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FOOD SYSTEMS PROFILE – MALAWI

Catalysing the sustainable and inclusive transformation of food systems

Malawi

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Catalysing the sustainable and inclusive transformation of food systems

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FOOD SYSTEMS PROFILE MALAWI

Key messages

Malawi is rich in natural resources including land, fish grounds (lakes), landscapes and biocultural diversity. Cash crops (e.g. tobacco and tea) bring in about 90 percent of the country's foreign exchange earnings. Maize is sown by more than 90 percent of small-scale family producers on small rainfed plots. Although they are increasingly exposed to climate change and weather shocks, smallholder subsistence farmers are able to produce more than 80 percent of the food consumed in Malawi – with maize accounting for more than 54 percent of national caloric intake (Government of Malawi, 2021).

Making the best of the resources, the agricultural sector employs 77 percent of the labour force and contributes 23 percent of gross domestic product (GDP). Including contributions beyond agriculture (e.g. food processing and food services), the food system overall contributes 49 percent of Malawi's GDP while employing 83 percent of the available workforce (Thurlow, 2021).

However, with a population set to double over the next 30 years and production systems constrained by low productivity and diversity, it is clear that food systems will require substantial overhauls to be able to ensure food and nutrition security for all, reducing vulnerability to climate change and climatic shocks, preserving soils and ecosystems while contributing to inclusive territorial development.[1]

Food insecurity remains pervasive, with one-third of the population facing moderate or severe chronic food insecurity (IPC, 2022). This, combined with nutrient deficiency and increasing obesity, highlights the need to diversify food production, raise levels of nutrition, and tackle environmental degradation (soils, ecosystems, lake pollution, pests and diseases).

Solutions demand addressing issues related to land tenure security, to ensure small-scale producers are able to reap the benefits of adopting sustainable practices, a wider range of crops and integrated crop/livestock production systems.

In order to accelerate the transition to sustainable food systems the following systemic levers and critical intervention areas have been identified:

i. Improve market connectivity and linkages between rural and urban areas through investments in critical transport, storage and marketing infrastructure (e.g. in Zone 5).

ii. Strengthen innovation systems that support 'whole-of-production systems' innovations; drought-tolerant crops and increasing crop diversity (spatial, temporal, functional), local seed (pulses) and organic input production, agroforestry and integrated crop/animal production systems, complementary irrigation, agroecological production technologies.

[1] Adopting a territorial perspective allows identification of seven different food systems in Malawi, and can help in facilitating the varying considerations. These are detailed in the fourth section of this profile and illustrated in Figure 10.

iii. Repurpose agricultural inputs subsidies to ensure uptake of a wider range of crops; more accurate targeting of small-scale farmers along with increased support for legumes and nutritional advice to encourage the use of input subsidies on pulses.

iv. Fast-track land certification programmes to enhance tenure security of rural households and strengthen the administrative capabilities of community land tenure committees.

v. Scale up complementary irrigation to ensure minimal yields (and livelihoods) in case of climatic shocks (e.g. for Zone 2, the shores of Lake Malawi, and Zone 6, where water supplies are readily available).

vi. Support local actors in working on territorially rooted solutions. This requires taking into account Malawi's territorial variability in natural resource endowments, market linkages and value addition, land-tenure arrangements, social capital and climatic conditions and unique sets of food-system-related challenges and opportunities identified in seven subnational territories or zones.[2] This support could be provided by facilitating multistakeholder cooperation and joint work to foster grassroots actions on specific challenges (e.g. taking action on research on water management in Zone 6).

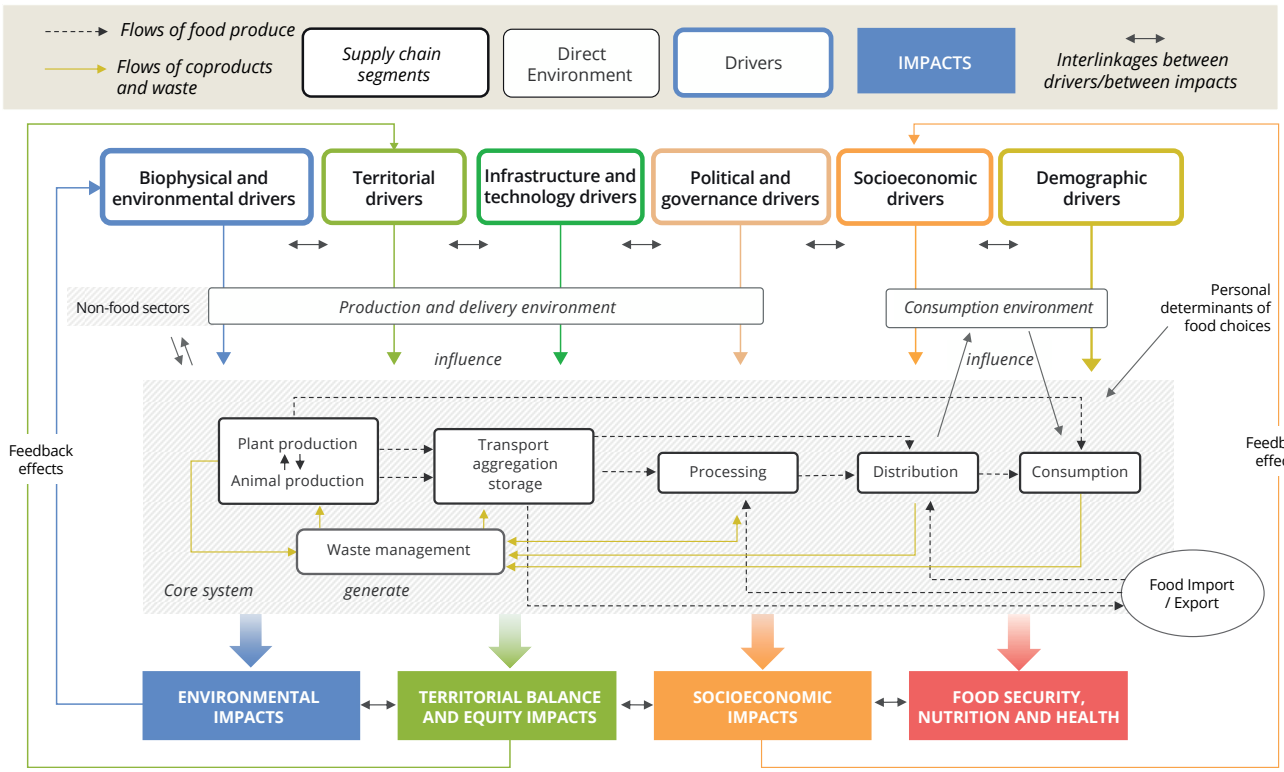
[2] For details of territorial zones, see the fourth section of this profile (Malawian food systems from a territorial perspective) and Figure 10.

Methodology and process

This brief is the result of a collaboration between the Government of Malawi, FAO, the European Union, and CIRAD in close collaboration with FAO experts. It was implemented in Malawi between February 2021 and September 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 2021 joint publication entitled *Conceptual framework and method for national and territorial assessments: Catalysing the sustainable and inclusive transformation of food systems.* (David-Benz *et al.,* 2022).

The assessment integrates 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 the food system 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 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**).

Figure 1. Analytical representation of the food system



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

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

The approach for Malawi included territorial analysis and two workshops, including a stakeholder consultation workshop, which were carried out to share and refine the results and identify the main levers to trigger in order to improve food system sustainability.

National context: Key figures

Located in Southern Africa, Malawi is a landlocked country, sharing its borders with Mozambique, the United Republic of Tanzania and Zambia. Despite significant economic and structural reforms, Malawi remains one of the poorest countries in the world. In the last two decades, real per capita gross domestic product (GDP) has remained largely flat, lagging behind regional peers (World Bank, 2021a). Progress in addressing poverty has stagnated, with poverty rates (at USD 1.90 per day) consistently around 70 percent (see **Table 1**). Almost 85 percent of the population lives in rural areas and relies on rainfed agriculture for employment. Rapid population growth and climate change are putting increasing strain on the natural resource base. The population has more than doubled in three decades and stood at 19.1 million in 2020. Although total fertility rates have declined significantly, the population is still growing at 2.7 percent per year and is anticipated to double by 2038. Increasingly erratic rainfall, watershed degradation, and limited storage infrastructure increase the country's vulnerability to droughts and floods, and hamper energy security and agricultural productivity. With only 11 percent of the population (4 percent in rural areas) having access to grid-based electricity, reliance on unsustainable charcoal production for fuel has led to deforestation and land degradation. Forest cover has declined rapidly since the 1970s, as a result of charcoal production and agricultural expansion.

