Understanding the Hunger and Malnutrition Situation in Zambia

By Rhoda Mofya-Mukuka, Alefa Banda and Benny Kabwela

Indaba Agricultural Policy Research Institute
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The Indaba Agricultural Policy Research Institute (IAPRI) is a non-profit company limited by guarantee and collaboratively works with public and private stakeholders. IAPRI exists to carry out agricultural policy research and outreach, serving the agricultural sector in Zambia to contribute to sustainable pro-poor agricultural development.

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Any views expressed or remaining errors are solely the responsibility of the authors.
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EXECUTIVE SUMMARY

Despite Zambia’s achievements in attaining self-sufficiency in the production of its main staple, maize, as well as other food crops over the last two decades, the country’s food insecurity and malnutrition status has remained worrisome. Zambia’s hunger index remains among the highest in the world currently estimated at 37.6%. In absolute terms, nearly 960,000 people were estimated to be at risk of food insecurity in the 2018/19 consumption year, a significant increase from about 210,000 in 2013. In 2014, FAO’s State of Food Insecurity (SOFI) report ranked Zambia second worst food insecure with 48% of the country estimated to be undernourished. This ranking sparked wide debate across the food security and nutrition actors in the country and raised interest on the estimation of hunger and food insecurity in the country.

Although there are notable data flaws in the estimation of the levels of undernourishment in the country, given the data limitations (Mofya-Mukuka and Mofu 2016), estimates of the extent of food availability from data sources such as the Rural Agricultural Livelihood Survey and the Living Conditions Monitoring Surveys are in tandem with the FAO’s estimated levels. It is against this background that the current study was instituted to examine the food situation and contribute to the effective policy formulation and implementation.

Key Messages

1. Zambia’s hunger index is among the highest in the world currently estimated at 37.6%.
2. Zambia has one of the highest prevalence of undernourishment in Africa, currently estimated to be at 44.5%.
3. The number of people estimated to be at risk of food insecurity has risen from 210,000 in 2013 to nearly 960,000 in the 2018/19 consumption year.
4. Current data show that 40% of children under the age of five are stunted, 6% wasted, 15% underweight, and 9% overweight.
5. The situation exemplifies the double-burden of malnutrition in women, with 10% (8% urban and 12% rural) underweight (BMI <18.5 kg/m²), and 23% (32% urban and 15% rural) overweight or obese (BMI ≥ 25.0 kg/ m²).
6. Zambia has a coherent multi-sectorial policy environment covering key nutrition issues but the nutrition budget allocations are inadequate and lack synergy among a broad set of nutrition-specific interventions and nutrition-sensitive plans.
7. Causes of hunger and malnutrition in the country include but not limited to the consumption of poorly diversified diet, widespread poverty—particularly in the rural areas—high vulnerability to climate shocks that affect food production, and perpetual post-harvest loses. Generally, there is inadequate access to food due to high rates of unemployment and poverty.

Because of the interplay between the various factors driving hunger and nutrition status, it will be important for interventions to adopt a well-coordinated, multi-sectoral approach. For instance, a
holistic approach to infrastructure development (both physical and institutional infrastructure) can support improved food security and nutrition status through improved access to food production, input and output markets, better sanitation, healthcare, and education. Interventions such as social cash transfers need to complement efforts towards sustainable improvement in child nutrition. The link between agriculture and nutrition needs to be more deliberately nurtured for improved food production to strongly support child nutrition.
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<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>CSO</td>
<td>Central Statistics Office</td>
</tr>
<tr>
<td>DEC</td>
<td>Dietary Energy Consumption</td>
</tr>
<tr>
<td>DER</td>
<td>Dietary Energy Requirement</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GHI</td>
<td>Global Hunger Index</td>
</tr>
<tr>
<td>HCI</td>
<td>Household Commercialization Index</td>
</tr>
<tr>
<td>IAPRI</td>
<td>Indaba Agricultural Research Institute</td>
</tr>
<tr>
<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
</tr>
<tr>
<td>MOA</td>
<td>Ministry Of Agriculture</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NFNC</td>
<td>National Food and Nutrition Commission</td>
</tr>
<tr>
<td>NFNSP</td>
<td>National Food and Nutrition Strategy Plan</td>
</tr>
<tr>
<td>PoU</td>
<td>Prevalence of Undernourishment</td>
</tr>
<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>SOFI</td>
<td>State Of Food Insecurity</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations International Children Emergency Fund</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>ZDHS</td>
<td>Zambia Demographic Health Survey</td>
</tr>
</tbody>
</table>
1. OVERVIEW

