



years of advocating for food sovereignty in Africa



ZAMBIA'S COLLAPSED FOOD SYSTEM

July 2024



The African Centre for Biodiversity (ACB) is committed to dismantling inequalities and resisting corporate industrial expansion in Africa's food and agriculture systems.

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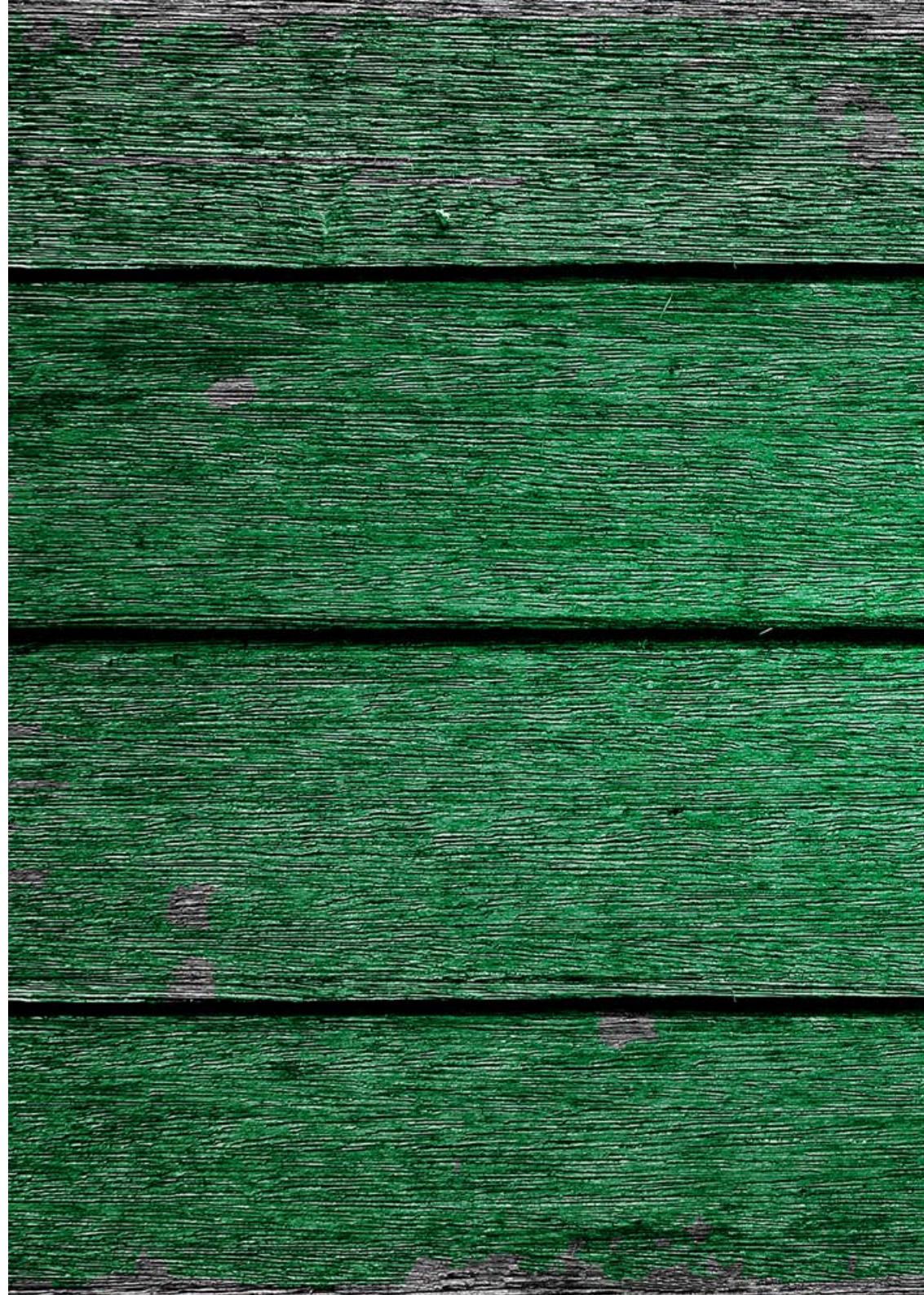
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ACRONYMS

ARC	African Risk Capacity (Group)
CPI	Climate Policy Initiative
FISP	Farm Input Subsidy Programme
FRA	Food Reserve Agency
IAPRI	Indaba Agricultural Policy Research Institute
IMF	International Monetary Fund
MoA	Ministry of Agriculture
MoFNP	Ministry of Finance and National Planning
P4C	Partners for Change
PMRC	Policy Monitoring and Research Centre
RoZ	Republic of Zambia
UNICEF	United Nations Children’s Fund
UCFZ	United Capital Fertilizer Zambia
USAID	United States Agency for International Development
ZAAB	Zambian Alliance for Agroecology and Biodiversity
ZANIS	Zambia News and Information Services
ZIPAR	Zambia Institute for Policy Analysis and Research
ZNFU	Zambia National Farmers Union

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ZAMBIA'S COLLAPSED FOOD SYSTEM: NEVER ENDING DEBT, CLIMATE SHOCKS, BIODIVERSITY LOSS AND FISPS

The indispensability of transitioning
to agroecology



ABOUT THIS PAPER

This paper explores the role of the farm input subsidy programme (FISP) in driving ecological degradation and thus weakening resilience to external shocks, such as those being experienced now. An argument is made for the reorientation of the FISP towards agroecological farming practices and principles to combat food and nutrition challenges as well as biodiversity loss in the country. This paper is a situational report, building on the substantive work undertaken by the African Centre for Biodiversity (ACB) on the FISP programme over the past decade.¹ This includes papers that focused on the failure of the FISPs in Southern African countries, including in Zambia. The papers highlight the need to transition to agroecology, with evidence of the value of diversified agroecology practices in four Zambian provinces.

1. See <https://acbio.org.za/research-and-resources/tags-farm-input-subsidy-programmes/>

INTRODUCTION

Is Zambia's food system collapsing? The country is facing an unprecedented set of interlocked challenges, driven by industrial-style agricultural policies, inappropriate public spending, and climate change-exacerbated extreme weather events. In February 2024, the Zambian President declared a state of national disaster and emergency, calling for support from bilateral partners and international funding organisations, on the basis that the extended drought in the country threatened national food security (ACAPS 2024).

Due to the drought, by March 2024 (ACAPS 2024):

- One million hectares of maize had been lost (almost 50% of maize under cultivation).
- The price of maize had risen by 30%, nearly double the five-year average, driving an increase in food prices and reducing availability and access to affordable food.
- About six million people were at risk of acute food shortages and malnutrition, with close to 10 million directly affected.
- There were increasing power outages, due to a lack of water to sustain hydroelectric power generation, which threatened major economic activities, primarily mining – the largest contributor to Zambia's export revenues (World Bank 2019).

Many blame the low reserve levels of maize in the country on the government's decision to export maize in 2022/2023. This decision had been aimed at generating much needed foreign exchange to service debts and procure inputs – among other needs (Chishya 2024).

Adding to the effects of drought, it has also become more difficult for farmers to produce food as farming soils are increasingly eroded, land and water bodies polluted, and agrobiodiversity has witnessed a steep decline.



While some regions experience drought, regions that recorded good levels of rainfall – such as the northern region around Lake Tanganyika – and that were expected to have good harvests, report incidences of flooding

These crises are compounded by the worst cholera outbreak in the region in 20 years (ACAPS 2024). More than 21,000 cases had been recorded by March 2024, with 700 deaths; and, as schools closed due to the outbreak, learning was disrupted for nearly 4.3 million children (ACAPS 2024). Incidences of malaria are also increasing as waters dry up, creating breeding grounds for mosquitoes (ReliefWeb 2024). Between 2022 and 2023 there was a 37% increase in malaria (11.1 million cases), and a 19% increase in malaria deaths (Kunda 2024a). About 30,000 people continue to be infected daily, with four people dying each day (Kunda 2024a). This is placing further strain on the already overburdened public health system.

Further negative health outcomes can be expected, as people have limited or no access to water for sanitation and cooking, and compromised immune systems heighten their risk of illness, particularly children (ACAPS 2024). Reduced access to safe water increases the risks of waterborne diseases (ReliefWeb 2024). Gains made in previous years, in extending access to safe water, will be compromised, with about 3.5 million people already targeted for support to access safe water (ReliefWeb 2024).

As water sources dry up, women and children, commonly responsible for fetching water, have to walk longer distances, often alone. This puts them at higher risk of gender-based violence and sexual abuse (ReliefWeb 2024). Furthermore, some of the districts affected by the droughts are known as hotspots for child marriages – at the national level, 29% of girls are already married off – and economic stress brought about by the drought will likely exacerbate this (ReliefWeb 2024).

