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FOOD SYSTEMS PROFILE - ZIMBABWE

Catalysing the sustainable and inclusive transformation of food systems

Zimbabwe

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Catalysing the sustainable and inclusive transformation of food systems

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FOOD SYSTEMS PROFILE
ZIMBABWE

Key messages

Zimbabwe is a landlocked, southern African country spread across 390 757 km^2, which are rich in natural resources. Most of the population lives in rural areas and depends on livelihoods generated by natural resources. While colonial policies heavily influenced contemporary settlement patterns and farming methods, the agriculture sector underwent another radical shift in the 2000s when land was forcibly redistributed from white commercial farmers. Approximately 1.3 million smallholder farmers, on plots less than six hectares (ha), occupy most of the agricultural land. Women (assisted by children) are responsible for most of the farm labour. Most field crops are grown during the single rainy season, from November to April. Horticultural crops and sugar cane are grown year-round where irrigation is available. Although there has been a substantial decline since 2000, the agriculture sector still plays a key economic role by providing livelihoods to approximately 67 percent of the population (54 percent of whom are women) and supplying about 63 percent of the industrial raw materials (Zimbabwe, Ministry of Lands, Agriculture and Rural Resettlement, 2018). Meat production and food product exports have, meanwhile, declined dramatically because of land reform, droughts and tick-borne livestock diseases.

Zimbabwe has huge agricultural potential and the government is committed to food systems transformation:

- Zimbabwe has a rich and diverse environment with large forests, grasslands, rivers, wetlands, wildlife and mineral deposits, which form the basis of its domestic economy;
- the country's natural resources provide 68 percent of its rural population with food and livelihoods (Zimstat, 2017). If used sustainably, they offer great potential for economic development and poverty reduction; and
- stunting prevalence among the population has progressively declined since 2006 (34.6 percent), although hotspots still remain (e.g. Manicaland). At 23 percent in 2020, stunting prevalence in Zimbabwe is below the regional average of 29 percent (FAO, 2021).

However, the country's food systems face multiple challenges:

- severe degradation of the natural resource base, particularly water, soils and forest systems, has led to low productivity in the agricultural sector;
- dietary diversity is low across all wealth groups. The most commonly consumed foods are cereals, oil, sugar and vegetables, while consumption of livestock products, legumes and fruits is very low;

- the production system lacks diversity with a strong focus on a few cash crops, particularly maize and sugar cane; and

- value chains are underdeveloped and offer few employment opportunities for women and young people.

There are also opportunities that can be leveraged to address these challenges:

- devolution of governance and capacity building of existing multisectoral food and nutrition security committees could help improve environmental planning, implementation, law enforcement and monitoring;

- existing nationwide agricultural extension services and improved media connectivity could support farmers to improve land use practices backed up through financial incentives and rewards;

- nationwide, multistakeholder, multimedia, nutrition awareness and behaviour change campaigns coordinated through strengthened, subnational food and nutrition security committees could transform consumption patterns;

- the government is committed to improving the food systems through policies and initiatives; facilitating multisectoral platforms, which could encourage collaboration to address food systems challenges;

- demand for diverse nutritious indigenous foods is increasing among the urban middle class, which should have a knock-on effect for increasing consumption and production nationally;

- de-risking production of diverse crops and providing financial incentives would support diversification, which could also be helped by improved support for diverse crop and livestock breeding; and

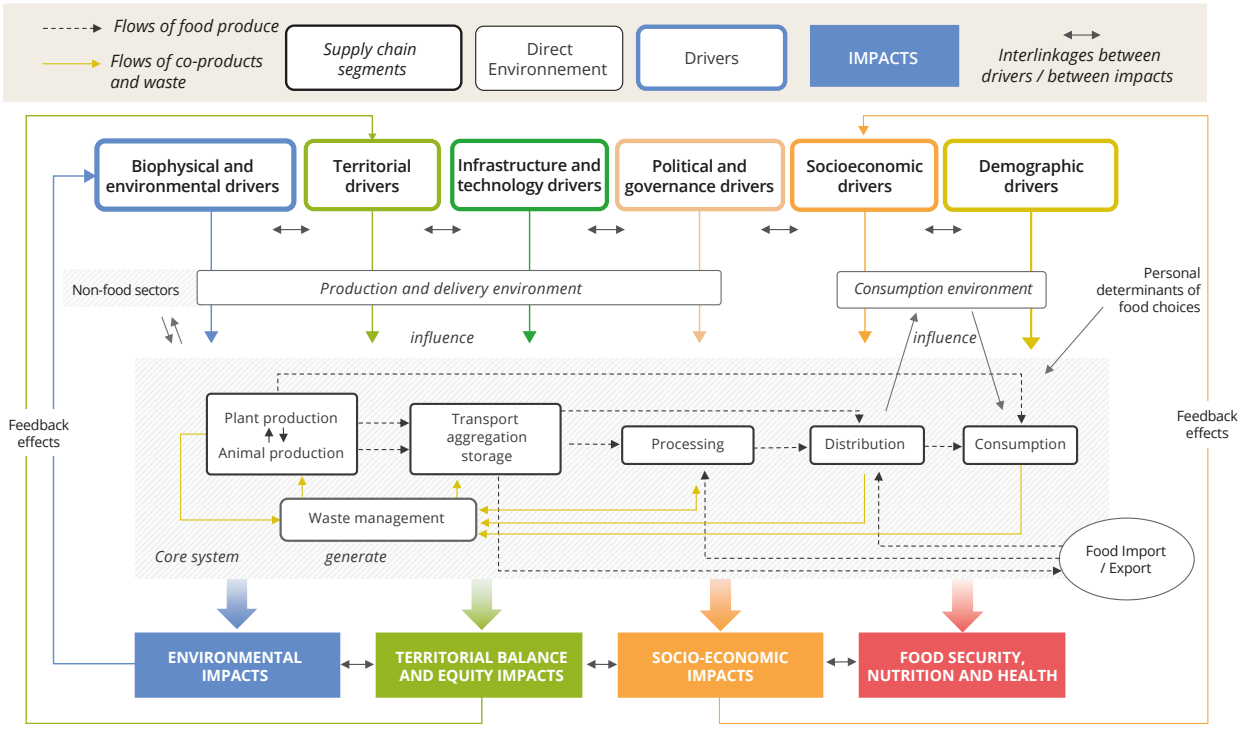
- focused support for key value chains could provide additional jobs for young people and women. Reducing risks and improving credit for women and young farmers would help address their employment issues.

Methodology and process

This brief is the result of a collaboration between the Ministry of Lands, Agriculture, Fisheries, Water and Rural Resettlement, Government of Zimbabwe, Food and Agriculture Organization of the United Nations (FAO) and the European Union, in close consultation with national and international experts. The preparation for the brief was implemented in Zimbabwe during May to December 2021. The methodology used for preparing this brief is the result of a global initiative of the European Union, FAO and CIRAD to **support the sustainable and inclusive transformation of food systems.** This assessment methodology is described in detail in the joint publication entitled, *Catalysing the sustainable and inclusive transformation of food systems: conceptual framework and method for national and territorial assessment* (David-Benz *et al*., 2022).

The assessment involves integration of qualitative and quantitative data analysis with participatory processes by mobilizing public, private and civil society stakeholders. The approach includes interviews with key stakeholders and a consultation workshop to refine systemic understanding of food systems and discuss potential levers to improve its sustainability. The assessment process thus initiates participatory analysis and stakeholder discussion on the strategic opportunities and constraints to sustainable transformation of food systems. The approach assesses the actors and their activities at the core of the system, together with their

Figure 1: Analytical representation of the food system



Source: David-Benz, H., Sirdey, N., Deshons, A., Orbell, C., & Herlant, P. 2022. *Catalysing the sustainable and inclusive transformation of food systems: conceptual framework and method for national and territorial assessment.* Rome, Brussels and Montpellier, France, FAO, European Union and CIRAD.

interactions along the food chain as well as the environments directly influencing their behaviour. Conditioned by long-term drivers, these actors generate impacts in different dimensions that, in turn, influence drivers via a number of feedback loops (see Figure 1).

The approach involves a detailed understanding of the key challenges along the four dimensions of sustainable and inclusive food systems: (i) food security, nutrition and health; (ii) inclusive economic growth, jobs and livelihoods; (iii) sustainable natural resource use and environment; and (iv) territorial balance and equity. Aimed at identifying critical issues affecting the sustainability and inclusivity of food systems, the assessment is both qualitative and quantitative in nature. Critical challenges and key food systems dynamics are specified in the form of **Key Sustainability Questions** (KSQs), whose answers (see schematic representations for all KSQs) help identify **systemic levers** and areas of action that are essential to bring about desired transformations in food systems.

This approach is designed as a preliminary rapid assessment for food systems and can be

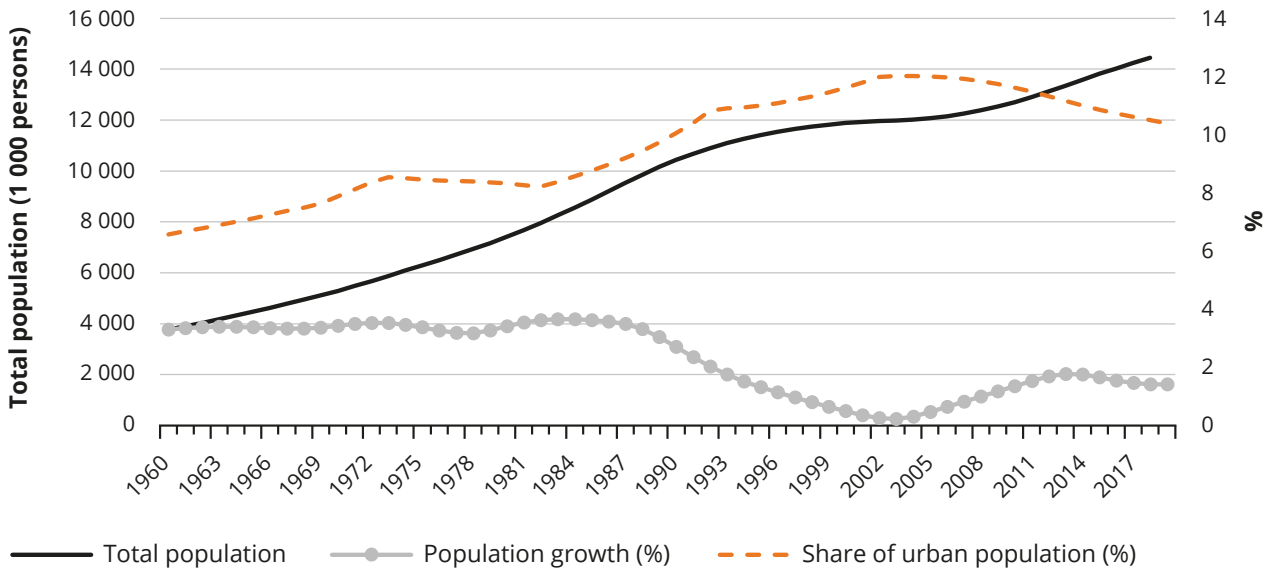
implemented over a period of 8 to 12 weeks. The methodology has been applied in more than 50 countries as a first step to support the transition towards sustainable food systems.

National context: key figures

Zimbabwe is rich in natural resources, with significant agricultural potential. Most of the country's nearly 15-million population live in rural areas (67.7 percent) (World Bank, 2020) and despite a high literacy rate of 88.7 percent (World Bank, 2021d), most Zimbabweans depend on livelihoods generated by natural resources, such as agriculture and mining. The country's economic situation has led to a gradual decline in the urban population over the past two decades (see Table 1). Figure 2 shows the slowing population growth rate and recent declines in urban populations, as large numbers have emigrated or returned to their rural homes. The country's annual population growth rate had declined rapidly, from 3.65 percent in 1984 to 0.23 percent in 2003, mainly due to HIV/AIDS, before rising to 1.78 percent in 2013, and then sliding again because of the current economic crisis (World Bank, 2022).

Zimbabwe has suffered from a prolonged macroeconomic crisis, partly caused by a radical restructuring of the agriculture sector through land reform in the 2000s. This has led to increasing poverty, which has contributed to food insecurity in the country (see Figure 3). After a period of decline in the early 2000s, poverty rates have increased since 2011, mirroring the current economic crisis. The per capita gross domestic product (GDP) was approximately USD 357 during the height of the economic crisis in 2008, before rising to USD 1 464 in 2016, but it has since declined. Inflation rose to 95 percent in 2009 and then fell to 4 percent in 2017, before shooting up to 61.3 percent in 2018 and 350 percent in 2019. The World Food Programme (WFP) has estimated annual inflation for May 2021 at 162 percent, while food inflation for the month was 179 percent (WFP, 2021).

Figure 2: Changes in population totals, growth rate and share of urban population since 1960



Source: FAO. FAOSTAT. In *Population and Employment Database* [online]. Rome. Cited 21 March 2022. www.fao.org/faostat/en/#data

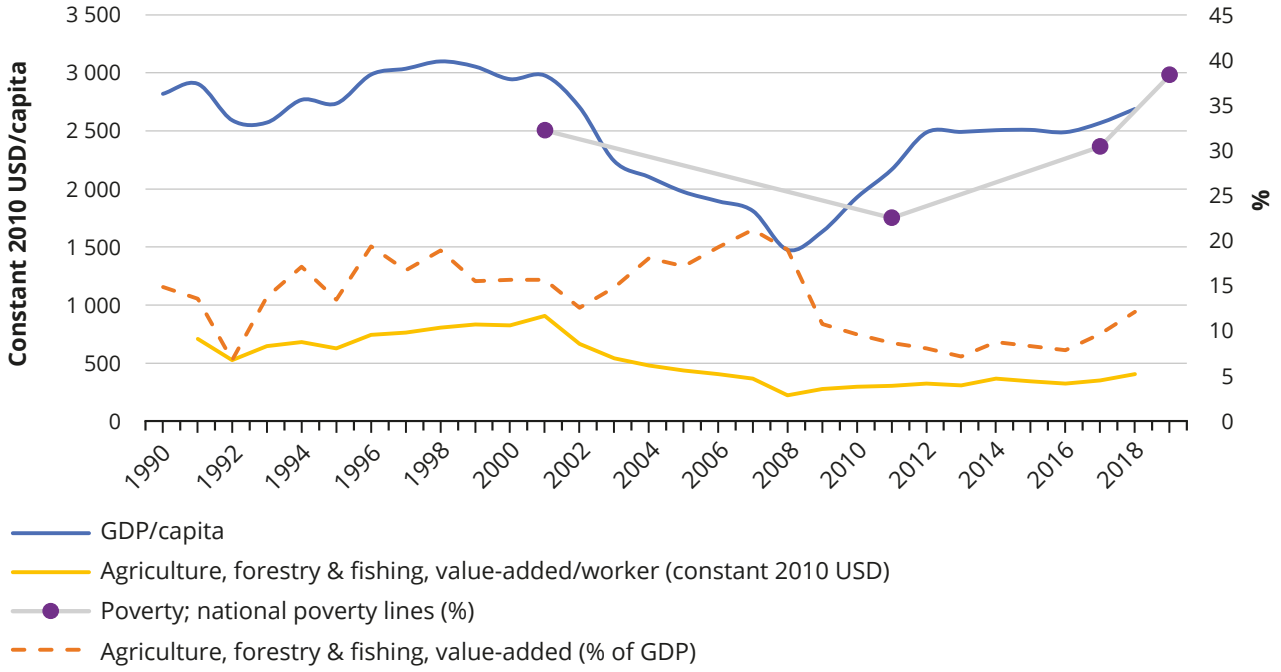
Table 1. Country level data – Zimbabwe

Indicators	2000	2010	2020	Comments
Population	11 881 482	12 697 728	14 862 927	Annual population growth rate is 1.47% (2020), with nearly 42% aged below 15 years.
Urban population (%)	33.8	33.2	32.2	Gradually declining trend.
Per capita GDP (in USD)	563.0	948.3	1128.2	Has been on a declining trend since 2016 (USD 1 464).
Annual inflation rate (%)	-	3.0	557.2%	Zimbabwe has experienced hyperinflation over the period 2018–2020; the inflation rate shot up from 10.6% in 2018 to 255.3% in 2019.
Access to safe drinking water: Rural (%) Urban (%)	 17 64	 15 64	 13 65	Less rural people today have access to safe drinking water than in 2000, and the gap between rural and urban areas is large.
	2010	**2015**	**2020**	
Governance effectiveness	3.83	12.02	10.58	After improving its position since 2010, Zimbabwe has fallen in the world governance effectiveness position to 10.58 out of 100.
	2001	**2011**	**2019**	
Poverty rate (%)	32.2	22.5	38.3	Poverty rates are rising, in line with the current economic crisis.
	2000	**2010**	**2020**	
Stunting rate (%)	32.4	33.7	23	Stunting prevalence shows a progressive decline since 2006 when it reached 34.6%, and is now below the regional average. Stunting prevalence is below the regional average of 29.1%.
Adult obesity (%)	10.5	13.8	15.5	Adult and child overweight and obesity rates are rising, especially among women and girls. It is estimated that 25.3% of women and 4.7% of men are obese. (Global Nutrition Report).
	2000–2002	**2010–2012**	**2016–2018**	
Average daily protein supply (g/cap) (3-yr average)	46.7	51.3	43.3	Declining trend. National assessments show that consumption of both pulses and livestock products have decreased.

Sources: World Bank. 2020. National Data – Zimbabwe. In: *The World Bank*. Washington DC. Cited 12 April 2022. https://data.worldbank.org/country/Zimbabwe; Global Nutrition Report. 2021. 2021 Global Nutrition Report. Cited 26 February 2022. https://globalnutritionreport.org; Zimbabwe. 2020. Zimbabwe Vulnerability Assessment Committee (ZimVAC) − 2020 Urban Livelihoods Assessment. Harare. Cited 10 March 2022; Zimbabwe, Office of the President and Cabinet. 2020. Food and Nutrition Council. Cited 10 March 2022. http://fnc.org.zw; Zimbabwe. 2021. Zimbabwe Vulnerability Committee. Rural Livelihood Assessment. Cited 1 March 2022. https://fnc.org.zw; World Food Programme (WFP). 2021. Food security and markets monitoring report. Zimbabwe, May 2021. Cited 23 March 2022. https://reliefweb.int/report/zimbabwe/zimbabwe-food-security-and-markets-monitoring-report-may-2021; FAO. 2021. FAOSTAT database. In: *FAO*. Rome. Cited 15 March 2022. www.fao.org/faostat/en/#data

Stunting in Zimbabwe has been trending lower since 2006 (34.6 percent), and is at 23 percent (FAO, 2021). Despite increasing food and nutrition insecurity in Zimbabwe, the country's stunting prevalence is below the regional average of 29.1 percent. Meanwhile, adult and child overweight and obesity rates are rising, especially among women and girls. It is estimated that 25.3 percent of women and 4.7 percent of men are obese (Global Nutrition Report, 2021). Protein consumption has declined in recent years; national assessments show that consumption of animal products and pulses have dropped (Zimbabwe, 2019; 2020; 2021).

