About FEWS NET

Created in response to the 1984 famines in East and West Africa, the Famine Early Warning Systems Network (FEWS NET) provides early warning and integrated, forward-looking analysis of the many factors that contribute to food insecurity. FEWS NET aims to inform decision makers and contribute to their emergency response planning; support partners in conducting early warning analysis and forecasting; and provide technical assistance to partner-led initiatives.

To learn more about the FEWS NET project, please visit www.fews.net.

Disclaimer

This publication was drafted by Erin Collier under the United States Agency for International Development Famine Early Warning Systems Network (FEWS NET), contract number AID-OAA-I-12-00006. The author’s views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States government.

Acknowledgments

FEWS NET gratefully acknowledges the network of partners in Zambia who contributed their time, analysis, and data to make this report possible. See the list of participants and their organizations in Annex 1.

Cover photos @ FEWS NET and Flickr Creative Commons.
# Table of Contents

Acronyms and Abbreviations .............................................................................................................. v

Executive Summary ............................................................................................................................ 1

Preface ................................................................................................................................................ 3

Key Concepts ...................................................................................................................................... 5

Commodity classifications .................................................................................................................... 5

Market types ....................................................................................................................................... 5

Formal versus informal trade flows .................................................................................................... 6

Trade flow magnitude and frequency ................................................................................................. 6

Price analysis ....................................................................................................................................... 6

1. Zambia Staples Food Market Fundamentals ..................................................................................... 8

1.1 Introduction ..................................................................................................................................... 8

1.2 National Food Supply ..................................................................................................................... 8

1.3 National Food Demand .................................................................................................................. 10

1.4 Food Trade .................................................................................................................................... 10

1.5 Cross-cutting Issues ....................................................................................................................... 11

1.5.1 Agroclimatology Context ........................................................................................................... 11

1.5.2 Economic Context ....................................................................................................................... 12

1.5.3 Infrastructure ............................................................................................................................... 13

1.5.4 Social Context ............................................................................................................................. 14

2. Maize ................................................................................................................................................. 16

2.1 Introduction ..................................................................................................................................... 16

2.2 Consumption ................................................................................................................................ 16

2.3 Production ..................................................................................................................................... 16

2.4 Structure of the marketing system ................................................................................................. 16

2.5 Domestic flows and price trends .................................................................................................... 18

2.5.1 Key markets ............................................................................................................................... 18

2.5.2 Price trends ............................................................................................................................... 18

2.6 Regional and international trade .................................................................................................... 20

2.7 Constraints ..................................................................................................................................... 21

3. Information Gaps ............................................................................................................................... 23

4. Market Monitoring Plan .................................................................................................................... 24

References ............................................................................................................................................ 26

Annex 1. List of Workshop Participants ............................................................................................... 28
List of Figures

Figure 1. Map of Zambia .................................................................................................................. 1
Figure 2. FEWS NET’s approach to market monitoring and analysis .................................................. 3
Figure 3. FEWS NET presence and remote monitoring countries ..................................................... 4
Figure 4. Total national production (MT) by commodity, 2010–2014 ................................................ 9
Figure 5. Average production (MT) in Zambia by province, 2010–2014 ........................................... 9
Figure 6. Staple food zones in Zambia ............................................................................................... 9
Figure 7. Total national production (MT) by commodity, 2010–2014 .............................................. 10
Figure 8. Average annual rainfall, Zambia, November to May, 2001–2014 ....................................... 11
Figure 9. Rainfall coefficient of variation (CV), Zambia, November to May, 2001–2014 .................. 12
Figure 10. Zambia’s agro-ecological regions .................................................................................... 12
Figure 11. GDP growth rate and world copper price, 2013–2018 ....................................................... 12
Figure 12. Contribution to GDP by sector (ZMW millions), 2010–2015 .......................................... 13
Figure 13. Share of agricultural exports (%), Zambia, 2013–2015 (average) .................................... 13
Figure 14. Inflation rate (%) and currency exchange rate (ZMW/US$), 2012–2016 ......................... 13
Figure 15. Export earnings (US$ millions), Zambia, 2013–2015 .................................................... 14
Figure 16. Road network ................................................................................................................... 14
Figure 17. Population density, Zambia ............................................................................................. 15
Figure 18. Poverty incidence (% of population in moderate poverty), Zambia, 2010 ......................... 15
Figure 19. Maize surplus levels (000 MT) by country, 2015/16 .......................................................... 16
Figure 20. National average maize production (MT) and prices (ZMW/kg) by province .................. 17
Figure 21. Maize marketing channel diagram ................................................................................... 17
Figure 22. Average monthly maize price index, Lusaka, 2009–2015 ............................................... 19
Figure 23. Average monthly maize prices (ZMW/kg) in Zambia, 2010–2014 ................................. 19
Figure 24. White maize prices (US$/kg) in the Southern Africa region, January 2016–April 2017 .......... 19
Figure 25. Total (formal and informal) annual maize exports and imports (MT), 2010/11–2014/15 .... 20
Figure 26. Total informal maize exports by country (MT), 2010/11–2014/15 ................................. 21
Figure 27. Maize production and trade flow map ............................................................................. 22
Figure 28. FEWS NET’s approach to market monitoring and analysis ............................................. 24

List of Tables

Table 1. Zambia staple food balance sheet (MT), 2010/11–2014/15 (average) ................................. 8
Table 2. Zambia maize, wheat, and cassava seasonal calendar ......................................................... 10
Table 3. Consumption of major food staples ..................................................................................... 10
Table 4. Average annual trade (MT), 2011–2014* .......................................................................... 11
Table 5. Location and number of private storage facilities, Zambia ................................................. 14
Table 6. General indicators to monitor vis-à-vis staple food markets in Zambia .............................. 24
Table 7. Indicators to monitor vis-à-vis maize markets in Zambia .................................................... 25
### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTESA</td>
<td>Alliance for Commodity Trade in East and Southern Africa</td>
</tr>
<tr>
<td>CAADP</td>
<td>Comprehensive Africa Agriculture Development Programme</td>
</tr>
<tr>
<td>CFS</td>
<td>Crop Forecast Survey</td>
</tr>
<tr>
<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
</tr>
<tr>
<td>COMTRADE</td>
<td>United Nations Commodity Trade Statistics Database</td>
</tr>
<tr>
<td>CSO</td>
<td>Central Statics Office</td>
</tr>
<tr>
<td>DRC</td>
<td>Democratic Republic of the Congo</td>
</tr>
<tr>
<td>FEWS NET</td>
<td>Famine Early Warning Systems Network</td>
</tr>
<tr>
<td>FRA</td>
<td>Food Reserve Agency</td>
</tr>
<tr>
<td>FISP</td>
<td>Farmer Input Support Programme</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GMO</td>
<td>Genetically Modified Organism</td>
</tr>
<tr>
<td>ha</td>
<td>Hectares</td>
</tr>
<tr>
<td>km</td>
<td>Kilometers</td>
</tr>
<tr>
<td>MAL</td>
<td>Ministry of Agriculture and Livestock</td>
</tr>
<tr>
<td>mm</td>
<td>Millimeters</td>
</tr>
<tr>
<td>MT</td>
<td>Metric Tons</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern African Development Community</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WFP</td>
<td>World Food Programme</td>
</tr>
<tr>
<td>ZMW</td>
<td>Zambian Kwacha</td>
</tr>
</tbody>
</table>
Executive Summary

- The objective of this report is to document the basic market context for staple food production and marketing in Zambia with a focus on maize, the country’s key commodity.

- The information presented stems from a literature review, secondary data, and a field assessment. In-country research took place in October 2014 and included market visits and a three-day stakeholder consultation workshop held in Lusaka.

- Zambia’s economy is largely dependent on its mining industry, especially the export of copper. Following a period of rapid growth, the country’s economic growth rate fell in 2013 and remains sluggish, driven by a drop in international copper prices. The subsequent decline in revenue from copper exports also led to currency depreciation and inflation in recent years.

- Zambia’s gross domestic product (GDP) has grown steadily since 2001, with a growth rate remaining above 5 percent for most of the past decade. However, the agriculture sector’s contribution to GDP declined from 16.0 percent in 2001 to 12.6 percent in 2012. Although agriculture is not the main driver of the Zambian economy, it is the most important sector for employment and supports the livelihood of over 66 percent of the population (Tembo and Sitko 2013).

- Despite economic growth, poverty rates remain high (over 60 percent of the population is poor), especially in rural areas. While Zambia’s political environment is relatively stable and calm, electricity, transport, and storage infrastructure drawbacks continue to limit the country’s ability to improve living standards across all socioeconomic levels of the population.

- Maize, cassava, wheat, rice, sweet potatoes, groundnuts, and mixed beans represent the main food staples in the country in terms of area planted and production volume. Higher-value, commercial cash crops such as cotton, tobacco, and sugar are also produced and are among Zambia’s main agricultural exports (Esterhuizen 2015).

- On aggregate, Zambia is surplus in terms of domestic food availability. Most food production in Zambia takes place at the smallholder and subsistence level, with low use of agricultural inputs, and in rainfed conditions. The presence of one rainy season provides one main harvest for predominately rainfed crops, including maize. For these type of products, seasonality plays a major role in food availability and trade, while other heavily irrigated food crops, such rice and wheat, can be and are harvested and marketed throughout the year, depending mostly on stocks, import levels, and prices. Finally, cassava, while also rainfed, can be harvested throughout the year due to the crop’s growth cycle and resilience. Cassava is harvested depending on household food needs and is mostly consumed within the household and not marketed.