While some regions experience drought, regions that recorded good levels of rainfall – such as the northern region around Lake Tanganyika – and that were expected to have good harvests, report incidences of flooding (Kunda 2024b). Zambia's people are already among the most malnourished in the world – about 48% of the population is unable to meet their minimum calorie needs each day (ACAPS 2024). CARE Zambia's Country Director noted in an interview with the BBC that 79% of the poor – those reaching borderline low consumption levels – are starting to employ severe food consumption strategies such as eating fewer meals and less at each meal. In an already gender-discriminating environment, having fewer resources often means that boys are

prioritised, in attending school for example, with girls being deployed to undertake tasks such as fetching water, or even being put into child marriages (CARE Zambia 2024).

These crises are playing out in a grim economic context. More than 50% of Zambians live on less than US\$1.9 a day (ACAPS 2024) and Zambia is highly indebted. To finance debt and fund development in the country, the Zambian government turned to commercial markets for funding, issuing three Eurobonds in 2012, 2014, and 2015 for US\$750 million, US\$1 billion, and US\$1.25 billion respectively (ZIPAR 2023). By 2019, this commercial (and more expensive) debt accounted for 50.3% of total external debt. It was mostly used to fund large infrastructure projects (mostly transportation-related), but challenges in implementation meant that expected benefits were not realised. In addition, transparency around the use of these funds reduced over time, with millions unaccounted for (ZIPAR 2023).

To finance deficits, Zambia started issued domestic government securities in 2015, which resulted in domestic debt reaching US\$7.1 billion by 2020 (ZIPAR 2023). In 2020, close to 52% of domestic revenue collected by the government went to servicing debt and a further 39% went towards public servant wages and salaries, leaving 9% of domestic government revenue for key social services (education, healthcare, infrastructure development, etc.) (MoFNP 2024a). Zambia is reliant on both domestic (beyond revenue collection) and external financing, as well as grants, to meet its budget commitments. In 2022, 46% of the budget was financed by foreign grants (1%), domestic borrowing (14%), and foreign financing (27%) (EY Zambia 2023). This percentage dropped to 33% in the 2023 budget, which had shrunk by about 4% (EY Zambia 2024). Funds coming from these sources contributed 9.8% to GDP, and in 2023 this fell to 6.8%, likely due to the Ukraine war (MoFNP 2024b).

In October 2020, the government formally defaulted on a US\$42.5 million payment on its 2024 Eurobond – this was the first sovereign default in Covid-19 times (ZIPAR 2023). The government requested a debt suspension on its Eurobond payments for six months in 2020, which was rejected on the basis that the Zambian government was not being transparent about its other debtors, including Chinese creditors (ZIPAR 2023). By March 2024, Zambia has restructured international

There is an urgent need to focus on strengthening smallholder farming systems to boost ecological health, which, in turn, supports ongoing food production

Eurobond loans valued at US\$3 billion. Zambia's debt is being reworked under the G20 Common Framework platform, which brings together big creditors to make debt deals – Zambia is viewed as a test case in this regard. This will leave Zambia with about US\$3 billion in debt (Do Rosario & Strohecker 2024).

Zambia is thus facing ecological, social, and economic crises. This creates extreme risk for the country, but also an opportunity to reorient its policy frameworks to support the building of resilience to external shocks at the community level, particularly smallholder farming. There is an urgent need to focus on strengthening smallholder farming systems to boost ecological health, which, in turn, supports ongoing food production. The current support system – the Farmer Input Support Programme (FISP) – is partly to blame for the crises because of its orientation towards creating dependencies and an industrial farming system that does not generate ecological or human health benefits.

Zambian government response

Zambia has called on development partners and international institutional funders for donations and loans to deal with the impact of the drought – to the value of US\$900 million. To date, it has up to US\$5.5 million from the United Nations Central Emergency Response Fund, US\$4.3 million from the African Risk Capacity (ARC) Group and the African Development Bank. The International Monetary Fund (IMF) is considering increasing funds for Zambia and the World Bank has committed to

mobilising resources to extend support to farmers and for social protection measures for households. UNICEF has put out a call for US\$27 million for its work in the country.

In January 2024, Zambia's Food Reserve Agency (FRA) started to sell maize grain to communities, starting with 50 kg bags of maize grain at reduced prices of K333 (US\$12.72 as of 12 June 2024 exchange rates) to communities in the Lumezi District (ZANIS 2024). The aim is to address food insecurity at the household level. Households have been cautioned not to on-sell the grain to gain money (ZANIS 2024). In early May 2024, the Zambia National Farmers Union (ZNFU) noted that the FRA had entered the crop market early in an attempt to shore up the national reserve and to act as a buyer for small-scale farmer maize (ZNFU 2024). The FRA announced that it would buy white non-GMO maize at K330 per 50 kg (US\$264 a ton) and invited farmers to deliver it to their nearest FRA depot. Private buyers are, however, paying K350–400 for a 50 kg bag, and in neighbouring countries, the price offered was US\$300 to US\$570 per ton (ZNFU 2024). ZNFU noted its concern that FRA was unlikely to compete favourably in the market and that farmers would look for better prices. This would support 'maize flight' to other countries. ZNFU also noted it had heard that the Ministry of Agriculture had threatened to blacklist all FISP beneficiaries not supplying maize to the FRA, despite the drought having wiped out the complete harvests of many farmers. ZNFU further noted concerns that many farmers will not be able to even pull together their contribution to the 2024/25 FISP and that non-FISP farmers will take years to recuperate (ZNFU 2024).

Even the army has been seconded to intensify its maize production. The Zambia National Service has instructed all of its units to actively participate in food production at its bases and on at least one hectare in their personal capacities (ZambianStreets 2024). The National Service has signed a memorandum of association with Nitrogen Chemicals of Zambia (a state-owned company) to buy more than 20 000 tons of basal fertiliser for this purpose, and it is setting up an arrangement with them to provide salary-backed loans to soldiers to purchase fertiliser for their own production, with guaranteed markets for the maize grown (ZambianStreets 2024). Zambia National Service Commander Lt General Maliti Solochi notes that the army will not only focus on cultivating winter maize but also on mass banana production, "looking to make Zambia the biggest exporter in the region" (Phiri, E 2024:1).

In 2023, Zambia, along with Malawi, Mozambique, and Zimbabwe, elected to participate in the African Risk Capacity (ARC), the African Union-led sovereign risk pool and early response mechanisms for climate shocks (Arnoldi 2024). The ARC provides insurance to countries to compensate for the consequences of climate shocks (CPI 2024). Participating countries must agree to in-country capacity building, and design contingency plans for the use of insurance pay-outs and customisation of the Africa RiskView software, which is used to determine claim viability (it tracks rainfall deviation and when a pre-defined threshold is crossed, it triggers the claim process) (CPI 2024). The in-country technical working groups design plans for fund disbursements (Arnoldi 2024). There are currently 24 African Union member states actively participating in the ARC with memorandums of understanding. Of these, seven countries have received payouts to date, including Malawi in 2017 and Madagascar in 2020 (CPI 2024). Premiums paid to the ARC are more than US\$100 million, with a maximum coverage of US\$30 million for each country per season for droughts that occur one in five or fewer years (CPI 2024). Zambia will receive an insurance payment from this pool, although the amount has not yet been determined.

The ARC is funded by the United Kingdom's Foreign, Commonwealth, and Development Office and the KfW Development Bank, on behalf of the German Federal Government, through interest-free capital to the value of about US\$86 million (CPI 2024). Aligned with the ARC is the ARC Replica programme that allows humanitarian organisations to take insurance on behalf of a country. In the case of the four countries mentioned above, the World Food Programme (WFP), StartNetwork, and the United Nations Refugee Academy are likely to be paid out later this year (Arnoldi 2024). In 2022, WFP received US\$14.2 million against a claim for Malawi (Arnoldi 2024).

Implications for the region

It is not just national food security that is threatened by the collapse of a food system in one country. In Tanzania, electricity supply is being rationed in regions such as Rukwa and Katavi that receive their electricity from power stations in Zambia (Said 2024) and inter-country trade in maize has been disrupted. Zambia placed a ban on any exports of maize grain and flour in February 2024, to retain what is left of the staple crop in the country. This has implications for farmers who would be able to get higher territorial

prices for their maize than what is being offered by the FRA and it has implications for other countries in the region.

In 2023, for example, Zambia turned down a request to supply maize grain to Kenya, despite the Kenyan government hinting that there had been an agreement in which some Zambian farmers were contracted to grow maize exclusively for the Kenyan market (Anyanzwa 2024). Kenya historically has imported from Tanzania, but changes in Tanzanian export regulations have made this more difficult. As a result, Kenya has been sourcing from Zambia, Uganda, and South Africa. The Democratic Republic of the Congo (DRC) will likely be hardest hit by Zambia's prohibition on exports. Since 2019, the DRC has had an agreement with Zambia to supply maize, with the intent to deter informal trade flows between the countries and promote formalised exports (Anyanzwa 2024). Zambia has requested about 500,000 tons of maize from Uganda to restore its reserves (Anyanzwa 2024). In May, the government suspended all taxes on imported maize to ease the costs associated with importing into the country and is encouraging private sector actors to also import under this window, issuing permits in this regard (The Star 2024).