Despite Zambia’s achievements in attaining self-sufficiency in the production of its staple—maize—as well as other food crops over the last two decades, the country’s food insecurity and malnutrition status have remained worrisome. The 2014 State of Food Insecurity in the world report (SOFI), rated Zambia the second most undernourished nation in the world with a prevalence of 48%. Although this prevalence has reduced to 44.5% in 2018, Zambia remains among the countries with the highest rates of undernourishment in the world (FAO, IFAD, WFP 2014; FAO et al. 2018). Similarly, Zambia’s hunger index remains among the highest in the world estimated at 37.6% (2018). In absolute terms, nearly 960,000 people were estimated to be at risk of food insecurity in the 2018/19 consumption year, a significant increase from about 210,000 in 2013 (Figure 1).

![Figure 1: Trend in Food Insecure Population in Zambia](image)

Source: Authors’ compilation from ZVAC Assessment Reports 2013-2018.

Regarding malnutrition, the current status remains unclear, as the last Zambia Demographic Health Survey (ZDHS) was carried out in 2013/14. At the time of writing this report, ZDHS was going in the field and results are expected in 2019. According to 2013/14 ZDHS, there was a steady decline in the prevalence of child malnutrition compared to the previous DHS that was conducted in 2007. The data showed that about 40%, 6%, and 15% of children aged below five years were stunted, wasted, and underweight respectively with 9% children being overweight. Furthermore, approximately 10% of women were underweight (Body Mass Index [BMI] <18.5 kg/m²) with 8% and 11% of the underweight women residing in urban and rural areas respectively. On the other hand, nearly 23% of women were overweight or obese (BMI ≥ 25.0 kg/m²) of which 32% and 15% were living in urban and rural areas respectively, and this points to the double burden of malnutrition (CSO 2014).
2. THE STATE OF UNDERNOURISHMENT, HUNGER, AND MALNUTRITION

2.1 State of Undernourishment

Undernourishment is defined as the deprivation of food with calorie consumption of less than 1,800 kilocalories per day, which is the minimum that most people require to live a healthy and productive life (FAO, IFAD, and WFP 2014). The prevalence of undernourishment (PoU) is an estimation of the proportion of the population facing severe food deprivation (FAO et al. 2017). The 2018 SOFI report by the Food and Agriculture Organization (FAO) estimates that Zambia’s PoU has marginally declined to 44.5% from the 45.9% reported in 2017 (see Figure 2). Although the PoU has been falling, the absolute number of undernourished people has been rising from 6.2 million between 2004 and 2006 to 7.4 million between 2015 and 2017.

![Figure 2: Trends in Zambia’s PoU between 2012 and 2018](image)

Despite the decline in the PoU, Zambia’s current rate is way too high above the global (11.3%) and the Sub-Saharan Africa’s (21.3%) average rates of undernourishment, ranking Zambia one of the most undernourished countries in the world (Figure 3). Moreover, Zambia’s levels of undernourishment have been above the average values for Sub-Saharan Africa since 2001 and indeed above most of its income peers (FAO et al., 2018).
Figure 3: Cross-Country Comparisons of the Prevalence of Undernourishment in Africa

Source: FAO et. al., 2018.

A recent study by Mofya-Mukuka, Kabwe, and Manyani (2018) conducted in two districts (Mumbwa and Chibombo) in Central Province found that PoU was about 17.5%. This suggests that there are likely wide regional variations in PoU across the country.