- Besides production-related aspects, several other factors influence the performance of agricultural markets due to their impact on food availability, access, and/or trade. In broad terms, these factors are:
  - **Geographic/climatic**: the unimodal rainfall pattern leaves the country vulnerable to long-term supply implications from the annual harvest. Weather irregularities can therefore have very significant effects on the supply level for the entire following marketing year, as well as subsequent years.
  - **Physical**: insufficient and inadequate infrastructure, mostly roads, irrigation systems, and storage facilities impede the staple food value chain growth and functionality at various levels, from productivity to distribution.
  - **Institutional**: substantial government intervention in the agriculture sector (purchase of staple foods, subsidized sales of staple foods on the market, input subsidies, and extension services) serves as a source of demand for some producers and affects prices in the markets. High public spending on these programs is a heavy financial burden on the national agriculture budget.
Political economy environment: uncertainty in trade policies (including export bans), as well as in the domestic public market interventions (including timing and price levels of purchases and sales of maize on markets), creates disincentives, volatility, and biases within the food markets.

Regional context: structural deficiency in neighboring deficit countries, surplus levels in other East and Southern African regional exporter countries, price differentials, trade policies, and regional integration to a large degree dictate the magnitude and direction of flows of staple foods between countries.

- Zambia is second only to South Africa as the main staple food exporter and source of regional food supply and trade. Staple foods are exported to neighboring structurally deficit countries (mostly Malawi and the Democratic Republic of the Congo (DRC)). Factors affecting production and overall supply in the broader region impact production and trade dynamics in Zambia. In addition, regional integration mechanisms (such as the Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA)) facilitate the access of Zambian goods in the regional market.

- White maize, the nation’s most produced and consumed staple food, is produced mostly in Eastern, Central, and Southern Provinces and is exported formally and informally to several countries in the region. White maize is consumed across the country fresh or as dried (grain, flour) product, and is also used for the brewing of local drinks. The maize value chain is very complex and involves multiple actors, both private and public, large- and small-scale, formal and informal. The public sector is a big market actor and is involved in both purchasing and selling on the market, as well as setting trade policy. Zambia both became and sustained its role as an important source of maize for the Southern Africa region in the past decade.
Preface

Markets and trade information and analysis are key inputs in FEWS NET’s integrated food security analysis. FEWS NET relies on a common understanding of a given population’s livelihoods (food and income sources and typical coping strategies used to handle shocks) as well as an understanding of typical market conditions and outcomes. Together, these are used to identify and quantify the magnitude of market-based anomalies and their potential impacts on food security outcomes of the poor and very poor (Figure 2).

Figure 2. FEWS NET’s approach to market monitoring and analysis

Several types of information help inform the understanding of typical market conditions that affect the food and income sources of the poor and very poor. These include: the geography of supply and demand for a particular commodity (for example, maize) or category of commodities (for example, staple foods); the role of different actors in the marketing system (from small-scale producers to industrial food processors); the seasonality of specific events or activities; aggregate import-dependence, particularly in the case of staple foods; and key programs and policies. These factors affect the stability of food availability and access (food prices and income levels) and therefore three of the four pillars of food security (food availability, access, utilization, and stability). Collectively, an understanding of these key elements constitutes the FEWS NET Markets and Trade Knowledge base.

Under FEWS NET III (FY 2012–2018), Markets and Trade Knowledge base information is compiled into “Market Fundamentals” reports that seek to provide readers with a general understanding of market dynamics during a typical year. These consolidated documents are elaborated for both presence and remote monitoring (RM) countries, with references to relevant external documents and resources when they are available. Two pilots were carried out in FY 2014, one in Sudan and one in Burkina Faso, to test the appropriateness of the approach, the usefulness of the end products, and the level of effort required.

During the first year of rollout (FY 2015), the Market Fundamentals reports will focus largely on staple food market structure and behavior. Such reports can be prepared for cash crop, livestock, and labor markets following a similar approach. Of particular interest to the FEWS NET project are markets identified as important sources of food and income for the poor and very poor based on an understanding of the livelihoods of those populations. The Markets and Trade Knowledge team’s vision is to eventually have a staple food Market Fundamentals report for each FEWS NET country and region. Other reports (focusing on cash crop, livestock, and labor markets) will be added in a modular fashion as time and resources permit.

FEWS NET monitors markets in presence as well as RM countries (Figure 3). A presence country is monitored by FEWS NET staff working in a local country office. RM countries are typically covered by analysts in a nearby country using a lighter analytical approach to identify anomalies and deteriorating conditions. FEWS NET also monitors staple food markets in other countries or regions that are relevant to understanding food availability and access for the poor and very poor in FEWS NET countries (for example, Benin, Pakistan, Kazakhstan, South Africa, and Mexico, among others).

The Market Fundamentals reports will continue to inform the project’s regular market monitoring in terms of the commodities covered in the project’s Markets and Trade database, Price Bulletins, Price Watch, and special reports (Figure 2). The specific markets and commodities covered in country-specific reports will depend on a number of factors. The reports focusing on staple food markets touch on the following:

- Cross-cutting issues that affect all markets in a given country or region: The political and macroeconomic environment and key national-level programs and policies that influence food and income sources.

- For each commodity market
  - Market structure, including the relative importance of local production versus imports in aggregate food availability and access, including the geographic distribution of production and consumption, and key actors in the marketing chain.
  - Market behavior/conduct, including purchase or selling behavior of key actors present in the marketing chain.
Market performance outcomes, including production trends, inter- and intra-annual price variability, and regional or international competitiveness.

Key indicators that analysts need to monitor over the course of the marketing year that could affect food availability and access of the poor and very poor.

FEWS NET’s widely recognized production and trade flow maps are incorporated into the report for commodities produced and consumed both locally and regionally as a means of illustrating the relative importance of certain markets and trade flow patterns in assuring food availability and access throughout the country. However, when a commodity is grown almost entirely as an exported cash crop or imported almost exclusively from international markets, other relevant diagrams and illustrations are used.

**Figure 3. FEWS NET presence and remote monitoring countries**

![Map of FEWS NET presence and remote monitoring countries](image)

Source: FEWS NET.
Key Concepts

The following provides the definitions of several key terms used throughout the report. For more detail on these definitions and other useful terms, consult the FEWS NET Markets and Trade Glossary.

Marketing system: This includes the entire commodity distribution system from production to consumption. A marketing system describes the key actors and the linkages between different stages of the distribution process of a given commodity. The marketing system also describes the spatial and functional relationships between market actors.

Marketing year: This refers to the period during which agricultural production from a given year’s harvest is sold. This period typically extends from one harvest of a particular commodity to the next, and is very similar to the consumption year used in FEWS NET’s livelihoods work in many cases.

Price: The cost or value of a good or service expressed in monetary terms. It is the financial cost paid when one buys a unit of a specific product or service. Prices, in the purest sense, indicate value that has been added to a particular commodity. This value added can be changes in the form (e.g., production or milling), place (e.g., transportation), or time (e.g., storage) of a commodity. Price signals can carry information about cost of production, transportation, storage, perceptions and desires as well as, in some instances, distortions.

Incentive: Something that incites an action or provides a motive (e.g., potential profits, benefits or gain from performing a particular economic activity).

Food balance sheet: This presents a comprehensive picture of the pattern of a country’s food supply during a specified reference period. A food balance sheet shows for each food item – i.e., each primary commodity and a number of processed commodities potentially available for human consumption – the sources of supply and its utilization.

Commodity balance sheet: This shows balances of food and agricultural commodities in a standardized form. The scope of standardization is to present these data in a less detailed form for a selected number of commodities without causing any significant loss of the basic variables monitoring the agricultural sector. The selected commodities include the equivalents of their derived products falling in the same commodity group, but exclude the equivalents of by-products and derived commodities, which through processing, change their nature and become part of different commodity groups.

Unimodal areas: Unimodal areas are agro-ecological zones with one distinct rainy season with one rainfall peak and typically a single harvest.

Bimodal areas: Bimodal areas are agro-ecological zones with either a single prolonged rainy season with two rainfall peaks or two or more distinct rainy seasons (which could each be unimodal or bimodal), resulting in two or more harvests. The amount of rainfall can be equivalent between rainy seasons or one may be dominant (for all commodities or for a single crop), resulting in differing yields between seasons.

Commodity classifications

Commodity-specific classifications of surplus and deficit areas are established based on historical production figures and on FEWS NET staff and key informants’ knowledge of the consumption patterns of particular areas of a given country. When surplus and deficit areas are identified in aggregate, the determination is typically based on total local production, expressed in kilocalorie terms, compared to total local needs (also expressed in kilocalorie terms). Estimated staple food needs are typically established by local governments and updated as consumption patterns change.

Surplus-producing area: A geographic area that produces sufficient quantity of a given commodity (or set of commodities, like cereals) to cover local demand and to supply other areas. An area can likewise be defined either as having a minor surplus, meaning that in a normal year slightly more of a commodity is produced than required to meet local needs, or as having a major surplus, meaning that production in a given area largely surpasses local needs.