The background of the page is a wooden plank texture. Overlaid on this is a stylized Zambian flag, which consists of a green upper triangle, a red lower triangle, and a black horizontal band in the center. A brown bird is painted in flight, positioned above the title text.

OVERVIEW OF AGRICULTURAL SECTOR

Dependence of population on farming

About 70% of the population is reliant on the agricultural sector for sustenance and livelihoods in Zambia (Kawamya 2021), with an estimated 70% of agricultural labour provided by women. In contrast to the estimated 1,000 large-scale farms in the country, there are about 1.6 million small-scale farmers, mostly producing maize for their own consumption and sale of surplus (Kawamya 2021).

Smallholder farmer production systems

In 2019, 71.5% of smallholders farmed on less than two hectares of land, 23.8% on land between two and five hectares, and 4.7% on between five and 20 hectares (World Bank 2019). The majority of smallholders farm under rainfed production systems (World Bank 2019). Livestock contributes 6% to farming household incomes and consumption, valued at 20% of all farming households' assets (World Bank 2019). The most commonly grown crops in the country are maize, sunflower, soybeans, groundnuts, sorghum, cotton, common beans, cowpea, sugarcane, finger and bulrush millet, rice, sweet potato, cassava, tobacco, barley, and wheat (Shitumbanuma et al. 2021). Commercial farmers mostly focus on wheat, soybean and cash crops like maize, rice and tobacco. Maize is the main staple and cash crop in the country, with more than 65% of cropped land planted to maize, and maize accounts for 57% of calorie consumption in the country (ZAAB 2020). Production systems key for household and community food security are illustrated in Figure 1.

Despite intentions in recent agricultural strategies to diversify crop production in the country, there has been very little progress away from the focus on maize, a relatively low-value crop in Zambia (Samoachoka 2023).



Figure 1: Production systems key for food security in Zambia

Source: World Bank 2019



UNLOCKING THE CRISES

The crises have come to a head because of the current drought, but its impact would not have been so severe if the entire system was not already under significant strain. This section unpacks elements of the crisis to show the unsustainable nature of the entire system and the role of the FISP in it. A food system comprises stakeholders and contexts across the value chain, from input supply chains through production to consumption and waste, along with external drivers such as environmental factors, climate change, economic conditions, and policy frameworks. Zambia is in a compounding cycle of negative influences and outcomes that it may find difficult to emerge from unless it turns urgently to an agroecological framing for its food and farming systems.

The 2023/24 drought

2024 is the driest agricultural season in more than 40 years (ReliefWeb 2024). In February 2024, Zambia declared a state of national disaster because of the ongoing drought that resulted in below-average rainfall in most areas, with zero rainfall in some of them (ACAPS 2024). The dry spells affected crucial vegetative and flowering stages for staple and economic crops (ReliefWeb 2024). Small-scale farmers cultivate 60% of maize in the country; 90% of these practice rainfed agriculture (ACAPS 2024). The drought is thus affecting food production and livelihoods in 84 of 116 districts in the country (ACAPS 2024). Temperatures are expected to remain above average for the next few months, which will also impact the wheat planting season (May/June) (ACAPS 2024). The devastating effects of the drought are expected to run into 2025. The drought follows on from severe flooding in 2023 in nine of 10 provinces, which destroyed crops and disturbed planting cycles, exacerbating already fragile levels of food and nutrition security (ACAPS 2024).



There is an urgent need to build farming communities' resilience at the landscape level to the impacts of extreme events such as drought

The most affected provinces – Central, Eastern, Southern, and Western – are also the areas that generate close to 60% of annual maize production and are home to more than 76% of Zambia's livestock (ReliefWeb 2024). The health of livestock is threatened as pastures disappear and animal welfare is likely to be compromised, with the threat of disease outbreaks such as nutritional anthrax, which is a danger to both animal and human populations (Phiri, F. 2024).

As most installed electricity supply in Zambia is generated through hydropower, reduced rainfall results in reduced capacity to generate electricity. This not only affects key areas of the economy, such as mining but is also a driver of biomass use for energy generation, which encourages deforestation (USAID n.d.). Thus, shifts in rainfall patterns have multiple knock-on effects that threaten society, the environment, and the economy. The national energy supplier announced in March that it would start eight-hour daily loadshedding to manage electricity consumption in the country (*Lusaka Times* 2024b). This comes at an estimated cost of US\$35 million a month for the utilities company (*Lusaka Times* 2024b), and unestimated losses for thousands of small businesses across the country.

There is an urgent need to build farming communities' resilience at the landscape level to the impacts of extreme events such as drought. This means capacitating them with the knowledge, tools, and support they need to improve the ability of soils to retain water and deploy rainwater harvesting. Other agroecological practices that need support include intercropping and multi-cropping, to produce a diversity of crops to offset the potential failure of one crop or another.

Drivers of the drought: El Niño and climate change

The drought is caused by the compounding effects of El Niño and climate change. El Niño is a climate pattern that describes the warming of surface waters in the eastern tropical Pacific Ocean – it is the 'warm' phase of the larger El Niño-Southern Oscillation – a change in air pressure over the Pacific Ocean. The warming of these waters impacts weather conditions around the world: it affects ocean temperatures, the speed and strength of ocean currents, and local weather. It occurs every two to seven years and not always at the same intensity, so is not predictable. In Southern Africa, the occurrence of El Niño typically triggers erratic rainfall or flooding, drought, and high temperatures. In Zambia, it tends to cause substantial reductions in rainfall and above-average temperatures (ACAPS 2024). This affects food production negatively and contributes to pest and disease outbreaks.

Zambia has limited institutional disaster risk reduction and response capacities, and the country is characterised by high multidimensional poverty rates, poor infrastructure, and limited healthcare access (ACAPS 2024). While Zambia has no control over the El Niño effect, it can play a significant role in building household- and community-level resilience to the impacts of El Niño and climate change.

Climate crisis

Climate change is causing shifts in both the timing and intensity of rainfall, resulting in dry spells, floods, and more pest infestations (ACAPS 2024). Average temperatures have increased by 1.3 degrees Celsius since 1960 (USAID n.d.) and are projected to increase between 2°C and 5°C by 2090 (ZAAB 2020). There has been a decrease in average rainfall of 1.9 mm per decade (USAID n.d.). With close to 70% of the Zambian population dependent on rainfed agriculture (USAID n.d.), any change in rainfall patterns threatens already fragile food and nutritional security. Decreased rainfall also reduces the availability of safe drinking water, which then affects the health sector (Mulenga 2023). In addition, increased temperatures and frequency of droughts will destroy grazing land and devastate livestock production (RoZ 2023). Projections include a rise in compound heat, drought, and flooding events (RoZ 2023). Under current climate change models, Zambia's production outputs are expected to decline by 30% by 2080, if no significant adaptation activities are undertaken (RoZ 2023).



Zambia is ranked as one of the countries with the highest vulnerability and lowest resilience to climate change (United Nations n.d.) because food production is based on the stability of rainfall patterns and there are high levels of ecological degradation (World Bank 2019). Zambia's Nationally Determined Contribution notes that climate variability and change are a significant threat to sustainable development (World Bank 2019). Policymaking – despite numerous attempts to encourage intersectoral strategies and programmes – tends to remain siloed. In addition, policies and programmes related to farming tend to favour industrial-style models.

The Zambian government notes in its 2023 National Adaptation Plan that adaptive capacity among farmers is poor (RoZ 2023). Among other identified climate change vulnerabilities the Plan highlights the loss of the natural resource base – including pasture, land, ecosystems, forests and water sources – and loss of soil nutrients as high risks, along with crop failure and food insecurity, reduced water quality and quantity, and an increase in incidences of climate-sensitive and water-borne diseases, as well as vector-borne ones, like malaria (RoZ 2023).

Agroecological principles and practices focus on enhancing ecosystem functioning, through boosting soil fertility and maintaining and enhancing biodiversity, among other benefits realised through its application.

Misguided policy frameworks and programmes

Zambia's national budget, released at the end of 2023, had a strong focus on revitalising agriculture, livestock, and fisheries sectors in the country, with plans to combat the impacts of climate change, high costs of farming inputs, and poor infrastructure (AfricaPress 2023). The plan was to reduce fertiliser prices and encourage millers to reduce maize meal prices (AfricaPress 2023). Key elements of the budget included the launch of the Comprehensive Agriculture Transformation Support Programme (CATSP), with a focus on extension services; finance; irrigation; value addition; storage; high-tech farm blocks, growth in exports; investment into farm blocks for roads, powerlines and irrigation systems; climate-smart agriculture; and systems to improve livestock health (AfricaPress 2023). There was also the inclusion of an 'agriculture credit window' to provide small-scale farmers and public service workers with affordable financing (AfricaPress 2023).