2.1.1 Concerns on the Measurement of PoU for Zambia

An individual is adequately nourished when dietary energy consumption (DEC) is equal to dietary energy requirement (DER). DEC can be computed from a household consumption survey where quantities of different food items consumed by the household are converted into their energy equivalent values. The percentage of individuals below the DEC gives the PoU for the given population. Hence, the estimation of the PoU indicator requires data on food availability and equality in access to food, as well as data on demographics.

Following the release of the 2014 SOFI report that ranked Zambia the second worst food insecure country in the world, there has been extensive debate across the various food security stakeholders who have raised concerns that Zambia’s dietary energy consumption is likely to be underestimated for several reasons including the following:

a) there has not been an updated survey on food consumption since 1971 to obtain updated information on the DEC. Many available micronutrient surveys are limited to targeting specific geographical areas and limited in scope;

b) the country’s food balance sheet, an indicator of availability of main foods, has been limited to staple food without taking into consideration legumes, which are also widely consumed; and

c) socio-economic and demographic changes over time have shifted the consumption of both rural and urban population Chisanga and Zulu-Mbata (2017), yet estimations by FAO have not incorporated changes in the composition of the population.
2.2 The State of Hunger in Zambia

Hunger is usually understood to refer to the distress associated with lack of food (International Food Policy Research Institute (IFPRI) 2017)). It is, therefore, an indicator of food insecurity and often used to refer to the state of undernourishment. The global hunger index (GHI) is a globally adopted tool to measure and track hunger in a given geographical area. According to the 2018 Global Hunger Report, most countries with a high hunger index are found in Africa, and Zambia ranks among the five countries with the highest hunger rates on the continent and in the world (Figure 4). It is, however, important to note that countries such as Bahrain, Bhutan, Burundi, Democratic Republic of Congo, Equatorial Guinea, Eritrea, Libya, Moldova, Qatar, Somalia, South Sudan, the Syrian Arab Republic, and Tajikistan are not ranked due to data availability challenges, and these countries have hunger and nutrition concerns (IFPRI 2018).
Zambia’s GHI has been above 40% (Figure 5) for most of the last two decades until recently when it dropped to 39% in 2016 and dropped further to 37.2% in 2017. Although the country’s hunger index has shown some steady downward trend, it's overall ranking on the GHI scale remains low and within the alarming range together with Chad, Yemen, Madagascar, and Central Africa Republic.

**Figure 4: Hunger Rating of Zambia among African Countries**


**Figure 5: Trends of GHI for Zambia**

2.2.1 Measures and Indicators

The GHI index is computed annually over a three-year period by IFPRI using data from various sources. The index constitutes four indicators: undernourishment, child wasting, child stunting, and child mortality assigning a weight to each indicator. Undernourishment and stunting form the most substantial contribution to the overall rating of the GHI suggesting that if stunting and undernourishment were addressed, the GHI for Zambia would reduce substantially. This, therefore, calls for sound government policy interventions to address the two indicators for the country including the data issues discussed in Section 2. The trends in each of the GHI indicators as depicted in Figure 6, show steady, but slow, downward trends, although the levels for stunting and undernourishment remain significantly high.

Table 1: Components of the GHI and their Respective Weights

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Indicator</th>
<th>Zambia’s Rate</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate food supply (FAO)</td>
<td>Undernourishment</td>
<td>44.5%</td>
<td>1/6</td>
</tr>
<tr>
<td>Child undernutrition (UNICEF, WHO, World Bank)</td>
<td>Wasting</td>
<td>6%</td>
<td>1/3</td>
</tr>
<tr>
<td></td>
<td>Stunting</td>
<td>40%</td>
<td>1/3</td>
</tr>
<tr>
<td>Child mortality (Inter-agency Group for Child Mortality Estimation)</td>
<td>Under-five mortality rate</td>
<td>12%</td>
<td>1/3</td>
</tr>
</tbody>
</table>