Considering the Human Development Index, while there have been impressive gains in recent years, the country still ranks 174 out of 189 (UNDP, 2020; Heumesser and Kray, 2019). The country ranks 145 out of 188 countries on the United Nations Gender Inequality Index and 116 out of 153 countries on the Global Gender Gap Index. Female agency is undermined by pervasive child marriage and

sexual and gender-based violence (World Bank, 2021a). Female-headed households have fewer assets and reduced access to infrastructure and services, which lowers their productivity (FAO, 2011). Low productivity is particularly evident in farming, as female-managed plots are estimated to be more than 25 percent less productive (UN Women *et al.*, 2015).

Tertiary enrolment, particularly among young women, is among the lowest in the world, and there is a significant skills demand–supply mismatch in key sectors of the economy. Malawi's health systems remain weak, with high rates of stunting and malnutrition. Moreover, unsafe drinking water, sanitation, and hygiene result in diarrhoeal diseases, exacerbating already poor health outcomes. **Table 1** presents country level statistics for Malawi.

Table 1. Country-level data – Malawi

Indicators	2000	2010	2020	Comments
Population (million)	11.1	14.5	19.1	Rapidly increasing, more than doubled in three decades.
Population growth rate (%)	2.7	2.9	2.7	Steady and rapid growth rate of population for two decades.
Rural population (%)	85	84	83	Share of rural population remains high and stable.
Urban population growth rate (%)	3.3	3.6	4.1	Increasing growth rate of urban population since 2003.
GDP/capita (USD)	156	479	636	Upward trend since 1960, but fluctuating over the years; declined significantly after 2011, before rising again in 2016.
GDP growth rate (%)	1.6	6.9	5.4 (2019)	Rate varies significantly year-to-year; slowed to 0.8% in 2020 in the COVID-19 pandemic.
Poverty headcount ratio at USD 1.90 a day (2011 PPP) (%)	72.5 (2004)	71.1	73.5 (2019)	Significant proportion of population remains below poverty line; limited progress over the last two decades. Poverty rates are lower using national poverty lines.
Gini Index	39.9 (2004)	45.5	38.5 (2019)	Inequality decreased between 1997 (Gini index = 65.8) and 2004, increased until 2010, before declining until 2019.
Inflation rate (%)	29.6	7.4	8.6	Highly unstable: range of 7.4% to 29.6% in the last two decades.
Access to electricity (%)	4.8	8.7	14.9	Access is limited, but gradually increasing over time.
Access to basic drinking water services (Urban/Rural) (%)	86/48	86/58	86/67	Inequality is clear across rural and urban areas. No available data on access to safely managed drinking water.
Access to basic sanitation services (Urban/Rural) (%)	32/19	33/22	34/25	Access is low and unequal between rural and rural areas.
Primary school enrolment rate (gross %)	140	139	145 (2019)	Rate has been stable over the last two decades.
Forest coverage (%)	33	28	24	Very rapid decline in forest cover over the last two decades.

Source: World Bank. 2022. Data. Washington, DC. World Bank Group. https://data.worldbank.org/country/malawi

Trends in food production, consumption and trade

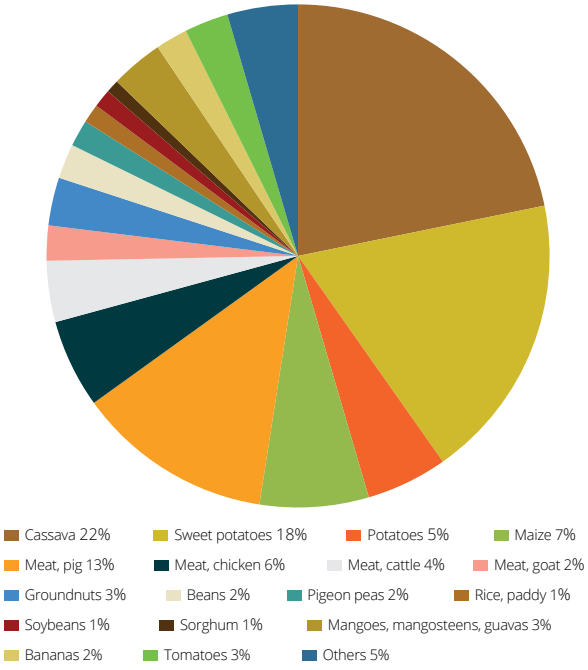
Crops dominate the agriculture sector, followed by the forestry, livestock and fisheries subsectors. Smallholder agriculture is the main source of food and provides livelihoods to a majority of the population. Crop production is concentrated on one main food crop (maize) and one main cash crop (tobacco). Low productivity and a strong focus on maize hamper food and nutrition security.

Even though its contribution to GDP has been declining over the years, the agriculture sector remains the backbone of the Malawian economy. In 2019, it accounted for 23 percent of GDP and employed more than three-quarters of the labour force (World Bank, 2022). Production, however, is largely subsistence-based and smallholder farmers remain the main producers and suppliers of food. As discussed later, high reliance on rainfed production systems, poor adoption rates of modern farming technology,[3] low uptake of improved inputs, limited access to credit, weak institutions (extension services, research, and market facilities) have contributed to low productivity of the agriculture sector and the situation is projected to worsen with climate change. This section examines the trends in food production, consumption and trade in Malawi.

Crops dominate the agricultural sector, followed by the forestry, livestock and fisheries subsectors. **Figure 2** presents the structure of production in Malawi in 2019. Foods grown by smallholder farmers in Malawi include tubers, cereals, pulses and fruits and vegetables. The dominant crops are maize, cassava, sweet potatoes and Irish potatoes, which accounted for more than half the value of output in 2019. Other important crops include peas, beans, rice, groundnuts, bananas, tobacco and sugar. Apart from crop production, people also raise livestock such as cattle, goats, pigs, sheep and poultry that provide income as well as contribute to food and nutrition security.

Approximately 4.5 million smallholder farmers are rearing different types of livestock with an average of 1.4 tropical livestock units per household (World Bank, 2022).

Figure 2. Structure of production (% of value, 2019)



Source: FAO. 2021. FAOSTAT Database: Production. Cited 15 March 2022. https://www.fao.org/faostat/en/#data

Production volumes of the key food crops have exhibited an increasing trend over the decades (**Figure 3**). This is especially so for roots and tubers,

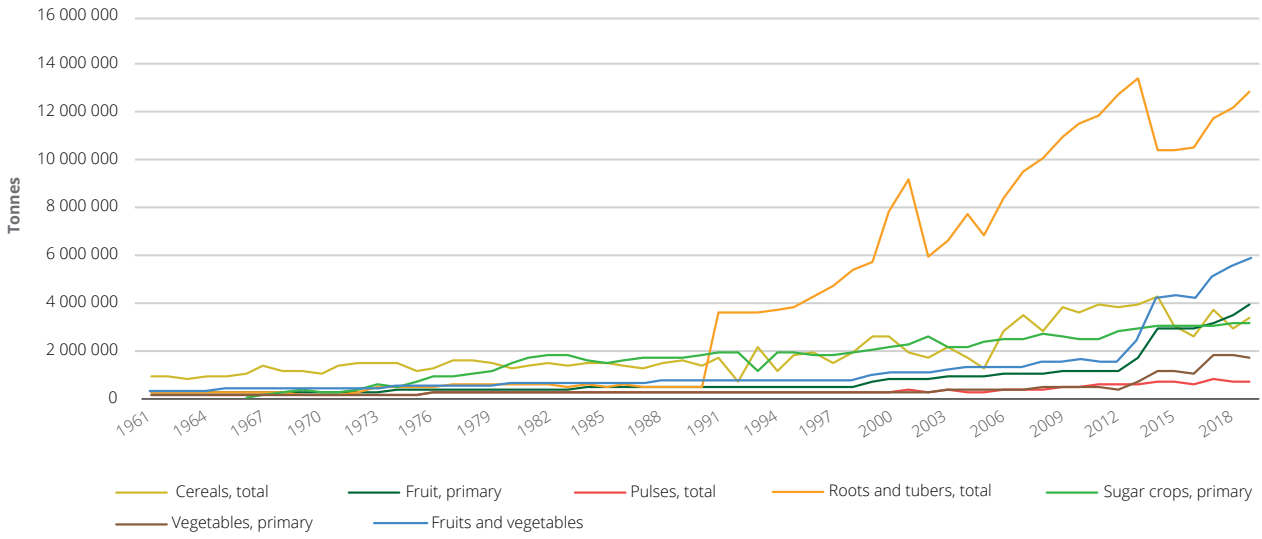
[3] Low adoption rates of technologies, despite their availability in Malawi, can be partially attributed to the lack of a pervasive extension system, thus limiting face-to-face interactions between farmers and extension workers (Beaman *et al.,* 2016). Additionally, technology adoption depends on multiple factors, including: social dynamics and information transfer (including trust in relation to the source of information); contextual costs and benefits (where the context of rural poverty is an important structural factor in low technology adoption); experience; and risk aversion of individual farmers (Hermans *et al.,* 2021).

which experienced rapid growth in the last three decades – driven by increased production of cassava and sweet potatoes. Nonetheless, roots and tubers accounted for only 15 percent of the harvested area in 2019. Almost 45 percent of harvested area was under cereal production. Of this, maize alone accounted for 85 percent, with wheat, millet and sorghum. Maize is considered to be the most important crop for food security in Malawi, and given wide perceptions that this is defined by maize harvests, almost every farmer in the country dedicates land and resources to its production (Fisher and Lewin, 2013).