Meeting the Malabo Declaration commitments

The Comprehensive African Agriculture Development Programme (CAADP) was launched in 2003. In the same year, African countries signed the Maputo Declaration calling for the implementation of the 2001 New Partnership for Africa's Development (NEPAD) and concerted actions to stimulate production and bring about food security across the continent (African Union 2016). The Maputo Declaration included a country commitment to allocating at least 10% of national budgets to agriculture (African Union 2016). As part of this, countries signed CAADP compacts and started to formulate National Agricultural Investment Plans (NAIPs).

In 2014, the Maputo Declaration was replaced by the Malabo Declaration, which reiterated the need for the 10% allocation but also expanded commitments to increasing irrigation and mechanisation and reducing post-harvest losses, among others (African Union 2016). The Malabo Declaration's scorecard pillars

Zambia's national budget, released at the end of 2023, had a strong focus on revitalising agriculture, livestock, and fisheries sectors in the country, with plans to combat the impacts of climate change, high costs of farming inputs, and poor infrastructure

are: re-committing to the CAADP process, enhancing investment finance into agriculture, ending hunger by 2025, halving poverty by 2025, boosting intra-African trade in agricultural commodities and services, enhancing resilience to climate change, and enhancing mutual accountability (Muloloni 2024).

The 2024 scorecard notes that no African country is on track to meet its Malabo commitments against all deliverables, and no one country is even close to boosting intra-African trade (African Union 2024). Zambia is only on track regarding enhancing investment financing in agriculture. The highest-scoring countries were Rwanda, Morocco, and Egypt. The Malabo Declaration ends in 2025, and a Post Malabo Agenda will set out targets for the next decade, with a focus on dealing with climate change, building resilience to climate shocks, and building more sustainable food systems (African Union 2024).

Consultations are underway with CAADP constituencies and technical working groups to formulate the Post-Malabo Declaration, which will come into effect by mid-2025 (CAADP 2024). Independent submissions are also invited. As an example, submissions made from the GIZ-convened Partners for Change Network Meeting

in June 2024 included recommendations around the integration of all affected stakeholders into the planning and implementation process and capacity building for local institutions; along with the involvement of local communities in decision-making processes and greater recognition of the multiple roles that agriculture plays in livelihoods, food and nutrition security, stewardship, etc. (P4C 2024). The submission also noted gaps in the Malabo agenda, such as the need to promote decentralised governance and prioritise land for food production; to support the use of Indigenous seeds and nationally-driven food system agendas, and to mainstream land rights and governance issues, especially for women and youth, among others (P4C 2024).

The FISP has been a key component of government support to the smallholder farming sector. The following section details how the FISP works; the challenges in its implementation; and, most importantly, its contribution to declining soil health and fertility, biodiversity loss, and reduced ecosystem and societal resilience to external shocks, such as the recent drought.

Farm Input Subsidy Programme (FISP)

About the FISP

The Fertiliser Credit Programme, initiated in 1997, was the forerunner of the FISP. It provided loans to selected beneficiary farmers who were to pay 10% of the full market price of the fertiliser at the time of planting, and the 90% balance in cash or maize at harvest time (IAPRI 2013). However, 75% of beneficiaries did not repay the balance of the loan, and this programme was not sustainable (IAPRI 2013).

In 2002, the Zambian government introduced the Fertiliser Support Programme, renamed as the Farmer Input Support Programme (FISP) in 2009 (MoA 2023a). To overcome the repayment problem, the FISP was designed to provide subsidies over three years, with a reduction from 50% to 25% and then phasing out (IAPRI 2013). However, this did not happen, as farmers quickly became dependent on the inputs and the subsidy became a political lobbying tool (see section on consequences of the FISP below). Specific objectives of the FISP are to (MoA 2023a):

- Ensure timely, effective and adequate supply of inputs to small-scale farmers.
- Expand markets for the private sector, particularly in rural areas.



- Serve as a risk-sharing mechanism for small-scale farmers to cover part of the cost of improving agricultural productivity.

The FISP is implemented in 116 districts across all 10 provinces in Zambia (MoA 2023a). It is accessed by just over one million smallholder farmers, based on specific selection criteria (MoA 2023a). Farmers are to:

- Be a member of a cooperative or farmer organisation, which is registered with the government, and has working governance structures in place; and be selected by the Camp Agriculture Committees (MoA 2023b).
- Contribute to the FISP, which is amended yearly (Gasior et al. 2022). It has been K400 for the past few years (MoA 2023b).
- Not be in formal employment (MoA 2023b).
- Cultivate less than 5 hectares of land and not produce more than 10 cattle, 30 goats, 100 chickens, or have more than two fish ponds (Gasior et al. 2022).
- Not be a beneficiary of the Food Security Pack (Gasior et al. 2022).
- Not work for any government or government-related department, organisation or institution (MoA 2023b).

In the 2017/18 agricultural season, the government introduced the Zambia Integrated Agricultural Management Information System (ZIAMIS) to manage the electronic registration of beneficiaries, suppliers, agro-dealers, and farmers; and all financial contributions, insurance pay-outs and redeeming of inputs (MoA 2023a). Small-scale farmers must be registered on the ZIAMIS system to appear on the national farmer register to qualify for the FISP (MoA 2023a).

There are other much smaller food security programmes, including the Food Security Pack and the Social Cash Transfer Programme. The Food Security Pack provides basic inputs, technologies, and training to 'vulnerable but viable' small-scale households (Gasior et al. 2022). The Ministry of Community Development and Social Services administers the scheme with technical support provided by the Ministry of Agriculture and Livestock extension staff. Farmers are supposed to contribute 10% of their harvest to the community recovery or seed bank, but this is not monitored or reported on.

The Social Cash Transfer Programme aims to support the elderly, individuals with disabilities, female-headed households with three or more children, and child-headed households (Gasior et al. 2022). Selection for the grant is based on an assessment of living conditions or a household score based on educational level, ownership of material goods, condition of the dwelling, etc. The grant is K150 per household per month, or K300 for a household with a disabled member (Gasior et al. 2022).

The FISP package

In 2009, the FISP package was halved from 8 x 50 kg bags of fertiliser and 20 kg of maize seed to 4 x 50 kg bags of fertiliser and 10 kg of maize seed (Kawamya 2021) to enable the programme to reach more beneficiaries. During the 2023/24 season, each farmer would get the following inputs (MoA 2023b):

- 3 x 50 kg top dressing fertiliser
- 1 x 10 kg bag maize seed
- One of the following:
1 x 25 kg bag of soybean seed, 1 x 20 kg bag of groundnuts seed,
1 x 12.5 kg rice, 1 x 5 kg sunflower seed, 1x 20 kg common
beans, 1 x 10 kg cowpeas or 1 x 10 kg sorghum.

Those on the eVoucher system can choose their inputs from a government pre-approved supplier list that includes a range of seeds and fertilisers to the value of their voucher while the direct input supply participants receive the above (MoA 2023b). A list of the specified inputs is made available to participating agrodealers and farmers, but not to the wider public. The fixed value of the pack is K9 581.18 (MoA 2023b).

Procurement of inputs

Agricultural input suppliers are chosen through public procurement processes (MoA 2023a).

Procurement of inputs (seeds, fertilisers) takes place months before the planting season. In 2023, two contracts were issued for fertilisers to the United Capital Fertilizer Zambia (UCFZ) Company Limited for roughly 73,000 tons of fertilisers, and to

Nitrogen Chemicals of Zambia (MoA 2023d). Contracts issued for the supply, delivery, warehousing, and distribution of urea fertiliser in 2023 went to eight companies, with Alpha Commodities receiving 23% of the total procurement volume of 119 380 tons, followed by ETC Input Zambia (12%) and Bestmed Services (11%) (MoA 2023d).

The official contract list notes that the following contracts for seed, under the direct bidding and limited bidding model, were awarded to Western Seed, SCZ International, SeedCo, Kamano, Kariba, ETC, Zambia Seed, Zambezi Seed, Corteva Agri, Farmers' Barn, Stewards Global, Synergy, Green Skill, Good Nature and TopSeed (MoA 2023d). The total amount awarded to companies for the provision of seed was K1.2 billion (US\$46 million at current exchange rates) (MoA 2023d); this is roughly 13% of the FISP budget.

The FISP procured 7 510 tons of soyabean seed, 5 551 tons of groundnut, 1 291 tons of common beans, 136 tons of rice, 29 tons of cowpea, 171 tons of sorghum, and 165 tons of sunflower seed for the 2023/2024 FISP season. Just over 61% of all seed procured – a total of 23 970 tons – was for crops other than maize (MoA 2023d). This is because, in the FISP package, the quantity of other seeds is normally more than the 10 kg of maize provided. Of the maize seed procured, 392 (4%) tons were for open-pollinated maize varieties (MoA 2023d).