Figure 3: Socioeconomic trends showing fluctuations in the gross domestic product, poverty rates, agricultural, forestry and fishing production and contribution to gross domestic product



Source: FAO. FAOSTAT. In *Population and Employment Database* [online]. Rome. Cited 15 March 2022. www.fao.org/faostat/en/#data

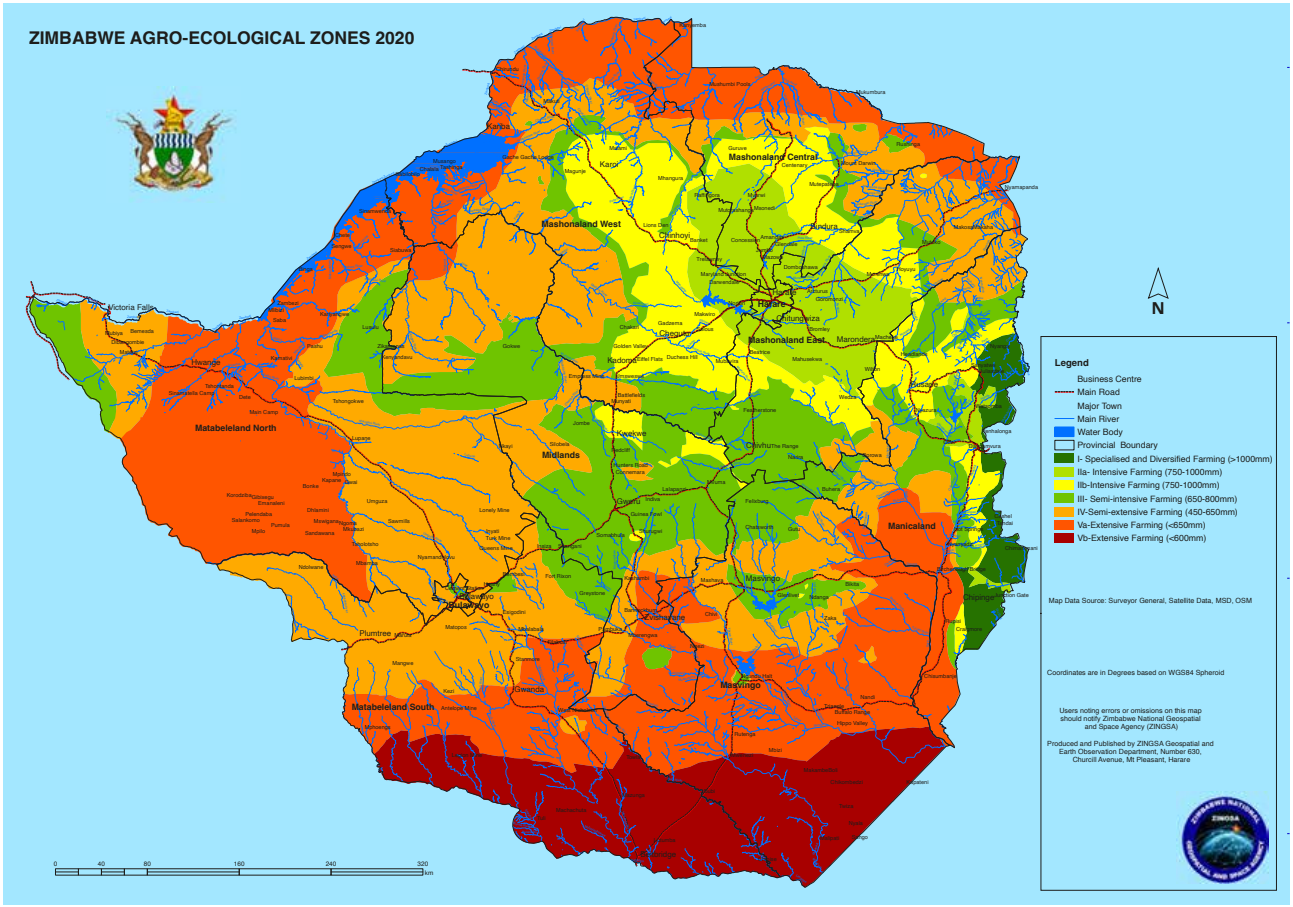
There is a growing realization that the food systems of Zimbabwe are not functioning sustainably and are contributing to numerous problems, including malnutrition, environmental degradation and increased vulnerability of the population to shocks, such as economic instability, climate change impacts and COVID-19. Overall, governance effectiveness is low in Zimbabwe.

Key figures and trends in food production, consumption and trade

In the 1890s, prior to colonization, Zimbabwean agriculture was dominated by shifting cultivation using hand-hoes, with mixed cropping of millet, sorghum and African rice, legumes, cucurbits and other vegetables. Livestock production included cattle, goats, sheep, poultry and pigs. Colonial policies, however, transformed the country's agriculture into crop dominant monocultures (mainly maize, cotton and tobacco). Colonial land acquisition led to the relocation of the indigenous population into marginal "communal areas" where the climate and soils are not conducive to maize production (van Engelen *et al.*, 2004). White farmers occupied the best agricultural lands, which they devoted to cash cropping of maize, sugar cane, coffee, tobacco, cotton, horticulture, dairy and cattle farming, leading to the domination of agriculture to the economy. Commercial farming became high-input and mechanized in contrast to the low-input, labour-intensive subsistence farming in communal areas.

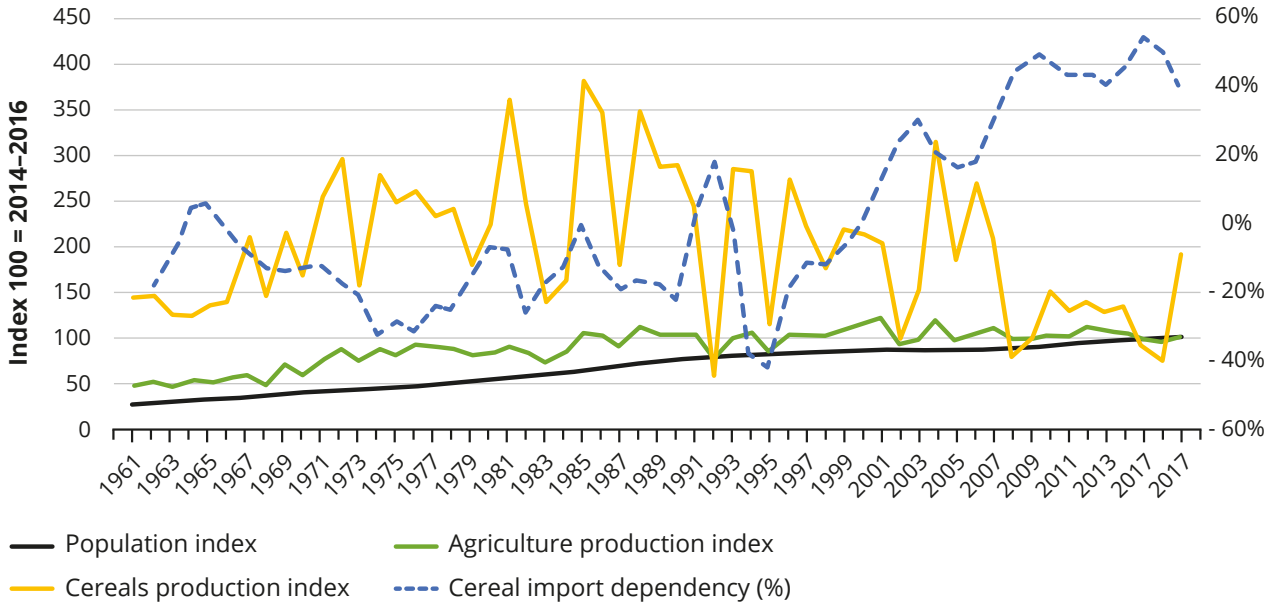
Post-independence, from 1980, resettlement programmes have relocated approximately 500 000 farmers, mostly carried out as part

Figure 4: Agroecological zones of Zimbabwe, 2020



Source: UN Geospatial. 2020. Adaptation of Zimbabwe Geospatial and Space Agency. In: *United Nations*. New York, USA, UN. Cited 12 March 2022. www.un.org/geospatial/file/2381/download?token=lzRSKdyz

Figure 5: Food balance trends showing increased dependency on cereal imports



Source: FAO. FAOSTAT. In *Population and Employment Database* [online]. Rome. Cited 3 March 2022. www.fao.org/faostat/en/#data

of the Fast-Track Land Reform Programme, which was implemented in the 2000s, when land was forcibly removed from white owners. As a result of the Programme, the country's economy rapidly shifted away from large-scale, commercial agriculture to smallholder dominated farming, and experienced decades of macroeconomic crises.

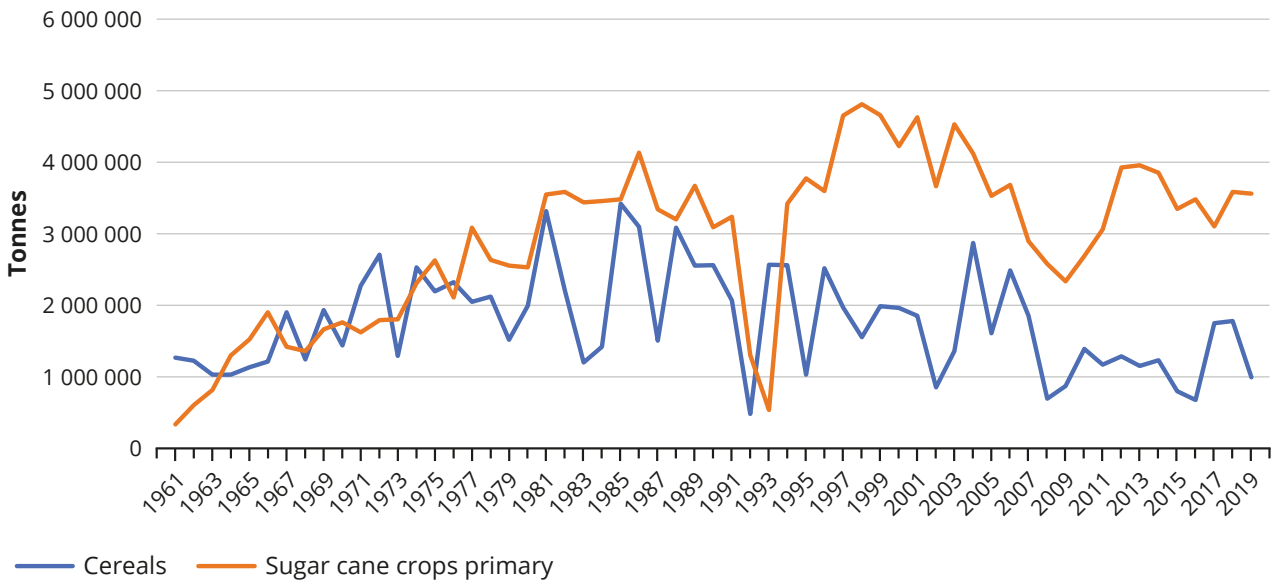
Currently, agriculture production is dominated by cash crops, such as maize, sugar, tobacco and cotton. In terms of tonnage, the main food crop is sugar, while maize is the most widely grown crop. While the country has huge natural agricultural potential, production, processing, storage, value addition and marketing infrastructure are dilapidated, and limited investment has led to underutilization of land, which is estimated to be at a quarter or less of its potential.

Current production systems are guided by agroecological zones (see Figure 4), with intensive and semi-intensive crop and livestock (dairy, beef, pig and poultry) production in regions I-III, while extensive cattle, sheep and goat production are dominant in the hot, dry areas in regions IV and V. Most field crops (maize, millet, sorghum, cow peas, sugar beans, bambara nuts, soyabeans, groundnuts, sunflower, tobacco and cotton) are grown during the single rainy season, from November to April. Horticultural crops (most of which are planted in peri-urban areas), and sugar cane are grown year-round where irrigation is available, while wheat is grown in the winter with irrigation.

Figure 5 shows the fluctuations in the cereal production index since the 1960s. Cereal production has been heavily influenced by droughts. Since the early 2000s, production has been affected by the restructuring of the agriculture sector through the Fast-Track Land Reform Programme. Production of maize, sugar cane and tobacco has increased the most since 1961. The largest area being harvested is for maize. Currently, sugar cane is the main food crop of Zimbabwe in terms of tonnage. Sugar production (3.5 million tonnes in 2019) is more than three-and-a-half times higher that of cereal production (994 178 tonnes in 2019). More than 60 percent of the sugar produced is consumed

locally. Part of the annual sugar cane yield goes to ethanol fuel production and the rest is directed to the beverages industry to make alcoholic beverages and sodas (Masunda, 2019). The increase in sugar cane production over that of cereals is shown in Figure 6. Sugar cane has replaced maize after the Fast-Track Land Reform Programme reduced the dominance of maize production in the 2000s. It is produced under irrigation in south-east Zimbabwe. The product and processing of it has become highly politicized (Scoones, Mavedzenge and Murimbarimba, 2017).

Figure 6: Trends in sugar cane and cereal production since the 1960s

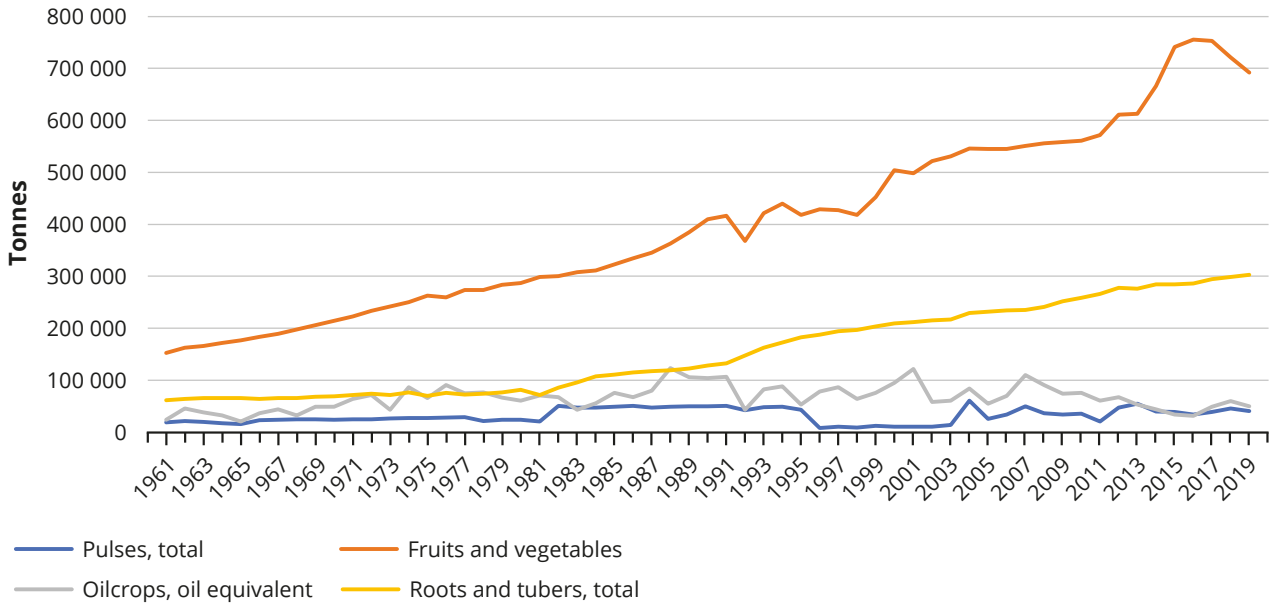


Source: FAO. FAOSTAT. In *Population and Employment Database* [online]. Rome. Cited 10 April 2022. www.fao.org/faostat/en/#data

Maize comprises 56 percent of the daily diet of most Zimbabweans; the country has become increasingly dependent on maize imports for human and livestock feed. Most maize (87 percent) is used in food products and the rest is applied for non-food uses.

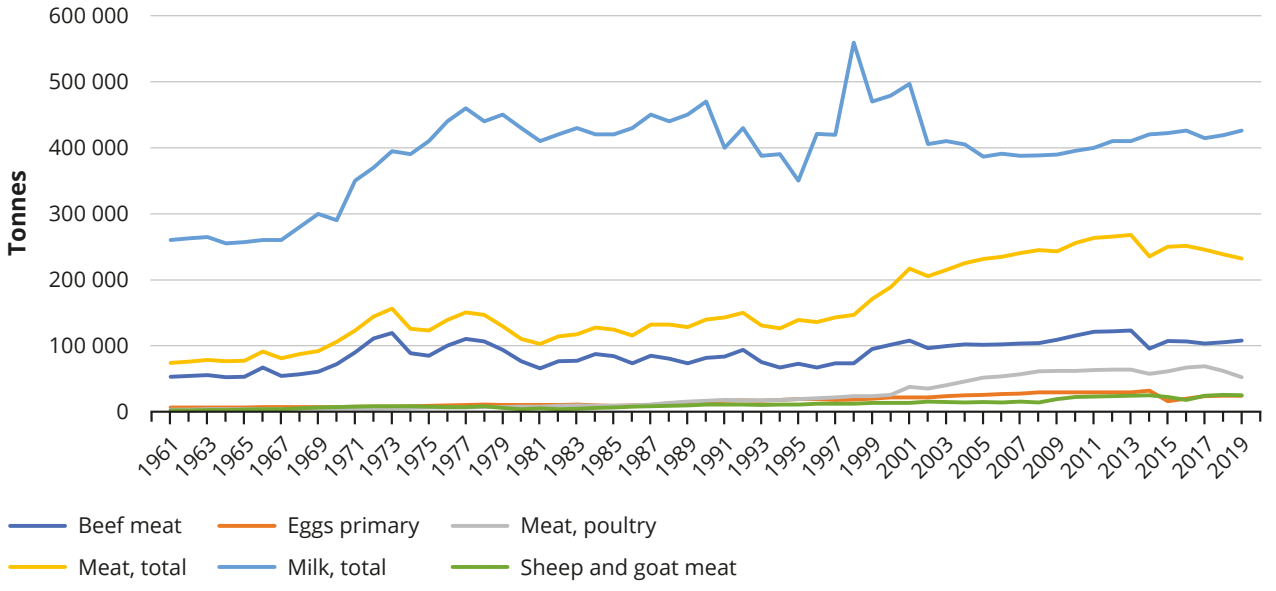
Figure 7 shows the growth in production of fruit and vegetables, and root and tuber crops in accordance with population growth and increased demand from urban consumers. Meanwhile, the production of oil crops has not increased correspondingly, probably due to competition with cheaper imports from South Africa. Production of pulses has also remained low, an indication of low local demand.

Figure 7: Production in tonnes of pulses, fruits and vegetables, oil crops and root and tuber crops



Source: FAO. FAOSTAT. In *Population and Employment Database* [online]. Rome. Cited 20 March 2022. www.fao.org/faostat/en/#data

Figure 8: Production of animal products in tonnes since the 1960s



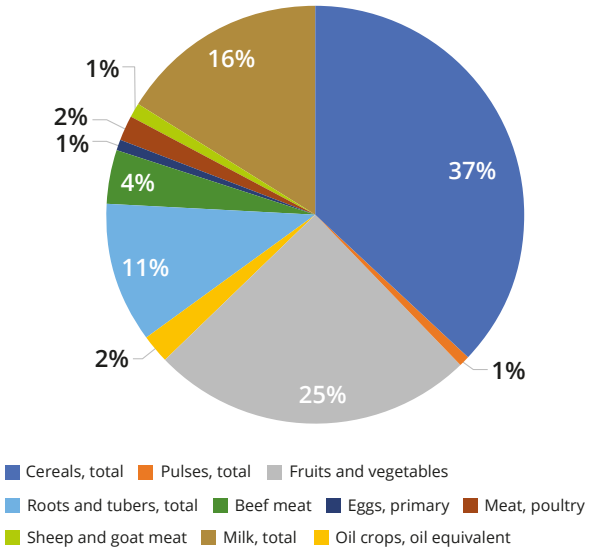
Source: FAO. FAOSTAT. In *Population and Employment Database* [online]. Rome. Cited 20 March 2022. www.fao.org/faostat/en/#data

Figure 8 shows that production of animal products has increased, but beef production has declined after peaking in the late 1990s. Instead, poultry meat production has increased in recent years.

Figure 9 presents production in Zimbabwe in terms of the main food crops, apart from sugar (more than 50 percent of production). As mentioned earlier, a large proportion of sugar is used for other uses, such as for exports, ethanol fuel production and by the beverages industry, and only a small proportion is for domestic consumption. Thus, it is not included in the chart. Apart from sugar, food production is dominated by cereals, fruits and vegetables, followed by milk, root and tuber crops. Production of other livestock products by comparison is low. The food availability chart (see Figure 12) in comparison, is dominated by cereals, oils and sugar.