In light of worsening land and soil degradation and other related impacts of climate change and farming practices, farmers have been increasing their production of roots and tubers (**Figure 3**). Sweet potato can be stored as a famine reserve crop, tolerates extreme weather conditions, and performs well in degraded soils (Kanyamuka, Dzanja and Nankhuni, 2018a). Similarly, cassava is more drought-tolerant than maize and offers one of the adaptation strategies to the impacts of climate change that Malawi is facing (Kanyamuka, Dzanja and Nankhuni, 2018b). Additional production is also being driven by increasing urban demand for affordable carbohydrates, and yields of cassava and sweet potato have been increasing due to the introduction of high yielding varieties, though these still fall short of potential.[4]

Nevertheless, as the main source of food, maize has been at the centre of agricultural policies, programmes and public expenditure for decades. This is further discussed in the Key Sustainability Questions. Its status as the cultural backbone of household food security reinforces the dominance of maize production, and according to the World Bank (2018), approximately 94 percent of farmers in Malawi produced maize, but only 14 percent sold it on the market. The major share of food energy intake for rural households thus comes from subsistence production of this crop, contributing significantly to the low dietary diversity at household and national level in Malawi (Government of Malawi, 2021).

Figure 3. Trends in production of key agricultural crops (tonnes)



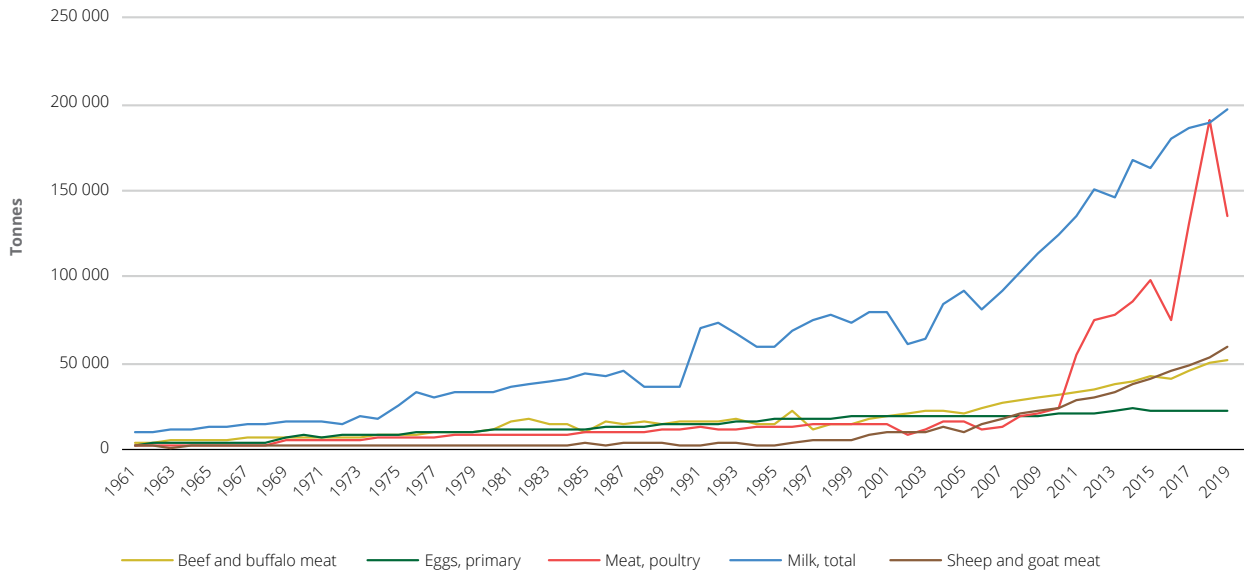
Source: FAO. 2021. FAOSTAT Database: Production. Cited 15 March 2022. https://www.fao.org/faostat/en/#data

[4] In 2017, cassava productivity of 21.8 tonnes/ha fell short of the potential of 45 tonnes/ha (Kanyamuka, Dzanja and Nankhuni, 2018b). For sweet potatoes too, the yields of 18 tonnes/ha in 2017 remained below the potential of 35 tonnes/ha (Kanyamuka, Dzanja and Nankhuni, 2018a).

Tobacco has been the major cash and export crop since the 1980s. Since the liberalization of tobacco growing in Malawi in 1995, smallholders are increasingly engaged in Burley tobacco production and it has become one of the major income earners for most smallholder households. Commercial estate farms in the country are engaged in the production of tobacco and other traditional cash crops such as cotton, sugar and tea. These commercial estates generate almost 80 percent of the country's exports and are run mostly by multinational firms operating out-grower schemes that contract nearby smallholders (World Bank, 2022). Smallholder production accounts for 95 percent of total tobacco production (Government of Malawi, 2018).

Production volumes of key livestock products have also increased over the years (**Figure 4**). This has been driven by a marked upward trend in the number of sheep and goats owned by smallholders, with a smaller increase in cattle numbers.

Figure 4. Trends in production of key livestock commodities (tonnes)

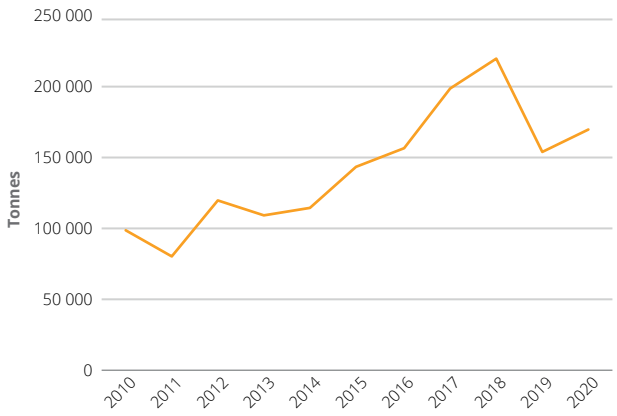


Source: FAO. 2021. FAOSTAT Database: Production. Cited 15 March 2022. https://www.fao.org/faostat/en/#data

While fisheries account for a small share of GDP, they are an important source of animal protein, contributing more than 70 percent of the dietary animal protein intake of Malawians and 40 percent of the total protein supply (Government of Malawi, 2021). Fishing supports the livelihoods of 10 percent of the population (World Bank, 2022). The total annual fish production has been fluctuating, with an overall increasing trend over the last decade (**Figure 5**).[5] Total fish production rose from 99 194 tonnes in 2010 to 170 843 tonnes in 2020, when 94 percent of the total fish catch originated from Lake Malawi, which remains by far the major source of fish in the country. The fisheries sector is composed of capture fisheries, aquaculture and aquarium trade subsectors.

[5] The fluctuations might be a result of increasing climate events that negatively affect fishing. According to a study by Limuwa *et al.* (2018) based on surveys, fishers reported increased incidences of drought, erratic rainfall, high temperatures and persistent *Mwera* winds (strong southeasterly winds that affect lake Malawi and can disrupt fishing activities).