Deficit area: A geographic area that does not produce enough of a given commodity to meet local demand.

Self-sufficient area: A geographic area that produces sufficient quantity of a commodity to cover local demand. This area rarely produces: either (1) enough to supply other areas, or (2) too little to meet local needs.

Market types

Reference market: A market that provides information about supply, demand, and price conditions in other nearby markets or key markets that influence the performance of others.
**Collection market:** A rural market where relatively smaller-scale traders (or trader agents) purchase directly from producers.

**Assembly market:** A market where relatively smaller quantities of a commodity are accumulated or aggregated, usually from different farmers and small-scale traders.

**Wholesale market:** A market where traders generally sell to traders. The volumes traded in each transaction tend to be relatively larger (for example, multiple 50-kg bags and even metric tons).

**Retail market:** A market where commodities are sold directly to consumers. The volumes traded during each transaction tend to be relatively small (for example, per kg or locally used bowl or other unit of measure).

**Formal versus informal trade flows**

**Formal trade flows:** Formal trade flows typically involve the exchange of large quantities of a given commodity, transported by road, rail, or sea. These trade flows are inspected, taxed, and reported in official government statistics, and abide by the requirements of the local legal system (including national-level laws and regional trade agreements). For example, in some countries, an importer or exporter is required to obtain a license from the local government or regional trade body that gives authority to engage in import or export activities. Formal trade can often also be thought of as legal trade.

**Informal trade flows:** Informal trade flows typically occur outside of the formal trade system (described above). These exchanges are typically not recorded in official government import and export statistics and are not inspected and taxed through official channels. These trade flows are typically undocumented, unlicensed, and unregistered. 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.

**Trade flow magnitude and frequency**

**Large trade flows:** The volumes traded (through either formal or informal channels) are estimated to be more important than other trade flow volumes in aggregate terms over the period of analysis. In unimodal FEWS NET countries, this represents the relative importance of trade flows between different geographic areas over a given marketing year. In bimodal areas, these may be season-specific. Because it is not possible to estimate actual trade flow volumes between markets in most FEWS NET countries, these are estimated based on discussions with key informants familiar with the staple food market system of a given country or region.

**Medium trade flows:** The volumes traded (through either formal or informal channels) are estimated to be somewhere in between large and small flows in terms of the aggregate volumes traded over the period of analysis. These are estimated through the same process as large trade flows (above).

**Small trade flows:** The volumes traded (through either formal or informal channels) are estimated to be less important than other trade flow volumes in aggregate terms over the period of analysis. These are estimated through the same process as large trade flows (above).

**Occasional trade flows:** These trade flows either take place during very specific times of year (for example, in the lean season only) or when certain specific conditions present themselves. These are typically not as important (in aggregate quantity) as other more regular types of trade flows.

**Price analysis**

**Coefficient of variation:** One of many measures of price variability, this is computed by dividing the standard deviation of a given price series by the mean.

**Average seasonal index:** This is calculated to demonstrate the extent to which prices during a given month in a given place differ, on average, compared to prices during other months of the year.

**Price differential:** This refers to a spatial or temporal difference in prices (also see spatial and temporal/seasonal arbitrage).

**Correlation coefficient:** Measures the association between two variables. A value of 0 indicates no association and a value of 1 perfect positive association.

**Freight on board (FOB):** This term is the market value of goods at the point of uniform valuation (the customs frontier of the economy from which they are exported).
Cost insurance freight (CIF): This is the price of a good delivered at the frontier of the importing country, including any insurance and freight charges incurred to that point, and before the payment of any import duties or taxes.

Export parity price (XPP): The monetary value of a product sold at a specific location in a foreign country, but valued from a specific location in the exporting country.

Import parity price (IPP): The monetary value of a unit of product bought from a foreign country, valued at a geographic location of interest in the importing country.
1. Zambia Staples Food Market Fundamentals

1.1 Introduction

Zambia is a landlocked country in Southern Africa that borders eight countries: Botswana, Namibia, Zimbabwe, Angola, Tanzania, the Democratic Republic of the Congo (DRC), Malawi, and Mozambique (Figure 1). Zambia is characterized by political stability, strong economic growth, abundant fertile land, and a generally favorable climate for agricultural production (Tembo and Sitko 2013).

Agriculture is an important part of the Zambian economy. In 2011, Zambia signed the Comprehensive Africa Agriculture Development Programme (CAADP) compact, committing to allocate at least 10 percent of national budget toward agricultural development, an increase from the 5 and 8 percent allocations in previous years (Chikwanda 2015). The sector contributes to between 8–10 percent of gross domestic product (GDP) but, perhaps more importantly, is the main livelihood for 70 percent of the population in Zambia (WTO 2016; MoAL 2013). The sector is based mainly on crop production, of which maize is the main product but cotton, rice, sunflowers, tobacco, Irish potatoes, wheat, and soybeans are also important crops. The sector is prone to variable annual production levels because of variability in rainfall; production declined by 7.7 percent in 2015 as a result of low and poorly distributed rains, after expanding by more than 8.0 percent in the previous year. However, there are variations at the subnational level across Zambia’s nine Provinces: Central, Copperbelt, Lusaka, Eastern, Luapula, Muchinga, Northern, North-Western, Southern, and Western Province. These subnational differences will be discussed throughout this report. Although these nine Provinces are also the names of important cities, this report will refer only to Provinces from here forward.

1.2 National Food Supply

Zambia’s favorable climatic conditions, high economic growth, and strong agricultural policy focus have facilitated agricultural growth and cultivation of diverse staple food and cash crops. Maize, cassava, rice, wheat, sweet potatoes, groundnuts, and mixed beans are the main food staples in the country in terms of area planted and production volume (Tembo and Sitko 2013). Higher-value, commercial cash crops such as cotton, tobacco, and sugar are also produced and are among Zambia’s main agricultural exports. With only 14 percent of suitable agricultural land currently under cultivation, significant room and potential for agricultural growth still exists (Esterhuizen 2015).

At a national level, Zambia is structurally surplus in overall staple food availability during an average year (Table 1). Disaggregating by commodity, on average Zambia is structurally surplus in maize, cassava, and wheat, and structurally deficit in rice.

Table 1. Zambia staple food balance sheet (MT), 2010/11–2014/15 (average)

<table>
<thead>
<tr>
<th>Element</th>
<th>Maize</th>
<th>*Cassava Flour</th>
<th>Wheat</th>
<th>Rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Domestic Availability</td>
<td>3,504,530</td>
<td>1,090,439</td>
<td>319,747</td>
<td>51,838</td>
</tr>
<tr>
<td>Opening Stocks</td>
<td>594,126</td>
<td>2</td>
<td>92,106</td>
<td>3,427</td>
</tr>
<tr>
<td>Production</td>
<td>2,910,404</td>
<td>1,090,437</td>
<td>227,640</td>
<td>48,411</td>
</tr>
<tr>
<td>Total Domestic Requirements</td>
<td>2,306,697</td>
<td>721,365</td>
<td>255,408</td>
<td>64,819</td>
</tr>
<tr>
<td>Human Consumption</td>
<td>1,435,692</td>
<td>666,843</td>
<td>244,026</td>
<td>59,763</td>
</tr>
<tr>
<td>Food Reserve Stocks</td>
<td>388,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Livestock Feed</td>
<td>199,386</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Breweries</td>
<td>96,400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Seed</td>
<td>41,699</td>
<td>-</td>
<td>-</td>
<td>2,636</td>
</tr>
<tr>
<td>Post-harvest Losses</td>
<td>145,520</td>
<td>54,522</td>
<td>11,382</td>
<td>2,421</td>
</tr>
<tr>
<td>Domestic Balance</td>
<td>1,197,834</td>
<td>369,074</td>
<td>64,339</td>
<td>-12,981</td>
</tr>
</tbody>
</table>

Note: Cassava values are not in cereal or grain equivalent.

Source: Authors’ calculations based on data from MAL/CSO (2016); SADC (2016); and COMESA/ACTESA (2016).
Production varies temporally and spatially. Figure 4 shows production of the three main staples (maize, cassava, and wheat) at the national level from 2010 to 2014. Rice is also included, but given the strong dominance of the first three staples in Zambian markets both in terms of production and consumption, only these are discussed herein. While wheat production remained fairly stable over time, cassava production decreased in recent years and maize production increased. The increase in maize production in the past decade was largely driven by increases in area expansion, while productivity, or yield rates, remains low in Zambia. Research has found that producers’ incentives to invest in technologies to improve farm productivity are limited by low and highly volatile farm gate prices for agricultural products in Zambia (Barrett 2008).

A number of factors have been identified as drivers behind these price dynamics, including underinvestment in road infrastructure, unpredictable trade policies (Tembo et al. 2010), market interventions that undermine private investment in crop markets and storage (Chapoto and Jayne 2009), and limited public investment in market information systems (Gage 2011).

As seen in Figure 5, production of the three main staple crops varies across the country. While Central, Eastern, and Southern Provinces are the major maize-producing provinces, Northern, Muchinga, North-Western, and Western Provinces are the major cassava-producing provinces; wheat production, albeit much lower relative to that of maize and cassava, is concentrated in provinces with high population centers, including Central, Copperbelt, and Lusaka Provinces.