Household foods in Zimbabwe come from a range of sources, including subsistence agricultural production (crop and/or livestock), wild harvested foods, such as fruits, vegetables, mushrooms, honey, animals, insects and fish, purchased foods (local, regional, or imports) and food aid. The prominence of the source type depends on whether a household is engaged in commercial or smallholder agriculture, their income level and

Figure 9: Structure of production (tonnes, 2019)

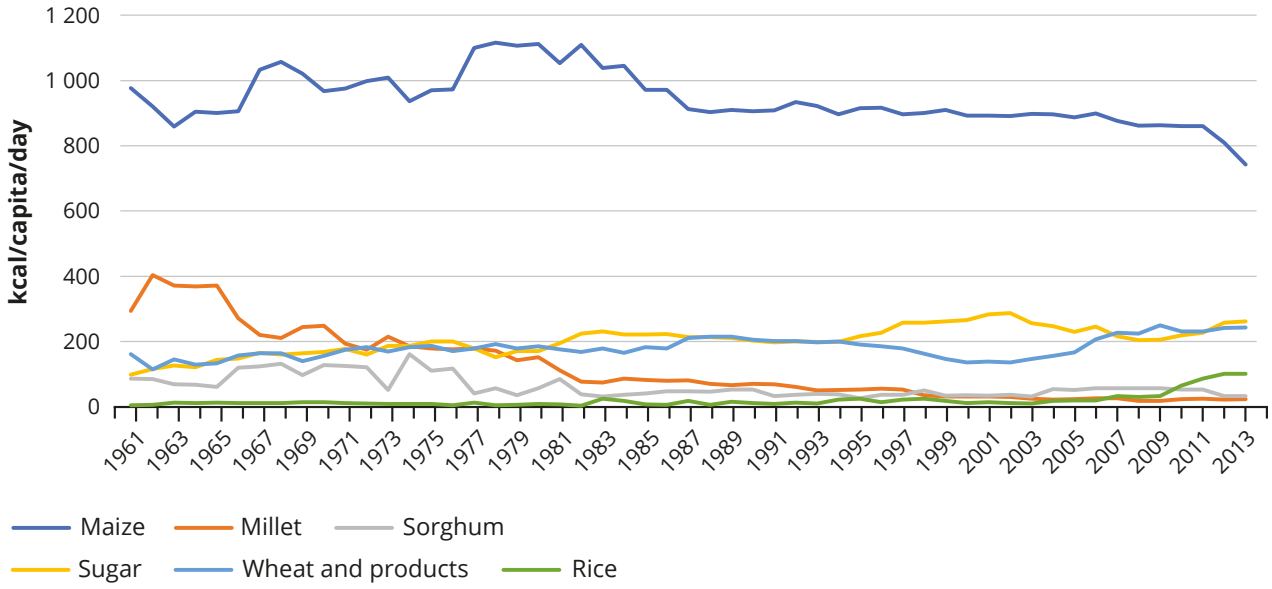


Source: FAO. FAOSTAT. In: *Population and Employment Database* [online]. Rome. Cited 11 April 2022. www.fao.org/faostat/en/#data

their location. Poorer families living in remote areas depend more on subsistence farming and their own livestock, while those living close to a national border, a highway or an urban area consume a greater share of purchased foods. Most households, whether rural or urban, allocate more than 50 percent of their budgets on food (Zimbabwe, 2019; 2020). More than 61 percent of daily energy per capita comes from cereals (predominantly maize) (see Figure 10). Figure 10 shows that maize consumption has always been high, but has declined since 2011, possibly due to increased consumption of other staples, such as rice and wheat products, neither of which are produced significantly in Zimbabwe. It also shows the declining consumption of sorghum and millet and the rise in sugar consumption.

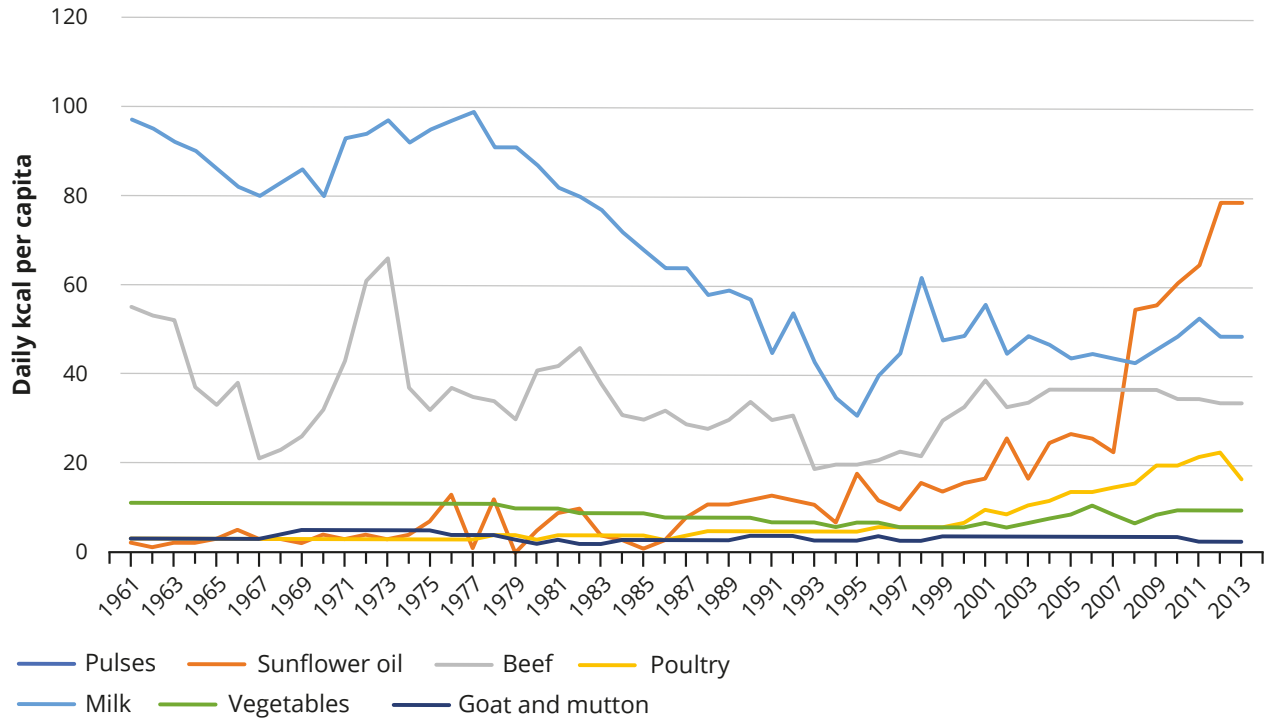
Figure 11 shows the changes in consumption of other major food items. Milk and beef consumption have declined significantly since the 1960s, while consumption of sunflower oil has increased dramatically. Consumption of pulses has also increased.

Figure 10: Food supply of daily kilo calories per capita from cereals and sugar since the 1960s



Source: FAO. FAOSTAT. In: *Population and Employment Database* [online]. Rome. Cited 4 April 2022. www.fao.org/faostat/en/#data

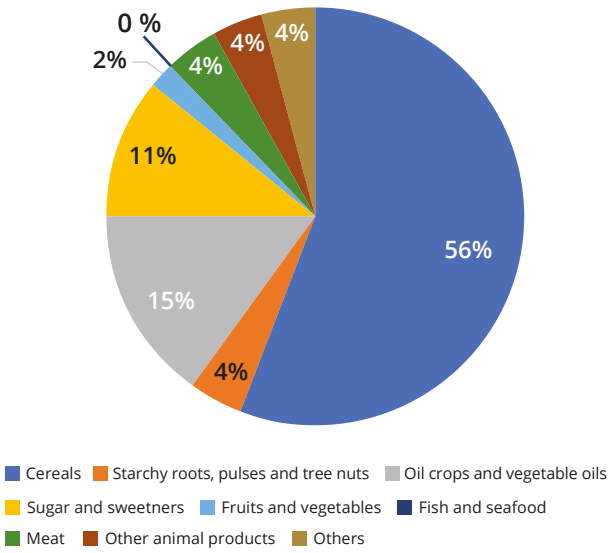
Figure 11: Food supply (daily kcal per capita) of other major food crops since the 1960s



Source: FAO. FAOSTAT. In: *Population and Employment Database* [online]. Rome. Cited 3 April 2022. www.fao.org/faostat/en/#data

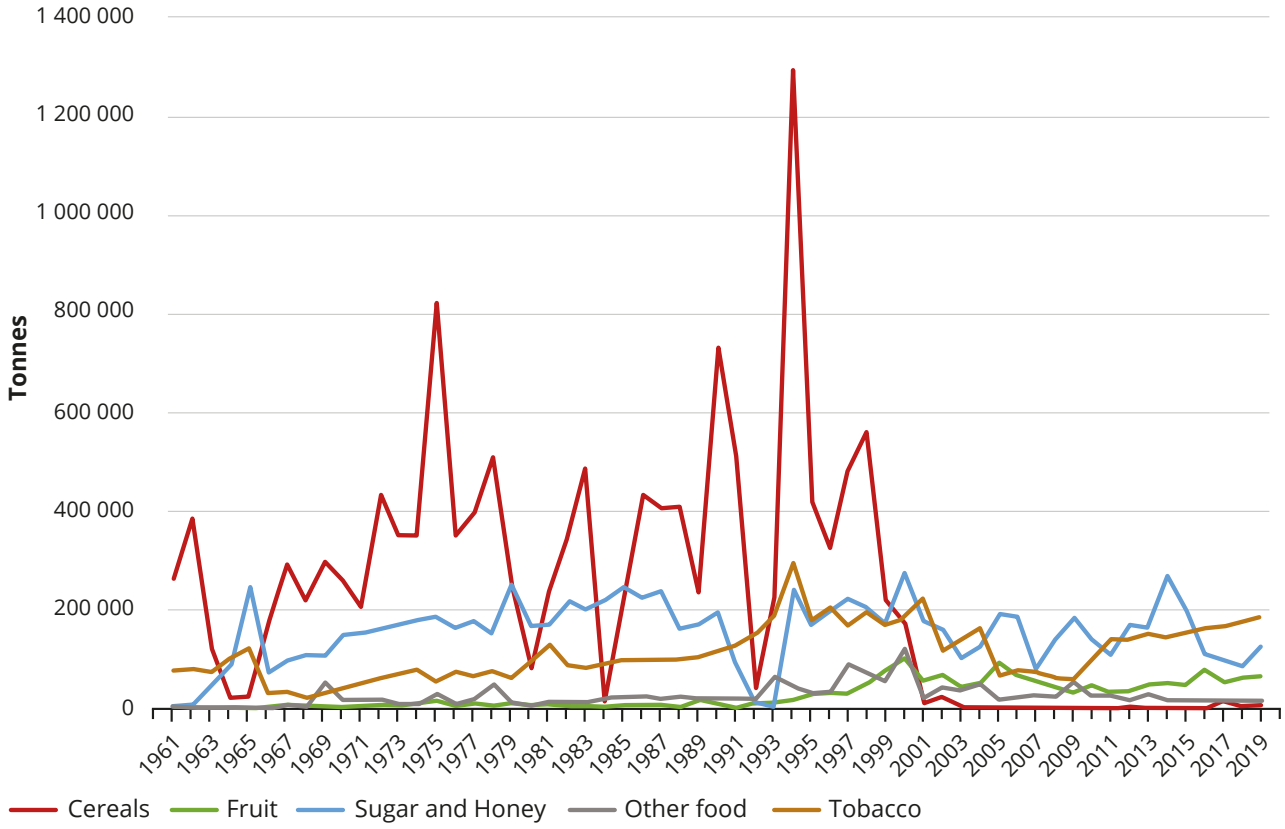
Figure 12 shows the domination of cereals in the country's food systems, followed by cooking oil and sugar. Animal products make up only 8 percent of household diets, while fruits and vegetables comprise only 3 percent. National nutrition surveys show that dietary diversity has declined enormously, and that currently, most of the main meals consumed by households across the wealth groups consist of maize, cooked and eaten as stiff porridge (sadza), usually with a relish of vegetables, meat or legumes. The 2021 Rural Livelihoods Survey notes that only 29 percent of rural households follow acceptable food consumption patterns, indicating poor dietary diversity. Dairy, legumes, meats and fruits are consumed once a week by households, on average. The survey also reveals that 31 percent of households had not consumed any protein-rich foods in the preceding seven days. Cereals, oils and vegetables were the commonly consumed food groups, while the consumption of cereals and oils was trending higher.

Figure 12: Food availability by commodity group (calories)



Source: FAO. FAOSTAT. In: *Population and Employment Database* [online]. Rome. Cited 25 March 2022. www.fao.org/faostat/en/#data

Figure 13: Main agricultural product exports (in tonnes) since 1961



Source: FAO. FAOSTAT. In: Population and *Employment Database* [online]. Rome. Cited 6 March 2022. www.fao.org/faostat/en/#data

Processed foods, including refined maize, white rice, white bread, sugar and cooking oil are favoured and cheaper than nutritious, indigenous foods in urban areas. Rural markets typically lack a wide range of diverse, nutritious foods. Wheat (as bread and pasta) and white rice consumption dramatically increased over the past two decades, considering that the country is increasingly relying on imports that cannot be grown in Zimbabwe without irrigation. This has pushed the government to implement policies aimed at increasing local wheat production in irrigation schemes, which would be better off by growing vegetables and legumes

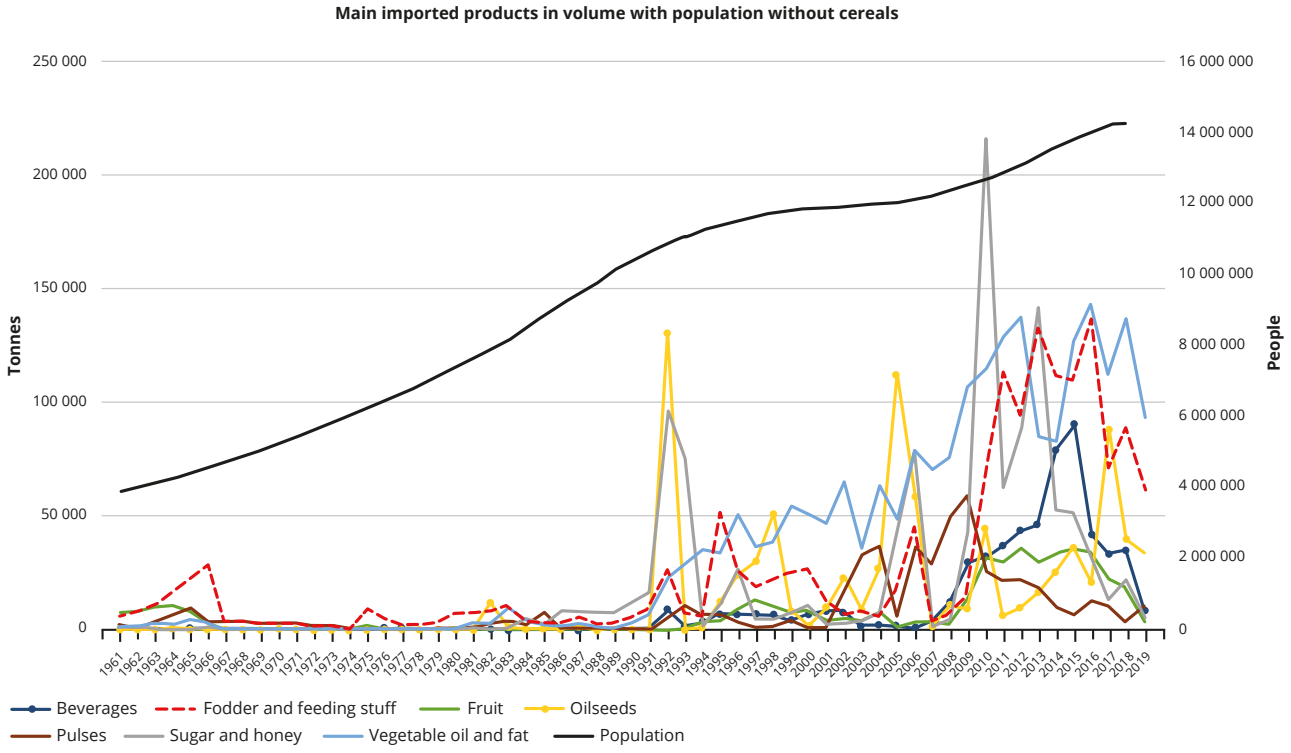
Figure 13 shows the export trend of main crop products since 1961. Currently, tobacco is the main export product. Export of most food crops and livestock products has declined dramatically since 2000, as the agriculture sector has become less commercialized. Approximately 40 percent of the local sugar production is refined and exported. Maize used to be the main food crop export, peaking at 287 818 tonnes in 1995, but this figure plunged to 103 tonnes in 2010. Maize exports increased in 2020 (4 484 tonnes), but still remained low.

Meat exports have decreased dramatically due to a decline in productivity resulting from land reform, droughts and tick-borne diseases. For example, in 1985, Zimbabwe exported 4 559 tonnes of beef products, while in 2010, the amount exported declined to zero and the sector

has not recovered since then. Poultry meat export was also high in the mid-1990s to early 2000s. It peaked at 2 750 tonnes in 2002, and has since declined to very low levels.

Maize dominates food imports. Figure 14 shows the main agricultural products imported into Zimbabwe without cereals. Most food imports have increased since the late 1990s, when Zimbabwe was undergoing structural economic adjustment programmes before its domestic economy was liberalized. This encouraged trade, but many local companies could no longer compete with imports and local production declined. The fluctuations in the data are likely to be related to economic turbulence in the country, which manifested into critical shortages of foreign currency.

Figure 14: Main agricultural products imports in tonnes since 1961



Source: FAO. FAOSTAT. In: *Population and Employment Database* [online]. Rome. Cite 10 March 2022. www.fao.org/faostat/en/#data

Characterization of the dominant actors of the food system

Collectors: Collectors of wild foods (mainly women) from agroecological zones, where crop production is less viable, are increasingly contributing to local niche and export markets. At the district level, the Forestry Commission and the Environmental Management Agency are tasked with regulating natural resource use in collaboration with the Rural District Council. The two entities monitor land degradation, land clearance for agriculture, stream banks, riverbed cultivation, and wild food harvesting and sales. Traditional community leaders at the district, ward and village levels are legally and culturally in charge of natural resource management governance under the Traditional Leaders Act (1999).

Producers: Approximately 1.3 million smallholder farmers are engaged in crop and livestock production (Zimbabwe, Ministry of Lands, Agriculture and Rural Resettlement, 2018) on family farms. Due to cultural gender norms and that men tend to migrate to urban areas or across borders for employment, women (assisted by children) are responsible for most farm labour. Garden crops and certain legumes and small livestock are the sole responsibility of women, while male household heads tend to control cattle production and engage in decision-making about cereals and field cash crops (FAO, 2017). Most farmers (66 percent) live in communal and old resettlement areas with 2–5 ha plots, while 19 percent (called "A1" farmers) farm an average of 6-ha crop lands. Another approximately 10 percent ("A2" farmers) farm between 250 and 2 000 ha, depending on their agroecological region. There are only about 700 commercial farmers (5 percent of the total farmers) on large and mid-scale farms producing cash crops and raising livestock (SNV, 2014). These farmers often engage in the export market. Mid-scale producers are often involved in contract farming, or are members of associations or cooperatives specializing in grains, horticultural produce and livestock products. A considerable share of the intensive poultry, pork and dairy production, as well as horticulture, is generated by peri-urban farmers (Liesdek and Ansenk, 2020). Beef, goat and sheep production has become dominated by smallholders practicing mixed farming in which cattle are used for draught power, milk and as a traditional wealth savings system (Bennett *et al.*, 2019). Agriculture production is supported by numerous inputs suppliers and government crop and livestock extension services, such as Agritex, the Department of Livestock and Veterinary Services, and the Department of Research and Specialist Services. Agritex provides training and technical support on production, harvesting and post-harvest practices, and is also responsible for distributing inputs through government schemes.

Distributors and processors: Some cereal grains are processed and stored at the household level or taken to local community millers, but most are sold unprocessed to buyers and transported to mainly urban processing centres. A considerable amount of grains are sent to stockfeed producers (Kapuya *et al.*, 2010). The main national grain processor is the Grain Marketing Board, which stores, buys and sells grain, regulates prices and distributes inputs through government programmes and food relief schemes. The multiple roles of the Grain Marketing Board are often conflicting and contentious, particularly with respect to price controls, which often skew markets and slow payments to farmers. A small proportion of horticulture food products are dried or canned, but most are sold fresh. In terms of meat processing, Zimbabwe has about 122 abattoirs and 30 meat processing plants (Bennett *et al.*, 2019). There is a distinct lack of rural food-processing and manufacturing enterprises, leading to lack of nutritious food in rural communities. In terms of livestock, this also leads to lower-than-expected sales. Food aid through the World Food Programme (WFP) and food imports make a considerable contribution to

maize distribution within the country. Regulators of processing and marketing of the country's food systems include the Rural District Council, which is responsible for allocating land and regulating processing and marketing centres and businesses.