Contracts for the supply, delivery, warehousing, and distribution of urea fertiliser were awarded to Bestmed Services, Agrizam Investments Ltd, Agro Trade Exchange Zambia Ltd, Greenfield Commodities Ltd., Kovenant Procure Zambia Ltd, Portland Commodities Ltd., ETG Input Zambia, and Alpha Commodities – to a total value of K102 million.²

Input suppliers can be international or national companies that submit bids in line with public procurement regulations. Suppliers are responsible for transporting inputs to designated depots in districts. They may not distribute directly to farmers without written permission but must work through designated agro-dealers (MoA

2. | A full breakdown of awarded contracts can be found at <https://www.agriculture.gov.zm/wp-content/uploads/2023/11/PUBLICATION-OF-THE-FISP-2023-2024-CONTRACTS-MOF-IMFNEW.pdf>

A move to dominate the regional fertiliser market?

UCFZ, run by five Zambian and three Chinese directors, one of which is the managing director, is owned by the Wonderful Group of Companies – a Zambian-based investment firm. UCFZ was started in 2021 to construct and operationalise Zambia's first mega and ultra-modern fertiliser plant sourcing materials locally (UCF 2024). The construction of the plant is undertaken in partnership with Wuhuan Company, a subsidiary of China National Chemical Corporation (Seetao 2022). A Chinese dignitary at the ground-breaking ceremony noted in his welcome speech that Zambia had become "one of the best destinations for Chinese investment in Africa", with direct investment having reached US\$500 million by 2021 (Chinese Embassy 2021). The total contract value to build the plant and begin operations was worth about US\$460 million (Seetao 2022). Once fully operational, it would be able to supply 80% of the urea demand and 60% of the D compound needed (FoodBusiness Africa 2022). The Wonderful Group of Companies sourced 60% of investment funds from financial institutions outside of Zambia (FoodBusiness Africa 2022). The company also raised financing for a second plant to produce urea fertiliser and ammonia, at an investment cost of US\$600 million (UCF 2024). In late 2023, state-owned Nitrogen Chemicals of Zambia procured 20,000 tons of compound D fertiliser from UCFZ to meet its obligation under its FISP contract (Mafa & Tembo 2023). There are rumours that the speed at which contracts have been signed with UCFZ, compared to delays in the signing of contracts with Nitrogen Chemicals of Zambia, speaks to political linkages to the private company (Mafa & Tembo 2023).

In 2023, UCFZ started exporting fertiliser to Botswana and listed on the Botswana Stock Exchange in 2024 with a US\$500 million bond (UCF 2024). In December 2023, UCFZ announced that it would invest US\$700 million in constructing fertiliser manufacturing plants in Zimbabwe as part of its regional expansion (Lutena 2023), and in 2024, it started exporting to Tanzania. It is not clear to what extent UCFZ will leverage China's political influence in these countries to gain access to their FISP contracts and funding.

2023a). National input suppliers need to partner with agro-dealers to participate in the FISP and provide them with access credentials to the ZIAMIS supplier portal. Warehouse managers/agro-dealers issue inputs to farmers against authenticated codes; they can only issue farmers with items from the approved list. Farmers must arrange and pay for their own transport to collect inputs (MoA 2023a).

Governance of the FISP

The MoA is responsible for implementation and oversight of all FISP activities, with its offices responsible for various elements at the national, provincial, and district levels (MoA 2023a). Key 'gatekeepers' at the more local levels are farmer organisations that consolidate beneficiary lists to the government, District Agricultural Committees that ratify the lists and can recommend removal from the list (MoA 2023a), and Camp Agricultural Committees that are responsible for identifying individual FISP beneficiaries with verified biometrics and recommending them to the District Agricultural Committee (MoA 2023a).

The FISP is split into two programmes: direct input supply and eVouchers. In the 2023/24 season, the direct input supply programme operated in the Eastern, Northern, Luapula, Copperbelt, Muchinga, and Western provinces (551 187 farmers), and the eVoucher programme in Lusaka, Central, Southern, and North-Western provinces (473 247 farmers) (MoA 2023b). The private sector has a

The private sector has a significant role in the eVoucher system, engaging agro-dealers and redeeming and distributing farming inputs to beneficiaries, whereas, in the direct input system, the government is responsible for procuring and distributing inputs

significant role in the eVoucher system, engaging agro-dealers and redeeming and distributing farming inputs to beneficiaries, whereas, in the direct input system, the government is responsible for procuring and distributing inputs (MoA 2023a).

Funding for the FISP

The government and farmers have always co-funded the FISP. In 2002, the government subsidised 50% of the cost of the fertiliser and hybrid seed package, with farmers contributing 50% upfront. The subsidy increased from 50% to 75% between 2002 and 2010 (Allan & Magasu 2021) and rose further to 79% of the market price of the package by 2013 (Mofya-Mukuka et al. 2013). In 2023/24, farmer contributions were K400 against a government-set value of the package of K9 581.18 (MoA 2023b) meaning the subsidy was close to 95%. Farmer contributions were set at K400 for the past nine seasons. The cost of the FISP has also ballooned, as the number of beneficiaries grew from 120 000 in 2002/03 (Mofya-Mukuka et al. 2013) to 1 023 434 in 2023 (MoA 2023b), although the volume of inputs provided to each beneficiary has been reduced.

FISP-related agricultural insurance

K100 of the K400 farmer contribution goes towards a crop insurance premium (MoA 2023a), which is meant to pay out in times of harvests being affected by extreme events, such as droughts or floods. There are concerns about the governance of this model, with anecdotal evidence that farmers were paid out with bags of onions instead of the promised cash (Andrews 2021). Mayfair Insurance and Pula/ZISC General Insurance provide the insurance and have paid out K192 million and K20 million respectively in the past few years (MoA 2023c). The Ministry of Agriculture (MoA 2023c) does note, though, that farmers struggle to claim compensation as they have to travel long distances to redeem their claims, and that farmers in remote rural areas do not have access to mobile or internet connectivity. In addition, payouts have not been timely, and there is more focus on droughts than on flooding.

In the 2023/24 season, 1 023 434 smallholder farmers contributed K400 to the FISP (almost K410 million, equivalent to US\$15.8 million at current exchange rates) and government allocated just more than K9 billion (US\$348

million at current exchange rates) (MoA 2023b) with 53% allocated to the direct input system and 47% to the e-voucher system. Table 1 gives a historical overview of FISP budget allocations from 2002 to date.

Table 1: Budget allocations to FISP, 2002/3-2023/4

Season	Budget	Fertilizer	Maize,	Targeted Beneficiaries			Percentage (%)	
	ZMW'000	(MT)	(MT)	eVoucher	DIS	Total	eVoucher	DIS
2002/03	100,000	48,000	2,400	0	120,000	120,000	0	100
2003/04	114,500	60,000	3,000	0	150,000	150,000	0	100
2004/05	112,600	46,000	2,500	0	115,000	115,000	0	100
2005/06	140,000	50,000	2,500	0	125,000	125,000	0	100
2006/07	198,000	84,000	4,234	0	210,000	210,000	0	100
2007/08	150,000	50,000	2,550	0	125,000	125,000	0	100
2008/09	185,000	80,000	4,000	0	200,000	200,000	0	100
2009/10	435,000	100,000	5,342	0	500,000	500,000	0	100
2010/11	430,000	178,000	8,790	0	891,500	891,500	0	100
2011/12	485,000	182,854	8,985	0	914,670	914,670	0	100
2012/13	500,000	183,634	8,770	0	877,000	877,000	0	100
2013/14	500,000	188,311.60	9,000	0	900,000	900,000	0	100
2014/15	500,000	208,235.75	10,000	0	1,000,000	1,000,000	0	100
2015/16	1,338,008	208,235.75	7,620	241,000	759,000	1,000,000	24	76
2016/17	755,220	183,253.15	8,072	602,521	1,006,666	1,609,187	37	63
2017/18	2,856,565			1,024,434		1,024,434	100	0
2018/19	1,785,873	159,229.70	4,212	612,777	411,657	1,024,434	60	40
2019/20	1,428,487	247,999.95	6,889	382,456	641,978	1,024,434	36	64
2020/21	1,111,840	328,654.60	8,577	166,761	857,673	1,024,434	20	80
2021/22	5,372,671	376,414.54	10,244.34	0	1,024,434	1,024,434	0	100
2022/23	7,442,500	307,330.20	10,244.34	0	1,024,434	1,024,434	0	100
2023/24	9,118,154	240,760.50	7,977.51	473,247	551,187	1,024,434	46.2	53.8

Source: MoA 2023

About 90% of the agricultural budget goes to the FISP and a significantly smaller amount to strategic food reserves. There is consistent overspend; a minimum of 100% but reaching 787% in 2020 (Samoachoka 2023). Officials note that over-expenditure is due to poor planning, weak monitoring and evaluation, and lack of coordination among stakeholders.