Figure 6: 2018 Zambia’s Global Hunger Index Trends

Source: IFPRI GHI reports for various years.
2.3 Status of Malnutrition

The World Health Organization (WHO) defines malnutrition as having insufficiencies, excesses, or disequilibrium in a person’s intake of energy and nutrients. The term broadly covers two concepts. The first one is undernutrition and includes stunting (low height for age), underweight (low weight for age), wasting (low weight for height), and micronutrient (including Vitamin A, Iron and Zinc) deficiencies. The second one is overweight which usually captures obesity and diet-related non-communicable diseases.

Although Zambia has recorded some notable reductions in stunting rates since 2001, the country failed to meet the Millennium Development Goal target of reducing stunting to 25% by 2015. The country’s commitment to the Malabo Declaration of the African Union and the Sustainable Development Goals of reducing stunting to 10% by 2025 and to zero by 2030, respectively, also looks far-fetched considering the current slow rate of progress (Figure 7). This requires that the government reposition the policy trajectory if the set targets are to be met.

![Figure 7: Trends and Targets in Stunting, Wasting, and Underweight](source: CSO, MoH, IFC (20/14).
Figure 7 shows the trends and targets in percentages of underweight, wasted, and stunted children between 1990 and 2014 together with their targeted percentages in 2025. There has been a downward trend in percentages of underweight children with percentages in child wasting remaining constant through time—stunting rates were reduced from the peak of about 53% between 2001 and 2012 to 40% in 2013/14. Overly, Zambia’s rates of malnutrition have virtually unchanged, burdening the country with considerable costs in health care. The high rates of stunting call for prevention through community-based approaches that target pregnant women early enough to prevent different forms of malnutrition.

Comparing levels of malnutrition in the form of stunting by province and across time indicates that the condition has scarcely changed. For instance (see Figure 8), only three out of nine provinces (Western, Southern, and Lusaka) in 2007 had stunting rates below the national average (44.9%). The situation barely changed in 2013 as only five out of ten provinces (Western, Southern, Lusaka, Copperbelt, and Northwestern) were below the national average (40.3%). Important to note is that although Southern Province was below the national average in 2013, its stunting rate rose from 36.2% in 2007 to 37% in 2013. Northern, Muchinga, Luapula, and Eastern provinces in that respect continue to be the leading provinces in child stunting in the country.

Figure 8: Stunting Rates by Province in 2007 and 2013/14
Figure 9 compares child stunting between Zambia and some selected African countries. The selected countries such as Malawi, Tanzania, and Uganda that have lower stunting rates are comparable to Zambia in terms of Gross Domestic Product and per capita income. This suggests that there are wider opportunities for Zambia to reduce the stunting rates regardless of the countries’ level of income.

![Figure 9: Comparisons of Stunting Rates between Zambia and Selected African Countries](image)

*Source: Zambia Ministry of Health (2017).*

### 2.3.1 Under-five Child Mortality

Child mortality, defined as the number of deaths per 1,000 live births (CSO 2014) is one of the most important social indicators. Zambia through the sustainable development goals (SDGs) aims to reduce under-five child mortality to 25 deaths per 1,000 live births by 2030. Looking at the current child mortality rates as indicated in Figure 10, Zambia is very unlikely to meet the SDGs on child mortality. Worth noting is that the provinces (Northern, Luapula, Muchinga, and Eastern) with the highest rates of stunting (as already shown in Figure 8) have the highest rates of under-five child mortality (Figure 10). Nearly half of all deaths in children under five are attributable to undernutrition, as undernutrition puts children at greater risk of dying from common infections, increases the frequency and severity of infections, and delays recovery. Therefore, there is need for deliberate and urgent policy actions to address the underlying causes of under-five child mortality.
Figure 10: Under-five Child Mortality Rates by Province

Source: CSO, MoH, IFC (2013/14)
3. THE POLICY ENVIRONMENT FOR FOOD SECURITY AND NUTRITION

3.1 Food Security Policies

Various policies have been developed in Zambia that directly and indirectly address food insecurity across the sectors. The policy frameworks over the years have been generally adequate to address the multi-dimensional nature of food insecurity, and constraints to agricultural productivity. However, a key challenge in the implementation of these policies is the disproportional and generally inadequate resource allocation to the various planned strategies, resulting in poor implementation of the policies. Box 1 summarizes the main programmes and policies to address food insecurity in the last two decades.