Buyers and sellers: Most agricultural produce leaves rural areas for urban and export markets. Horticulture products are mostly bought fresh by middlemen before being sold to wholesalers, retailers or manufacturers. Zimbabwe has approximately 2 400 rural butchers, 1 800 supermarkets, shops and butcheries, 2 026 restaurants and catering institutions, and 30 000 informal food retail outlets (Bennett *et al.*, 2019). Crops and livestock are usually bought by "middlemen", who often dictate and manipulate prices, as they control transport and access to urban areas and processing or storage facilities (including those run by the private sector or parastatals, such as the Cold Storage Commission and the Grain Marketing Board). Processed and packaged food and fresh produce are distributed in urban areas through wholesale or retail outlets, designated produce markets and street vendors, and through restaurants. The informal sector plays an extensive and largely unregulated role in the sale of food, and prices are controlled by middlemen, who are often seen as corrupt and expect bribes to protect informal traders from regulations by the authorities (Tawodzera *et al*., 2019). The Agricultural Marketing Authority is the main market regulatory body; however, it is not very effective, and enforcement of marketing regulations is limited.

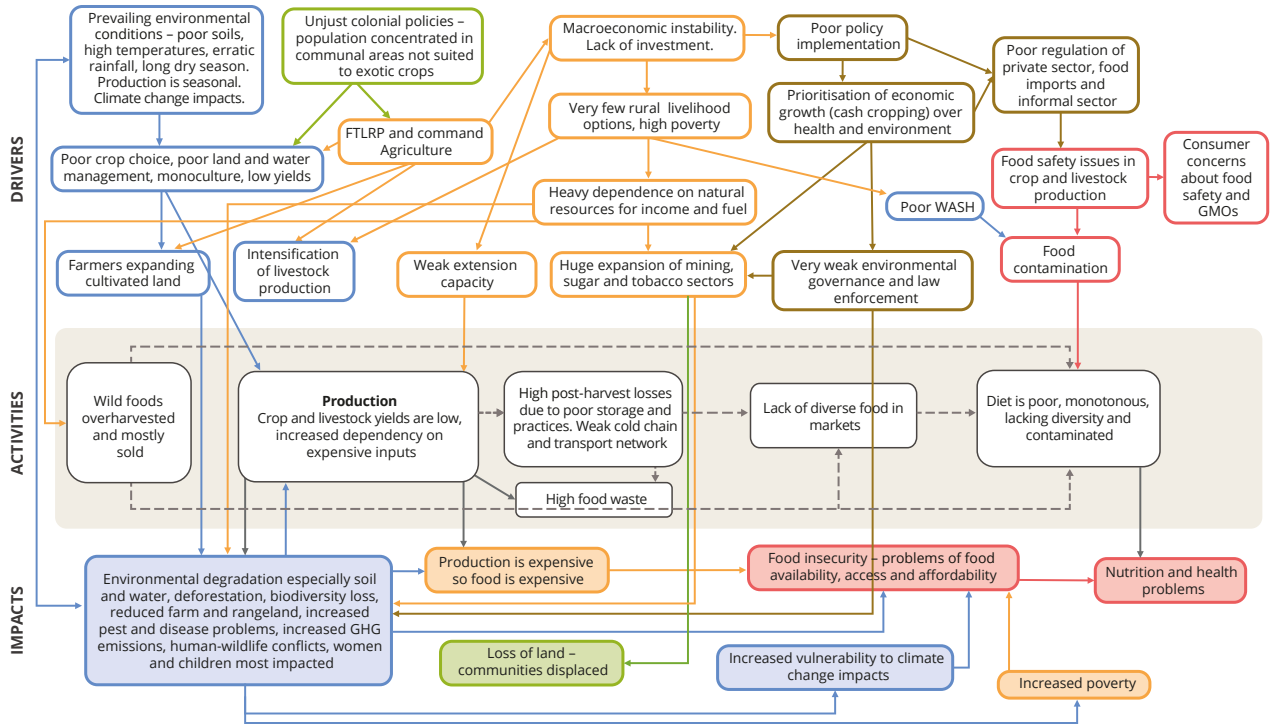
Key challenges to the achievement of core sustainable food systems goals

Key Sustainability Question # 1: Why is the natural resource base on which the food systems of Zimbabwe depend being drastically degraded?

The economy and food systems of Zimbabwe are heavily influenced by biophysical factors, but the country's natural resource base has become increasingly degraded, threatening the health of consumers and sustainability of its food systems, particularly in the face of increasing climate change impacts.

Zimbabwe is losing more than 10 percent of its forests per decade, with tobacco farming contributing to 15 percent of this loss (Zimbabwe, Ministry of Environment, Water and Climate, n.d.). Forest cover declined from 53.2 percent of its total land area in 1992 to 41.6 percent in 2008 and is now at 36 percent (Zimbabwe, Ministry Environment, Water and Climate Environmental Management Agency, 2017). The country's soils have become severely degraded because of practices, such as annual ploughing, land clearance by burning, poor grazing management, continuous cereal monoculture without crop rotation and use of cover crops, inappropriate application of fertilizers and lack of soil protection or run-off management on slopes. Annual soil loss from erosion in rangelands is at 3–75 tonnes per hectare, and at 15–50 tonnes per

Figure 15: Drivers and impacts of natural resource degradation in relation to the food systems



Source: Authors, 2022.

Notes: WASH, water, sanitation and hygiene; GMO, genetically modified organism; GHG, greenhouse gas, FTLRP, Fast-Track Land Reform Programme.

hectare for arable lands (Zimbabwe, Ministry Environment, Water and Climate Environmental Management Agency, 2017). The degraded soils, which are mainly in the communal areas, suffer from multiple nutrient deficiencies and low pH, which impedes the effectiveness of fertilizers (Dhliwayo *et al.*, n.d.). Increased soil degradation will lead to increased use of expensive fertilizers and pesticides, which will further degrade the soil and elevate the cost of production, resulting in increased farmer poverty and increased food prices.

Drivers of natural resource base degradation

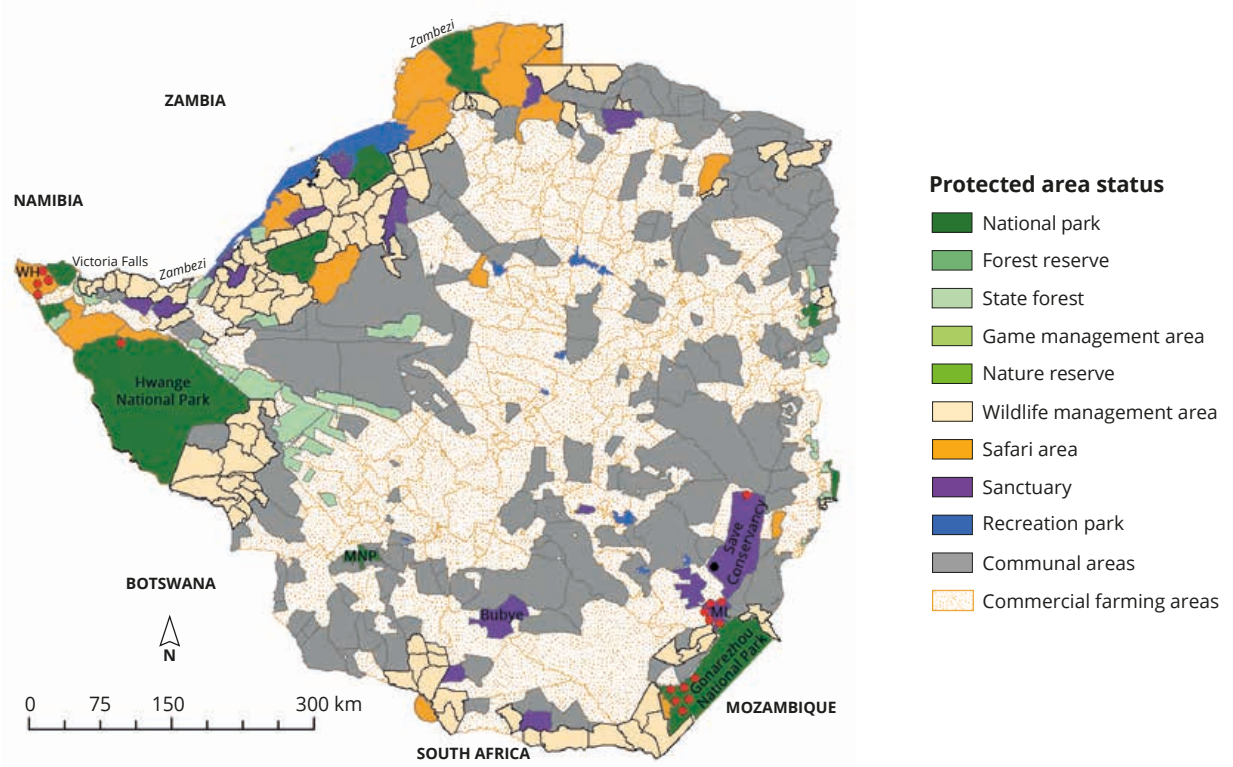
Zimbabwe has a rich, diverse environment with large forests, grasslands, rivers, wetlands, wildlife and mineral deposits, which form the basis of its economy and provide 68 percent of the total rural population with food and livelihoods (Zimstat, 2017). These resources have great potential for economic development and poverty reduction, if used sustainably (Åkesson, Ölund Wingqvist and César, 2016).

The country's **highly variable climate** and single rainy season make agricultural production vulnerable to periodic droughts. Climate change is already causing increases in average annual temperature and a decline in rainfall, while heatwaves, storms, droughts and floods are increasingly intense and frequent (Brazier, 2017). Most of the **country's soil** (70 percent) is sandy, inherently low in fertility, pH level and moisture retention capacity, while being highly prone to erosion (van Engelen *et al.*, 2004). Surface water resources are limited. Most rivers are seasonal, and dams and irrigation schemes are not widespread. Dependence on limited groundwater is high for domestic, irrigation and commercial activities (FAO, 2016). The rural communities in Zimbabwe depend on forests for fuel wood (for cooking, tobacco curing and brick making), timber for construction and sale, and non-timber forest products for food and income. Due to cultural norms, women and children are responsible for water and fuel wood collection as well as agricultural labour and accordingly, are most vulnerable to environmental degradation and climate change impacts (FAO, 2017).

Zimbabwe lacks an overarching environmental policy and governance frameworks are scattered across various policies, strategies and legislation. Several ministries are tasked with enforcing environmental legislation, causing confusion on responsibilities and resulting in weak monitoring of degradation and poor enforcement (Naome, Rajah and Jerie, 2012). The Environmental Management Act (2002) provides a basic framework. Zimbabwe also has a forestry policy, a water policy and strategy, a climate change policy and strategy, a national biodiversity strategy and action plan, and is a signatory to the United Nations Convention to Combat Desertification and Drought. **Further problems include lack of awareness among the judiciary and police, lack of a holistic approach to development and lack of transparency, accountability and political will to address environmental abuses** (Åkesson, Ölund Wingqvist and César. 2016).

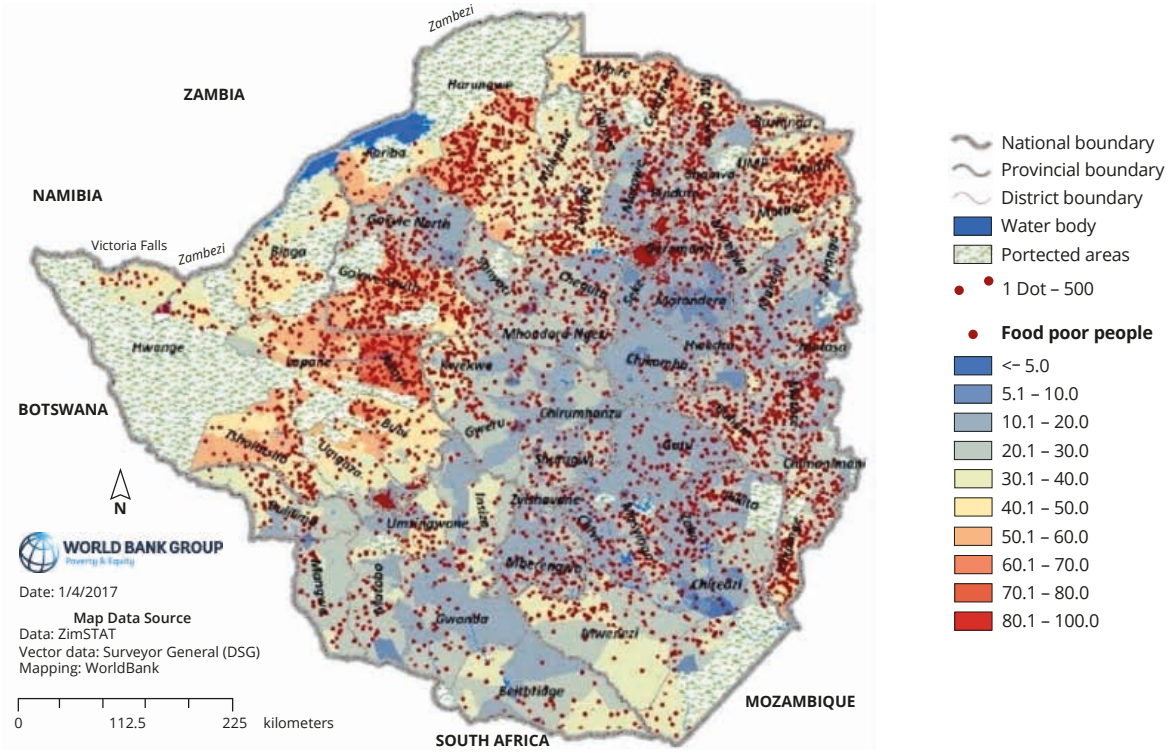
Due to **colonial land acquisition**, most of the rural population and the extreme poor are concentrated in communal areas (Swinkles *et al.*, 2019) (see Figures 15 and 16). In these areas, crop and livestock yields are low, population density is high and deforestation, soil erosion and siltation of watersheds are widespread (Whitlow, 1988). Land rights are based on user rights and land use planning, which rarely involves local communities, is uncoordinated (Zimbabwe, Ministry of Environment, Water and Climate, 2014). Land is allocated by traditional leaders and local authorities, who along with various government departments, are responsible for environmental protection, but lack the capacity and resources to implement it. The **Fast-Track**

Figure 16: Zimbabwe land use classification



Source: Motsi, T., Tichiwangana, S., Matope, G. & Mukarati, N. 2013. A serological survey of brucellosis in wild ungulate species from five game parks in Zimbabwe. Onderstepoort Journal of Veterinary Research 80(1). Map conforms to United Nations. 2017. Map of Zimbabwe. Cited 15 March 2022. https://www.un.org/geospatial/file/2381/download?token=lzRSKdyz.

Figure 17: Ward food poor population density on prevalence in 2012



Source: Swinkles, R., Norman, T., Blankespoor, B., Mutanditi, N. & Zvirereh, H. 2019. *Analysis of spatial patterns of settlement, internal migration, and welfare inequality in Zimbabwe*. World Bank. https://openknowledge.worldbank.org/handle/10986/32190. Map conforms to United Nations. 2017. Map of Zimbabwe. Cited 12 March 2022. www.un.org/geospatial/file/2381/download?token=IzRSKdyz.

Land Reform Programme has eased some population pressure, but it has led to increased environmental degradation in the communal and resettlement areas. Resettlement areas lack governance of traditional leaders and are even more vulnerable to environmental abuses (Manyonganise and Museka, 2020).

The high poverty levels in the countries make **rural communities increasingly dependent on natural resource-linked livelihood options** (Zimbabwe, Ministry of Environment, Water and Climate, n.d.), **including unsustainable, uncontrolled and often illegal sale of wild fruits, fuel wood, timber, gravel and river sand, as well as artisanal mining.**

Policies to revitalize the ailing economy (such as the National Development Strategy 1, 2021−2025, the Transitional Stabilisation Policy, 2018, the Agriculture and Food Systems Transformation Strategy, 2019 and the National Agriculture Policy Framework 2018−2030) have focused on expanding **smallholder cash crop production, particularly flue-cured tobacco** (mainly under contract farming), which is the fastest growing agricultural sector (World Bank, 2019). The **mining sector has also rapidly** expanded and now accounts for more than 12 percent of national GDP (up from approximately 4 percent in 2000) and contributes 55 percent of foreign currency earnings (ITA, 2021). The rapid and unregulated expansion of these sectors has had an extremely negative impact on the environment (Åkesson, Ölund Wingqvist and César. 2016). The precedence of mining and plantation agriculture have also displaced communities (Mlevu, 2021;

Mafirakureva, 2021), whose lands have been sold or awarded to corporations.

Socioeconomic impacts

There is a dearth of reliable data detailing trends in environmental impacts, but it is clear from the available literature and stakeholder interviews that Zimbabwe is experiencing serious degradation of land and water resources, and threats to its forests and biodiversity (United Nations, 2010). This is reducing agricultural productivity and the availability of wild foods, increasing poverty and reducing people's ability to buy nutritious food. Many of the problems are interconnected and self-reinforcing. For example, deforestation contributes to soil erosion, which, in turn, causes siltation of catchments, reducing water availability.

Reduced water availability is caused by over-extraction of surface and underground reserves and siltation of catchments due to widespread soil erosion from overgrazing, ploughing (Elwell, n.d.), deforestation, uncontrolled mining, and streambank cultivation (Ncube-Phiri *et al.*, 2015). Water pollution from mining is also a serious hazard to crops, animals and people (Åkesson, Ölund Wingqvist and César. 2016), with contamination by toxic chemicals, including mercury and cyanide (Ncube-Phiri *et al.*, 2015). Weak water governance compounds the situation with conflicts over water use among the catchment councils, local authorities, traditional leaders and resettled farmers (Zimbabwe, Ministry of Environment, Water and Climate, 2014). Human–wildlife conflicts are increasing as settlements and farmlands encroach on wildlife habitats, leading to crop and livestock losses and human fatalities (Gandiwa *et al.*, 2013). The situation is exacerbated during droughts when humans and wildlife compete for food and water.

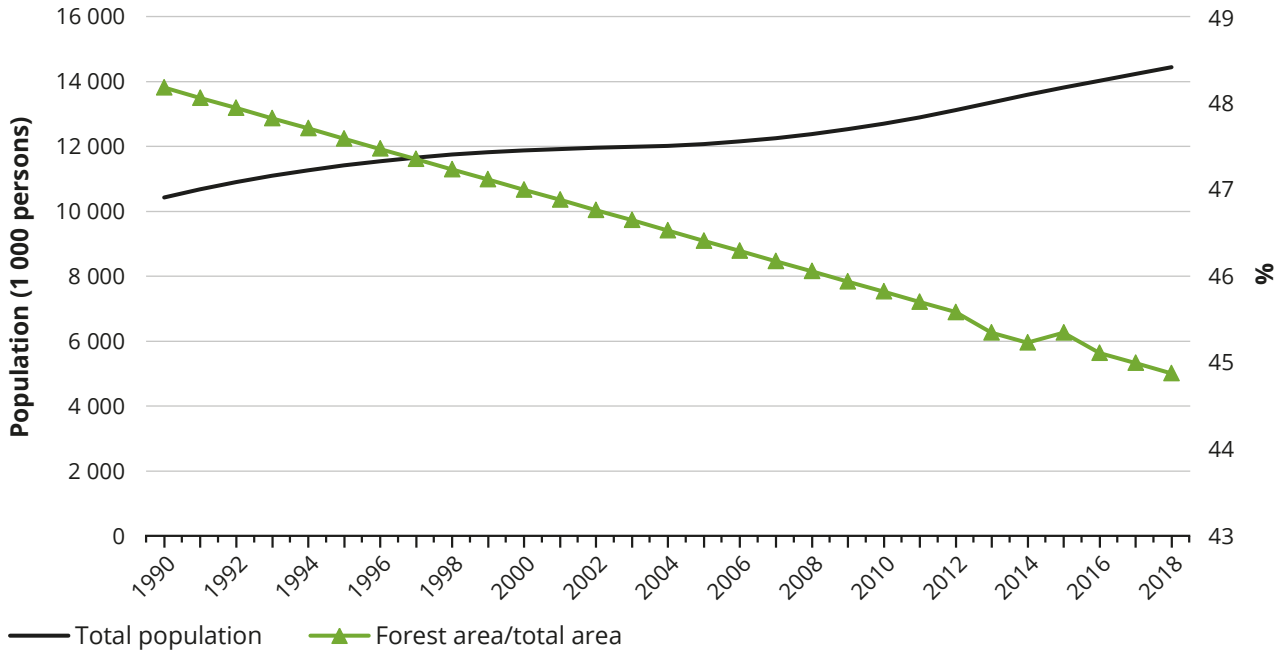
Climate change impacts, exacerbated by environmental degradation, increasingly restricts the areas where key crops, such as maize and sorghum, can be grown (Mugabe *et al.*, 2011). Other impacts on the food system are decreased soil fertility, increased crop and livestock pest and disease attack, decreasing water sources for irrigation and domestic activities, increased food insecurity, health problems and poverty (Brazier, 2017). The southern parts of the country are projected to be the worst hit.