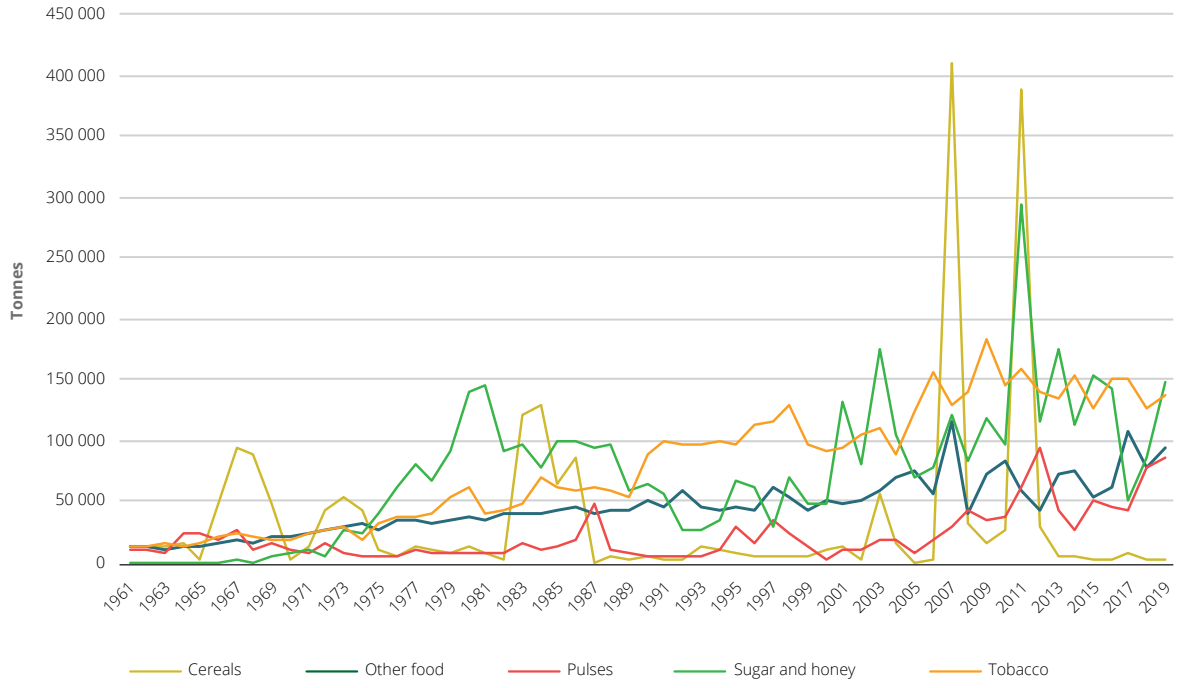
Figure 5. Trends in fish production (catch in tonnes)



Source: Government of Malawi. 2021. Annual Economic Report 2021. Ministry of Economic Planning & Development and Public Sector Reforms. Cited 13 July 2022. https://www.finance.gov.mw/index.php/our-documents/annual-economic-reports

Malawi's share in global trade is negligible, ranking 156 in the world in terms of total exports and 155 in total imports. Tobacco is the main agricultural export, followed by sugar, tea and coffee, and together they bring in more than 80 percent of Malawi's export revenues. Exports of these products have generally trended upward, though with substantial fluctuations over the years (**Figure 6**). Other exports include nuts, oilseeds, fodder and feedstuff. According to the Africa Agriculture Trade Monitor 2021 (Bouët, Tadesse and Zaki, 2021), intra-African agricultural exports (mainly to South Africa, Zambia, Zimbabwe and Mozambique) averaged USD 270 million annually, representing 23 percent of total agricultural exports. The biggest export market is the European Union, followed by Asia.

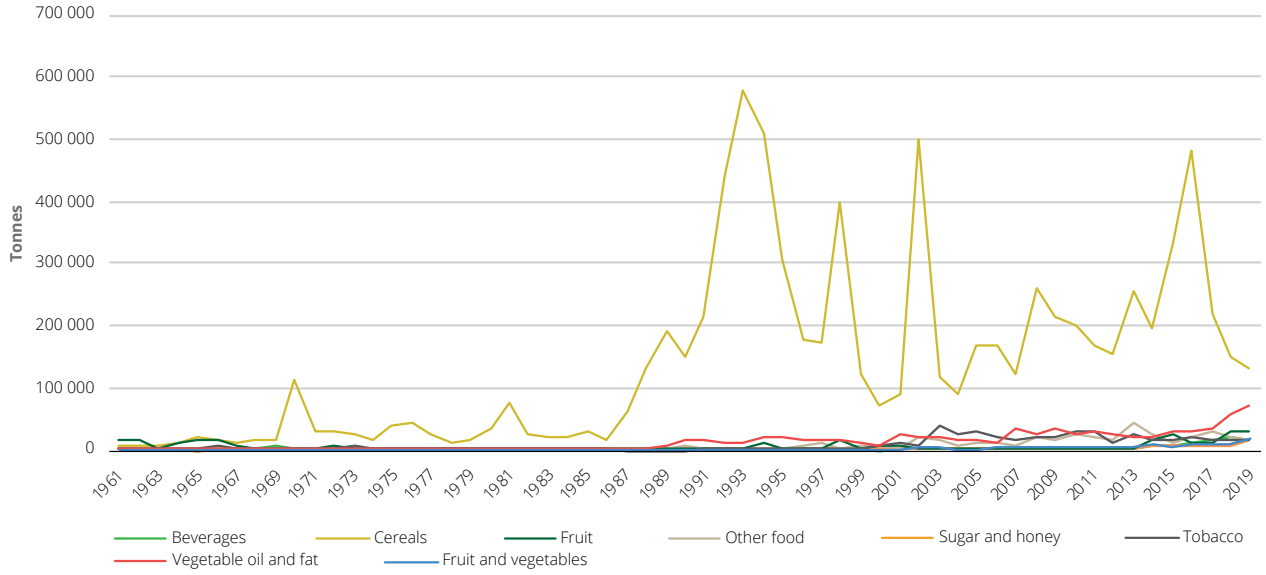
Figure 6. Trends in exports of key commodities (tonnes)



Source: FAO. 2021. FAOSTAT Database: Trade. Cited 15 March 2022. https://www.fao.org/faostat/en/#data

Malawi's food imports have fluctuated substantially in recent years, but have trended lower over the last two decades and stood at less than 15 percent of total merchandise imports in 2020 (Knoema, 2021). Wheat is the most significant of Malawi's food imports, followed by vegetable oils (e.g. palm oil and soybean oil), tobacco and other food preparations (**Figure 7**). However, food import dependency is very low. Approximately 90 percent of Malawi's food comes directly from domestic harvests and household food availability is determined primarily by own production, which in turn relies mainly on maize production. According to recent data, the country was able to meet 95 percent of its cereal demand from domestic sources with a very low (5 percent) import dependency (Bouët, Tadesse and Zaki, 2021). Food imports are largely from South Africa, Zambia, Zimbabwe and other African countries.

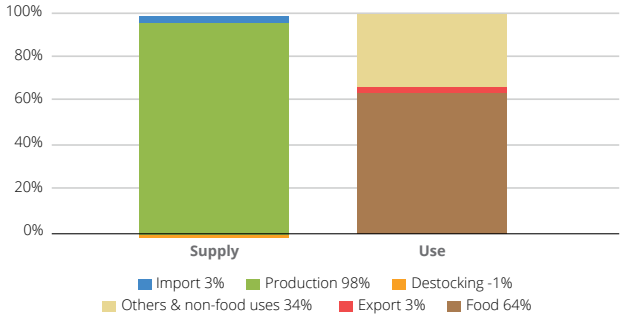
Figure 7. Trends in imports of key commodities (tonnes)



Source: FAO. 2021. FAOSTAT Database: Trade. Cited 15 March 2022. https://www.fao.org/faostat/en/#data

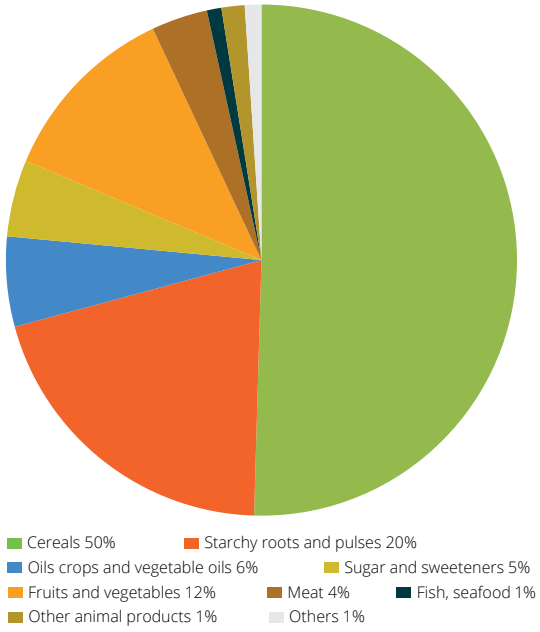
The country's food balance in terms of food energy consumption reflects the subsistence nature of production (**Figure 8**), with almost 98 percent from food produced in-country (FAO, 2021), and trade playing a minimal role. **Figure 9** presents the daily supply of different food groups in terms of food energy shares. Food availability seems to be dominated by cereals (50 percent), followed by starchy roots and pulses (20 percent). Availability of animal proteins is very low – as little as 4 percent for meat and 1 percent for fish and seafood.