Box 1: Key Food Security Policies in the Last 20 Years

- Agricultural Sector Investment Plan (1996 - 2001)
- Farmer Security Pack (FSP) (2000-date)
- Food Reserve Act (enacted in 2004)
- Fifth National Development Plan, 2006-2010
- 2006 Restructuring of Ministry of Agriculture (Women and Youth section of the department of Agriculture renamed ‘Food and Nutrition’ section)
- National Agriculture Policy 2004-15
- National Agriculture Investment Plan 2014
- Sixth National Development Plan, 2010 – 2015
- Ministry of Agriculture operational guidelines for food and nutrition (2014)
- Seventh National Development Plan, 2017-2021
- Second National Agriculture Policy 2016-21
- Introduction of Ministry of Fisheries and Livestock (2014)
- Introduction of E-voucher – promoting diversification (2014/15)
- Social protection and welfare through programmes such as Social Cash Transfers
- Direct food assistance through programmes such as the Home Grown School Meals Programmes for school going children

Source: Authors
3.2 Agricultural Sector Budget

Since 2013, the budget allocations to the agricultural sector have been less than 10% of the national budget per annum, which is below the Maputo commitment to allocate at least 10% of public expenditure to agriculture (Figure 11). The appropriations have considerably dropped from 9.4% in 2017 to about 6.1% in the 2019 budget as the debt burden continues to squeeze public spending. Moreover, input and output subsidies for maize production, the main staple crop for Zambia, take up more than half of the agricultural sector budget with limited impact on farm productivity, crop diversity, and poverty reduction.

Figure 11: Budget Allocation to the Agricultural Sector

Source: MoFNP and MoA various years.
Note: Figures exclude allocations via other ministries.

3.3 Nutrition Policies

It is widely acknowledged that Zambia has perhaps one of the most comprehensive nutrition policy frameworks in the region (Harris et al. 2017). At a glance, the country has a coherent multi-sectoral policy environment covering key nutrition issues, which, among other achievements, has led to the establishment of multi-sectoral coordination structures at all levels, from national to sub-district. Currently, Zambia has eight key line ministries with a mandate to address nutrition challenges. These are Ministry of Health (MoH), Ministry of Agriculture (MoA), Ministry of Fisheries and Livestock, Ministry of Local Government and Housing, Ministry of General
Education, Ministry of Community Development and Social Services (MCDSS), Ministry of Water Development Sanitation and Environmental Protection (MWDSEP), Ministry of Chiefs and Traditional Affairs, and Ministry of Gender. However, there remains a challenge of weak linkages between the line ministries. For instance, the implementation of the homegrown school meals program under the Ministry of General Education does not adequately collaborate with the MoA to ensure that extension services are provided to smallholder farmers who are expected to supply the foods to the school through the MCDSS. Similarly, the Ministry of Lands and Natural Resources (MLNR) is not part of the nutrition line ministries, yet it has a significant role to play in fruit production of both exotic and indigenous fruits. Strengthened collaboration between the MoA and MLNR would help to improve food production holistically.