Proposed systemic levers:

Leverage point 1: In line with current decentralization, strengthen local level institutions, which can be a conduit for improved natural resource management.

Devolution is a founding principle of the new Constitution (Chapter 14) and is supported through the Devolution and Decentralisation Policy (2020). It involves empowering the country's ten provincial councils to spearhead economic and social development (through local authorities) by leveraging "local" taxes. Leveraging existing, multistakeholder Food and Nutrition Security Committees at the subnational level to form sound environmental planning, implementations, law enforcement and monitoring bodies would strengthen local food systems and enhance

Figure 18: Forest decline compared to population growth



Source: FAO. FAOSTAT. In: *Forestry Database* [online]. Rome. Cited 15 March 2022. www.fao.org/faostat/en/#data

accountability. This can be done by strengthening the Food and Nutrition Security Committees to carry out comprehensive planning and implement multisectoral programmes.

Zimbabwe has one of the most widespread agricultural extension services in the world, and as cell phone and Internet connectivity improves, more options for a pluralistic demand-driven service become available. Improving the capacity of the existing extension services can rapidly affect most of the country. A strong focus needs to be on improved soil management, agroecological practices and innovative livestock feed solutions. This can be done by supporting the devolution programme with training and capacity building.

Lack of political will and resources to implement policies are factors that may inhibit the implementation of these actions. Implementation of devolution has been extremely slow and has borne few fruits to date. The government publicly professes to be concerned about natural resource protection, but, in practice, economic recovery holds precedence, often at the expense of conservation of natural resources.

Leverage point 2: Introduce mechanisms that support sustainable land management

Well-planned and implemented actions to improve land management can be a highly effective instrument for encouraging best practices. This can be done by strengthening government extension services, farmers unions and the role of traditional leaders to govern and manage these schemes to encourage better implementation of environmental protection policies.

Other leverage points are the following: revision of policies to encourage consistency; better monitoring of policy implementation and the condition of natural resources; gradual, orderly, land reform to decongest communal areas; encouraging civil society to work together; and sharing of success stories and research findings.

Key Sustainability Question # 2: Why do household diets across Zimbabwe lack diversity, leading to nutrition problems among its women and children?

Zimbabwe is undergoing a "nutrition transition", which normally occurs when a country reaches a mid-level stage of development (Gomez *et al.*, 2013) and food systems become increasingly dominated by purchased, processed and imported foods rather than household, agricultural production. As a result, the country is experiencing multiple forms of malnutrition concurrently, including micronutrient deficiencies, stunting, overweight and obesity (Zimbabwe, Ministry of Health and Child Care, 2015a). Zimbabwe has made significant progress in reducing stunting prevalence, as noted earlier, from 33.8 percent of children under five years in 2010 (Zimbabwe, 2010) to 23.5 percent in 2019 (Zimbabwe National Statistics Agency and UNICEF, 2019). However, national surveys conducted for more than a decade have shown a disturbing decline in dietary diversity in urban and rural households (Zimbabwe, 2018a; 2019; 2021, Zimbabwe, Office of the President and Cabinet, 2020). This is reflected in the household food consumption score (based on meal frequency, quantity and number of food groups consumed), with the percentage of households achieving an acceptable diet decreasing and the percentage with a poor diet increasing (see Table 2).

Table 2: Household food consumption scores between 2018 and 2021

Rural livelihoods assessments data	Household food consumption score of households (%)	
Year	Acceptable	Poor
2018	55	20
2019	47	24
2020	31	30
2021	29	43

Source: Zimbabwe. 2021. Zimbabwe Vulnerability Committee Rural Livelihoods Assessments (2018-2021).

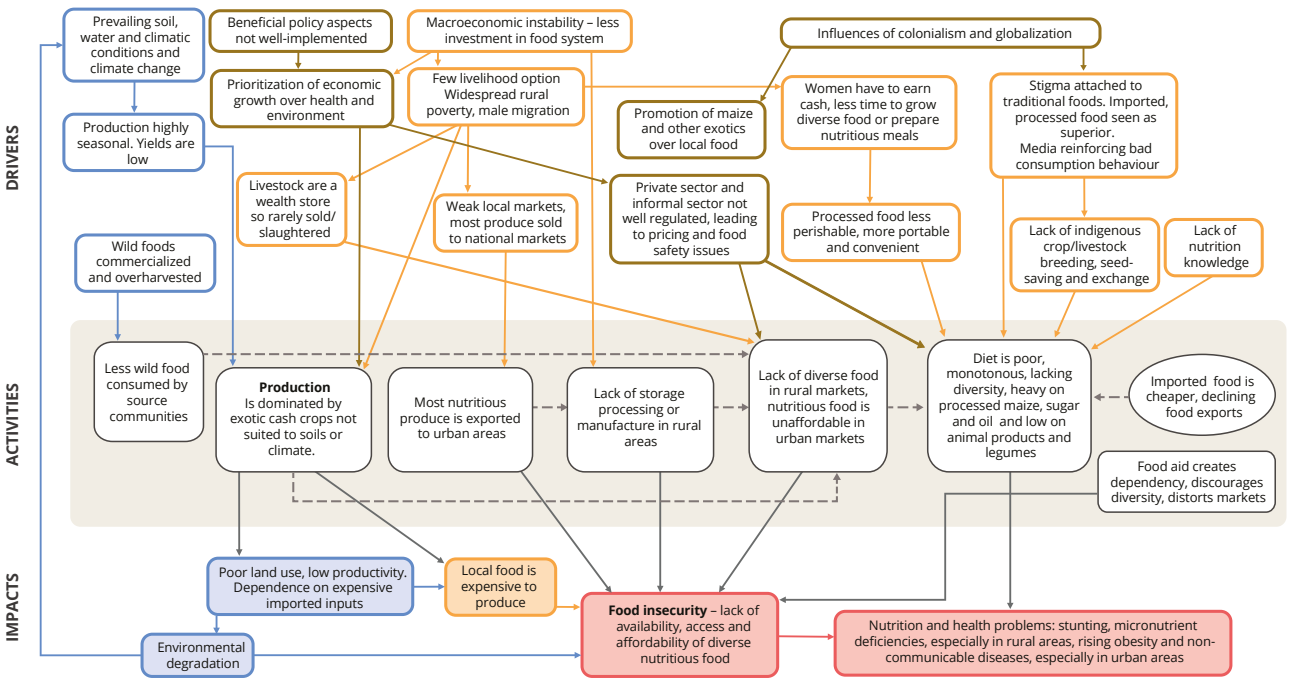
Figures from national surveys in some districts show unacceptable diets year-after-year. Some of these hotspots also consistently record high stunting rates and are areas of high cash crop production (Zimbabwe, 2018b). The drivers of low dietary diversity (see Figure 18) are many and complex, and not well-understood.

In 2021, only 6 percent of children aged 6–23 months in Zimbabwe were getting a minimum acceptable diet, 21 percent had a minimum meal frequency and 20 percent received minimum dietary diversity (Zimbabwe, 2021). This means that most children were not consuming the variety of foods needed and neither were the number of daily meals adequate. Only 29 percent of rural households showed acceptable food consumption patterns (in terms of meal frequency, amount and diversity), while poor food consumption patterns increased from 31

percent in 2020 to 43 percent in 2021 (Zimbabwe, 2021). Results from the 2020 Urban Livelihoods Assessment (Zimbabwe, 2020) indicated that only 12 percent of urban children had a minimum acceptable diet. The proportion of women of reproductive age (15–49 years) consuming at least five food groups increased from 40 percent in 2017 to 43 percent in 2019, but dropped dramatically in 2020 to 19 percent. This figure rose to 33 percent in 2021, which is still low. Also noted from the 2021 survey was a decrease in women consuming protein and iron-rich foods (Zimbabwe, Office of the President and Cabinet, 2020) and that, on average, dairy, legumes, meats and fruits were consumed only once a week by most households. Cereals, oils and vegetables were the most commonly consumed foods. Overweight and obesity among both women and children has been increasing with higher rates in urban areas (Zimbabwe, 2015). Prevalence of overweight and obesity in women increased from 23 percent in 1994 to 35 percent in 2015, while that for men fell from 15 percent to 13 percent (Mangemba and San Sebastian, 2020).

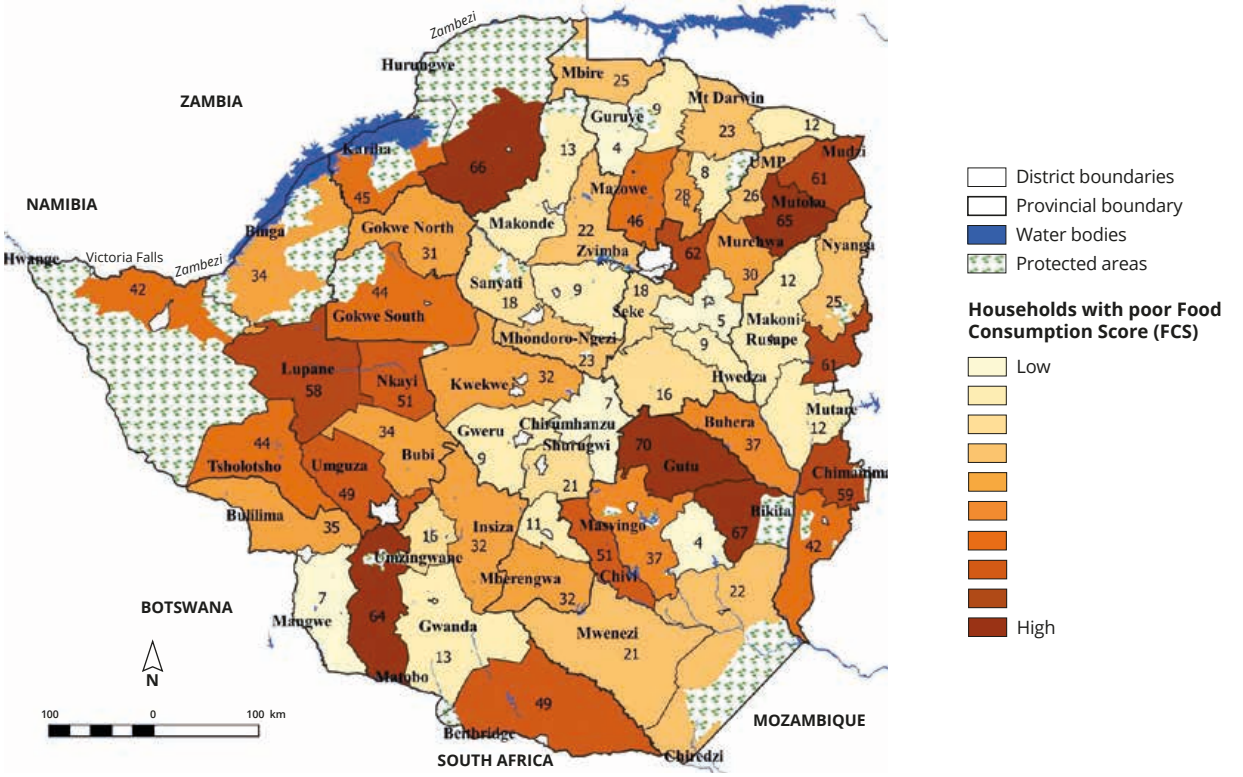
On average, the **modern Zimbabwean diet** has become very monotonous, consisting of the same food eaten each day (stiff maize porridge with a vegetable relish and, if available, meat or bean stew). Complementary feeding practices (when a baby is introduced to solid foods) are poor in Zimbabwe with children aged 6–8 months being given predominantly watery maize porridge with limited diversity, animal products and almost no legumes (Madzima, 2012). Dietary diversity improves with age, but children aged 12–23 months are still receiving a predominantly carbohydrate-based diet with a limited selection of vegetables, and only occasional consumption of animal products.

Figure 19: Drivers and impacts of low dietary diversity



Source: Authors, 2022.

Figure 20: Districts with households accessing a poor diet



Source: Zimbabwe. 2018. Zimbabwe Vulnerability Committee Rural Livelihoods Assessment. Rural Livelihoods Assessment (RLA). Harare. Cited 11 March 2022. https://zdhr.uz.ac.zw/xmlui/handle/123456789/1413 conforms to United Nations. 2017. Map of Zimbabwe, Cited 11 March 2022. www.un.org/geospatial/file/2381/download?token=lzRSKdyz.

Drivers of low dietary diversity

Zimbabwean agriculture and the local diet have changed dramatically over the past century. Food preferences have been heavily influenced by colonial values. Before the arrival of white settlers in the 1890s, Zimbabweans ate a wide range of cereals, root and tuber crops, oil seeds, legumes, fruits, vegetables, and wild produce, including insects, small animals and mushrooms (Gelfand, 1971). Urbanization and globalization have reinforced colonial perceptions that indigenous foods are inferior, being associated with rural life, poverty and lack of education.

Through colonial policies and recent efforts to address macroeconomic instability, there has been a drive for a few cash crops (maize, tobacco, cotton and sugar cane) to dominate the agriculture sector. Dietary diversity has declined in line with a decrease in crop diversity. In rural areas with access to national markets, the most marketable produce is sent to urban markets as prices are low in villages. Urban markets have also become dominated by processed, imported foods, which tend to be cheaper than locally produced or manufactured foods. Wild-harvested products that used to be widely consumed locally have been commercialized and are also exported from rural areas to supply the urban middle-class and export markets. This has led to a dearth of nutritious food in many rural areas.

For reasons already discussed, efforts to achieve crop productivity in an unsuitable environment puts an economic and labour strain on household members, particularly women (FAO, 2017), as they tend to bear the main agricultural and domestic

labour burden. This reduces the time and energy available to women to grow diverse crops (which are more labour-intensive) and prepare nutritious meals (FAO, 2017). Resource degradation and climate change further reduces agricultural productivity, access to nutritious, wild foods, and firewood and water needed for cooking meals. **These factors have led to reduced diversity in crop production** and diversity of food markets, particularly in rural areas. They have also led to reduced incomes and, accordingly, the ability to buy nutritious foods. A policy-shift towards diversification has occurred (as detailed in the National Agriculture Policy Framework (NAPF) 2018−2030), but cash crop monoculture and use of expensive inputs in place of traditional, diverse agroecological practices was widely promoted by extension agents and development agencies, until recently.

As shown in Figure 19, the regions where dietary diversity is lowest in the country are consistently in Matabeleland North, including Lupane, Nkayi and Hwange and in Masvingo province, including Gutu, Bikita and Chivi (Zimbabwe, 2018a; 2019; 2010; 2021). These areas are hot and dry and have poor soils, so crop production is challenging. Counterintuitively, although livestock production is high in these provinces, meat consumption is low (Zimbabwe, 2020; 2021). Large livestock are rarely consumed by farming families, as they are an important source of wealth and provide insurance against shocks (Tavirimirwa *et al.*, 2013). The absence of rurally based abattoirs, butcheries and refrigeration further exacerbates reluctance to slaughter large animals for food that cannot be preserved. **Broiler chickens and eggs from hybrid layers have become an important means of generating income rather than a source of food.** As legume production is low in many cattle-rearing areas for climatic reasons, households in these parts of the country experience a protein deficit in their diets.

Access and availability of food undoubtedly play an important role in influencing diets and, therefore, nutrition. Access to safe water, sanitation, hygiene, and health services also play a role, although the relationship is ambiguous (Zvitambo, n.d.). However, there is also a very strong social/behavioural influence in terms of food choices, and care and feeding practices for women and infants, and children and adolescents. Zimbabwean surveys have revealed that higher education among mothers is a strong factor influencing better household consumption of nutritious food (Zimbabwe, Ministry of Health and Child Care, 2015).

Socioeconomic impacts

The long-term effects of these nutrition and health problems will have major impacts on Zimbabwean society. Malnutrition in children can have lifelong, irreversible impacts on brain development, immune system development and human productivity. People who suffer from malnutrition as children have higher mortality rates and suffer from more health problems. They perform less well at school and tend not to achieve their potential as adults. The connection between earning capacity and malnutrition is well established. World Bank (2006) has shown how malnutrition can slow economic growth and perpetuate poverty. The economic burden caused by health problems on households and

countries is another major contributing factor. The economic cost of malnutrition in developing countries can range from 2 percent to 16 percent of GDP (ACP-EU Joint Parliamentary Assembly, 2014).

Proposed systemic levers:

Leverage point 1: Follow through on government nutrition policies and, especially, strengthen multi-stakeholder Food and Nutrition Security Committees at national and subnational levels for behavioural change campaigns, including nutrition education.

Well-functioning Food and Nutrition Security Committees at the subnational level can act as a conduit for the implementation of national policies aimed at behavioural change towards dietary diversity, including through increased nutrition education and other communication methods. This would increase demand for healthy foods, which would encourage local production and processing. It can be done by implementing nationwide, multi-stakeholder, multimedia nutrition awareness and behavioural-change campaigns using influencers and opinion leaders. Leveraging donor funding for Food and Nutrition Security Committees and encouraging private sector engagement with them could be other ways of achieving the same outcomes.

Leverage point 2: Facilitating platforms for strengthened government, civic and private sector institution collaboration within the food systems.

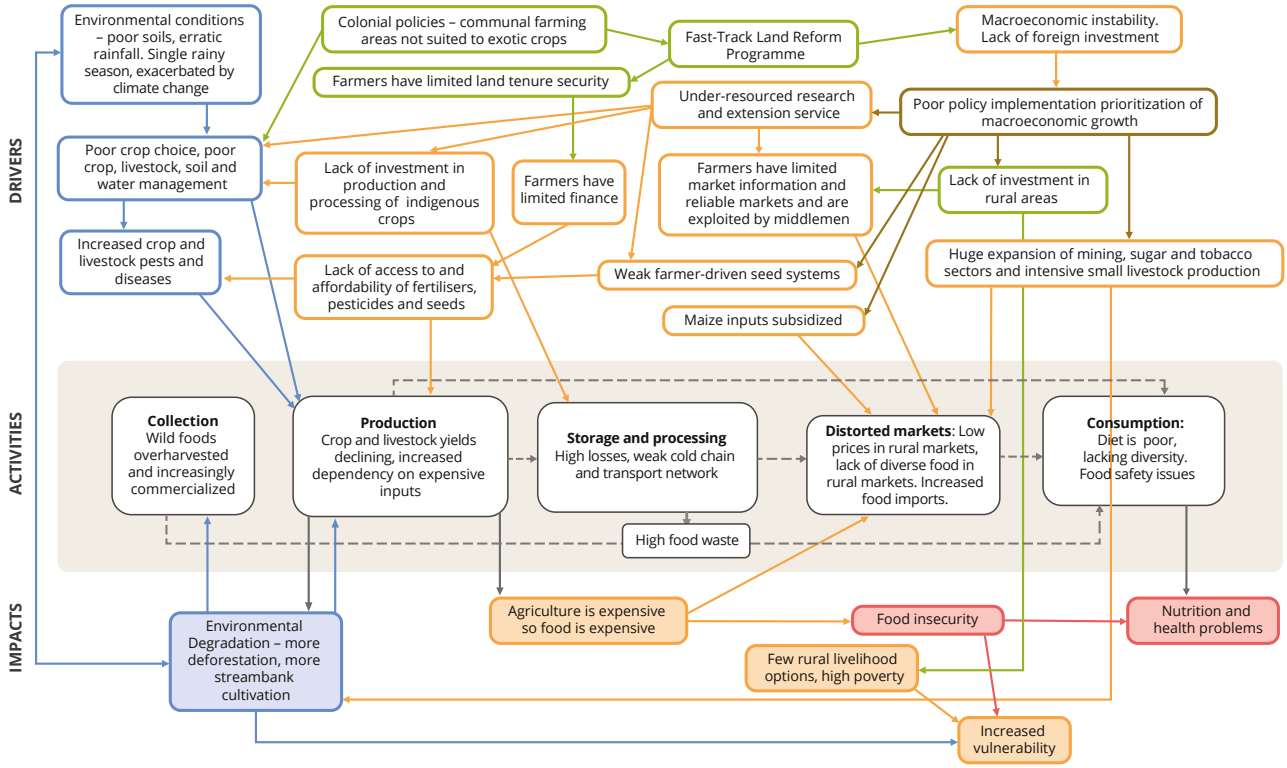
Strengthened collaboration among key actors in the food systems would create space for the building of trust, accountability and improved decision-making. Key actors are the Ministry of Agriculture, Consumer Council of Zimbabwe, and private sector producer organizations, such as the Horticulture Development Council, and the Livestock and Meat Advisory Council. This can be facilitated by encouraging improved dialogue and better implementation of nutrition and agriculture policies and subnational implementation structures, such as Food and Nutrition Security Committees and mechanisms, care groups and food festivals.