Figure 8. Food balance (in calories)



Source: FAO. 2021. FAOSTAT Database: Food Balances. Cited 15 March 2022. https://www.fao.org/faostat/en/#data

Figure 9. Daily food supply (kcal/capita)



Source: FAO. 2021. FAOSTAT Database: Food Balances. Cited 15 March 2022. https://www.fao.org/faostat/en/#data

These patterns are further reflected in the poor quality of food consumed in the country, which has shown little to no improvement in the last decade. In 2017, 45 percent of households had less than acceptable food consumption, compared to 48 percent in 2009 based on Food Consumption Scores (WFP, 2018). There is a lack of dietary diversity and an overreliance on cereal and/or starchy foods as the primary meal. Consumption of animal-based foods and other nutrient-dense foods (e.g. vegetables and fruits, nuts, seeds and legumes) is still low, owing to restricted production, limited availability, and hampered access (IPC, 2022; Gilbert, Benson and Ecker, 2019). Furthermore, food consumption quantity has exhibited inconsistent outcomes over time and is still vulnerable to climatic and weather-related shocks.

An analysis of household diets, in terms of the average days of consumption of each food group in a week, helps shed light on the consumption patterns in Malawi (WFP, 2018). Staple foods (cereals and tubers) are consumed almost daily, as expected; vegetable consumption is near-daily; pulses and meat are consumed on average less than two days a week, though there are variations throughout the country. Fruit consumption is only one day per week on average. Dairy consumption is extremely low throughout Malawi, with less than one day a week of consumption on average. While there are differences between diets in rural and urban areas, these vary more substantially with income. For instance, a survey of household consumption of meat, fish, milk, pulses/nuts, fruits and vegetables as a proportion of daily diets showed these rose as incomes increased (NSO, 2012). Moreover, dietary patterns for female-headed households were poorer. Although the share of urban population remains low, economic development, urbanization, and the rapid rise of the middle class is leading to gradual changes in dietary patterns. This is reflected in the rising imports of processed foods and beverages (Munthali *et al.,* 2021).

Characterization of players and activities in the food systems

Malawi's food system involves a numbers of players with different interests, forming a rather complex policy and institutional environment in which the food system operates. Besides the government, actors influencing policy include donors, civil society, the private sector, farmers' organizations, parliament and academia. Actors can also, however, be classified quite conventionally:

1 Production
Farmers, particularly small-scale family farmers, along with agrodealers and input suppliers are the key actors ensuring primary production. Input subsidies make the government a key player here too. A growing NGO community also plays a role in supporting farmers with inputs and extension services.

2 Aggregation
Taking produce further down the line involves private traders, agricultural cooperatives and private companies. The major player, though, is the Agricultural Development and Marketing Corporation (ADMARC), which has warehouses and outlet markets across Malawi. Agricultural commodity exchanges have also grown in importance, with major players including the Agricultural Commodity Exchange (ACE) and the Auction Holdings Commodity Exchange (AHCX).

3 Processing
Food processing in Malawi is still largely undeveloped and most processed food is imported and sold through retail outlets. There is some basic and micro food-processing at community level, including milling, packaging and sometimes nutrient fortification. Agroprocessing contributes about 11 percent of the GDP (Benfica and Thurlow, 2017). Private sector firms, e.g. Bakhresa, Farmers World, Export Trading Company, and Paramount Commodities are involved in medium-scale milling, storage and transportation. There is also some rudimentary processing in the dairy and beef sectors, as well as in horticulture. Cooperatives have been growing, with increasing involvement in food processing. The National Smallholder Farmers' Association of Malawi (NASFAM) has a notable processing subsidiary.

4 Marketing
The main actor in agricultural marketing is ADMARC, as it provides both the backward and forward market linkages for farmers. As a price leader, ADMARC has huge influence on the market. Informal small-scale trade and cross-border trade are important sources of food security in Malawi as they supplement farmers' own harvests and allow traders to earn a living. Local markets are largely informal and formal retail channels are concentrated in urban centres. Poor road and communication networks are among the major factors limiting the efficiency of the food market and entire supply chain. Additionally, poor Malawians sometimes engage in barter, to exchange excess produce for foods they lack. They also engage in casual agricultural labour for food or payment, locally known as "ganyu".

5 Retailing
The retail sector has also been growing with the arrival of multinational supermarkets in the past 20 years. This has increased food choices and the variety of food types on the market, and affected the general nutrition status of most middle-class households, where consumption of foods high in salt, sugar and fat (i.e. ultraprocessed, convenience foods) is also increasing. Major retail chains include domestic groups such as Peoples, Chipiku and Sana, and Shoprite of South Africa.

Actors in the policy space

The Malawi food policy space has generally been dominated by the Ministry of Agriculture, and to a lesser extent by other related line ministries, such as those dealing with land, transport, health, trade, local government and education. The role of the government, among others, has been to initiate policy processes and provide the structures and institutional platforms for policy engagement. Government has a central role in setting standards and ensuring that those are met by all actors within the system.

The government has the primary responsibility of building the infrastructure that supports the food system such as roads, markets, energy and ICT networks and others. Additionally, apart from central and the local government, a number of quasi-state institutions, such as the National Planning Commission (NPC), have also provided support in policy focus across sectors. For instance, the NPC has recently launched "Malawi Vision 2063" – setting out a roadmap to self-reliance, with the development of the agriculture sector as its first priority (Government of Malawi, 2021).

The other category of actors having a huge influence on the Malawi food system includes the various development partners both bilateral and multilateral donors. These partners ensure alignment between local policy processes and international development paradigms. At the same time, the development partners play a crucial role in providing the resources that support most policy processes in Malawi. Due to their financial capacity and influence on both civil society and government it frequently happens that their narratives come to dominate public discourse on development.

Civil society organizations also play a significant role in the Malawi agrifood system. These civil society players include the networks such as the Civil Society Agriculture Network (CISANET), the Civil Society Organisation Nutrition Alliance (CSONA) and the Malawi Economic Justice Network (MEJN). The main role of the networks is to provide space and evidence for policy advocacy but also mobilization of sector actors. Other civil society actors are the non-governmental organizations and the individual players. These complement the work of the government and of the development partners in agricultural development by support the farming communities with inputs, capacity building, extension services and community mobilization.

The private sector is also growing in importance and is mainly represented in formal platforms through the Malawi Confederation of Chambers of Commerce and Industry (MCCCI). It facilitates engagement in policy advocacy and space for collaboration (e.g. trade fairs). While most of the entities that invested in tobacco production have pulled out, there are new entrants in sugar, legumes and fruit processing. There is limited participation of local Malawians in the commercial agriculture sector, due to a lack of locally designed incentives to support them, as much of the public expenditure in the agriculture sector is dedicated for the input subsidy programme, and given that the majority of Malawians are holders of small landholdings (see Key Sustainability Questions).
Farmers' organizations are also important players in policy engagement. The Farmers' Union of Malawi and the smallholder grouping NASFAM are the main actors and representatives of their interests in the policy space. Other institutions fill a supporting role by providing evidence in policy processes, including research institutions such as the MwAPATA agricultural policy thinktank, the International Food Policy Research Institute (IFPRI) and academia, especially the Lilongwe University of Agriculture and Natural Resources.

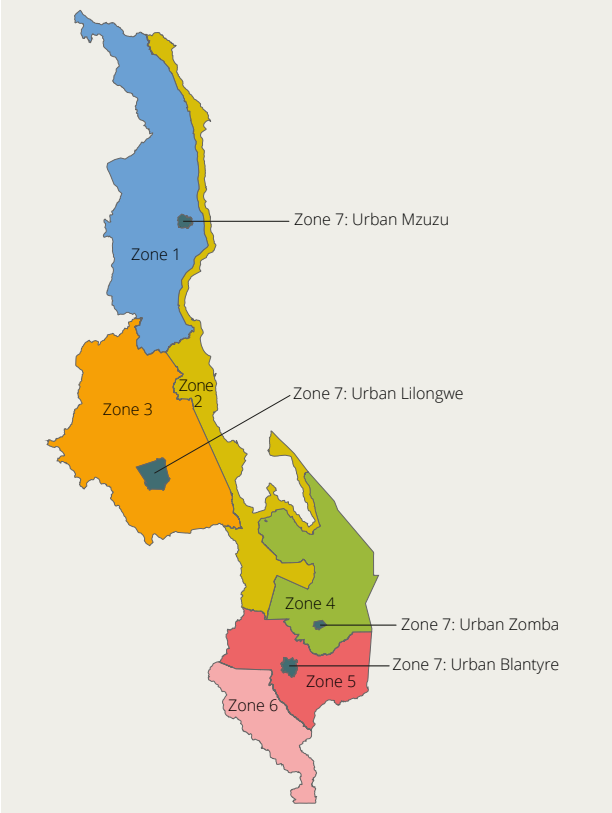
The Parliamentary Committee on Agriculture (PCA) plays a crucial role in developing agrifood laws.