Government attention to reducing malnutrition in Zambia dates back to 1967. At that time the National Food and Nutrition Commission (NFNC) was established through the National Food and Nutrition Act as a statutory body created to coordinate nutrition interventions and track progress towards improving the nutrition status of the country with a focus on vulnerable groups such as children, pregnant women, and lactating mothers. The act was amended in 1975 to include provision for the set-up of community nutrition groups and their registration with the NFNC. Box 2 outlines key government nutrition policies that have been formulated since the 1967 Act.

| National Food and Nutrition Act 1967 |
| National Food and Nutrition Policy 2008 |
| Sixth National Development Plans 2011 - 2015 |
| The Seventh National Development Plan (7NDP) 2017- 2021 |
| National Food and Nutrition Strategic Plan 2011- 2015 |
| National Food and Nutrition Strategic plan 2017-21 |

**Box 2: Key Nutrition Policies and Strategies**

Source: Authors

Despite a good policy framework, resource allocation for nutrition in the country does not reflect the priorities stated in the policies. An analysis of the nutrition budget allocations shows that the releases have remained inadequate hence, limiting implementation of strategies, which is key to achieving food security and nutrition in the country.
3.2 Nutrition Budget Allocation

Although the allocated budget towards nutrition interventions has increased over time, the nutrition allocation as a percentage of total national budget allocation has remained very low and unstable (Figure 12). Between 2014 and 2017, there was a significant drop from 0.09% to 0.05%. Compared to 2018, there is a 10% drop in the 2019 budget allocation. Across the line ministries, the budget allocations reflect well the priority areas as identified in the 2017-21 National Food and Nutrition Strategic Program.

![Figure 12: Nutrition Budget Allocation by Key Line Ministry from 2013 to 2019 in the Percentage of the Overall Total Budget](image)


3.2. Nutrition Coordination

Nutrition coordination has been a challenge largely due to poor communication and limited information sharing. There has been inadequate guidance and promotion of synergy among a broad set of nutrition-specific interventions and the nutrition-sensitive plans and programs of national stakeholders. This limited synergy is partly because the National Food Nutrition Commission (NFNC), whose mandate is to promote and oversee nutrition activities in the country, is placed in the Ministry of Health and not under a multi-faceted institution. This limits its functional powers to coordinate activities in other nutrition line ministries.
4. FACTORS DRIVING FOOD SECURITY AND NUTRITION SITUATION IN ZAMBIA

Understanding the food security situation is critical to understanding the malnutrition status of any household, community, or country. By definition, food security is the condition in which all people, at all times, have physical, social, and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (United Nations' Committee on World Food Security 1996). The four dimensions of food security are food availability, accessibility, utilization, and stability.

4.1 The Conceptual Framework of Malnutrition

A framework developed by United Nations International Children Emergency Fund (UNICEF) in their nutrition strategy of 1990 (UNICEF 1990) was applied to enable a consistent evaluation of the causes of malnutrition in Zambia. As shown in Figure 1, the framework shows that malnutrition is a consequence of a three-tier set of causes from immediate, underlying to basic causes. Inadequate dietary intake and ill health, which influence each other, are the two immediate causes of malnutrition. For the most part, the immediate causes affect individuals whereas the underlying and basic causes affect the household, community, and nation, respectively. The underlying causes, which include inadequate household food security, improper care of children and women, insufficient health services, and an unhealthy environment, negatively affect adequate dietary intake and disease incidences. Moreover, basic causes surrounding resource availability, their control and use, and the political environment that reinforce these underlying causes. Therefore, to achieve high nutrition status, policy strategies should focus on addressing not only the immediate causes but also the underlying and basic causes of malnutrition.
Figure 13: UNICEF Conceptual Framework of Malnutrition
Source: UNICEF (1990)

4.2 Food Availability

For a long time, Zambia has remained self-sufficient regarding food. The primary constituent of the Zambian diet is maize; having adequate maize, to a large extent, is synonymous to being food secure. Over the years Zambia has managed to have enough stock of the main staple, maize, to meet the total national requirements through production and carry-over stocks (Figure 14). As shown by the crop forecast results, during the 2017/18 farming season, production of maize was expected to reduce by 34% below the previous season and by 20% over a five-year average, respectively. Regardless, the total supply is more than adequate to meet the estimated total annual requirements. However, the challenge is how to ensure proper food distribution within and across households, communities, or regions.
Figure 14: Availability of the Main Staple