Lack of monitoring of policy implementation could threaten the implementation of these actions. In addition, the private sector may be resistant to work within policy confines. If urban markets continue to expand in an uncontrolled manner, nutritious food availability in rural markets will continue to decline. Another important leverage point is improved regulation of the private sector with regard to production, marketing and importing of unhealthy processed foods and improved food safety regulations.

Key Sustainability Question # 3: Why are the food systems of Zimbabwe experiencing low productivity and lacking diversity?

The food systems of Zimbabwe are increasingly affected by declining agricultural yields and lack of production diversification, leading to lack of diversity in the markets and low dietary diversity. Figure 21 shows the main drivers and impacts of this situation.

Figure 21: Drivers and impacts of low diversity and declining yields in agricultural production



Source: Authors, 2022.

Drivers of low productivity and low diversity

The agricultural system of Zimbabwe has always been vulnerable to variable climate, poor soils and dependence on a single, short rainfall season for most crop production. **Colonial and post-colonial policies** have exacerbated this vulnerability by promoting monocultures of a few exotic cash crops (maize, cotton, tobacco and sugar cane). Prior to the commercialization of agriculture, Zimbabweans grew and consumed a range of staples, including the small grains – sorghum and millet – African rice (*Oryza glaberrima*), root and tuber crops, legumes, and indigenous vegetables (Mharapara and Mugabe,1984). However, there has been a huge shift over the past century. Recent policies, including the Fast-Track Land Reform Programme, the Command Agriculture Programme, launched in 2015, which boosts cash crop production through input subsidies and price controls (World Bank, 2019), and numerous NGO programmes directed at market-linked agriculture, have exacerbated the cash crop focus. Extensive investments have been poured

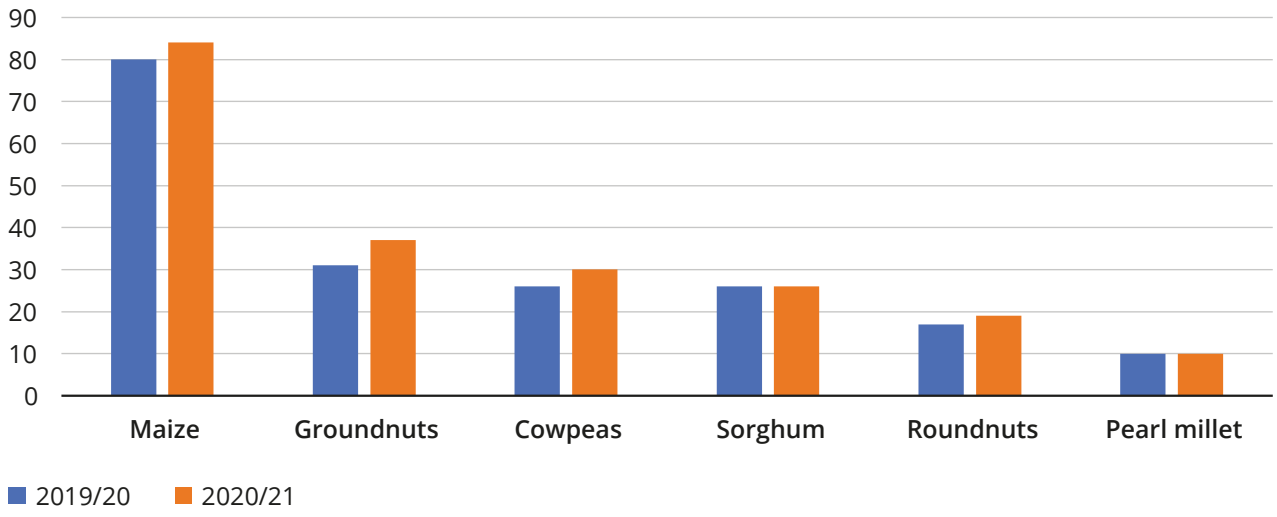
into developing cash crops at the expense of indigenous crops (Mharapara and Mugabe, 1984).

Indigenous grains and legumes are tolerant of drought, poor soils, pests and diseases. Finger millet can be stored for up to 10 years without the need for chemical protectants. But indigenous crops have suffered from the **lack of investment and research** into better varieties and ways to reduce their heavy production and processing labour requirement (Muchineripi, 2008). The private sector has not promoted indigenous grains because they are not profitable, requiring few inputs or hybrid varieties. The sale of open-pollinated seeds are illegal in Zimbabwe, crippling the evolution of diverse **farmer seed systems** (Mutonodzo-Davies, 2010). Markets for indigenous crops are very weak and so is demand, because production is low and consumer prices are high. Small grains are highly labour intensive and **processing** technology for them is not becoming more efficient. This places a large extra burden on women, who are traditionally responsible for processing the grains (Nciizah *et al.*, 2021). Figure 22 shows the percentage of Zimbabwean households that grew various crops between 2019 and 2021.

Because of the reliable market for maize, most farmers grow **the cereal even though it is not suited** to the soils or climate in much of the country. A highly refined maize meal is preferred by most consumers because it provides a revenue source for the processing industry. The preference for maize has also been encouraged through years of distribution of food aid, which has motivated farmers to plant the crop even in unsuitable agroecological zones. Figure 23 shows the few areas that are suitable for maize production (shaded in green).

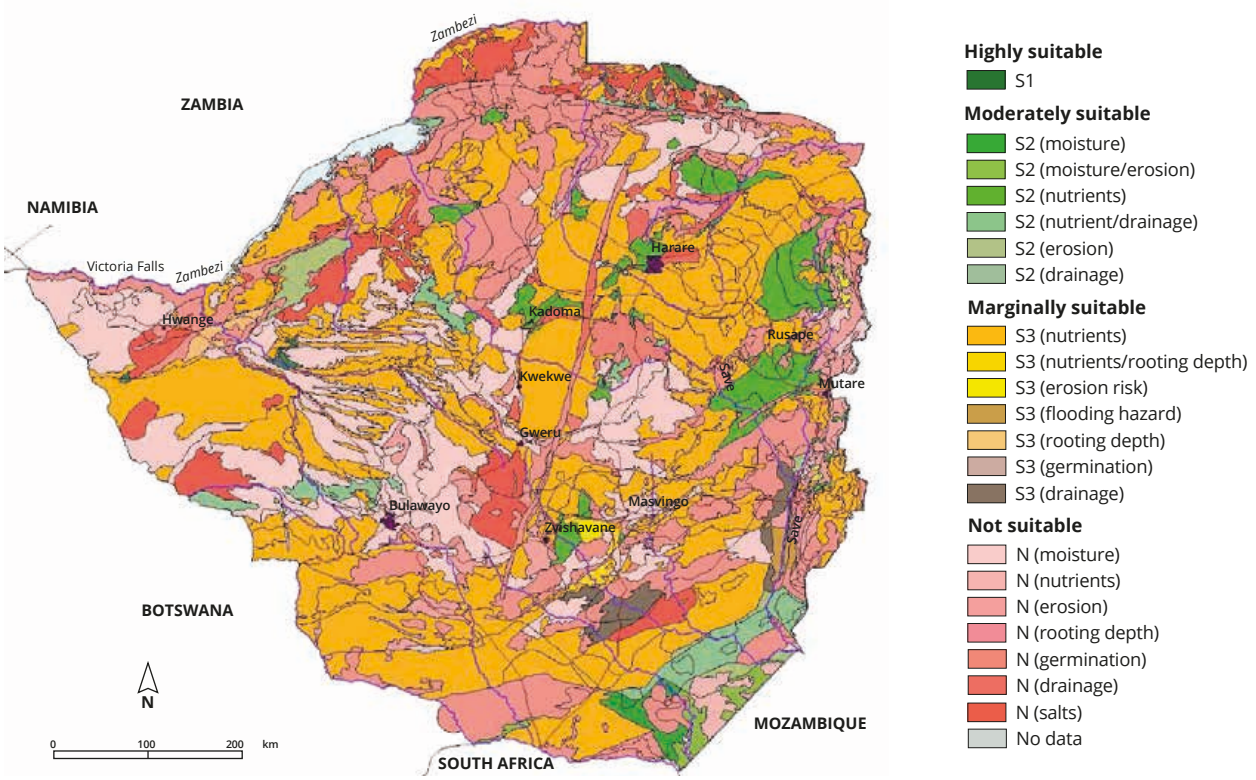
Climate change-induced rainfall decline causes regular crop failures, resulting in chronic food insecurity, which could be avoided if farmers switched to indigenous grains and diversified their cropping systems. Zimbabwe has the lowest maize yields in tonnes per hectare among the main maize producing countries in the southern African region (see Figure 24). Poor soil fertility management, seed types and poor crop management are contributing factors.

Figure 22: Percentage of households growing various crops in the 2019/20 and 2020/21 season



Source: Zimbabwe. 2021. Zimbabwe Vulnerability Committee RLA. Cited 3 March 2022. https://fnc.org.zw/

Figure 23: Suitability of land for maize cultivation



Source: van Engelen, V., Mantel, S., Dijkshoorn, J., and Huting, J. 2004. *The Impact of Desertification on Food Security in Southern Africa: A Case Study in Zimbabwe.* Report 2004/02. Wageningen, ISRIC – World Soil Information / UNEP – United Nations Environment Programme. Cited 20 March 2022. https://www.isric.org/sites/default/files/isric_report_2004_02.pdf

Unlike small grains, maize does not grow well in poor soils. It does not compete well with weeds and is susceptible to insect and disease attack during growing and storage. Maize is also less tolerant of dry spells and drought than small grains, but is particularly sensitive to high temperatures (Mugabe *et al*., 2011) making it highly vulnerable to climate variability and change. Accordingly, for viable levels of production in Zimbabwe, maize depends on **expensive inputs** that few farmers can afford, particularly when acceptable prices for the end-product are not guaranteed by the Grain Marketing Board. The government has begun **subsidizing maize inputs** and controls the price, further distorting the market. Agrodealers depend on maize farmers as customers for high-yielding hybrid maize seeds, fertilizers, herbicides and pesticides. Consequently, there is a **vested interest** in discouraging small grains. The inputs and markets are similar for the other major cash crops, tobacco and cotton. Wheat is increasingly consumed in Zimbabwe and the government has decided to introduce a policy of wheat production in irrigation schemes, which had been reserved for horticulture. This will result in reduced production of much needed micronutrient-rich fruits and vegetables.

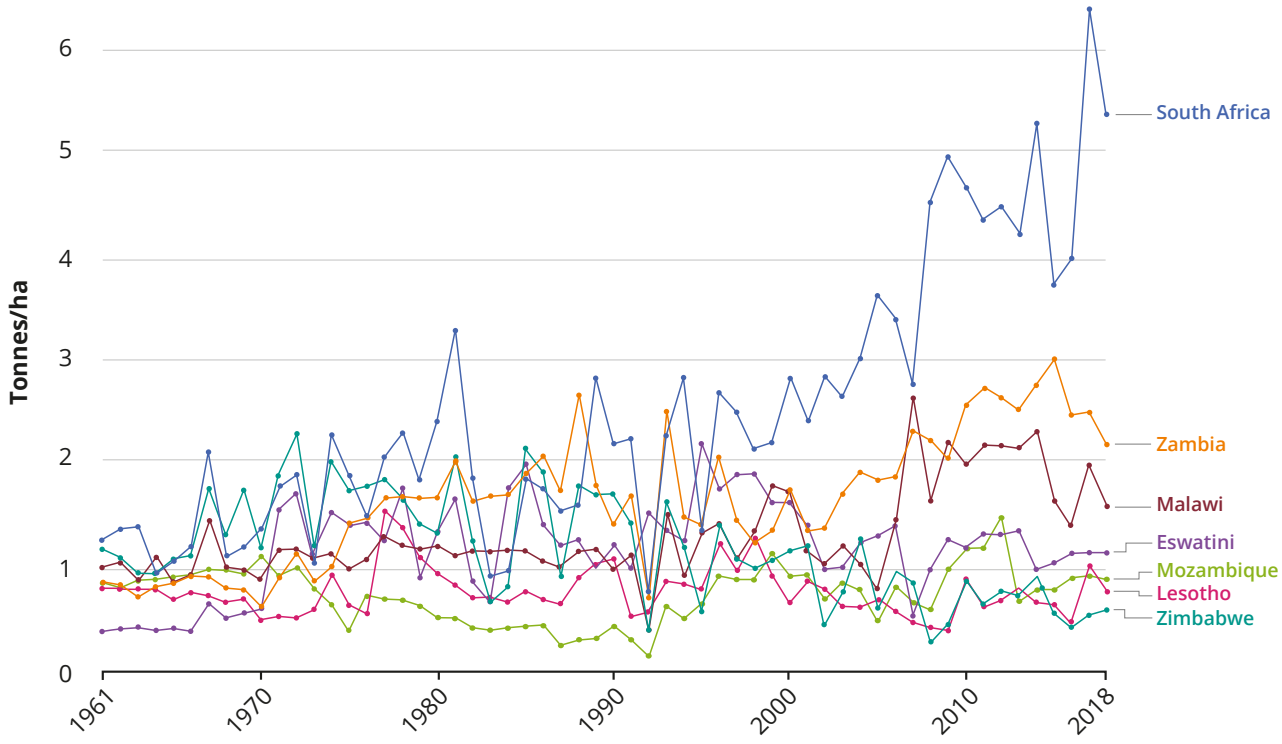
The once excellent **agricultural extension service of Zimbabwe** has suffered from lack of investment and a consequent brain drain (Mukembo and Edwards, 2015). As a result, farmers make inappropriate crop choice and apply poor livestock, crop, soil and water management techniques. **Pest and disease problems** are increasing. Farmers are not trained in selecting and bulking resilient indigenous

seed varieties (Muchineripi, 2008) and struggle to access certified seeds of appropriate crops. Due to weak research, training and extension services, farmers often lack skills and knowledge of sustainable production and post-harvest methods, which exacerbates the poor land management situation. This leads to high levels of pest and disease attacks and post-harvest losses. Unlike indigenous grains, maize grain requires expensive chemical protectants and storage silos.

Macroeconomic instability largely exacerbated by the Fast-Track Land Reform Programme has led to the near collapse of the commercial agriculture sector. While Zimbabwe used to export maize, it has become a net importer of the cereal and many other food goods. A World Bank analysis (2019, p. 2) shows that agriculture currently drives half of what it used to in terms of GDP in 2007 (see Figure 24). Over the past two decades, national yields of all major crops (except tobacco) and livestock herd sizes have declined dramatically (Zimbabwe, Ministry of Lands, Agriculture and Rural Resettlement, 2018, pp. 28–30). Beef production has declined due to the shift from commercial to small-scale production, the collapse of the nationwide livestock disease control system and successive droughts, leading to cattle and goat deaths (Bennett *et al.*, 2019). Large livestock are, thus, no longer a reliable store of wealth nor a household safety net.

Due to uncertainty related to **land tenure** resulting from the Fast-Track Land Reform

Figure 24: Average maize yields in tonnes per hectare among main maize producing countries in southern Africa



Source: Our World in Data. Data explorers. In: *Corn Yields* [online]. Cited 10 April 2022. https://ourworldindata.org/explorers/crop-yields?tab=chart&facet=none&country=MOZ~ZAF~ZWE~ZMB~MWI~LSO~SWZ&pickerSort=desc&pickerMetric=maize_attainable&Crop=Maize&Metric=Actual+yield.

Programme, farmers cannot **access credit**, while the controversy surrounding the Programme has cut off potential investors and donor finance. There are **few rural livelihood options** and investment in rural areas has been historically low. In an attempt to resuscitate the economy and commercial agriculture, the government has **prioritized economic growth** and reduced **regulation of the private sector.** This has led to greater focus on the use of hybrids and inputs.

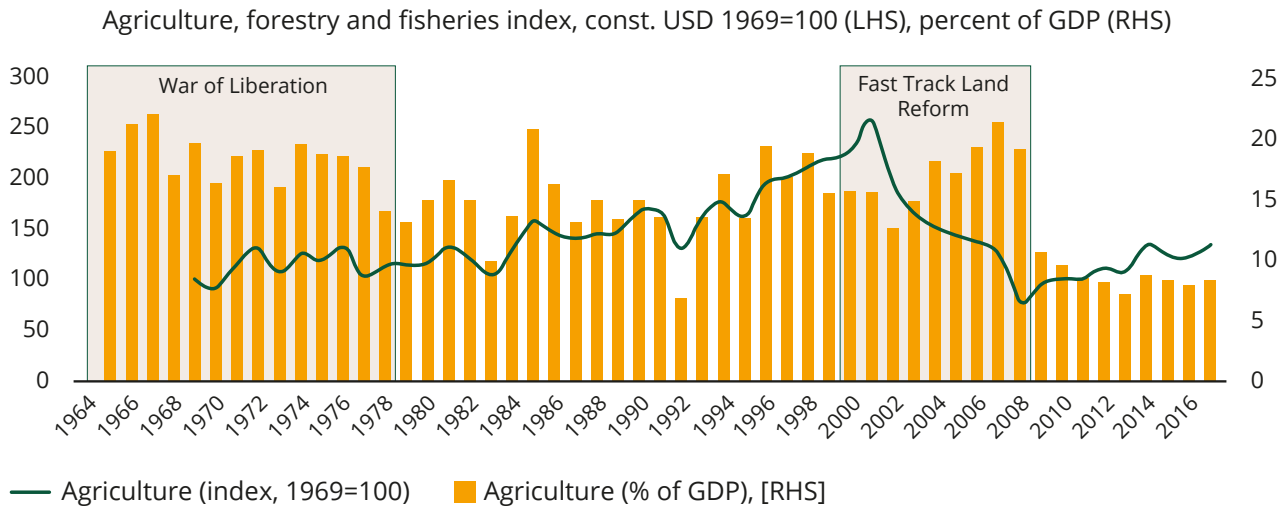
Socioeconomic impacts

The monopoly of a few inappropriate cash crops in the food systems has locked farmers into an expensive, low-yielding, unsustainable production cycle that leads to increased **environmental degradation**, poverty and vulnerability to market and climatic shocks. Increasing soil infertility further reduces crop yields. **Rural poverty is high** in Zimbabwe and urban poverty is increasing (World Bank, 2019), partly because of low revenue from agriculture, but also from lack of investment in rural areas from both governmental and private sectors.

The input-dependent agricultural system has led to **high prices for local food** and made imported food cheaper and therefore more competitive in the market. Local manufacturing firms have, in fact, struggled to compete with imported goods, leading to the closure of 4 610 firms between 2011 and 2014 (ILO, 2016). The situation makes access to nutritious food limited and expensive, probably contributing to the nutrition problems being experienced nationally. If maize productivity continues to decrease (which is likely given the soil fertility decline and climate change projections), the country will become increasingly dependent on imported foods, unless it begins to diversify production towards more appropriate food crops.

The government is aware of these problems and has committed to diversify production in policy, but the actual implementation of these policies requires considerable mind-shift, effort and financing. As the country's production system has been so massively disrupted through the Fast-Track Land Reform Programme, a gradual approach is necessary.

Figure 25: Contribution of agriculture to gross domestic product in Zimbabwe since 1969



Source: World Bank. 2006. *Repositioning Nutrition as Central to Development: A Strategy for Large-Scale Action*. Washington, DC.

Proposed systemic levers:

Leverage point 1: Facilitate production diversification and increased productivity.

This can be achieved by attaining improved farming practices (including intensification) through better extension support; distribution of more appropriate inputs (traditional seed varieties, livestock breeds and organic fertilizers) though government, private sector and NGO schemes, and de-risking and providing incentives for private sector investment into diverse "'healthy" food production, processing, food and livestock feed manufacturing in rural areas.