Malawian food systems from a territorial perspective

The adoption of territorial perspective allows us to discern seven different food systems in Malawi (Figure 10). These food systems result from the variations in terms of biophysical conditions for production available technologies and production systems, land(use) rights and access, infrastructure (energy sources), presence of functional markets, investments and market opportunities but also from the presence of other crops (besides maize as the main staple crop, legumes also represent an important entry point to support diversification while boosting the nutritional status of the population) and non-agricultural activities.

Besides identifying some of the essential system elements that characterize each of the seven territorial food systems, the description also includes an analysis of potential levers and how these would contribute to improving the sustainability of each of these systems. These levers complement the levers identified during the national-level analysis of a set of key sustainability issues.

Figure 10. Map of the territorial food systems in Malawi



Source: Authors' own elaboration. Map conforms to United Nations. 2012. Map no. 3858, Rev. 4. https://www.un.org/geospatial/content/malawi]

Zone 1 covers Karonga upland, Chitipa, Rumphi and Mzimba. The agriculture in this zone is dominated by legumes, rice and bananas. It offers resources such as forests, national parks, large and perennial rivers, mineral deposits and access to neighbouring Zambia and the United Republic of Tanzania. It faces challenges in high poverty and malnutrition rates, low access to electricity, high deforestation, land-tenure insecurity and poor road infrastructure, with limited value addition for produce.

The main levers in this zone would be to improve road and market infrastructure in order to promote aggregation and market integration with other areas, as well as processing at farm level. Better access to electricity would be necessary to improve processing and conservation of food. Enhanced water use could benefit fish farming and agriculture, through irrigation. This is especially important given that the predicted impact of climate change on legume production in this zone is likely to lead to a decrease in annual production, potentially translating into a 12 percent decrease in annual production in Karonga, and more in other zones, such as Shire Valley (Hunter *et al.,* 2020).

Zone 2 covers all areas along the shore of Lake Malawi and the Great Rift Valley. The food system is dominated by rice production and fishing, with fertile soils and potential for irrigation, and

represents some of the most suitable lands for short-maturing maize production (Hunter *et al.,* 2020). Challenges include high poverty and illiteracy rates, limited value addition, high rates of deforestation and substantial land degradation. The lake is the main source of livelihoods and opportunities for the population, with tourism and cross-border trade also playing a significant role.

Leverage points here would be to invest in irrigation and promote linkages between cooperatives and plants processing mangoes and fish. The development of storage infrastructure, including investments in cold-chain facilities, would also help fishers to improve their returns and livelihoods.

Zone 3 (Kasungu-Lilongwe and Mchinji plain) is the main food production area for Malawi with almost all crops grown, including tobacco. Fertile soils and generally good weather conditions lead to high levels of productivity of all crops, especially grains and legumes. The main challenges in this zone are the very high deforestation rates, land-tenure insecurity, persistently high rates of poverty, and malnutrition. Road infrastructure is better than in other parts of the country and producers have access to markets. This zone has been deeply affected by global campaigns against tobacco consumption, leading some growers to abandon their farms to search for jobs in urban areas. The main leverage point in this zone would be to promote diversification in favour of food crops, or cash crops other than tobacco.

Zone 4 is the eastern region covering Zomba, Machinga, Mangochi and Balaka. This zone is dominated by rice production and fishing in Lake Chirwa. The main challenges are high soil degradation and deforestation and high risk of flooding, especially in the Lake Chirwa watershed. This zone has opportunities that include advancing irrigation, favourable weather conditions, connectivity to Mozambique, and potential for tourism, especially in national parks.

It is important to note that Kasungu and Machinga are important producers of legumes in Malawi, and Machinga might suffer some of the greatest negative changes in bean production (52 percent) at the household level due to projected changes in climate (Hunter *et al.,* 2020).

The main leverage areas in this zone would be flood controls and promoting tourism as an alternative livelihood to farming.

Zone 5 is the Shire Highlands (Blantyre, Mulanje, Thyolo, Phalombe, Mwanza and Chiradzulu), covering the different landscapes in the southern region of the country. Agricultural production is dominated by legumes, tea and coffee, but also includes maize, vegetables, fruit and cassava, as well as breeding of goats. Population density is high, leading to land–tenure insecurity and rural–urban migration. Poverty rates are as much as 74 percent in some districts. This zone also offers advantages such as good weather for horticulture, a dynamic dairy industry and good linkages to the main border entry points for both road and rail.

Zone 6 is composed by the Lower Shire (Nsanje and Chikwawa) and borders Mozambique on both boundaries. This zone is the most vulnerable in terms of drought and floods. The zone also benefits from winter production of maize using floodwater residues, and livestock breeding and fishing are also sources of livelihoods in this area. Other substantial challenges include poor road infrastructure and access to markets, limited access to electricity, high poverty rates (64 percent) as well as high land degradation. Despite these challenges, this zone has several opportunities such as a good potential for irrigation (more than 400 ha), and the largest sugar-processing plant.

This zone would benefit from investments in water management, to better manage responses to both floods and droughts.

Both Zone 5 and Zone 6 are likely to be among the least ready to respond or adapt to climate-change-related impacts, with predicted negative impacts on production for beans, maize, cassava, cowpeas and groundnuts (Hunter *et al.,* 2020). This zone is characterized by low adoption of improved agricultural practices, low access to financial services, low education levels, and low access to agricultural information (Hunter *et al.* 2020).

This zone would benefit from promotion of agroprocessing at household level, in order to enhance agricultural incomes through value-addition to on-farm primary production, with efforts towards avoiding post-harvest losses, as well as the dissemination and adoption of climate-smart varieties of crops to ensure suitability of agricultural production to land and climate trends. The latter could involve for example, promoting the adoption of a diversity of bean cultivars as well as additional legume species (cowpeas and groundnuts), which are predicted to remain relatively resilient to the changing climate (Hunter *et al.,* 2020).

Zone 7 represents the main urban and peri-urban areas (the capital, Lilongwe; Blantyre in the Shire Highlands; Zomba, the old capital; and Mzuzu in the north, a focus of trade with the United Republic of Tanzania). These areas are characterized by better access to communications, electricity and road infrastructure and processing facilities. Consumption differs slightly from other parts of the country, with maize and livestock staples, but more consumption of processed food and some promotion of healthy food. The main challenges include population increases, mostly through rural–urban migration, poor waste management, pollution, land degradation and deforestation and increased use of charcoal. This zone offers producers easy access to markets, better roads, and potential to promote exports of agricultural products, especially livestock.

This zone would benefit from investments in agroprocessing to increase value addition and create jobs. Moreover, nutritional education could help to prevent food-related non-communicable diseases, which have been increasing with consumption of highly processed convenience foods, and associated increasing trends in overweight, obesity and diet-related non-communicable diseases.

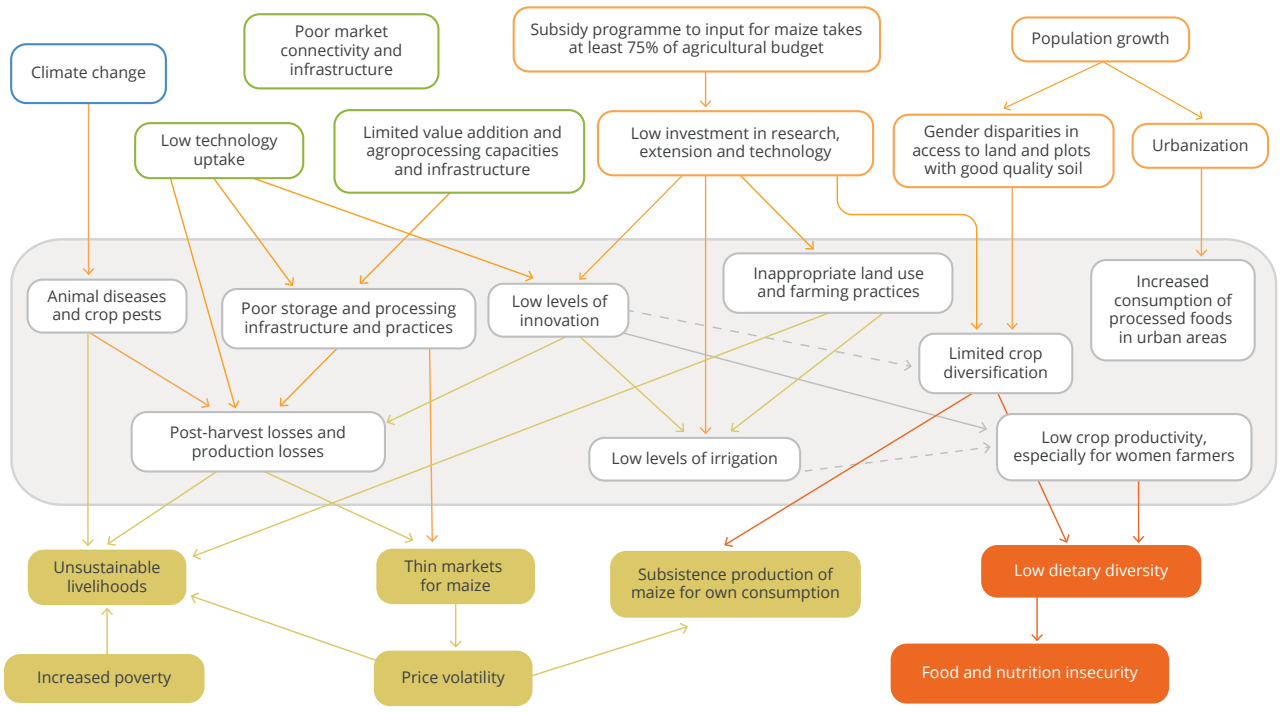
The adoption of a territorial perspective thus allows anticipation of the impacts of climate change on food system sustainability in each of the identified food systems. For example, with maize widely grown in areas characterized by their marginal or moderate suitability for long-maturing varieties and with climate change expected to reduce output by between 2.8 percent and 17 percent, Zones 2, 5 and 6 will be particularly impacted – notably the Shire Valley, Salima and Mzuzu (Hunter *et al.,* 2020).