Furthermore, the low levels of agricultural intensification and crop diversification—especially among the poor smallholders—affect households’ food availability. For example, the average maize yield per hectare among smallholder farm households is less than 2.5 metric tons of maize per hectare (IAPRI 2016) while the Simpson index of diversification—a measure of the extent of crop diversification—is 0.42 (Mofya-Mukuka and Kuhlgatz 2015). The majority of the smallholder households (80%) cultivate a maximum of three crops. Such low levels of diversification entail limited diversity food items for consumption, especially for low income smallholder rural households. The use of technologies such as irrigation to enhance food production during the dry season is mostly employed by large-scale food producers, whereas the small-scale producers are restricted to gardening commonly in the dambo areas. Thus, food crop production remains seasonal. Livestock rearing—especially large ruminants like cattle—is not as widespread as small ruminants like goats. Poultry rearing is common, whereas the local supply of marine products like fish is limited with imports far exceeding exports (Mofya-Mukuka and Kefi 2015). Among the resource constrained households, livestock serves a dual purpose as a source of animal protein and income from sales enabling them to cope with livelihood shocks.

In addition to food production challenges, post-harvest losses contribute to low food availability in Zambia. From 2010 to 2015, postharvest losses accounted for more than 10% of the quantity produced for selected food crops and items without much significant change (Figure 15). For instance, the postharvest losses for maize within the same period on average were about 25%.

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1 The Simpson Diversity Index takes into account proportionate area of each crop and ranges between 0 and 1. If there is specialization then the index moves towards zero.
The percentage was much higher for the high-protein content pulse beans at 35% and tomato at 39%. For milk, a highly nutrient-rich product, the postharvest losses were about 12%. As the losses vary across the spectrum from harvesting, storage, transportation, processing, packaging, and sales, they have remained a threat to food availability, accessibility, and utilization. With the general population projected to be growing at 2.8% per annum and 18% for under five children, remedying such postharvest losses is vital for food security and nutrition.

**Figure 15: Estimates of Post Harvest Losses (2010-2015)**


### 4.3 Food Accessibility

Poverty levels in Zambia have remained high contributing to limited access to nutritious food. Although overall poverty rates declined from 60.5% to 54.4% between 2010 and 2015 (Figure 16), rural poverty has remained unacceptably high and only declining marginally from 77.9% to 76.6% over the same period. To make matters worse, more than half of the country’s population live in the rural areas. Among the factors highly contributing to high poverty rates and ultimately poor access to food is the high rate of employment especially in rural areas. Only 39.9% of the population in formal employment are in the rural areas while the majority (60.1%) are in urban areas.
Because the majority of the vulnerable population live in the rural areas and depend primarily on farming for their livelihoods, commercialization of agriculture at the household level is vital for generating income to improving access to a variety of food. However, currently in Zambia, the average household crop commercialization index (HCI) is low, about 32%. According to IAPRI (2015), less than 50% of the small-scale farming households participate in markets. Female-headed households even have a much lower HCI estimated at 24% compared to male-headed households whose HCI is estimated to be 34%. The low HCI entails limited household income and purchasing power essential for obtaining high nutrient containing food items, especially for the poor and food insecure without off-farm income sources. Consequently, consumption and food expenditure patterns have to be adjusted accordingly.

Household dietary diversity, an indicator of food access, is estimated to be low among rural households. Dietary diversity among children aged 6-23 months is low with only 22% of them being fed a minimum diverse diet (CSO 2014). Most households, especially in the rural areas, survive on diets that are lacking a variety of food nutrients. Typically, a diet in the rural areas is composed of maize products, some other starchy roots (e.g., cassava), and vegetables while protein, especially from animal sources, is rarely consumed. Cereals provide almost two-thirds of the dietary energy supply (Mofya-Mukuka and Sambo 2017). Figure 17 shows household food consumption according to food groups. The food consumption pattern can be attributed in part to the cereal (mostly maize) centric production system, which has resulted in limited household dietary diversity.
Out of the 16 food groups, average household dietary diversity score among rural households is estimated to be seven. Typically, female-headed households have on average a less diverse diet compared to male-headed households as shown in Table 2.