Reflecting these spatial production differences, Zambia is often broken into three main staple zones: the cassava belt (more than 75 percent of area planted is cassava), the maize belt (more than 75 percent of area planted is maize), and the dual (or mixed) staple belt (cassava and maize together comprise 25–75 percent of area planted) (Figure 6) (Chapoto et al. 2010).

The majority of agricultural production in Zambia occurs through small-scale agriculture, with 73 percent of farmers cultivating less than 2 hectares (ha) of land (MoAL 2013). With the exception of wheat, production of these crops is almost entirely rainfed, and subsistence level. Wheat production is heavily irrigated and carried out by large-scale farmers. This reliance on rainfall makes agricultural production heavily seasonal. Zambia has one annual rainfall season (a unimodal rain pattern) from November to April, with one annual harvest in May (Table 2). The lean season, when supplies begin to run low and market dependence increases, begins in November and lasts until the start of the green harvest in March and April. Wheat and cassava are harvested throughout the year due to use of irrigation and the longer growing period, respectively.
Table 2. Zambia maize, wheat, and cassava seasonal calendar

<table>
<thead>
<tr>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize harvest</td>
<td>Land preparation and planting</td>
<td>Green maize harvest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main maize marketing season</td>
<td>Lean season</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cassava harvest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land preparation and planting</td>
<td>Wheat harvest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main wheat marketing season</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


1.3 National Food Demand

In terms of national total national consumption, maize, cassava, wheat, and rice are the main staple foods consumed in Zambia, in descending order (Table 3). At the national level, maize is largely the dominant staple food, comprising over half of total caloric intake (Figure 7). Cassava is the second highest consumed staple food, with consumption especially high in the northern and western parts of the country and lower in the central, eastern, and southern areas as well as in the major urban centers. Maize and cassava can be substitutes, but some parts of the country have a preference for one over the other: in areas of the far north in the “cassava belt,” cassava is preferred over maize; in other areas of Northern and North-Western Provinces in the “dual staple” areas, the two staples are closer to perfect substitutes; and in Eastern, Central, and Southern Provinces, considered the “maize belt,” maize is the preferred staple (Chapoto et al. 2010).

In contrast, wheat (third highest consumed commodity) is almost exclusively consumed by upper-class households in urban areas, including Lusaka, the largest consumption center in Zambia, and the Copperbelt, another important urban area with significant food demand. Rice is not a significant part of the Zambian diet. In addition to human food consumption, government purchases for grain reserve stocks are a significant source of demand for maize, as discussed in section 2.

1.4 Food Trade

Although Zambia does not have any ports, its proximity and borders with so many countries offers opportunities for exchange, making trade an important component of the Zambian food economy. Zambia is the second largest staple food exporter in the Southern Africa region after South Africa, making it a very important source of staple foods for several neighboring countries. As a generally peaceful region and country without any major conflict, no major security issues hinder local economies or trade flows. Zambia trades food both formally in large quantities and informally across its borders in smaller volumes.

Zambia is a member of several formal trade institutions, such as the Southern African Development Community (SADC) (since 1992) and the Common Market for Eastern and Southern Africa (COMESA) (since 1981), benefitting from access to these free trade agreements.

Table 3. Consumption of major food staples

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Quantity consumed (kg/capita/yr)</th>
<th>Daily caloric intake (kcal/capita/day)</th>
<th>Share of caloric intake (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>133</td>
<td>1122</td>
<td>57</td>
</tr>
<tr>
<td>Cassava</td>
<td>83</td>
<td>252</td>
<td>13</td>
</tr>
<tr>
<td>Wheat</td>
<td>17</td>
<td>136</td>
<td>7</td>
</tr>
<tr>
<td>Others</td>
<td>111</td>
<td>465</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>345</td>
<td>1975</td>
<td>100</td>
</tr>
</tbody>
</table>


Figure 7. Total national production (MT) by commodity, 2010–2014

Source: Author's calculations based on data from MAL/CSO (2016); SADC (2016); and COMESA/ACTESA (2016).
trade areas (Rasmussen 2015). In turn, Zambia grants duty-free access to imports from COMESA member states and applies a zero-tariff rate for goods from SADC member countries. 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) (Rasmussen 2015). Formal trade is carried out by large-scale, commercial traders and the Zambian government. While Zambia engages in high-volume, formal trade for maize and wheat (Table 4), cassava trade flows are much smaller and mostly informal (UN 2017). Zambia historically implemented trade bans for maize, but has recently made a public effort to avoid such restrictive trade policies, as discussed in section 2.6. Large-scale commercial farms and traders also dominate the export of cash crops, including sugar, tobacco, coffee, and soy products (World Bank 2014).

Informal trade also contributes to Zambia’s supply and trade dynamics. Informal staple food flows are especially prominent between Zambia and the DRC, Tanzania, and Malawi due to the porous and unregulated nature of these borders, price differentials, and demand. While demand and price differentials also exist with Zimbabwe, only trivial amounts of informal trade flow across the Zimbabwe border as a result of stronger regulation. Maize is the main food commodity informally traded; cassava is also exported informally to the DRC and Angola but in small amounts, and is mostly consumed domestically despite surplus production in Zambia (Haggblade et al. 2008). Informal trade is carried out by private traders and their agents and the FRA.

1.5 Cross-cutting Issues

1.5.1 Agroclimatology Context

Zambia’s humid subtropical climate is generally favorable for agricultural production. Annual rainfall ranges from 600 millimeters (mm) to 1,500 mm, with higher amounts in the north and less in the south (Figure 8) (MoAL 2013; Government of the Republic of Zambia, United Nations Development Programme 2010). Rainfall amounts are generally adequate for agriculture, but the country is prone to both droughts and floods due to intra- and interannual rainfall variability. The majority of rainfall in all regions occurs between November and April, with a pronounced dry season from May to October, meaning that early or late rains may affect the progression of the agricultural growing seasons.

High levels of rainfall variability in parts of the country cause agricultural production to be volatile. Interannual rainfall varies the most in the southern regions of the country, which are therefore more prone to drought (Figure 9). Rainfall is especially important because nearly all agricultural production in the country is rainfed. Since the country has one main rainy season, its agricultural harvest cycle is unimodal.

The country can be divided into four major agro-ecological regions based on rainfall and soil type (Figure 10) (MoAL 2013). Region I covers parts of Western, Southern, Lusaka, and Eastern Provinces. This region receives the least amount of rainfall

Table 4. Average annual trade (MT), 2011–2014*

<table>
<thead>
<tr>
<th>Type of trade</th>
<th>Direction of trade</th>
<th>Maize</th>
<th>Cassava</th>
<th>Wheat</th>
<th>Rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal</td>
<td>Exports</td>
<td>22,560</td>
<td>NA</td>
<td>NA</td>
<td>1,827</td>
</tr>
<tr>
<td></td>
<td>Imports</td>
<td>8,940</td>
<td>NA</td>
<td>NA</td>
<td>5,411</td>
</tr>
<tr>
<td>Formal*</td>
<td>Exports</td>
<td>885,481,456</td>
<td>54,500</td>
<td>4,325,369</td>
<td>1,120,478</td>
</tr>
<tr>
<td></td>
<td>Imports</td>
<td>3,577,081</td>
<td>83,309</td>
<td>23,209,069</td>
<td>27,857,480</td>
</tr>
</tbody>
</table>

Note: Formal trade includes annual trade 2011–2015. NA means Not Available.

Source: Authors’ calculations based on data from COMESA/ACTESA (2016); and UN (2017).

1.5.2 Development Programme

The development of Zambia’s agricultural sector is supported by various initiatives and programmes. The Government of the Republic of Zambia has implemented several programmes aimed at enhancing agricultural production and increasing food security. The Farmer Input Support Programme (FISP) is a key initiative, providing inputs such as seeds, fertilizers, and pesticides to farmers. The programme has been successful in increasing agricultural productivity and reducing food insecurity, particularly in regions with high rainfall (MoAL 2013). The Economic Recovery and Growth Strategy (ERGS) also focuses on improving the agricultural sector as a means to boost economic growth and reduce poverty. The strategy emphasizes the need for investment in agricultural infrastructure, such as roads and irrigation systems, to enhance productivity and increase access to markets.

The country has also been working to improve its trade incentives to attract foreign investment and expand its export base. Measures have been taken to reduce tariffs and trade barriers, making it easier for companies to enter the market. However, challenges remain in terms of infrastructure development and the regulatory environment, which may hinder further progress in the sector. Zambia is a member of various regional trade blocs, such as the Southern African Development Community (SADC), which aims to promote economic cooperation and integration among its member states. This membership provides opportunities for Zambia to enhance trade within the region and beyond.

As Zambia continues to focus on enhancing its agricultural sector, it is crucial to address the issues of rainfall variability and the development of effective infrastructure to support the growth of the country’s agricultural economy. The country’s efforts in this area are essential for improving food security, reducing rural poverty, and contributing to the sustainable development of the nation.
in the country (<800 mm annually). The region is suitable for sorghum, groundnut, bean, sweet potato, cassava, rice, and millet production and especially suitable for cattle production.

