculture in Southern Africa

Country	Name	Website	Contact (Email or Phone)
South Africa	AgBiz – Agricultural Business Chamber for South Africa	https://agbiz.co.za/	john@agbiz.co.za admin@agbiz.co.za +27 (0) 12 807 6866
South Africa	Southern African Confederation of Agricultural Unions (SACAU)	http://www.sacau.org/	info@sacau.org +27 12 644 0808

Annex 4. Overview of Market Information Systems

Name of the system	Lead Implemented (Company or donor)	Country/ Region coverage	Commodities covered	Variables collected	Data collection methodology	Dissemination methodology
AMIS G20 Agricultural Market Information System http://www.amis-outlook.org/home/en/	Governed by a Steering Committee that includes: FAO, GEOGLAM, IFPRI, IFAD, International Grains Council, OECD, UNCTAD, World Bank Group, WFP & WTO	G20 countries (including South Africa) + Spain and 7 other major countries in the agricultural sector (Egypt, Japan, Kazakhstan, Nigeria, Philippines, Saudi Arabia, Thailand, Ukraine & Vietnam).	Global food supplies mainly wheat, maize, rice, and soybeans	Unit supply, opening stocks, production, food use, feed use, closing stocks (Yearly)	Mainly based on the *FAO Food Price Index, Cereals Price Index, Sugar Price Index, Vegetable Oils Price Index, Dairy Price Index, Meat Price Index.*	Through the dashboard, information can be obtained on a yearly basis
GIEWS FMPA (Food Price and Monitoring Analysis) Tool https://fpma.apps.fao.org/giews/food-prices/tool/public/#/home	Governed by FAO	Worldwide coverage	Food supplies (including bread, cassava, maize, meat, milk, palm oil, potatoes, rice, sugar, and wheat)	Commodity coverage, Unit of measure and Prices in USD & home currency,	Data sourced from each country's respective Ministry and their agricultural institutions/ organizations	Through the tool, weekly, monthly retail, and wholesale prices.
InfoTrade https://infotradeuganda.com/	Led by FIT Insights Group	Uganda	Food supplies such as Mushroom, cabbage & shea oil	Sharing of information on production, market, and payment transaction (in terms of prices, volume & quantity)	Data collected from 25 major markets across the country	Has monitoring dashboards, and can provide weekly reports as well as historical information

Name of the system	Lead Implemented (Company or donor)	Country/ Region coverage	Commodities covered	Variables collected	Data collection methodology	Dissemination methodology
Regional Agricultural Trade Intelligence Network (RATIN) https://ratin.net/	Led by USAID	Regional coverage in East Africa for 5 countries (Burundi, Kenya, Rwanda, Tanzania & Uganda)	Maize, Mixed Beans (Red beans, yellow beans, black beans, etc), Millets & Peas	Market prices, border volumes,	Through Border observation technique, Tracking technique, and Stock-taking techniques	Dashboards providing information relating to warehouse grain storages, early marketing, and trade info
Afrique Verte Internationale (AVI) http://www.afrique-verte.org/index.cfm	Main donor: European Commission	Burkina Faso, France, Guinea, Mali & Niger,	Food supplies (cereals, grains, rice)	Technical information regarding prices, grain operators, farming season, and overall food situation	Data collected by field animators from AcSSA (in Niger), AMASSA (in Mali), and APROSSA (in Burkina Faso)	Monthly bulletin issued electronically
National Association of Producer Organizations of Ivory Coast (ANOPACI)	Funded by Members' contribution	Ivory Coast	Agricultural products	Consumer & wholesale prices, average trend of market products	Via interviews done by animators of Village Information Points (VIP)	Disseminated through radios (main) and billboards
National Society for the Management of Food Security Stock (SONAGESS) https://sonagess.bf	Government of Burkina Faso	Burkina Faso	Agricultural products (cereals, protein & oil products)	Warehouses & stock management cost, Prices, (producer, wholesale & consumer prices)	Data collected via interview covering over a 48 markets	Disseminated through paper/electronic format and over the radio (weekly basis)

Name of the system	Lead Implemented (Company or donor)	Country/ Region coverage	Commodities covered	Variables collected	Data collection methodology	Dissemination methodology
Observatoire du Marche Agricole (OMA) http://www.oma.gov.ml/	Assemblée Permanente des Chambres d'Agriculture du Mali (APCAM)	Mali	Products in Agro-Industry	Prices (wholesale and consumer) & Production capacity	Via interviews and Observation by reporters	Via monthly bulletins and disseminated over the radio & on TV
Ethiopian Commodity Exchange (ECX) https://www.ecx.com.et/	Government in partnership with its Members	Ethiopia	Agricultural products	Prices, Volume of trade & Warehousing cost	Via monitoring transaction changes for products	Via website, Electronic ticker board, Print media, TV & Radio
SIMA Mozambique	Governed by Ministry of Agriculture	Mozambique		Price, Transport Costs, Availability of product flow	Via interviews and Observation by reporters	Via weekly bulletin (Quimbe Quimbe), radio & notice boards https://cgspace.cgiar.org/ handle/10568/57537
Kenya Agricultural Commodity Exchange (KACE)	In partnership with West Media Limited (WML)	Kenya	Agricultural products	Prices, Demand & Supply of various commodities traded,	Via interviews and Observation by reporters	Via website, Electronic ticker board & Print media
Esoko Ghana https://esoko.com/	In initial partnership with USAID	Ghana	Agricultural products	Price	Via the mobile app tool "Insyt" – (mobile surveys)	Providing market prices through SMS

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