Key challenges to the achievement of core sustainable food systems goals

Key Sustainability Question 1: Why does Malawi's food system not allow smallholder farmers to make a decent living, nor ensure food security and nutrition – in rural areas in particular?

With a population growth rate of 2.7 percent (World Bank WDI Database, 2020), increasing land degradation and high susceptibility to climate shocks, Malawi's food systems will likely not be able to sustainably continue to feed its growing population nor meet its poverty-reduction targets, if current trends continue. Trend data show that agricultural productivity has remained consistently low compared to other countries in the region. Only 0.5 percent of crop plots are estimated to be under irrigation, leaving production levels and smallholder incomes vulnerable to changing rainfall patterns and price swings (World Bank, 2018).

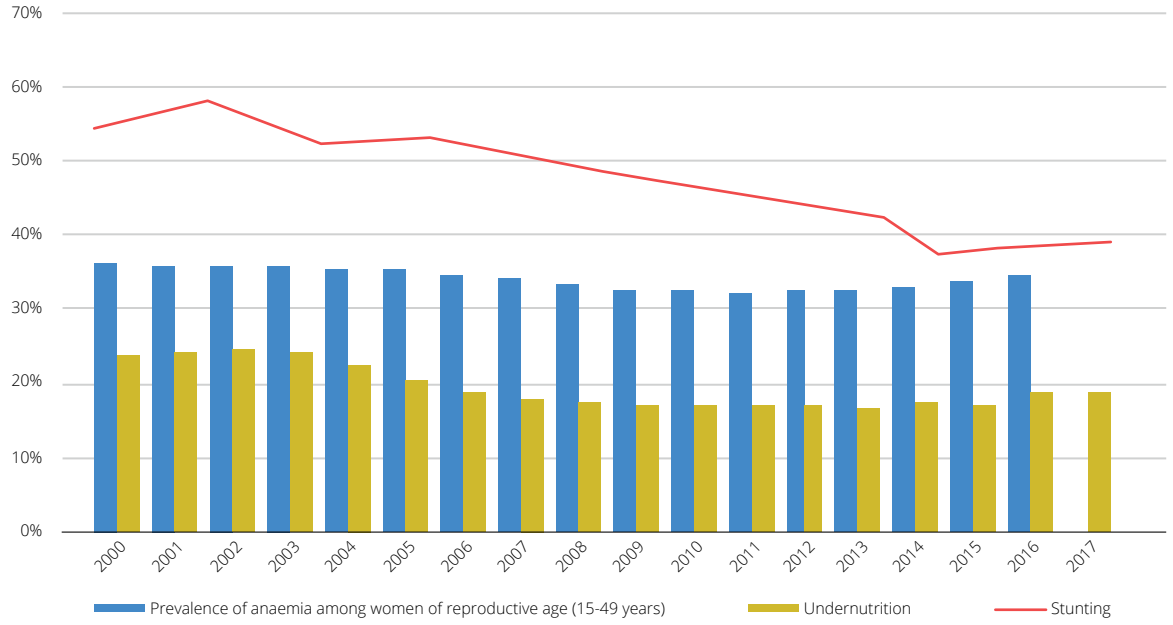
Figure 11. Drivers of food insecurity, malnutrition and poverty



Source: Authors' own elaboration

Much of the domestic food supply is shaped by trends in smallholder food-crop production, given that most Malawians have cereal-based diets and rely on domestic maize production. Moreover, the lack of dietary diversity, especially in rural areas, means that stunting, wasting and micronutrient deficiencies remain high, though they have trended lower (**Figure 12**). Food insecurity and malnutrition are highly associated with low and volatile food production and productivity.

Figure 12. Prevalence of malnutrition in Malawi (2000–2018)



Source: FAOSTAT, Food Security Indicator Suite. https://www.fao.org/faostat/en/#country/130

Malawi carries the triple burden of malnutrition, since problems of underweight and stunting remain prevalent, resulting from undernutrition and lack of micronutrients, even as health problems associated with overweight and obesity are increasing in urban and higher income contexts.

Additionally, poverty is more widespread and deeper in rural areas, where 84.7 percent of households are engaged in agriculture and 43.4 percent in rearing livestock (NSO, 2021; NSO, 2020). These reports furthermore showed that 92.8 percent of households in rural areas were engaged in agricultural activities, compared to 43.7 percent in urban areas, and the proportion of households cultivating rainy season crops was 88 percent compared to 31.2 percent in urban areas. The majority of rural households are farmers with less than 2 ha of land and living on less than USD 2.50 a day at household level. Rural poverty rates at 56.6 percent are markedly worse than urban rates, at 19.2 percent. Household incomes in rural Malawi are dominated by agricultural income, and shocks to crop production have substantial impact on livelihoods, as does price volatility. Moreover, especially for households that depend upon cash or export crops, consumption is highly correlated with agricultural income, though informal insurance mechanisms within communities or extended households may help to smooth consumption in the face of agricultural production and income shocks. In addition, given imperfect labour and credit markets, household labour shocks such as illness or death affect production and off-farm earnings, and thus consumption (McCarthy, Brubaker and de la Fuente, 2016).

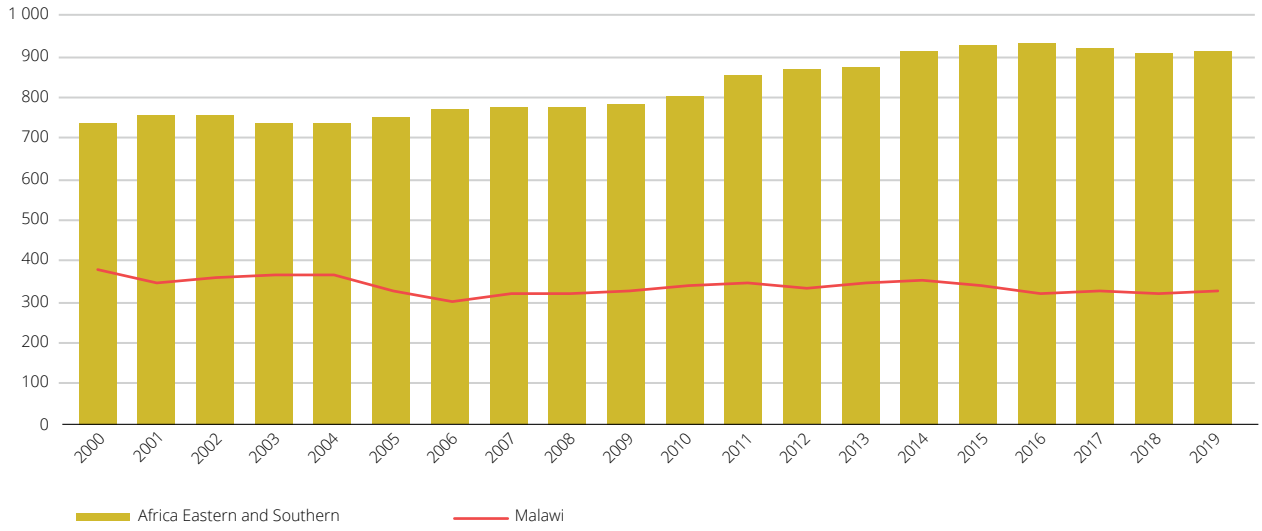
A major driver of poverty, food insecurity and malnutrition is the low and fluctuating production of cereals, starchy roots and tubers. An additional factor is the lack of diversification of produce, layered on gender and land inequities.