Region Ila is along the central, southern, and eastern plateaus covering parts of Central, Eastern, and Southern Provinces and receives 800 mm to 1,000 mm of rainfall annually. This region possesses fertile soils suitable for a range of crops, especially maize. Region Ilib mostly covers the semi-arid plains and sandy soils of Western Province. This region is characterized by low fertility but is still suitable for cassava, rice, and millet production.

Region III makes up half of the country’s total land area, covering North-Western, Copperbelt, Luapula, Northern, and Muchinga Provinces. This region receives 1,000 to 1,500 mm of rainfall annually. Region III is suitable for maize, cassava, millet, sorghum, bean, and groundnut production.

Ample rainfall in Regions Ila and III makes these two areas the most productive agricultural regions in the country. Region Ilib generally receives the same level of rainfall as Region Ila, but its sandy soil composition makes it the least productive region in the country. Region I receives the least rainfall, making production there vulnerable to drought (Sitko et al. 2011).

1.5.2 Economic Context

Zambia witnessed strong economic growth over the past 10 years: annual growth rates ranged from 5–10 percent between 2007 and 2013 (World Bank 2016). During this period, Zambia’s economy grew faster than the average Sub-Saharan African rate, and it was recognized by the World Bank as a middle-income country in 2011 (World Bank 2016).

The economic growth during that time was mainly driven by the mining industry. Zambia is the world’s second largest producer of copper, with exports of copper, coal, and gold constituting the vast majority of the country’s export earnings. The subsequent fall in international copper prices after 2015 led to sluggish growth in the country (Figure 11). As agriculture is also a large component of GDP (Figure 12), the decrease in world commodity prices further contributed to the recent slowdown in the country’s growth. Major agricultural exports include sugarcane, tobacco, and maize.

Industries with recent positive growth rates include non-mining industrial production, construction, and manufacturing, which together grew 10.8 percent in 2015 compared to 6.5 in 2014 (Figure 13). The growth in this combined sector was led by the construction sector due to public sector infrastructure projects.

The World Bank forecasted that economic growth would remain slow in 2016 but would begin to rise in 2017. This growth forecast is optimistic despite assumptions of continued low copper prices and a growing fiscal deficit.
The Zambian currency, the Kwacha (ZMW), depreciated sharply in 2015 and 2016 against the US dollar (US$), depreciating by 62 percent from its value in 2014 (Figure 14). The main drivers of the currency depreciation were lower copper prices coupled with a strong US dollar. The currency depreciation also fueled inflation in the country because of Zambia’s dependence on food and fuel imports (Figure 15). Inflation levels were over 20 percent in 2015 and 2016.

1.5.3 Infrastructure

The main infrastructure issues that affect agricultural markets in Zambia include power generation, transportation, and storage. Hydroelectric power generation in the country has proven potential, but pitfalls have led to countrywide electricity shortages. The transportation infrastructure suffers a similar drawback, with major cities connected to each other by roads, but rural areas largely unconnected. Finally, the country suffers from inadequate grain storage facilities and rudimentary on-farm storage techniques.

Electricity supply has been a major issue in the country. Hydroelectric power has great potential in Zambia because of the many rivers that run through it, but as a result of low river levels, total electricity generation fell by 25 percent from 2015 to 2016 (Ministry of Finance 2016b). As a consequence, the power deficit was estimated at 1,000 megawatts (MW), or 50 percent of peak demand, through much of 2015. Zambia Electricity Supply Corporation (ZESCO), the state power company, resorted to load-shedding (blackouts) at least eight hours per day for the majority of customers through 2015. By March 2016, the situation had improved, and ZESCO reduced load-shedding to four hours per day. As a result of these issues, electricity costs in the country remain high and even increased in recent years, in turn affecting the cost of food production. The deficit of power also meant increased imports of electricity and petroleum products, which come at a significant cost because of the depreciation in the Kwacha. Rural areas remain largely unconnected to the grid (Smith and Chinzara 2016).

The condition of most roads in the country is very poor, especially outside of the major urban centers of Lusaka, the Copperbelt, and Livingston Provinces, creating a significant impediment to moving agricultural products to markets. Zambia has 37,000 kilometers (km) of roadway, of which only about 6,500 km are paved. While these roads connect major cities, the vast majority of the country’s rural areas do not have passable roads (Figure 16). Furthermore, the poor conditions of the unpaved roads create significant challenges for the large trucks used to transport commodities the long distances between surplus areas of the country to urban consumption areas. Improvements in road infrastructure led to a 26.6 percent increase in passengers transported by road from 2015 to 2016. However, 60 percent of smaller roads connecting rural areas are generally in poor condition; during the rainy season, many of the dirt roads that connect rural areas to the main roads become impassable by vehicles (Hays, Reynolds, and Mital 2014).
Railways are another important source of transportation in the country. However, both cargo and passenger rail saw declines in use from 2015 to 2016. The decline was partly attributed to improvements in road infrastructure, which incentivized a switch from rail to road transportation, as many users found the road network to be more efficient. Mining companies heavily utilize both roads and rail for their operations (Ministry of Finance 2016b). Rail lines connect Zambia with Mozambique, Malawi, Angola, and Tanzania. As a landlocked country, Zambia does not have any domestic ports. The closest ports are the Beira (via Zimbabwe) and Nacala (via Malawi) ports in Mozambique. Other port options include Dar es Salaam in Tanzania or South Africa’s Durban and East London ports, to which Zambia is connected by both a road and rail system (IFDC 2013).

Most farmers lack efficient on-farm storage facilities. Most small-scale farmers rely on traditional storage methods, such as using bags to store grain, often inside the home. These rudimentary storage conditions contribute to significant post-harvest losses. Most commercial farmers have adequate on-farm storage facilities that can store products for extended periods of time.

At the national level, storage capacity is inadequate to handle bumper harvests. Government (public) storage capacity stands at 2 million metric tons (MT) countrywide. The majority of agricultural storage facilities available for lease by commercial grain traders are in the hands of the FRA. Private storage facilities in Zambia are generally considered insufficient. Private investment in capital-intensive storage has been limited due to unpredictable agricultural policies, namely the timing of the purchase and sale of maize grain by the government. Overall, an estimated 825,000 MT of private storage space exist across the country (N. Sitko 2011; Govereh, Jayne, and Chapoto 2008). Table 5 lists where and how many private storage facilities are located in Zambia. The lack of adequate storage infrastructure leads to spoilage of maize, thereby reducing the total supply levels that would otherwise be available for domestic consumption and exports.

1.5.4 Social Context

With a population of roughly 15.5 million people, Zambia ranks as the 22nd most populated country in Africa, but only the 43rd most densely populated country in Africa due to its abundance of land (United Nations, n.d.). The total population growth rate between 2000 and 2010 was about 3 percent annually. Zambia’s population growth has been decreasing, as evidenced by its fertility rate, which fell steadily from 7.2 births per woman in 1980 to 5.9 births per woman in 2010 (Central Statistics Office 2012). Zambia is one of Africa’s most urbanized countries – 39.5 percent of

<table>
<thead>
<tr>
<th># of facilities</th>
<th>District/Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kasama</td>
</tr>
<tr>
<td></td>
<td>Ndola</td>
</tr>
<tr>
<td></td>
<td>Mpongwe</td>
</tr>
<tr>
<td></td>
<td>Kapiri mposhi</td>
</tr>
<tr>
<td></td>
<td>Mkushi</td>
</tr>
<tr>
<td></td>
<td>Nyimba</td>
</tr>
<tr>
<td></td>
<td>Katete</td>
</tr>
<tr>
<td></td>
<td>Petauke</td>
</tr>
<tr>
<td></td>
<td>Seshke</td>
</tr>
<tr>
<td></td>
<td>Kalomo</td>
</tr>
<tr>
<td></td>
<td>Choma</td>
</tr>
<tr>
<td></td>
<td>Monze</td>
</tr>
<tr>
<td></td>
<td>Mazabuka</td>
</tr>
<tr>
<td></td>
<td>Gwembe</td>
</tr>
<tr>
<td></td>
<td>Lundazi</td>
</tr>
<tr>
<td></td>
<td>Kasama</td>
</tr>
<tr>
<td>2</td>
<td>Lusaka</td>
</tr>
<tr>
<td>3</td>
<td>Chipata</td>
</tr>
</tbody>
</table>

Source: Grain Traders Association (2014).
its population lives in urban areas. Between 2000 and 2010, the urban population grew faster than the rural population, at 4.2 percent and 2.1 percent annually, respectively. The urban areas of Lusaka and the Copperbelt remain the most densely populated areas of the country (Figure 17).

Despite recent economic growth, poverty rates remain high at over 60 percent of the population. While urban poverty is significantly lower at about 30 percent, rural poverty rates are over 70 percent. Poverty rates are highest in Eastern, Northern, Western, and Luapula Provinces, whose populations are mostly rural (Figure 18) (World Bank, Central Statistics Office, and Ministry of Finance and National Planning 2012). The growth in mining, trade, and construction, the key driver behind Zambia’s overall economic growth, did not improve the economic status of poorer households, since these capital-intensive and urban-based sectors do not employ large portions of the rural poor (World Bank, Central Statistics Office, and Ministry of Finance and National Planning 2012).