Over the years, many reports have been published about corruption and political lobbying influencing who benefits from the FISP and who does not. There is also an absence of publicly accessible information regarding volumes of fertiliser actually distributed and precise numbers of beneficiaries, and a complete lack of assessments related to the FISP's contributions to crop yields and food availability in the country (Samoachoka 2023). Funds spent on agricultural research and extension are consistently less than 3% of the agricultural budget (Samoachoka 2023) and while aspects such as investments in infrastructure, land development, technology, and livestock development are ranked as more important than the FISP, they are far less resourced (World Bank 2021). Costs are also often underestimated.

There are concerns about the transparency of budgetary processes and spending on agriculture. An International Budget Partnership report found that deviations from the budget were highest in the agricultural sector – sometimes up to 236% (Samoachoka 2023). Figure 2 shows that from 2019 to 2022, the MoA's budget spending exceeded approved levels; expenditure was allowed through supplementary budget approvals (Samoachoka 2023). While Africa currently produces twice as much mineral fertiliser as it consumes (about 30 million tons) a year, it imports most potassium and nitrogen fertilisers (African Union 2023). This makes it vulnerable to highly volatile price fluctuations in the global market. Prices can change very quickly; i.e. between budget formulation and actual expenditure (Samoachoka 2023). For example, the war in Ukraine affected Zambia in two significant ways. First, it reduced the country's prospects of attracting foreign financing, on which Zambia relied in 2022 for 21% of its national budget financing (PMRC 2022). Second, it resulted in fertiliser prices almost doubling on the global market as crude oil prices grew by about 60% (PMRC 2022). This directly affects the financing of the FISP. The PMRC noted that the conflict would directly constrain production because of increased prices of fertilisers resulting in lower yields, reduced farmer incomes, and reduced purchasing power (PMRC 2022).

The direct input support modality of the FISP generates significant other costs in terms of warehousing, transportation, loading, etc., which has forced the government into risky financial decisions (Samoachoka 2023). For example, in 2021, the government

issued a letter of credit against yet-to-mature government bonds; and often there have been delays in disbursement from the Treasury, which is constrained by the debt burden. This, in turn, has caused delays in the delivery of inputs and resulted in missed planting opportunities and thus a reduction in yields (Samoachoka 2023).

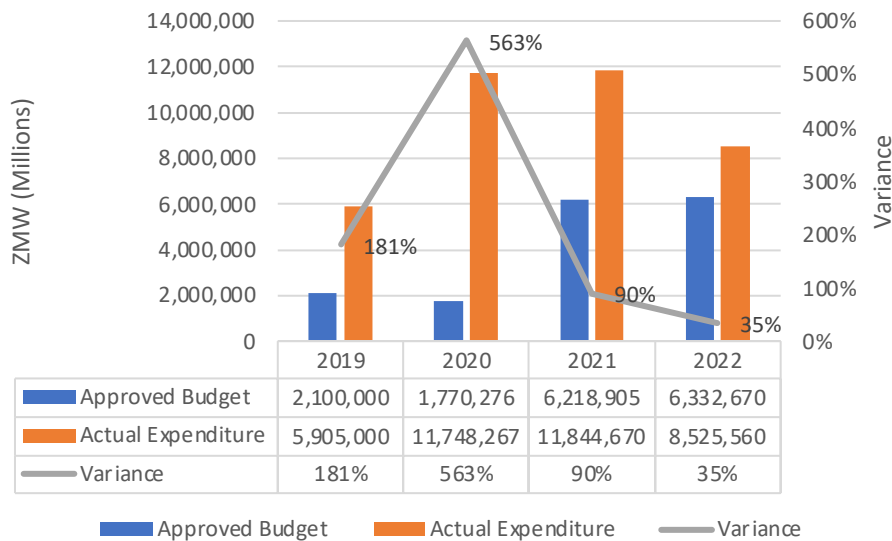


Figure 2: Ministry of Agriculture’s Budget Performance Trends (2019–2022)
Source: Ministry of Finance and National Planning (MOFNP) Annual Economic Trends

Critique of the FISP

There are well-known critiques of the FISP, which has not attained its objectives.

- Most beneficiaries are larger farmers, there is elite capture of subsidies, politicisation of allocation, and inefficiencies (World Bank 2021). Corruption tends to be a consequence of subsidy systems like the FISP.

- As with other African countries, Zambia’s FISP has been characterised by late delivery, which has a negative effect on yields. The World Bank (2021) notes that a 2007/8 study found that maize yields per hectare were 5% lower for households using subsidised inputs than those using private inputs, because of late delivery.
- The type of fertiliser supplied often does not work in contexts with highly diverse soil fertility profiles and climatic conditions (IAPRI 2023).
- The programme does not reach those who need support the most – those cultivating on less than two hectares (more than 70% of all smallholder farms in the country) (Kawamya 2021).

Figure 3 indicates how the FISP incentivises maize production (IMF 2023). Figure 4 shows that increased production doesn’t necessarily translate to increased yields (IMF 2023).

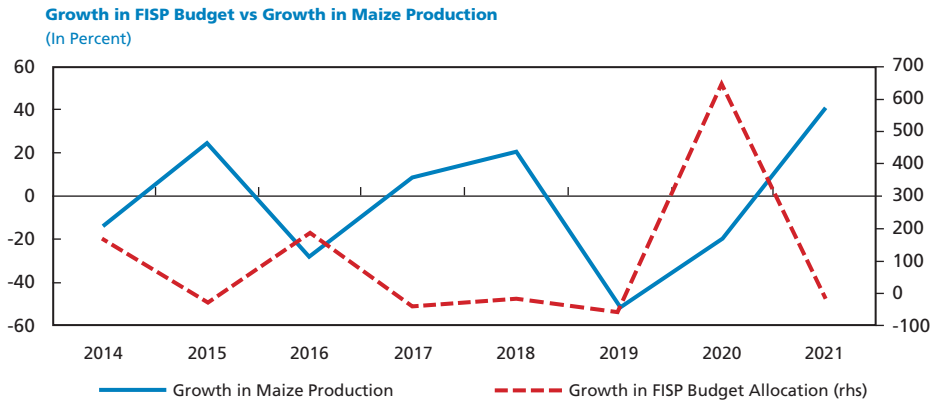


Figure 3: Growth in FISP budget vs growth in maize production
Source: IMF 2023

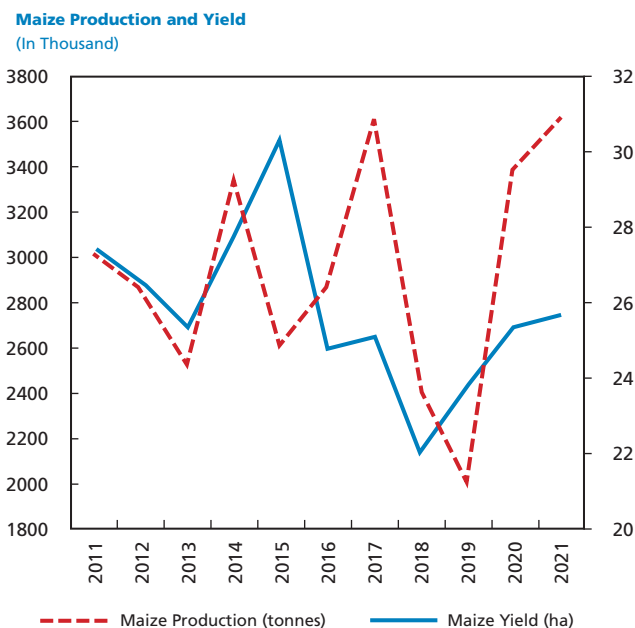


Figure 4: Maize production versus yields (2011–2022)

Source: IMF 2023

While this paper argues that the inputs provided through the FISP are damaging to environmental health and human wellbeing, and not actually effective in sustainably boosting yields, it does not dispute the need for support for smallholder farmers, particularly those that are more vulnerable. The exclusion of this group is concerning. Many studies point to the FISP benefiting those with larger landholdings, and arguably those with more capacity to build their own resilience. The FISP is also viewed as poverty reduction intervention, and so cannot exclude this group of farmers.

The funding for the FISP is not sustainable and it has failed to deliver on its objectives. Besides the procurement of fertilisers and maize seeds, the government also incurs

the cost of the tendering process, transportation, and storage in the direct input system, which the finance minister already noted in 2021 as “being unsustainable to the Treasury with expenditures increasing significantly over the years with limited change in the number of beneficiaries and input package” (Kawamya 2021:1). The eVoucher system was designed to ameliorate some of these challenges, but it has faced challenges of its own, including that farmers have not received their inputs despite making the requisite payments. By 2021, the government had also started accruing debt with local transporters (Kawamya 2021).