**Table 2: Dietary Diversity Score by Gender**

<table>
<thead>
<tr>
<th>Level</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>6.87</td>
</tr>
<tr>
<td>Gender of household head</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7.00</td>
</tr>
<tr>
<td>Female</td>
<td>6.35</td>
</tr>
</tbody>
</table>

However, recent studies have found that consumption and food expenditure patterns, especially in urban areas, have changed over time (Chisanga and Zulu-Mbata (2017)). They identify factors
fostering this change which have the potential to influence various nutrition indicators and these include the following:

i. Population increase and urbanization;
ii. Increase in per capita income and income inequality—income growth more apparent for urban than rural households;
iii. The decline in the share of food expenditure on starch staples (both rural and urban);
iv. Increase in the expenditure on fruits and vegetables for the rural population, especially the poor; and
v. Limited sources (fish, poultry, and eggs) of animal protein for the poor as shares of beef and dairy products have also fallen—even for urban households.

Figure 18 (a) and (b) depict points (iii) and (iv). The authors, however, conclude that changes in consumption and expenditure patterns to some extent disclose how less diverse Zambian diets are.

Figure 18: Changes in Consumption and Expenditure Patterns of Selected Commodities

5. CONCLUSION

The food security and nutrition situation in Zambia remains of high concern and a threat to the national economy. Despite some data and computation issues that have been raised, Zambia continues to rank poorly at a global level; there is an urgent need for the country to ensure that the situation is addressed. There is need to prioritize resource allocation to reflect policy strategies if food security and malnutrition are to be addressed.

It is clear that conditions and factors impacting the nutrition status are evolving. Therefore, adaptation to the changing environment is vital to help build the resilience of the vulnerable and poor segments of the population, especially in rural areas. The effects of climate change and variability such as flash floods and prolonged dry-spells in high food production areas continue to threaten food availability. This change negatively affects the rural agricultural households by lowering their harvest, income, and consequently food access.

For a large part, both the urban and rural areas rely on the markets for their food and non-food items. Price volatility as reflected in the changing consumption and food expenditure patterns negatively affect the poor with low purchasing power. As a result, the quantity and nutrient quality of food accessed and consumed by the vulnerable population, i.e., children and women of the reproductive age group, is likely to be inadequate. Moreover, there are dietary shifts occurring mainly due to the evolving socio-economic factors, food value chains, and consumption and food expenditure patterns.

Further, it is evident that malnutrition is a multi-sectoral and multi-dimensional phenomenon that requires consideration of a number of factors that have a bearing on short- to long-term child nutrition status.

Because of the interplay between the various factors driving hunger and malnutrition status, it will be important for interventions to adopt a multi-sectoral approach and to be well coordinated. The NFNC should be placed in a multi-faceted institution such as Cabinet Office for more efficient coordination across the line ministries. For instance, a holistic approach to infrastructure development (both physical and institutional infrastructure) can support improved food security and nutrition status through improved access to food production input and output markets, better sanitation, healthcare, and education. It is also important to ensure that agricultural services are nutrition sensitive by promoting crop diversification, livestock production, food processing, and more involvement of women smallholders. The homegrown school meals program should be centered on supply of food by the local farmers; hence, the need for adequate and efficient extension service delivery to ensure consistent and quality supply of food. Overall, linkages between the MCDSS and the MoA should be strengthened with regards to the school feeding program as well with the FISP and food security pack. Interventions such as social cash transfers need to be scaled up to complement efforts towards sustainable improvement in child nutrition. The link between agriculture and nutrition needs to be more deliberately nurtured so that improved food production should more strongly support child nutrition.
REFERENCES