Zambia’s political situation has remained relatively calm, especially compared to neighboring countries such as the DRC and Zimbabwe, which have incurred conflict and political turmoil. Over the last two decades, Zambia has not suffered from conflict or political instability, and transitions of power have been relatively smooth. Recent presidential elections in August 2016 were closely contested, but the incumbent president, who has served since the death of the previous president in January 2015, was reelected.
2. Maize

2.1 Introduction

Maize is the most consumed and produced staple food at the national level in Zambia, and hence, it is considered Zambia’s main staple. It is commonly said in Zambia that people do not consider that they have eaten for the day unless they have eaten maize. Maize accounts for over 70 percent of total food availability and 60 percent of human consumption requirements.

At the national level, Zambia is structurally surplus in maize production. With significant growth in maize production in Zambia over the past five years, the country sustained its status as a surplus producer in the region in the years since. With several maize deficit countries in Southern Africa with high maize demand, Zambia’s maize production growth established it as an important maize exporter in the region. Maize is therefore important not only as a source of food for local consumption, but also as a source of income at the household level and of GDP growth at the national level.

2.2 Consumption

Unlike the other main staple foods (cassava, rice, and wheat), maize is consumed across all wealth groups and across the entire country. It is most commonly consumed as “nshima,” a dish made from maize meal and hot water. A strong cultural stigma persists against consuming yellow maize, so only white maize is used for human consumption, while yellow maize is used only for livestock feed.

2.3 Production

National production increased over the past five years, enabling Zambia to export to regional markets. It became the lead supplier for the region in the 2015/16 marketing year, nearly matching South Africa, as discussed in further detail in FEWS NET’s Southern Africa Supply and Market Outlook report (Figure 19). This production is attributed to area expansion, however, not yield improvements, indicating limits to continued production growth given the increasing land fragmentation and dwindling land holding sizes as a result of the land tenure and distribution systems in the country (N. Sitko et al. 2011). Important input use policies, along with the country’s favorable agro-ecological conditions for maize growth, also contributed to the recent, steady increase in production.

Eastern, Central, and Southern Provinces are structurally surplus areas, while the major deficit areas include the urban, high-consumption centers of Lusaka and the Copperbelt Provinces, and isolated areas with poor production, including almost all of Western Province, and pockets of Southern, Luapula, and Northern Provinces (Figure 20).

The majority of the country’s maize is produced by small-scale farmers using rainfed techniques. Small-scale farming production in Zambia is significantly focused on maize. In 2011/12, 86 percent of all smallholders grew maize (N. Sitko et al. 2011). However, the majority of smallholder farmers are still net purchasers of maize (Siegel 2008). As discussed previously, Zambia has a unimodal rainfall season, spanning from November to April, with harvest occurring in May (Table 2).

2.4 Structure of the marketing system

As a result of the high consumption rate across the country, maize’s marketing system and trade flows are far more complex than those of any other staple food. A high level of government intervention also occurs in maize markets, further complicating the marketing system.

Both formal and informal market networks coexist and have separate well-defined market chains, but these are also well integrated, so a large number of traders actively participate on the market (Figure 21). The main value chain actors include producers, traders, millers, the government (FRA), and consumers.
The majority of maize produced and found on markets comes from small- and medium-scale producers. The majority of these farmers have about 1 to 5 ha of land and use traditional rainfed production systems. These small- and medium-scale producers sell their maize to both formal and informal channels. A very small percentage of farmers are large-scale commercial producers that use irrigation and semi-mechanized systems. Large-scale producers are concentrated around the main urban areas of Lusaka and the Copperbelt. It should also be noted that approximately 50 percent of all maize produced is consumed at household level (USAID/COMPETE 2009) and never enters the market. The percentage of maize produced that is consumed by the household is even higher among just emergent farmers (defined by the government as smallholders who are between small-scale subsistence farms and large-scale commercial farms, cultivating 6 to 20 ha of land) (N. J. Sitko and Jayne 2014). The proportion of maize that emergent farmers retain for home consumption is greater than the proportion retained by commercial farmers for labor or stock feed (USAID/COMPETE 2009).

The major marketing period in Zambia lasts from May through November. The greatest volume of market exchanges typically takes place in July and August when supplies are highest. The majority of maize sold on markets is sold to the Food Reserve Agency (FRA); at the national level, the FRA has purchased more than 80 percent of all maize sold by smallholder farmers in some years (World Bank 2014). The FRA typically enters the market in June, but has waited as late as August in more recent years (2015). The FRA announces the quantity of maize it plans to purchase for strategic reserves at the start of marketing season, but this amount often changes as the marketing year progresses. In most years, by the end of the marketing year the FRA has purchased double the target amount it announced at the beginning of the year. The FRA then sells maize to registered, large-scale mills at below-market price levels (Mason and Myers 2011). As a result, commercial mills rely on the FRA as the source of maize supply instead of directly sourcing from the maize market. The FRA also exports maize in some years, and imports maize in production deficit years.

An array of small-, medium-, and large-scale traders also purchase maize from farmers in markets and sell it either on markets to consumers, to millers, or, in the case of small-scale traders, to larger traders. The majority of small-scale traders are assemblers with strong relationships with farmers. Small-scale traders mostly operate in the informal sector, but are still required to obtain valid trading licenses and pay municipal taxes. Small-scale traders are often engaged in the sale of fertilizers during the low maize-buying period (November–January). Additionally, some small-scale traders have arrangements with farmers in which they supply fertilizer to farmers, who repay the traders in the form of maize at the time of harvest. On the other end of the spectrum, medium- and large-scale traders operate within the formal sector. Most large traders also sell agricultural inputs, including agrochemicals and nonagricultural commodities. A few large traders and agribusinesses trade other commodities, including groundnuts, soybeans, common beans, cowpeas (to supply WFP), yellow maize, and cotton.

Whether small-, medium-, or large-scale traders dominate the marketing network depends on the area. In Southern Province, small-scale traders dominate markets, while large-scale traders have the largest market share of maize trade in Eastern Province. Most large traders in Eastern Province have a network of numerous maize-assembling agents hired to purchase}\n
---

**Figure 20. National average maize production (MT) and prices (ZMW/kg) by province**

**Source:** FEWS NET calculations based on data from CFS (2015); MAL/CSO (2016); SADC (2016); and COMESA/ACTESA (2016).

---

**Figure 21. Maize marketing channel diagram**

**Source:** FEWS NET Partner Workshop, Lusaka, Zambia (2014).
maize directly from farmers on their behalf. The small-scale traders in Eastern Province generally purchase maize from farmers and resell it to larger traders.

All levels of traders face competition with the FRA as maize purchasers on the market. While the FRA offers higher prices to farmers, the advantage that private traders have over the FRA is their ability to pay spot cash to farmers on delivery.

Millers, both small-scale and commercial, are also key actors in the Zambian maize market. Hammer mills purchase maize to process and sell as maize meal. The majority of maize is processed locally at small-scale mills, and often at the household level as well. The majority of commercially milled maize is both processed and sold to consumers in Lusaka and Copperbelt Provinces. Processors that mill maize for livestock feed and brewing companies also exist in the urban centers of Lusaka and Copperbelt Provinces.

Finally, storage is an important part of the maize marketing system chain. Small-scale traders typically store their maize for short periods near the household in cribs or under tarp, or at rented storage space at the market. Most smallholder farmers lack adequate storage and as a result often sell their produce at harvest time when prices are at their lowest levels (“Zambia Fertilizer Assessment” 2013). However, large-scale traders tend to have sufficient storage. Large-scale traders typically have storage space located in Lusaka or the Copperbelt area, where they sell their supplies.

### 2.5 Domestic flows and price trends

#### 2.5.1 Key markets

The major maize surplus areas of the country are in Eastern, Southern, and Central Provinces (Figure 27). With few major roads connecting distant areas of the country, the important source and destination markets lie along these major roads. Key markets that serve as major sources of surplus for the surrounding areas, as well as areas in other provinces, include Chipata, Lundazi, and Petauke in Eastern Province, Choma and Kalomo in Southern Province, and Mumbwa and Serenje in Central Province. Although Western Province is not a surplus area at the provincial level, Kaomo (located in Kaomo District) is the one surplus market in the province and is an important source of supplies for the rest of the province.

The greatest deficit area is in the westernmost part of the country, covering most of Western Province, as well as parts of North-Western and Southern Provinces. Very low population density, scarce infrastructure, and poor growing conditions (including poor soil and low rainfall) inhibit maize production and flows in Western Province. With few roads going into this area, it is also isolated from the marketing network in other parts of the country. Mongu is connected to and sources supplies from the surplus market of Kaoma, making it an important market for Western Province. Next, the country’s most densely populated urban centers of Lusaka, Kabwe, and the Copperbelt are important deficit areas with little to no production and very high consumption. Ndola, Kitwe, and Chingola are important markets in the Copperbelt area that are located very close together and strongly integrated. Last, some localized deficit pockets arise in Eastern Province (Chama and Mambwe Districts) and along the border with Zimbabwe in Southern Province. Mambwe District has very little production as a result of the large national park that takes up a large share of the land there.