This is not to say that funding for the smallholder farming sector should be stopped or even curtailed, but rather that it should serve to make smallholder farmers more independent and capacitated to lead in producing nutritious, clean (from chemicals), and appropriate food. The FISP has encouraged a dependency on synthetic inputs sourced from a volatile global market, reducing farmers’ ability (and related knowledge) to weather external shocks. It has reduced instead of bolstered their resilience.

Reorientating the FISP – and the accompanying extension support and research and development – towards agroecological farming and food systems that grow resilience would, over time, reduce the need for such onerous funding. Smallholder farmers in Zambia, brought together by the Rural Women’s Assembly (RWA) in 2021, note that the FISP is an example of how the food system has been captured by elites and agro-industry, both local and international (Andrews 2021). The RWA noted that peasant organisations and farmers’ movements in the country had lobbied hard for funds to support small-scale agricultural development, and the FISP was an outcome of that, but that it was not serving the needs of farmers on the ground. Farmers shared their views that the subsidy programme was corrupt and did not reach those who needed it most and that it did not provide a choice of agroecological inputs. Views were also provided in the report on the visible deterioration of farming soils and other ecological problems due to the ongoing use of synthetic fertilisers.

THE CONSEQUENCES OF THE FISP

The orientation of the FISP towards mostly maize production, using hybrid seeds and synthetic fertilisers, is a driver of ecological degradation, particularly as it relates to soil health and biodiversity. Healthy soils and high levels of biodiversity are critical elements of ecosystem resilience and a farming system's ability to weather and recover from external shocks. The FISP has created and promoted farmer dependence on external inputs, procured from a global market that itself is not resilient to shocks, such as COVID-19 and the war in the Ukraine, as examples. This dependence is costly and is likely to become more so as the government struggles to maintain debt repayments alongside its commitments to its citizens. It absorbs a significant amount of the government budget, constraining investment in other much-needed public services like infrastructure, research, and development. Smallholder farmers need support, but this must be appropriate support that not only boosts food and nutritional security, generates decent livelihoods, and delivers meaningful opportunities, but also that does not damage the ecological base of production. This is not the case in its current form.

Linkages between the FISP and degraded ecosystems

The Zambia Alliance for Agrobiodiversity and Agroecology (ZAAB) (2020) undertook consultations in several districts in Zambia and found that the FISP was directly linked to the destruction of natural forests and soil degradation. Healthy and resilient ecosystems are a critical factor for farming success. This includes healthy and fertile soils able to support plant growth, and necessary levels of biodiversity in the farming ecosystem. The African Union (2023) notes that up to 80% of cultivated land in Africa is degraded, losing an average of up to 60 kg of nutrients per hectare a year. It predicts that if this situation is not reversed, more than 50% of currently arable land will be unusable by 2050 (African Union 2023). Zambia is no exception to this worrying trend.

Degraded soils

Healthy, fertile soils are not only the necessary base for agricultural production, but they are also key to climate change mitigation and resilience-building measures. Soils need a good physical structure to support plant growth; they must be able to provide enough water, air, and structure to support the plant and provide optimal temperatures for plant growth (Shitumbanuma et al. 2021). To perform these functions, the soil needs high levels of organic matter and microbial life, and it should be kept covered and disturbed as little as possible.

Several studies point to declining soil fertility in Zambia (Sichinga n.d.). Key issues related to the chemical properties of soil in Zambia are the limited ability of the soils to retain and supply nutrients to crops, and high levels of soil acidity (Shitumbanuma et al. 2021). An estimated 30% of Zambian soils are acidic, mostly in high rainfall regions, as a result of weathering and leaching. The soils are derived from rocks that tend to have low levels of calcium, magnesium, and potassium, among other elements. Declining soil fertility is also a result of prolonged use of nitrogen-based fertilisers and the continual mining of nutrients by plants, with no replenishment (Shitumbanuma et al. 2021), often found in monoculture planting.

There is ample scientific evidence pointing to how the use of synthetic fertilisers changes soils' physical, chemical, and biological properties. Continual use is linked to the decline of organic matter in the soil, the hardening of soil (restricting entry of air and water), reduction of fertility, loss of nutrients, and pollution of soil, water, and air (Pahalvi et al. 2021). Some examples include (Shitumbanuma et al. 2021):

- Chemical urea converts to ammonia and carbon dioxide when interacting with soil bacteria, forming anhydrous ammonia, which is toxic to soil organisms.
- Chloride in potassium chloride, found in D compound fertiliser, combines with nitrate in the soil to form chlorine gas that kills soil organisms.
- Most synthetic fertilisers are salts, meaning that they attract water to themselves, and away from plant roots and soil organisms.
- Nitrogenous fertilisers speed up the breaking down of organic matter in the soil, which can lead to the depletion of soil organic matter.



Healthy, fertile soils are not only the necessary base for agricultural production, but they are also key to climate change mitigation and resilience-building measures

Ongoing use of synthetic fertilisers is also linked to increased incidences of pest attacks, acidification of the soil, and loss of critical soil microorganism populations (Pahalvi et al. 2021). Increased incidences of pest attacks lead to increased use of synthetic pesticides and insecticides, which kill non-target pests and organisms and, in turn, can reduce yields. Beneficial insects act as biological pest control agents and nutrient cyclists and pollinator populations (Okagu et al. 2023). Their destruction reduces the biological diversity present on the farm, thus reducing ecosystem functionality and balance. In addition, chemicals leach into water bodies, affecting non-target species like fish, which further upsets ecosystem equilibrium and poses long-term risks to water lifeforms. Working through the food chain, these risks extend to people (Okagu et al. 2023).

In 2023, the African Union announced its 10-year *Fertiliser and Soil Health Plan: 2023–2033*. The plan notes the need to increase investments in the local manufacturing and distribution of mineral and organic fertilisers, biofertilisers, and biostimulants. At the same time, it focuses on the removal of trade barriers, including reducing import tax on synthetic fertilisers; mobilising more public and private capital to develop fertiliser value chains; and consolidating trade credit guarantees, working capital, and targeted subsidies to increase the use of fertilisers (African Union 2023).

In the 10-year plan, the African Union (2023) suggests that existing subsidy programmes must align with private-sector investments and focus on crops that offer the highest returns. Since these are commodity crops, mostly cereals, it is not clear how this suggestion addresses either soil health or localised food insecurity. The goal is to triple



fertiliser use from 18 kg a hectare (2020 figures) to 54 kg a hectare by 2033. The 10-year plan will be implemented from January 2025 to December 2033. The plan has been met with criticism from the Alliance for Food Sovereignty in Africa (AFSA), due to the lack of consultation in its development and to the marginalisation of sustainable approaches such as agroecology. If funded, such approaches could mitigate key challenges such as malnutrition, escalating commodity prices, and climate change (Nation 2024).

Synthetic inputs destroy farming soils, which makes the orientation of the FISP towards this model highly problematic. The focus must first be on building soil health, which would support crop health. The World Bank (2021) notes that soils characterised by low soil fertility levels do not respond well to fertilisers; the lower the soil fertility, the less value provided by synthetic fertilisers. It goes further to note that the highly acidic soils in Zambia show a limited response to basal fertiliser application – fertiliser normally applied at the start of the planting season spread over fields or in planting holes. The World Bank also notes that the FISP could be actively discouraging good soil management practices by encouraging monocropping, thus reducing intercropping, and discouraging fallowing. Zambia's National Policy on Climate Change (2016) does not contain provisions for soil protection (Mulenga 2023).

What is needed is a comprehensive package aimed at building soil organic matter, nutrient profiles, and improved capacity to retain water. Agroecological practices provide for such a package through intercropping, multi-cropping, mulching, composting, etc. And they do so in a way that reduces farmer dependence on external inputs sourced from a volatile global market. This requires that the FISP budget be reorientated towards extension services to provide technical support and training, localised bio-input value chains, and appropriate research and development.

Biodiversity loss

The higher the levels of biodiversity and on-farm agrobiodiversity, the more nutrients there are available to cycle through the system and support strong plant growth and sufficient populations of beneficial insects to control pests and pollinate crops (Sentinel 2022).

Zambia's biodiversity is already at risk and there is an urgent need to stop agricultural expansion or intensification in areas that have high biodiversity value (those that

are home to the top 10% of species in an area) and to promote farming practices that maintain, and, better yet, enhance biodiversity to maintain the ecosystems that support food production (Sentinel 2022). Crops, particularly maize, and pulses, pose the highest risk to biodiversity in high biodiversity areas (mostly natural forests and wetlands) because they consume large tracts of land. By 2014, already more than 28% of Zambia's animal species and subspecies were threatened or endangered (Sentinel 2022). Forests, which provide primary water sources in Zambia, are increasingly eroded. The country has lost 2.44 million hectares of tree cover between 2011 and 2023, a 10% loss (Global Forest Watch 2024).