The production transition towards indigenous, climate-friendly crops would lead to enhanced productivity and less dependence on high-cost inputs and, therefore, result in increased returns from agriculture and an improved nutrition situation in the country. The drive for a more sustainable approach to agriculture is also covered (Pillar 8; Resilient and Sustainable Agriculture) by the National Agricultural Policy Framework 2018–2030. The Policy Framework further proposes finance mechanisms to implement these measures.

Leverage point 2: Encourage demand for environmentally suitable "healthy food" crops among different stakeholders.

This can be achieved by developing suitable markets (among consumers, food manufacturers and livestock feed producers) and promoting import substitution. Increased demand for environmentally suitable "healthy food" crops is crucial to support and stimulate production diversification. It is also a critical factor in facilitating dietary diversity and, therefore, to promote nutritional security among Zimbabweans.

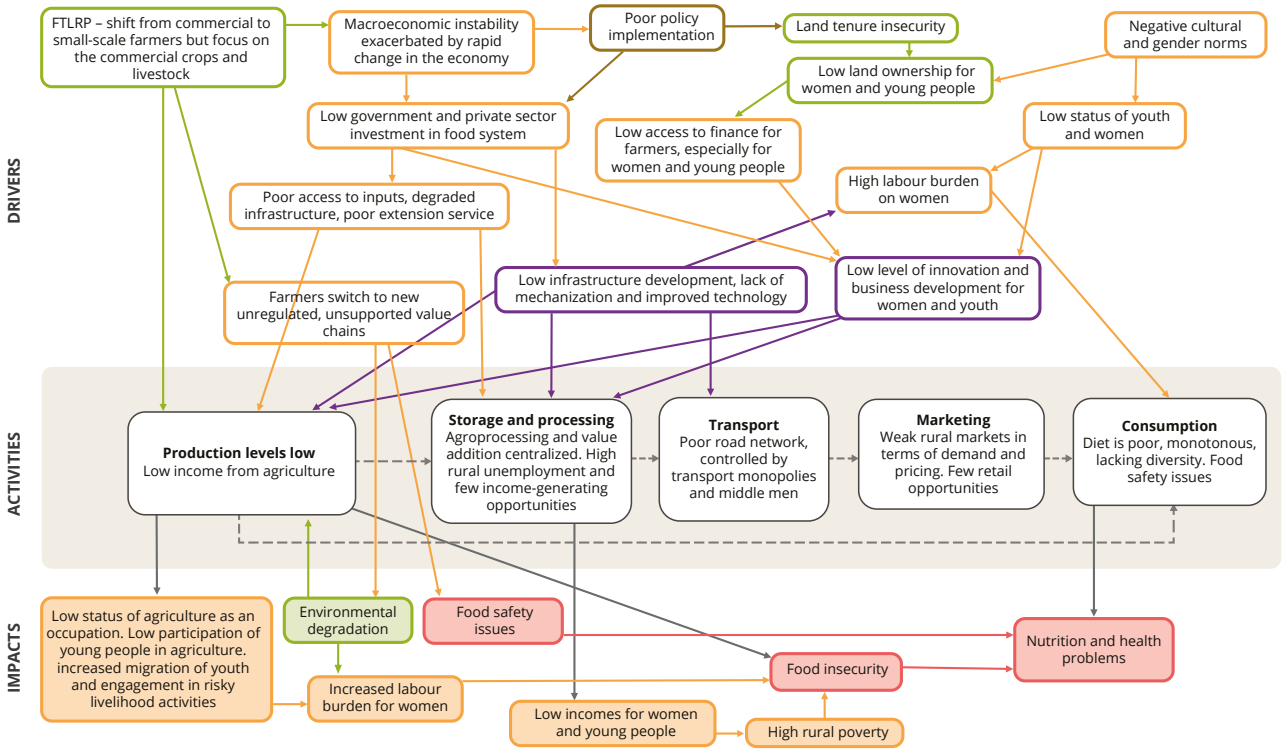
This plan of action is supported by the multisectoral approach championed by the Food and Nutrition Security Council, the Ministry of Health and Child Care, and the Ministry of Lands, Agriculture, Fisheries, Water and Rural Resettlement, in implementing the country's Food and Nutrition Policy and the Multisectoral National Food and Nutrition Strategy. It is further supported by civil society initiatives, such as the Traditional and Organic Food Forum.

Key Sustainability Question # 4: Why are the food value chains of Zimbabwe underdeveloped and unable to provide better employment opportunities for the country's women and young people?

As a result of the Fast-Track Land Reform Programme, as discussed earlier, the share of dominant crops and livestock to GDP has changed. This is because smallholder farmers are mainly subsistence producers with low business skills, and are not familiar with cash crops or commercial agricultural methods. In addition, investment in smallholder value chains has been low, as discussed earlier, in terms of, among others, mechanized production, harvesting and processing, improved storage, transport networks and cold chain facilities.

Although women are responsible for most of the labour in agricultural production and food processing on smallholder farms in Zimbabwe (FAO, 2017), their work is rarely financially compensated through formal employment, particularly since the decline of commercial agriculture. In addition, when women work on the family farm, the income from farm produce is usually controlled by the male head of the household. When women engage in piece work, their wages are usually lower that of men. Women are also poorly represented in the formal workforce and in small- and medium scale enterprises (van Klaveren *et al.*, 2010), and they represent the majority of informal food vendors in rural and urban settings. Women have low representation in land ownership (FAO, 2017), which hampers their access to formal financial services and, in turn, restricts their access to

Figure 26: Drivers and impacts of undeveloped value chains and lack of employment opportunities in the food systems for women and young People in Zimbabwe



Source: Authors, 2022.

Note: FTLRP, Fast-Track Land Reform Programme.

technology and ability to start on- or off-farm enterprises.

The transformation of the country's agriculture sector into one that is dominated by smallholder farming presents great opportunities for more sustainable value chains that benefit women and young people, but this has not been supported by policy or finance. Figure 25 shows the main drivers and impacts of undeveloped value chains and lack of employment opportunities in the food systems for women and young people.

Drivers of underdeveloped value chains

Prior to the launch of the Fast-Track Land Reform Programme, the farming sector was dominated by large commercial plantation-style farms and ranches tended by workforces comprised of resident farm labourers. Farm owners invested heavily in mechanization and irrigation infrastructure and could access favourable credit and tax concessions. Processing, storage and marketing of these cash crops were supported by government and private sector investment and was highly centralized. Several parastatals, including the Cold Storage Commission, the Cotton Marketing Board, the Grain Marketing Board, the Dairy Marketing Board and the Tobacco Marketing Board, specifically supported commercial production and marketing. Commercial agriculture contributed, on average, 16 percent per annum to GDP between 1965 and 2001 (see Figure 24). Its current contribution is approximately 7.6 percent and has been averaging 11 percent per annum since 2000 (World Bank, 2021a).

Although a shadow of its former self, commercial agriculture still provides approximately 60 percent of raw material inputs for manufacturing (Chitiyo *et al.*, 2019). In terms of the share of agricultural GDP, the dominant crops are tobacco (25 percent), maize (14 percent), cotton (12.5 percent), sugar cane and horticulture (7 percent), while beef and fish (10 percent) and other livestock account for 10 percent and 24 percent, respectively. Earlier sections included a discussion on the **decline in production** of beef and cereals and that the production of crops and pulses have not kept pace with population growth of Zimbabwe. Horticulture and poultry production has increased probably because they give relatively **high returns over a short period**. This makes them suitable activities in a volatile economy, with additional shocks related to climate change and variability.

However, the **infrastructure supporting** these typical value chains has deteriorated and has not been adapted to support the diverse and widespread smallholder farming sector. The main agricultural parastatals are struggling with low capacity and high debt (Muzapu *et al.*, 2016) and have been slow to adjust their modus operandi sufficiently to cater for the smallholder sector. Only a quarter of the national grain silos are functional (Chikwati, 2017), while the main food processing and manufacturing companies are in large cities.

The Government of Zimbabwe expects agriculture to play a key role in reviving economic growth, increasing exports and reducing poverty along with food and nutrition insecurity. But, because the focus is on the same commercial value chains, with little investment in supporting smallholder producers, processors, buyers and retailers, irrigation, mechanization and transport infrastructure and an extension service that is underresourced, it will be difficult to achieve the results recorded in the past. Despite land reform being initiated more than 20 years ago, there has been **little public or private sector investment** in food production, storage, transport, marketing and manufacturing. Meanwhile, existing infrastructure – particularly irrigation, grain storage, and transport networks – have become severely degraded (AfDB, 2018; Zimbabwe, 2018b). Nationwide efforts to control livestock diseases, such as organized cattle dipping, are no longer carried out, leading to large reductions in the national herd, as already discussed. The new era dominated by small, family-run farms, mainly in communal areas (without secure land tenure and with adverse environmental conditions)

makes it difficult to achieve the same level of productivity as large-scale commercial farms that benefited from huge investment and support along the whole value chain.

New problems are associated with smallholder production of tobacco and cotton, including, among them, massive deforestation caused by **land clearance** and fuel wood harvesting for curing tobacco, and **misuse of cotton and tobacco agrochemicals**. These practices require high levels of training and regulation to be applied properly. Lack of protective clothing and appropriate precautions during application by female farmers (many of whom could be pregnant or breast-feeding), improper storage and disposal of chemicals and containers, and increasing use of highly toxic chemicals on food crops were mentioned by key informants in this study. Contract farming of tobacco and cotton has become extremely unfavourable for small-scale farmers, as their input costs are barely covered by sales, leaving households with very little income.

Food crops, such as sorghum, millets, cowpeas, roundnuts and groundnuts, produced in small quantities by most smallholder farmers only contribute 0.5 percent to agricultural GDP (AfDB, 2018) yet they feed much of the population and provide households with a crucial buffer against economic, climate and other shocks. Most smallholder cereal and legume value chains use **labour-intensive, low-technology and low-input systems** in terms of production, harvesting, processing and storage. Farmers usually process their own grains for household consumption or take it to small grinding mills, which depend on expensive diesel or highly erratic electricity supplies. There is very little value addition and very few rurally based processing enterprises. Most produce is exported to national markets, including manufacturing companies, in a semi-processed state. **Food loss and food safety** issues arise due to poor harvesting and storage techniques. Mycotoxin contamination of maize and groundnuts are particularly common (Probst, Bandyopadhyay and Cotty, 2014) and food losses

due to pest attack in cowpeas can be as high as 60 percent, according to key informants.

The Africa Development Bank (AfDB) notes that over the past ten years, the horticulture sector of Zimbabwe has been growing at a rate of 30 percent per annum (AfDB, 2018). The government has launched the Horticulture Recovery and Growth Plan (2020−2025) to improve community food and nutrition security through encouraging group-run nutrition gardens and the establishment of a market-linked horticulture production for national and export markets. A major challenge is that horticulture crops tend to be exotic and require high inputs and irrigation, usually from highly depleted groundwater sources. In addition, these crops are highly perishable and depend on efficient and effective transport systems, which do not exist in Zimbabwe. The policy contains a research and development component promoting indigenous fruits and vegetables, which should help reduce water consumption. However, unless substantial investment goes into nationwide soil improvement and water harvesting to recharge groundwater stores, and improving transport networks, it will be difficult for this drive to be sustainable, or make any meaningful contribution to rural household diets.

There has also been rapid expansion of intensive poultry, pig and dairy production, which depends heavily on maize and soya for stockfeed. The maize and soya are mostly imported from neighbouring countries, including South Africa and Zambia (Livestock and Meat Advisory Council interview). This **raises production costs**, making imported meat cheaper and more attractive to consumers. In addition (according to experts consulted during this study), there is large-scale, illegal importation of cheap meat that bypass health, safety and biosecurity control measures, posing a serious risk to consumers and further reducing the competitiveness of local farmers. In addition, with the local industry being unregulated, it potentially leads to an increase in animal welfare and **food safety issues, as well as in zoonotic diseases**.

The country's agriculture sector has **weak national and export market** competitiveness due to ad hoc policy actions and excessive production costs related to inadequate supply of and dependence on **imported inputs**, raw materials and finished goods (Zimbabwe, Ministry of Lands, Agriculture and Rural Resettlement, 2018, p. 25). Farmers tend to work as individuals rather than forming commodity groups to bulk produce. They lack information about prices and markets, and negotiating power. This leads to flooding of markets, poor prices for produce, and exploitation by unregulated middlemen (Mutenga, 2014). Unfortunately, the Agricultural Marketing Authority lacks the capacity and resources to regulate these actors.

There are very few organized livestock markets, abattoirs or reliable cold chain facilities in rural communities – all of which contribute to very low livestock offtake rates. Prices in rural markets are low and if farmers fail to reach national markets, they often have to engage in local barter trade. There is virtually no investment in developing rural economies in terms of supporting **food manufacturing enterprises** in small towns, which could provide employment, increase local incomes and provide a wider range of nutritious food for purchase in rural areas. Poor transport networks and unreliable electricity supplies in rural towns repel private sector investment. Some NGOs are working to strengthen these aspects. For example, the Agricultural Business Centre in Gokwe town was established to support the production and sale of local goods, such as sunflower oil, peanut butter and dried fruits, while local cattle markets are being set up.

The expanding agriculture segments in Zimbabwe (horticulture, root and tuber crops, and poultry) are doing so mainly because of the motivation of farmers themselves, who are also, to a large extent, processors and marketers of their own produce. The switch is driven by attraction to production lines that provide short-term gains with minimal investment. Interestingly, these growing crop and livestock production systems are also favourable to women and young people, as they are less labour intensive and have a higher turnover than the traditional ones. These value chains get some support from civil society, which is encouraging increased production of more climate appropriate, nutritious, indigenous crops and providing training in value addition, product development, food safety, quality control and marketing supported by consumer awareness campaigns, and food and seed festivals to generate demand. NGOs are also helping processing groups to access equipment to reduce labour issues.

Drivers of weak opportunities for women and young people

Although rural women in Zimbabwe make up most of the labour in food production, processing and preparation, due to patriarchal cultural norms, they are marginalized from family and community decision-making, and are generally discouraged from engaging in income-generating enterprises (Nyarata, Chiweshe, and Mahiya, 2019). Traditionally in Zimbabwe, cash crops, such as maize, tobacco, cotton and large livestock, have been controlled by male heads of households, while women have been allowed control over the production of and income from indigenous

legumes, horticultural crops (including sweet potatoes) and poultry (FAO, 2017).

As mentioned earlier, the labour burden on women is a major contributing factor to the lack of productivity and nutrition problems, but low levels of public and private investment into agricultural and food processing mechanization have perpetuated the country's drudgery-based food systems.

Young people, meanwhile, shun farming due to low land ownership, the high labour burden (from low levels of mechanization), slow economic return, low incomes and lack of finance (Banda, 2021). They are less likely than older community members to own large livestock – a major way to invest and grow revenue. Due to few income and employment opportunities, outmigration to urban areas and across borders is high among the country young people in rural areas. The country's comparatively good education system continues to produce graduates that are unemployable in Zimbabwe, but employable in other countries, leading to a growing trend of brain drain and outmigration (Michaels *et al.*, 2017). Despite attaining higher levels of formal education, young people lack the necessary skills for both the formal and informal sectors (Maulani and Agwanda, 2020), thereby also contributing to high rates of youth unemployment in Zimbabwe.

The Fast-Track Land Reform Programme further exacerbated unemployment by causing the closure of most large-scale commercial farms, putting large numbers of female and young farm workers out of work. The knock-on effects to the economy also led to company closures and loss of employment. **The cost of borrowing and high risk related to hyperinflation and exchange rate fluctuations** have not been conducive for private sector investment into job-creating production activities. For example, interest rates on loans averaged 32 percent between 2011 and 2014 (World Bank, 2021b), while inflation exceeded 500 percent in 2020 (World Bank, 2021c).

Socioeconomic impacts

Lack of investment in agriculture and the food manufacturing industry has contributed to low incomes for rural women and young people. Outmigration, violence and general malaise characterize the status of the country's young people, contributing to increased crime and instability in the southern African region. Due to lack of income-generating opportunities, the young people in Zimbabwe are also more likely than the older population to engage in risky employment activities, such as artisanal mining and sex work (British Council, 2020), rather than working on the family farm where incomes are low and labour burdens are high. With less

investment in technology and mechanization, the status of work in the food systems declines further and is less attractive to young people, increasing the labour burden on women, who have less capacity to migrate from rural areas for more lucrative work opportunities. This increased labour burden reduces agricultural productivity, leading to food insecurity, and nutrition and health problems because women struggle to produce, process, market and prepare nutritious food for their households. Low incomes lead to increased rural poverty and decreased ability to buy nutritious food, access health care and other vital services, contributing to health and nutrition issues.

As farmers increasingly venture into unregulated, unsupported value chains, incomes may increase but so will the rampant natural resource degradation, discussed under KSQ 1, which ultimately undermines the sustainability of food production. Food safety issues have also become evident, resulting from poor post-harvest practices to produce losses and food contamination. Livestock intensification with a focus on hybrids and high inputs makes production more costly for farmers, more water consumptive and more polluting, increasing greenhouse gas emissions and introducing health risks to livestock and consumers. Land is increasingly used for livestock feed production. Food safety threats to consumers have increased due to lack of regulation over local and informal markets, as well as imported food.

Proposed systemic levers:

Leverage point 1: Policy support to stimulate private and public sector investment in rural areas and overall value chain development

Increased investment towards enhancing the services and infrastructure for food production, storage, transportation, marketing and value addition, especially in rural areas, will help reduce food loss and improve food safety. This, in turn, will increase returns from agriculture for smallholder farmers and generate productive employment opportunities for women and young people. Rural development interventions and supporting financial mechanisms, as outlined in the National Development Strategy 1 (2021−2025) and the National Agriculture Policy Framework (2018−2030), need to be implemented on the ground.

Leverage point 2: Facilitate and strengthen smallholder, youth and women's organizations

Organizing smallholder farmers and strengthening youth and women's organizations will provide them with better representation in the value chain. These groups can lobby the government and other institutions to provide them with adequate support services within the food systems, and ease the risks and credit constraints at various stages of the value chain.

The National Gender Policy (2013−2016) includes a strategy to "support efforts to transform informal livelihood income generation into viable economic activities and broaden agroentrepreneurship in disadvantaged rural, resettlement and urban areas". During the revision of this policy, specific strategies to support rural women and farmers should be included.

The National Youth Policy (2013), includes an objective, among others, to "promote the rights and freedoms of all youths paying special attention to empowering previously marginalized sections, such as young women and girls, youth with disabilities, youth living with HIV, out of school youth and youth living in rural areas". The policy contains a strategy to "ensure that the government approves a 25 percent quota of all economic indigenization and empowerment facilities in agriculture, mining, commercial, tourism, and industrial economic activity is reserved and available for youth, paying particular attention to the empowerment of young women and young people with disabilities". During the revision of this policy, more mechanisms to encourage young people to participate in the country's food systems should be spelled out.

Transition to sustainable food systems

There is a growing realization that the food systems of Zimbabwe are not functioning sustainably and are contributing to numerous problems, including malnutrition, environmental degradation and increased vulnerability of the population to shocks, including economic instability, climate change impacts and COVID-19.

The findings of the Food Systems Assessment (FSA) are aligned with the country's national policies. The right to food and water is well covered in the Constitution and food systems support is mainstreamed into national policies and strategies, including the National Development Strategy 1 (2021−2025), the National Agriculture Policy Framework (2018−2030), the Agriculture and Food Systems Transformation Strategy, the Food and Nutrition Policy, the Multisectoral National Food and Nutrition Strategy, the Zimbabwe Livelihoods Strategy, the Horticulture Recovery Plan and the Livestock Recovery Plan. The **Food and Nutrition Council**, under the **Office of the President**, is responsible for the coordination, analysis, and promotion of a cohesive national response by multiple sectors and stakeholders to food and nutrition insecurity in Zimbabwe, with **Food and Nutrition Security Committees** at provincial, district and ward levels, with representatives from the agriculture and health ministries.

However, as mentioned earlier, policies to encourage economic growth often override those of improved nutrition and environmental protection, which are fundamental to achieving sustainable food systems.