The major flows of maize in the country are from the surplus areas of Southern, Eastern, and Central Provinces to the major urban centers of Lusaka and the Copperbelt, where demand from millers and consumers is very high. In Eastern Province, Chipata, Lundazi, and Petauke all lie in the center of the major surplus areas and are located on the same major road that goes from Eastern Province to Lusaka. Large volumes of maize are transported on large trucks from these three areas to Lusaka. Maize also flows from these areas to the neighboring deficit areas in Chama and Mambwe Districts. In Southern Province, Kalomo and Choma are the major marketing centers and are located on the main road that connects Lusaka with the major tourist city on the southern border of Livingstone. Maize also flows from Kalomo north to be sold to millers in Lusaka, and east to the major deficit areas of neighboring Western Province. Maize from the surplus areas of Central Province is drawn south to Lusaka, and also north to the major industrial area of the Copperbelt. Multiple large markets operate very close to each other in the Copperbelt area, including Ndola, Kitwe, and Chingola. Once maize reaches this area from Central Province, it flows very easily between these markets. Finally, in Western Province, Kaomo is an important source market, and Mongu is an important destination market in the middle of the large deficit area. The majority of domestic maize flows occur during and immediately following the harvest, mostly from May to July.

#### 2.5.2 Price trends

Maize prices in Zambia exhibit a strong seasonal trend: they reach their lowest point between May and July in most rural markets (and in August for large urban markets) with market supplies from the May harvest; they rise over the season,
reflecting storage costs and dwindling supplies; and they reach their highest point in January right before supplies from the green harvest become available, starting at the end of February (Figure 22).

Within Zambia, prices are typically the highest in Mongu, the major market of Western Province, due to its geographic isolation and deficit production, and lowest in the structurally surplus markets of Choma and Chipata in Southern and Eastern Provinces, respectively (Figure 23).

The selling and buying price for maize is ultimately determined at the point of sale to millers, consumers, or larger traders. At the point of sale, a quality check is usually done to ensure standards for white maize are met. Due to the preference for white maize, any amounts of yellow maize lower the price.

As the largest purchaser of maize on market, the FRA’s purchasing price plays a role in determining maize market prices in Zambia. Since the 2002/03 marketing season, the FRA’s pan-territorial purchase price has been above average wholesale market prices, especially in major maize-producing areas such as Choma, Chipata, and Kasama (Chapoto and Jayne 2009). In 2015, while the average market price for maize was 1.3 ZMW/kg, the FRA set its buying price at 1.5 ZMW/kg. The above-market level FRA purchase price creates competition and increases the purchase price for traders. As a result, research has found that FRA prices have raised maize market prices in both surplus and deficit areas; between July 2003 and December 2008, the FRA’s activities raised mean maize market prices by 19 percent in Choma, a major maize production area, and 17 percent in Lusaka, a major maize consumption area (Chapoto and Jayne 2009).

Prices are also impacted by marketing costs, including transport and taxes. High fuel costs and poor conditions of feeder roads in Zambia create high transport costs. Although large-scale traders generally have their own transport, small-scale producers or traders typically collectively hire and share local transport costs. Marketing costs are high in Zambia as a result of many variable factors, including perceived risk of policy changes, high finance costs, and exchange rate fluctuations. The two major policies that affect maize markets, i.e., the export policy and the FRA’s buying and selling strategy, change frequently, causing very high price volatility and uncertainty compared to that in other countries in the region, except Malawi (Chapoto and Jayne 2009). Fluctuations in the exchange rate affect production costs since many inputs are foreign exchange-derived. The lack of stability caused by these various factors leads to a lack of stability in the marketing chain and, as a result, traders incorporate high margins in their prices to protect themselves against the risk.

Despite the factors that elevate maize prices in Zambia, Zambian maize prices have historically been the second lowest in the region, behind only South Africa. In the 2015/16
marketing year, Zambia’s average maize price briefly dropped below that of South Africa, further strengthening Zambia’s role as an important maize exporter and supplier for the rest of the region, as discussed in section 2.6 and in FEWS NET’s Southern Africa Supply and Market Outlook report. However, prices quickly recovered in the 2016/17 marketing year and have recently remained above price levels in South Africa, as well as those in Mozambique and Malawi (Figure 24).

2.6 Regional and international trade

Zambia is surrounded by maize deficit countries. South Africa was historically the main supplier of maize for the region, but is increasingly producing more GMO (genetically modified organism) maize (World Bank 2014). Many countries in the region will not accept GMO maize grain imports, including Zimbabwe, Zambia, Malawi, and Mozambique. Although Zambia produces only non-GMO maize, Zambia did not previously formally export maize significantly in the region because of a maize export ban imposed in most years (Figure 25). However, after the removal of the export ban in April 2014, as a producer of non-GMO maize and given its recent increased domestic production, Zambia became an important source of maize supplies for the region in the 2015/16 marketing year. Zambia formally exported large volumes of maize to the region, surpassing South Africa to become the region’s top exporter in 2015/16. The greatest formal exports of maize were exported to Zimbabwe and Malawi due to their large national deficits.

In addition to trade policy, a number of regulations and requirements must be met for formal exports and imports of maize and related inputs, thereby shaping the amount and profile of Zambia’s regional maize trade. All imports and exports into and out of Zambia require a trade permit issued by the Agribusiness Unit of the Ministry of Agriculture and Livestock (MAL) that is only valid for 30 days. Furthermore, all exporters and importers must be registered with the Zambia Revenue Authority, a policy that excludes very small traders.

For maize exports, most of Zambia’s regional trade partners, including Botswana, Malawi, Namibia, Tanzania, and Zimbabwe, require a non-GMO certification as part of the phytosanitary certification. With the prohibition of imports of GMO seeds into the country, only non-GMO maize is grown in Zambia. This requires designated non-GMO inspectors to take physical samples for analysis by the Zambia Agriculture Research Institute (ZARI). This process obliges traders to arrange for samples to be collected and transported to ZARI headquarters in Lusaka. Traders report that they have been required to obtain non-GMO certificates for their exports to South Africa even though South Africa does not have a non-GMO certification requirement and is not a non-GMO country. In addition, traders must obtain phytosanitary certificates and fumigation certificates, which are required by most Southern African countries. These certificates are only valid for 15 days, after which time, if the maize has not been exported, the trader must repeat the process to obtain new certificates (World Bank 2014).

All formal imports of maize inputs, such as seed and fertilizer, must be registered with ZARI before being imported. The registration process can take several seasons and imposes a very high cost on importers. Furthermore, Zambia requires a quality inspection for certain imported items, including maize flour and all types of fertilizer, which obliges importers to send samples to the Zambia Bureau of Standards at least two weeks before the date of arrival. Foreign quality certificates from the destination country are not accepted. Finally, each imported product (for example, each type of fertilizer) must be registered annually with the Zambia Environmental Management Agency, another high cost for importers (World Bank 2014).

The high cost and time requirements that these processes entail are barriers for all traders, and exclude very small traders from the formal, legal system. As a result of these high barriers, informal flows of maize trade occur with neighboring countries (Figure 26). At the national level, Zambia informally exports far more, almost twice as much, than it informally imports. The majority of Zambia’s informal exports go to the DRC via border points near the Copperbelt area, and to Malawi through border points in Eastern Province. These high informal flows are due to high demand in the DRC and Malawi, price differentials, and the lack of regulation along these borders. While the Malawi border is very informal and unregulated, some formal border checkpoints and customs exist along the DRC border, but even at these border checkpoints the majority of maize crosses the border to the side of the checkpoint informally, unregulated, or checked by the DRC customs. Zambia also
informally exports maize meal, but the amounts are trivial. Maize meal follows similar trends, with nearly all informal maize meal exports going to the DRC. Informal imports of maize meal into Zambia are insignificant.

2.7 Constraints

The Zambian government is a significant player in the Zambian maize market; it influences maize prices, input prices and availability, and maize trade through three important policies.

First, the FRA is a parastatal set up in 1995 to manage and ensure national food security by maintaining a national food reserve. However, for several years, the FRA directly and actively purchased and sold maize on the market at subsidized prices. Since 2008, the FRA has been the dominant buyer of maize in Zambia. During the 2010/11 marketing year, the FRA purchased 83 percent of smallholders’ marketed maize (Mason and Myers 2011). The 2016 budget allocated 43 percent of agricultural spending toward this program (Chikwanda 2015). The FRA pricing policy and its effect on market prices are discussed below.

Second, the government provides farmers with subsidies for fertilizer and crop seeds, primarily for maize through the Fertilizer Support Program (FSP), now called the Fertilizer Input Subsidy Program (FISP). The FSP was set up in 2002, and then changed to the FISP in 2009. Combined, the FRA and FISP accounted for three percent of the total government budget allocation for 2016 (Chikwanda 2015). The FISP provides fertilizer and seed to farmers at subsidized prices. Its focus is on supporting small-scale maize farmers but the government expanded the program in recent years to include rice, sorghum, cotton, and groundnuts (WTO 2016). From 2004 to 2010, the FSP/FISP made up an average of 31 percent of the agricultural budget (MoAL 2013). In 2016, the government allocated 57 percent of the agricultural budget, equivalent to ZMW one billion, for the program (Chikwanda 2015). The FISP is sometimes criticized for crowding out the private sector.