There are two key issues related to biodiversity loss. One is the use of unsustainable farming practices (monocropping and use of synthetic inputs that destroy biodiversity) and the other is expansion into new land. In 2021, the Sentinel project undertook rapid assessments in five communities to evaluate the drivers for the expansion of agricultural activities at the smallholder farmer level. Key drivers for expansion into new land are (Sentinel 2021):

- Attempts to increase production levels (and thus yields) in response to increases in commodity prices (like maize, and sunflowers); this normally takes place concurrently with the intensification of production on existing land through enhanced use of synthetic inputs. Price incentives like this also encourage the mono-cropping of commodities.
- Community members who have land-use rights under customary tenure systems rent out forested land to investors wanting to cultivate normally conventional crops – the land is often not well managed.
- Migration away from drought areas, and resultant reduced productivity and food security, into areas with more stable production characteristics – resulting in land being used for agriculture in new areas.
- Farmers opting to open new parcels of land rather than spending time and money to rehabilitate degraded soils.

In all five communities visited by the Sentinel research team, community members noted a decline in biodiversity, particularly indigenous tree species, and wildlife,

resulting in reduced availability of medicinal plants and bushmeat, and a concurrent reduction in ecosystem services like pollination. Climate change and extreme events will drive further expansion into new lands, spurring deforestation and, if farming with synthetic inputs, further deterioration to the ecological farming base.

An estimated 80% of Zambians are directly dependent on natural resources for their food, fuel, medicine and raw materials for livelihoods (CIFOR 2024). Any farming practices that damage or destroy ecosystem health and resilience must be shifted towards ones that can maintain and preferably boost these. The current orientation of the FISP contributes to biodiversity loss on currently farmed land; and, by exacerbating the loss of soil fertility, it encourages expansion into new land.

Further entrenchment of food poverty

In the 2015–2016 El Niño-driven drought, households reported a 37% reduction in income (ACAPS 2024). This kind of loss has significant implications for household food security in the current context of rapidly rising food prices, particularly when Zambians are already suffering from hunger and malnutrition. Food prices increased on average by 14.2% between December 2022 and December 2023, driven by changes in cereal prices (ReliefWeb 2024). The Disaster Management and Mitigation Unit (DMMU) has, from October 2023 to date, provided food relief to 2.4 million individuals, with an estimated six million households at risk of hunger (Lusaka Times 2024a). Zambia ranked 113 of 125 countries on the Global Hunger Index in 2023 (ACAPS 2024). The 2018 National Demographic Health Survey (the latest one undertaken) showed that only 13% of children under two years had a minimum acceptable diet (ACAPS 2024), 35% of children under five years are stunted, and 4% of children are acutely malnourished or wasted (ReliefWeb 2024). Reduced income opportunities due to a failed harvest places households at high risk of acute food shortages.

The overemphasis (and thus reliance) on maize places people further at risk as dietary diversity is limited. In addition, reliance on a single commodity such as maize makes the country vulnerable to price fluctuations (ACAPS 2024) and places farming families at economic risk. In contrast to the FISP orientation, agroecology promotes diversity in

cropping, which acts as a safeguard in the case of failure of one crop and this diversity also produces the varied macro- and micro-nutrients needed for nutritional security.

The images below show the difference in fields using conventional and agroecological methods in Zambia’s drought crisis in 2024.



Post shared from Community Technology Development Trust, Zambia. Facebook page caption: Farmer in Chikankata, central Zambia, showing off the results of using bokashi on one of his fields. On top is a local maize variety treated with bokashi and tea manure and at the bottom is his other field where he planted a hybrid and used fertiliser. Dated 26 February 2024.

Reduced income opportunities due to a failed harvest places households at high risk of acute food shortages

Figure 5 shows the numbers of Zambians who became undernourished from 2002 to 2022. Given the current crisis, the graph is likely to continue its downward trend. Some studies on the FISP note that increased grain production in Zambia – which does not necessarily equate to increased nutrition production – is largely due to expansion into new lands, and not from intensified production on current farming land. It is clear that the FISP has not contributed to sustained improved food and nutrition security in the country.

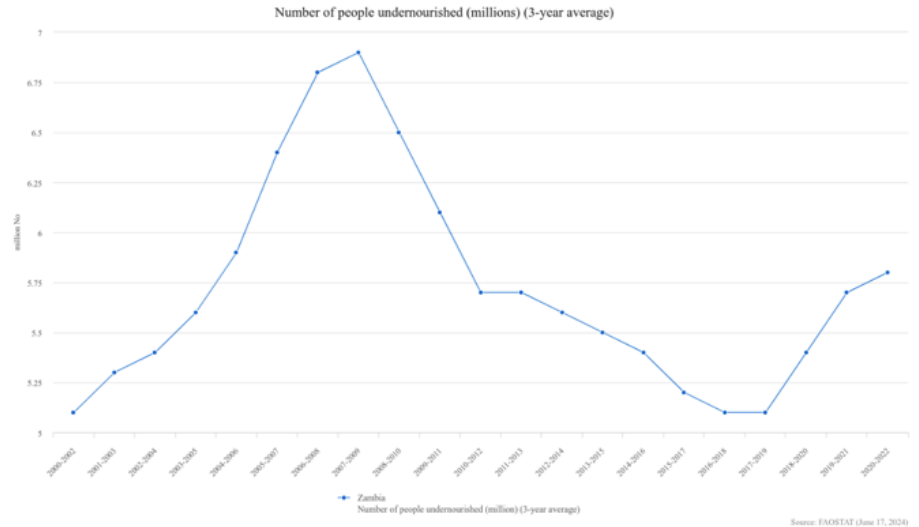


Figure 5: Numbers of undernourished Zambians (2002–2022) (millions; three year average)

The background of the page is a wooden plank texture. The top half is a solid green color. The bottom half is divided into a grid of four squares: two red squares on the left and two black squares on the right. A silhouette of a bird, possibly a hawk or eagle, is painted in brown on the green background, facing right.

WHY AGROECOLOGY

It is very clear that Zambia needs to radically shift its food and farming frameworks to bring about food and nutrition security and stable farming livelihoods, and to build adaptive capacity and resilience to the impacts of climate change. It needs a framework that can simultaneously boost the production of nutritious food at the community level, boost local economies, and reduce both costs (of inputs) and negative environmental impacts. Agroecology provides such a framework, as it speaks to social, ecological and economic elements, which would result in resilient communities and ecosystems.

Many civil society organisations in Zambia have urged government to turn to agroecology as a framing for food and farming systems to combat the drought crisis. FIAN Zambia called on government to take urgent action in promoting drought-resilient crops (millets, sorghum, cassava) through the various government programmes and to move away from the dependency on maize. The Community Technology Development Trust (CTDT 2024) noted the urgency to support local food production systems to build resilience in the face of climate change and crises, such as the drought, and reiterated the call to government to support farmers in conserving and developing their drought-resistant crops and seeds.

Agroecology encompasses a set of principles and practices that aim to ensure the sustainability of farming systems and farming communities (ZAAB 2020). There is a core focus on the use of a holistic approach to agriculture (that encompasses both landscapes and lifeforms) with the objective of attaining optimal resource use and land management while staying within the carrying capacity of the farming ecosystem (ZAAB 2020).

Given the current interlocking crises, it is imperative that government actively support the building of community resilience, particularly that of farming communities. Resilience of agricultural systems is based on a system's ability to cope with the effects of shocks



(like droughts), its capacity to adapt to these shocks and still be productive, and its capacity to change or transform to function in changed conditions (ZAAB 2020). Agroecology speaks directly to this urgent need. Its practices are known to rebuild ecosystem health and vitality (through enhancing soil health and biodiversity), to

support attainment of food and nutritional security through provision of a diversity of nutritious and clean (chemical-free) foods, and to reduce the dependence of farmers on external inputs (through emphasising recycling of resources and finding synergies) – thus also reducing dependence on volatile global market prices.

CONCLUSION

Is Zambia's food system collapsing? The combination of already entrenched levels of poverty, hunger and malnutrition speak to a system that cannot hold out indefinitely against external shocks. This includes an increasingly strained budget, the high likelihood of more extreme weather events, and overburdened public health systems, among others. The base of production – and in Zambia, most people's livelihoods – is broken and requires urgent attention paid to fixing the soil, incentivising the uptake of agroecological farming – including the use of indigenous or localised seed – and reorientating policy and related support systems towards pro-people programmes and projects. Without these measures, it is unlikely that Zambia will recover or build the resilience necessary to adapt to further climate shocks in the future.

The FISP is directly linked to the decline in soil fertility in the country and to biodiversity loss, both of which are key elements of functional farming ecosystems. Smallholder farmers need support, but that support must aim to make them more independent and able to use locally available, appropriate and affordable inputs. Over time, support can then be scaled back – a situation that is not possible with the current FISP, as farmers, already battling with poor soils, are completely dependent on the subsidised seed and fertiliser. This speaks to the need to allocate funding to extension services, to research and development, and to promoting farmer-managed seed systems.

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