In 2021, as a contribution to the United Nations Global Food System Summit, Zimbabwe conducted a study on the national food systems and developed a report outlining the challenges and presenting strategic pathways for food systems transformation (Zimbabwe, 2021). These pathways include ensuring access to safe and nutritious food for all, shifting to sustainable consumption patterns, boosting nature positive production, advancing equitable livelihoods and value distribution, and building resilience to vulnerabilities, shocks and stresses. Although this shows the government's commitment to improve the national food systems, a financial support framework and clear strategies to follow these pathways are lacking.

Institutional architecture fit for purpose?

For effective leverage to improve the food systems, it is crucial to adopt a multisectoral approach. The silo approach in the structure of the Government of Zimbabwe and in its policy implementation is a main factor impeding food systems sustainability. Collaboration across sectors in government ministries and departments is crucial, along with increased cooperation and information-sharing among the government, civil society, farmer unions, advocacy groups, academic institutions, the private sector, and community institutions.

There is a need for further deepening of the transformation process of the food systems in Zimbabwe. This FSA study reveals serious data gaps throughout the food systems. Consequently, more research needs to be conducted to understand the current condition of the key factors impeding the transformation of the country's food systems. This includes a better understanding of the condition of the country's natural resources, especially soil, water, and biodiversity; the causes of stunting across the country; and understanding barriers and motivations to dietary diversification. More research is also required to understand the financial and other mechanisms and incentives needed to boost production diversification and determine the contribution of women and young people to different economic sectors and ways to increase their effective participation in the food systems of Zimbabwe.

References

ACP-EU Joint Parliamentary Assembly. 2014. *The social and economic consequences of malnutrition in ACP countries*. Background document. https://www.europarl.europa.eu/meetdocs/2009_2014/documents/acp/dv/background_/background_en.pdf

Africa Development Bank (AfDB). 2018. Zimbabwe - Agricultural Value Chain Development Programme (AVCP) – ESMP Summary. 9 July 2000. Cited 15 March 2022. www.afdb.org/en/documents/document/zimbabwe-agricultural-value-chain-development-programme-avcp-esmp-summary-102921

Åkesson, U., Ölund Wingqvist, G., & César, G. 2016. Environmental and climate change policy brief Zimbabwe. SIDA Helpdesk for Environment and Climate Change, 6–24.

Banda, I. 2021. Policy Inconsistencies and Poor Research Slow Young Farmers in Africa. *Global Issues*, March 2021. Cited 21 March 2022. www.globalissues.org/news/2021/03/16/27387

Bennett, B., Chakoma, C., Figué, M, Vigne, M., & Katic, P. 2019. Beef value chain analysis in Zimbabwe. Report for the European Union, DG-DEVCO. Value Chain Analysis for Development Project (VCA4D CTR 2016/375-804). Cited 28 April 2022. https://agritrop.cirad.fr/590657

Brazier, A. 2017. *Climate change in Zimbabwe: a guide for planners and decision-makers.* 2nd Edition. Harare, Konrad Adenauer Stiftung.

British Council. 2020. *Next generation Zimbabwe.* Next Generation series. January. Cited 10 May 2022. www.britishcouncil.org/research-policy-insight/research-series/next-generation

Chikwati, E. 2017. GMB in storage dilemma. Only 3 out of 12 silo depots functional. *Chronicle*, 8 February, Cited 15 March 2022. www.cfuzim.com/2017/02/08/gmb-in-storage-dilemma-only-3-out-of-12-silo-depots-functional

Chitiyo, K., Dengu, C., Mbae, D., & Vandome, C. 2019. *Forging inclusive economic growth in Zimbabwe*. Briefing note. Insights from the Zimbabwe Futures 2030 Roundtable Series. London, Chatham House. Cited 12 March 2022. www.chathamhouse.org/2019/10/forging-inclusive-economic-growth-zimbabwe/supporting-growth-along-value-chain-zimbabwes

Constitute. 2013. Zimbabwe's Constitution of 2013. www.constituteproject.org/constitution/Zimbabwe_2013.pdf

David-Benz, H., Sirdey, N., Deshons, A., Orbell C. & Herlant, P. 2022. *Catalysing the sustainable and inclusive transformation of food systems: conceptual framework and method for national and territorial assessment.* Rome, Brussels and Montpellier, France, FAO, European Union and CIRAD.

Dhliwayo D., Nyapwere N., Mhaka L., Chkwari, E., Manyanga A. and Nyamangara, J. n.d. *Status of soil resources in Zimbabwe: the needs and priorities for sustainable management.* Harare. Cited 10 April 2022. https://www.slideshare.net/FAOoftheUN/status-of-soil-resources-in-zimbabwe-the-needs-and-priorities-for-sustainable-management-dhliwayo-nyapwere-mhaka-chkwari-manyanga-and-nyamangara-chemistry-and-soil-research-institute

Elwell, H. n.d. Development and adoption of conservation tillage practices in Zimbabwe*. Soils Bulletin*, No. 69. Harare, FAO. www.fao.org/3/t1696e/t1696e11.htm

FAO. 2016. *AQUASTAT Country Profile – Zimbabwe*. Rome. Cited 25 March 2022. www.fao.org/publications/card/en/c/I9842EN

FAO. 2017. *National Gender Profile of Agriculture and Rural Livelihoods – Zimbabwe.* Country Gender Assessment Series. Harare. Cited 12 March 2022. www.fao.org/family-farming/detail/en/c/892531

FAO. 2021. FAOSTAT database. In: *FAO*, Rome. Cited 13 March 2022. www.fao.org/faostat/en/#data

Gandiwa, E., Heitkönig, I., Lokhorst, A., Prins, H. T., and Leeuwis, C. 2013. CAMPFIRE and human-wildlife conflicts in local communities bordering northern Gonarezhou National Park, Zimbabwe. *Ecology and Society* 18(4):7. http://dx.doi.org/10.5751/ES-05817-180407

Gelfand, M. 1971. *Diet and Tradition in an African Culture*. Edinburgh, UK, Livingston.

Global Nutrition Report. 2021. 2021 Global Nutrition Report. Cited 27 February 2022. https://globalnutritionreport.org

Gomez, M. 1988. A Resource Inventory of Indigenous and Traditional Foods in Zimbabwe. *Zambezia*, vol 15(1): pp. 1–66.

Gomez, M., Barrett, C.B., Raney, T., Pinstrup-Andersen, P., Meerman, J., Croppenstedt, A., Lowder, S., *et al.* 2013. *Post-green revolution food systems and the triple burden of malnutrition*. Agricultural Development Economics Division, FAO. ESA Working Paper No. 13–02. Rome. Cited 12 March 2022. https://www.fao.org/fileadmin/templates/esa/Papers_and_documents/WP_13-02_Gomez_et_al.pdf

International Labour Organization (ILO). 2016. *Employment creation potential analysis by sector.* Paper by the Labour and Economic Development Research Institute of Zimbabwe (LENDRIZ) for the International Labour Organization (ILO). Cited 18 March 2022. www.ilo.org/global/docs/WCMS_619735/lang--en/index.htm

International Trade Administration (ITA). 2021. *Mining and minerals*. Cited 12 April 2022. www.trade.gov/country-commercial-guides/zimbabwe-mining-and-minerals

Kapuya, T., Saruchera, D., Jongwe, A., Mucheri, T., Mujeyi, K., Traub, L. & Meyer, F. 2010. *The grain industry value chain in Zimbabwe.* Technical paper. Rome, FAO. Cited 17 April 2022.

Lancet. 2013. Executive summary of The Lancet Maternal and Child Nutrition Series. 6 June 2013. Cited 26 April 2022. www.thelancet.com/series/maternal-and-child-nutrition

Liesdek, B., & Ansenk, O. 2020. *The Zimbabwean fruit and vegetable sector standards for export and agro-processing*. Netherlands Enterprise Agency. Cited 15 March 2022. www.rvo.nl/sites/default/files/2020/07/Zimbabwean-fruit-and-Vegetable-Sector.pdf

Madzima, R. 2012. Zimbabwe Nutrition Contextual Analysis Report, Concern Worldwide, September 2012. Internal report.

Mafirakureva, G. 2021. Displaced Chipinge farmers flee to Mozambique. *The Standard*, July 18. www.thestandard.co.zw/2021/07/18/displaced-chipinge-families-flee-to-moza

Mangemba, N., & San Sebastian, M. 2020. Societal risk factors for overweight and obesity in women in Zimbabwe: a cross-sectional study. *BMC Public Health*, 20, 103.

Manyonganise, M, & Museka, G. 2020. The Sedated Sacred: A socioreligious analysis of Zimbabwe's land reform programme and environmental degradation. In: P. Matholeni, G. Boateng & M. Manyonganise eds. *Mother Earth, Mother Africa and African Indigenous Religions*. Sun Press, Stellenbosch, South Africa.

Masunda, M. 2019. Sugar industry's great potential. *The Standard*, 3 November 2019. Cited 18 March 2022. https://thestandard.newsday.co.zw/2019/11/03/sugar-industrys-great-potential

Mharapara, I. & Mugabe, N. 1984. Rice research in Zimbabwe. In *Rice Improvement in Eastern, Central and Southern Africa: Proceedings of the International Rice Workshop held at Lusaka, 9-19 April 1984*. Manila, International Rice Research Institute. Cited April 5, 2022.

Michaels, D., Couper, I., Mogodi, M., Hakim, J., Talib, Z., Mipando, H., Simuyemba, M. *et al.* 2017. A peer evaluation of the community-based education programme for medical students at the University of Zimbabwe College of Health Sciences: A southern African Medical Education Partnership Initiative (MEPI) collaboration. *African Journal of Health Professions Education*, 9(3):138–143.

Mlevu, S. 2021. *Threat of displacement remains for Chilonga Villagers.* Centre for Natural Resource Governance, 20 March 2021. Cited 10 April 2022. https://slymedianews.com/threat-of-displacement-remains-for-chilonga-villagers

Motsi, T., Tichiwangana, S., Matope, G. & Mukarati, N. 2013. A serological survey of brucellosis in wild ungulate species from five game parks in Zimbabwe. *Onderstepoort Journal of Veterinary Research,* 80(1).

Muchineripi, C. 2008. *Feeding Five thousand: the case for indigenous crops, in Zimbabwe.* African Research Institute. Policy Voices Series. London, African Research Institute.

Mugabe, F., Thomas, T., Hachigonta, S., & Sibanda, L. 2011. *Southern African Agriculture and climate change: a comprehensive analysis – Zimbabwe*. International Food Policy Research Institute. Cited 18 April 2022. https://media.africaportal.org/documents/aacccs_zimbabwe_note.pdf

Mukembo, S., and Edwards M. 2015. Agricultural extension in sub-Saharan Africa during and after its colonial era: the case of Zimbabwe, Uganda, and Kenya. *Journal of International Agricultural and Extension Education*, 22(3).

Mutenga, T. 2014. Zimbabwe: farmers ripped off as GMB struggles to raise funding. *Financial Gazette*, 15 May 2014. Harare. Cited 15 March 2022. https://allafrica.com/stories/201405151210.html

Mutonodzo-Davies, C. 2010. *The political economy of cereal seed systems in Zimbabwe: rebuilding the seed system in a post-crisis economy.* Future Agricultures Working Paper 015. Cited 10 May 2022. https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/2333

Muzapu, R., Havadi, T., Mandizvidza, K., & Xiongyi, N. 2016. Managing State-owned enterprises (SOEs) and parastatals in Zimbabwe: human resource management challenges – drawing lessons from the Chinese experience. *Management, Scientific and Academic Publishing*, 6(4): 89–102.

Naome, R., Rajah, D., & Jerie, S. 2012. Challenges in Implementing an Integrated Environmental Management Approach in Zimbabwe. *Journal of Emerging Trends in Economics and Management Sciences*, 3(4): 408–414.

Ncube-Phiri, S., Ncube, A., Mucherera, B., and Ncube, M. 2015. Artisanal small-scale mining: potential ecological disaster in Mzingwane district, Zimbabwe. *Jàmbá: Journal of Disaster Risk Studies*, 7(1): 158. www.ncbi.nlm.nih.gov/pmc/articles/PMC6014108/pdf/JAMBA-7-158.pdf

Nciizah, T., Nciizah, E., Mubekaphi,C., and Nciizah, A. 2021. Role of small grains in adapting to climate change: Zvishavane district, Zimbabwe. In: D. Ayal, L. Adeleke, & I. da Silva, eds. *African Handbook of Climate Change Adaptation*. Berlin, Springer Nature.

Nuss, E. and Tanumihardjo, S. 2010. Maize a paramount staple crop in the context of global nutrition. *Comprehensive Reviews in Food Science and Food Safety*, 9(4): 417–436.

Nyarata, K., Chiweshe, K. and Mahiya, I. 2019. Rural women as entrepreneurs in the context of patriarchy: experiences of female entrepreneurs in Mudzi district, Zimbabwe. *Africanus: Journal of Development Studies*, 49 (2).

Probst, C., Bandyopadhyay, R. and Cotty, P. 2014. Diversity of aflatoxin-producing fungi and their impact on food safety in sub-Saharan Africa. *International Journal of Food Microbiology*, 174: 113–122.

SNV. 2014. Rural agriculture revitalisation program – horticulture sub-sector study report. Harare, SNV. Cited 20 March 2022. https://snv.org/cms/sites/default/files/explore/download/rarp_2016-horticulture-report.pdf

Scoones, I., Mavedzenge and Murimbarimba, F. 2017. Sugar, people and politics in Zimbabwe's lowveld. *Journal of Southern African Studies*, 2017, 43(3): 567–584.

Tavirimirwa, B., Mwembe, R., Ngulube, B., Banana, N., Nyamushamba, G., Ncube, S., and Nkomboni, D. 2013. Communal cattle production in Zimbabwe: a review. *Livestock Research for Rural Development*, 25(12).

Tawodzera, G., Chigumira, E., Mbengo, I., Kusangaya, S., Manjengwa, O., and Chidembo, D. 2019. *Characteristics of the urban food system in Epworth, Zimbabwe.* Consuming Urban Poverty Working Paper Series, No. 8. Cited 15 May 2022. https://consumingurbanpoverty.wordpress.com/working-papers

United Nations. 2010. *Country Analysis Report for Zimbabwe 2010*. Harare. Cited 7 April 2022. https://paperzz.com/doc/9401720/country-analysis-report-for-zimbabwe-2010

United Nations. 2021. *Common country analysis, Zimbabwe 2021*. Harare. Cited 7 April 2022. https://zimbabwe.un.org/sites/default/files/2021-06/UNCT_ZW_CommonCountryAnalysis_2021Final_0.pdf

van Engelen, V., Mantel, S., Dijkshoorn, J., and Huting, J. 2004. *The Impact of Desertification on Food Security in Southern Africa: A Case Study in Zimbabwe.* Report 2004/02. Wageningen, ISRIC – World Soil Information / UNEP – United Nations Environment Programme. Cited 18 March 2022. https://www.isric.org/sites/default/files/isric_report_2004_02.pdf

van Klaveren, M., Tijdens, K., Hughie-Williams, M., and Martin, N. 2010. *An overview of women's work and employment in Zimbabwe.* Decisions for Life MDG3 Project. Country Report No. 7. Cited 21 April 2022. www.ituc-csi.org/IMG/pdf/Country_Report_No2-Angola_EN.pdf

Whitlow, R. 1988. *Land degradation in Zimbabwe: a geographical study.* Harare, University of Zimbabwe (UZ) / Department of Natural Resources. Cited 13 March 2022. https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/9091

World Bank. 2006. *Repositioning Nutrition as Central to Development: A Strategy for Large-Scale Action.* Washington, DC.

World Bank. 2019. *Zimbabwe Public Expenditure Review with a Focus on Agriculture.* Washington, DC.

World Bank. 2020. National Data – Zimbabwe. In: *The World Bank*. Washington DC. Cited 10 April 2022. https://data.worldbank.org/country/Zimbabwe

World Bank. 2021a. Agriculture, forestry, and fishing, value added (% of GDP) – Zimbabwe. In: *The World Bank*. Washington DC. Cited 26 April 2022. https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=ZW

World Bank. 2021b. Lending interest rate (%) – Zimbabwe. In: *The World Bank*. Washington DC. Cited 15 March 2022. https://data.worldbank.org/indicator/FR.INR.LEND?locations=ZW

World Bank. 2021c. Inflation, GDP deflator (annual %) – Zimbabwe. In: *The World Bank*. Washington DC. Cited 23 March 2022. https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG?locations=ZW

World Bank. 2021d. Literacy rate, adult total (% of people ages 15 and above) – Zimbabwe. In: *The World Bank*. Washington DC. Cited 23 March 2022. https://data.worldbank.org/indicator/SE.ADT.LITR.ZS?locations=ZW

World Bank. 2022. Population growth (annual %) – Zimbabwe. In: *The World Bank*. Washington DC. Cited 18 March 2022. https://data.worldbank.org/indicator/SP.POP.GROW?locations=ZW

World Food Programme (WFP). 2021. Food security and markets monitoring report. Zimbabwe, May 2021. Cited 12 April 2022. https://reliefweb.int/report/zimbabwe/zimbabwe-food-security-and-markets-monitoring-report-may-2021

Zimbabwe. 2010. National Nutrition Survey. Harare. Cited 15 April 2022. www.humanitarianresponse.info/en/operations/zimbabwe/assessment/zimbabwe-national-nutrition-survey-2010

Zimbabwe. 2015. Demographic Health Survey. Harare.

Zimbabwe. 2018a. National Nutrition Survey. Harare. Cited 12 May 2022. www.unicef.org/zimbabwe/media/1056/file/Zimbabwe%202018%20National%20Nutrition%20Survey%20Report

Zimbabwe. 2018b. Zimbabwe Vulnerability Committee Rural Livelihoods Assessment. Rural Livelihoods Assessment (RLA). Harare. Cited 21 February 2022. https://zdhr.uz.ac.zw/xmlui/handle/123456789/1413

Zimbabwe. 2019. Zimbabwe Vulnerability Committee. Rural Livelihood Assessment. Cited 21 February 21 2022. https://fnc.org.zw

Zimbabwe. 2020. Zimbabwe Vulnerability Assessment Committee (ZimVAC) − 2020. Urban Livelihoods Assessment. Harare. Cited 27 February 2022. https://fscluster.org/sites/default/files/documents/2020_urban_livelihoods_assessment_report.pdf

Zimbabwe. 2021. Zimbabwe Vulnerability Committee. Rural Livelihood Assessment. Cited 10 March 2022. https://fnc.org.zw

Zimbabwe, Ministry of Environment, Water and Climate. 2014. National Biodiversity Strategy and Action Plan 2014. Cited 21 April 2022. https://www.cbd.int/doc/world/zw/zw-nbsap-v2-en.pdf

Zimbabwe, Ministry of Environment, Water and Climate. n.d. Fifth National Biodiversity Communication. Harare. Cited 21 April 2022. https://www.cbd.int/doc/world/zw/zw-nr-05-en.pdf

Zimbabwe, Ministry Environment, Water and Climate, Environmental Management Agency. 2017. Republic of Zimbabwe National Land Degradation Neutrality Targets. Harare. Cited 10 May 2022. https://knowledge.unccd.int/sites/default/files/ldn_targets/Zimbabwe%20LDN%20Country%20Commitments.pdf

Zimbabwe, Ministry of Health and Child Care. 2015. Zimbabwe National Micronutrient Survey Report. Harare. Cited 18 April 2022

Zimbabwe, Ministry of Lands, Agriculture and Rural Resettlement. 2018. National Agriculture Policy Framework (NAPF) (2018−2030)/, (June, 2018 draft). Cited 6 April 2022. http://www.livestockzimbabwe.com/Updates/Draft-%20Zimbabwe%20Agriculture%20National%20Policy%20Framework.pdf

Zimbabwe, Office of the President and Cabinet. 2020. Food and Nutrition Council. Cited 18 February 2022. http://fnc.org.zw

Zimbabwe National Statistics Agency and ICF International. 2016. Zimbabwe Demographic and Health Survey 2015: Final Report. Rockville, Maryland, USA. Cited 8 May 2022.

Zimbabwe National Statistics Agency and United Nations Children's Fund (UNICEF). 2019. Zimbabwe Multiple Indicator Cluster Survey 2019. Survey Findings Report. Harare. Cited 22 March 2022.

Zimstat. 2017. Zimbabwe Poverty Report. Harare. Cited 18 April 2022.

Zvitambo. n.d. SHINE study. Cited 12 April 2022. www.zvitambo.co.zw/index.php/research/current-projects/shine-study

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