Third, the Zambian government controls and restricts maize export volumes through export bans as a means of preserving domestic supplies to safeguard food security. The government has imposed export bans on maize grain and maize meal on and off since the 1990s. Under the maize export bans, the FRA was the only legal Zambian exporter of maize through government-to-government deals (World Bank 2014). The Zambian government lifted the export ban in April 2014 and maintained this status through the 2015/16 marketing year.
Figure 27. Maize production and trade flow map

Note: FEWS NET Production and Trade Flow Maps provide a summary of the geography of marketing systems that are relevant to food security outcomes during an average marketing year or season. The maps are produced by FEWS NET in collaboration with stakeholders from local government ministries, market information systems, NGOs, and private sector partners, using a mix of qualitative and quantitative data.

3. Information Gaps

Further information on the following aspects will help to better understand staple food markets in Zambia:

- *The quantity of food staples demanded by development actors (such as WFP and international/nongovernmental organizations) for food assistance, nationally or abroad.* The procurement of food in Zambia for its use as food assistance is well recognized. For some commodities, such as maize, this demand appears to be of considerable size and might impact local prices. Up-to-date information regarding institutional commodity demand and sourcing locations/markets is needed to understand the effects of local procurement on Zambian food markets and food access.

- *A characterization of current informal trade dynamics across the border between Zambia and Zimbabwe.* This would facilitate a better understanding of Zambia’s total maize exports and food supply sources in Zimbabwe.

- *The dynamics and factors of livestock markets in Zambia.* Livestock are an important part of livelihoods in many parts of Zambia. Information on supply, prices, and trade flows for cattle should be collected, monitored, and further integrated into market analysis for the country.

- *The dynamics and factors influencing the depreciation of the Zambian Kwacha and how they transmit to the staple food market system.* The Kwacha has depreciated with respect to the US dollar. Weak global food commodity and mineral (specifically copper) prices and strengthening of the US dollar are often considered the main factors behind this trend, but a more detailed understanding is needed.
4. Market Monitoring Plan

FEWS NET regularly monitors staple food market dynamics in both presence and RM countries. It is neither necessary nor possible for FEWS NET to effectively monitor all commodity markets at all times. Rather, the Markets and Trade Knowledge team focuses on monitoring the status of a select group of indicators over a given marketing year (Figure 28). Those key indicators include the status of key activities and events that are likely to influence market supply and demand dynamics and the resulting price levels and variability in key reference markets. FEWS NET also regularly monitors incentives for trade flows out of areas of relative abundance into those of relative scarcity. Some of these indicators have threshold values that are used in practice, in combination with other information, to suggest when one might have reason to be concerned about food availability and/or access at a national or subnational level. The results of such monitoring are regularly reported in FEWS NET’s Price Watch and Price Watch Annex and also serve as essential inputs into the FEWS NET project’s integrated food security analysis.

Figure 28. FEWS NET’s approach to market monitoring and analysis

![Diagram of market monitoring plan]

Table 6 provide an overview of general indicators to monitor with respect to the broader staple food marketing system in Zambia. Table 7 identifies specific indicators that should be monitored for specifically for maize.

Table 6. General indicators to monitor vis-à-vis staple food markets in Zambia

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic production</td>
<td>Growing conditions at key growing stages, for all commodities, and expected harvest</td>
</tr>
<tr>
<td></td>
<td>Seasonal calendar (update based on conditions prior to planting)</td>
</tr>
<tr>
<td></td>
<td>Domestic production estimates, nationally and regionally</td>
</tr>
<tr>
<td>Price monitoring</td>
<td>Wholesale prices of all commodities</td>
</tr>
<tr>
<td></td>
<td>Retail prices of all commodities</td>
</tr>
<tr>
<td>Domestic consumption</td>
<td>Quantification of amount used for food, for other uses, and wasted, for all commodities</td>
</tr>
<tr>
<td>Trade flows (quantities)</td>
<td>Formal, all commodities, from and to Zambia</td>
</tr>
<tr>
<td></td>
<td>Informal, all commodities, from and to Zambia</td>
</tr>
<tr>
<td></td>
<td>Seasonality of trade flows with neighboring countries</td>
</tr>
<tr>
<td></td>
<td>Monitoring of trade patterns at major border crossing points</td>
</tr>
<tr>
<td>Government policies</td>
<td>Policies or programs that have an effect on the production, trade, or consumption of the commodities analyzed</td>
</tr>
<tr>
<td>Regional context</td>
<td>Food supply in the Democratic Republic of the Congo (DRC)</td>
</tr>
<tr>
<td></td>
<td>Food supply in Malawi</td>
</tr>
<tr>
<td></td>
<td>Food supply in Kenya</td>
</tr>
<tr>
<td></td>
<td>Food supply in South Africa</td>
</tr>
<tr>
<td>Food assistance</td>
<td>Amount of procured food for food assistance, from Zambia</td>
</tr>
<tr>
<td>Macroeconomic context</td>
<td>Exchange rate, against US dollar and neighboring currencies</td>
</tr>
<tr>
<td></td>
<td>Inflation</td>
</tr>
<tr>
<td></td>
<td>Consumer price index</td>
</tr>
</tbody>
</table>
### Table 7. Indicators to monitor vis-à-vis maize markets in Zambia

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maize</strong></td>
<td>Institutional demand (volumes and timing of purchases and sales by the FRA)</td>
</tr>
<tr>
<td></td>
<td>Institutional prices (purchase price of the FRA, sale price by the FRA)</td>
</tr>
<tr>
<td></td>
<td>Industrial demand</td>
</tr>
<tr>
<td></td>
<td>Production estimates in Eastern and Southern Provinces</td>
</tr>
<tr>
<td></td>
<td>Production and imports of white maize in South Africa</td>
</tr>
<tr>
<td></td>
<td>Southern and East Africa regional maize prices</td>
</tr>
<tr>
<td></td>
<td>Southern and East Africa regional maize supply</td>
</tr>
<tr>
<td></td>
<td>Size of storage losses</td>
</tr>
</tbody>
</table>
References


Chikwanda, Alexander. 2015. “2016 Budget Address by the Hon. Alexander B. Chikwanda M.P., Minister of Finance, Delievered to the National Assembly on Friday October 9th 2015.”


Esterhuizen, Dirk. 2015. “Agricultural Economic Fact Sheet.” USDA, GAIN.


FEWS NET Partner Workshop, Lusaka, Zambia. 2014.

Gage, Daria. 2011. “Revitalizing Zambia’s Agricultural Marketing Information Centre (AMIC).” USAID/Enabling Agricultural Trade (EAT) and Michigan State University. [http://www.aec.ms.edu/fs2/zambia/policy.htm](http://www.aec.ms.edu/fs2/zambia/policy.htm).


IFDC. 2013. “Zambia Fertilizer Assessment.” IFDC.


Sitko, Nicholas. 2011. “Key Findings of Zambia AgCLIR Study.” USAID.


UN. 2017. COMTRADE. comtrade.un.org/data.


“Zambia Fertilizer Assessment.” 2013. IFDC.
### Annex 1. List of Workshop Participants

<table>
<thead>
<tr>
<th>Name of Participant</th>
<th>Organization</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yotam Mkandawire</td>
<td>Grain Traders Association of Zambia (GTAZ)</td>
<td>Business Advisor</td>
</tr>
<tr>
<td>Tawonga Mkandawire</td>
<td>GTAZ</td>
<td>Business Advisor</td>
</tr>
<tr>
<td>Dingiswayo Banda</td>
<td>Ministry of Agriculture and Livestock (MAL)</td>
<td>Chief Economist</td>
</tr>
<tr>
<td>David Mundia</td>
<td>MAL- Agribusiness</td>
<td>Ag Deputy Director</td>
</tr>
<tr>
<td>Daniel Machiya</td>
<td>Food Reserve Agency (FRA)</td>
<td>Marketing Officer - HQ</td>
</tr>
<tr>
<td>Stephen Mukumbuta</td>
<td>WFP</td>
<td>Snr Program Officer</td>
</tr>
<tr>
<td>Ebony Loloji</td>
<td>National Union of small Scale Farmers of Zambia</td>
<td>Head Research</td>
</tr>
<tr>
<td>Tibone Moyo</td>
<td>Zambia National Farmers Union (ZNFU)</td>
<td>Economist</td>
</tr>
<tr>
<td>Sylvester Nyendwa</td>
<td>MAL-Northern Province</td>
<td>Provincial Agriculture Planner</td>
</tr>
<tr>
<td>Ednah Kasanda</td>
<td>Musika</td>
<td>Researcher</td>
</tr>
<tr>
<td>Dr. Martin Chiona</td>
<td>Zambia Agriculture Research Institute - Mansa</td>
<td>Principal Researcher</td>
</tr>
<tr>
<td>Ponga Bwalya</td>
<td>MAL</td>
<td>District Agricultural Coordinator - Mwinilunga</td>
</tr>
<tr>
<td>Brian Ngandu</td>
<td>MAL</td>
<td>Economist</td>
</tr>
<tr>
<td>Erin Collier</td>
<td>FEWS NET HO</td>
<td>MT HO</td>
</tr>
<tr>
<td>Yvonne Vhevha</td>
<td>FEWS NET Region</td>
<td>RFSS</td>
</tr>
<tr>
<td>Chansa Mushinge</td>
<td>FEWS NET</td>
<td>NTM</td>
</tr>
<tr>
<td>Agness Ngolwe</td>
<td>FEWS NET</td>
<td>ANTM</td>
</tr>
</tbody>
</table>