Agricultural production faces major challenges, with wider implications for poverty, food insecurity, malnutrition and vulnerability more broadly:

- over-reliance on rainfed agricultural production systems, which are prone to climate shocks;
- low productivity due to lack of modern inputs and practices, and gender disparities in access to critical inputs and services;
- animal and plant diseases which lead to major crop and livestock losses;
- volatility of prices of maize, fertilizer and tobacco; and
- the nutrition and health situation, including HIV/AIDS, malaria, tuberculosis, anaemia and other non-communicable diseases, which also put monetary burdens on households.

Agricultural production is characterized by low and stagnant productivity (**Figure 13**), due to reliance on rainfed agriculture, lack of investments in modern inputs and continued use of traditional and soil-depleting agricultural practices – 98 percent of plots were prepared using a hand hoe (NSO, 2020) – soil degradation, climate variability and thin markets.

Figure 13. Added value in agriculture, forestry and fishing (2000–2019)



Source: World Bank. 2021. WDI Database. Cited 20 October 2021. https://databank.worldbank.org/source/world-development-indicators.

Crop yields are still as low as 20 percent of potential, with 75 percent of crop production coming from smallholder farmers who use traditional tools and techniques and have limited credit and insurance access (Ulimwengu et al., 2021). Irrigation and mechanization rates are low, despite improvements in the supply of quality seeds and fertilizer. The sector still has limited local processing, value addition, food manufacturing, storage and market infrastructure, logistics and transportation, and energy infrastructure. Poor storage contributes substantially to post-harvest losses, ranging between 5 percent and 12 percent of total agricultural production at household level (Ambler, de Brauw and Godlonton, 2017). Humid and otherwise poor storage environments, materials and practices also result in high aflatoxin/mycotoxin levels in grains, with implications for public health (Eskola *et al.,* 2019).

These factors contribute to strong seasonal food price variations, even during periods of relatively abundant harvests, because of limited storage at the community and household levels, low credit availability and inadequate strategic food reserves (FAO, ECA and AUC, 2020). While the parastatal marketing board ADMARC was set up by the Ministry of Agriculture and Food Security to implement a price band system for maize, this has been insufficient for price stabilization, partially because of ADMARC's limited financial resources. Between 2006 and 2014, ADMARC purchased between 90 percent and 62 percent of local maize (Heumesser and Kray, 2019).

Gender yield and productivity gaps are also an important driving factor in food insecurity, malnutrition and vulnerability. Women are estimated to perform between 50 percent and 70 percent of all agricultural tasks in Malawi (Akram-Lodhi, 2018). At the same time, a study indicated that women had less access to land than men, which reduced their productivity by up to 12 percent (Deininger, Xia and Holden, 2017). Addressing such gender disparities and noting the drivers of gender gaps in yields and productivity are critical.

Women not only have unequal access to land, but the land they do have is of lower soil quality (Burke and Jayne, 2021). This compounds the impact of structural factors, such as lack of access to extension and financial services in perpetuating lower productivity and yields. While women use better soil management practices (including residue incorporation and years of compost or manure applications), this might be because of the lower quality soil of their plots (Burke and Jayne, 2021). Additionally, 60 percent of women-managed plots used local seed varieties in 2014–2016 , and they used lower levels of improved seed, improved maize and fertilizer (Makate and Mutenje, 2021). It is important to note the cultural importance of maize in relation to food security and nutrition behaviours and choices, with women choosing local varieties, perceived to have better taste and nutritional value (Makate and Mutenje, 2021). Male plot managers, on the other hand, systematically use improved seeds for all crops, as well as improved maize, inorganic fertilizer and combinations of these inputs, and are more likely to produce maize for marketing rather than their own consumption (Burke and Jayne, 2021).

These factors, along with maize-focused incentives, undermine efforts to increase productivity and diversify crops to offer more nutritious options and varieties better suited to withstand the potential impact of climate change and reach higher yields, while improving soil conservation (World Bank, 2018). The Farm Input Subsidy Programme (FISP) has been the main programme to focus on increased use and adoption of improved seeds and fertilizers in growing maize, and other key crops in subsequent reforms. Even with its recent reforms, however, including increased distribution of vouchers for legumes, there has been no positive impact on agricultural

diversification, with 87 percent of all seeds distributed in 2015/2016 being maize (Heumesser and Kray, 2019). However, the FISP did show positive results in diversification, though this depended upon the value of farm assets. Not all households demonstrated the diversification in their production, as only those households with large land sizes used "additional" land to diversify crop production, while maintaining the same land area under maize cultivation. For those households, this diversification showed some benefits through positive outcomes in household dietary diversity and livelihood resilience.

Food security and nutrition, and livelihoods, have also suffered significantly from the recent spread of plant and animal diseases and pests – such as attacks by fall armyworm (FAW) that have become the major threat to food security in Malawi (Keeton, 2018), and which are intimately linked to environmental and climate variability drivers (further explored in Key Sustainability Question 2).

Market-based products to combat fall armyworm exist, such as cypermethrin, and integrated pest management techniques have also been tried. But more permanent solutions need to be found and implemented through investments in research and extension services to ensure farmer engagement, or FAW will continue to pose a significant threat to farmers and the food system as a whole.

Pests and diseases also afflict the underdeveloped livestock sector, which is important for both livelihood and nutrition purposes as it is viewed as a store of wealth and can also provide much-needed access to animal-source protein foods. However, particularly in the southern region (Zones 5 and 6), foot-and-mouth disease has been prevalent, threatening the cattle population, while the central region grappled with African swine fever in pigs and Newcastle disease in poultry.

By contrast, the emergence of a growing middle class has led to a shift in dietary patterns among Malawian households in urban areas (Zone 7), unlike in rural areas where diets have remained undiversified (Dzanja *et al.,* 2018). With market liberalization, regional integration and increased trade, food choices have diversified with more imports of processed commodities, meat and exotic foods. However, there is inequality in dietary and nutrition patterns between urban and rural households (Mazunda, Kankwamba and Pauw, 2015; Reardon *et al.,* 2021). In urban areas, for instance, consumption of highly processed convenience foods has contributed to obesity, and non-communicable diseases such as diabetes and cardiovascular diseases. At the same time, while rural areas may have a range of plant-based foods, they grapple with storage problems that lead to mycotoxin build-up, which can result in liver and oesophageal cancers (Matumba *et al.*, 2016). They thus have a direct impact on poor health outcomes of the population, in addition to being a driver of vulnerability, poverty and food insecurity.

Levers

In light of the centrality of agricultural production and productivity, the key levers identified include:

i. Investment in critical transport, storage and marketing infrastructure, as well as ensuring access to critical complementary agricultural and rural services. Enhancing market linkages could provide the basis for greater marketing and storage of maize, thus attenuating seasonal price and availability volatilities. These would also enhance the current food reserves and, by strengthening market linkages between rural and urban areas, could foster consumption of a variety of locally produced, nutritious foods in urban areas, rather than highly processed foods contributing to increasing overweight and obesity rates.

ii. Investment in research and development and increasing use and adoption of improved

technologies and practices in agriculture, including a specific focus on soil improvement. Increasing support to R&D could also help in bringing in new technologies, increase agroprocessing and value-addition, improving capacity building and also institutional development and coordination.

iii. Promoting production of diversified food in rural areas could be done through rethinking the balance of resources dedicated to different critical agricultural programmes beyond FISP, as well as further reforms to ensure FISP also benefits smallholder and women farmers. The promotion of diversified production can simultaneously meet environmental objectives and increase knowledge and literacy on nutrition, food safety and health.

iv. Promoting gender equity and enhanced agricultural asset wealth for women through agricultural and rural programmes. The aim would be to enhance women's access to critical inputs and services, including improving access to input vouchers, which could reduce the gap in improved maize adoption between men and women farmers. It is estimated that the probability of modern maize production by women in the FISP increased by 222 percent, suggesting this has the likelihood of reducing the gender gap in adopting modern maize (Fisher and Kandiwa, 2014). Furthermore, the FISP can be leveraged to further diversification, by allowing for redeemability on a broad range of productive inputs, and to promote uptake of appropriate agriculture inputs and technologies (Heumesser and Kray, 2019).

The current reform agenda, also informed by the outcomes of the Food Systems Summit Dialogue, provides ample opportunities for dialogue on public expenditure in agriculture to ensure investments in critical subsectors. These include extension services and infrastructure to increase value addition – and thus income generation – for rural households. Furthermore, current efforts of diversification within the FISP could be further explored in order to scale up the successes already seen in the uptake of modern inputs, and also increase on-farm diversification with the additional distribution of a variety of seeds. This could be done with a view to targeting smallholder and women farmers, in order to have an impact on household consumption of diversified diets.

Key Sustainability Question 2: Why are smallholder farmers increasingly vulnerable and less resilient to climate variability and other environmental challenges?

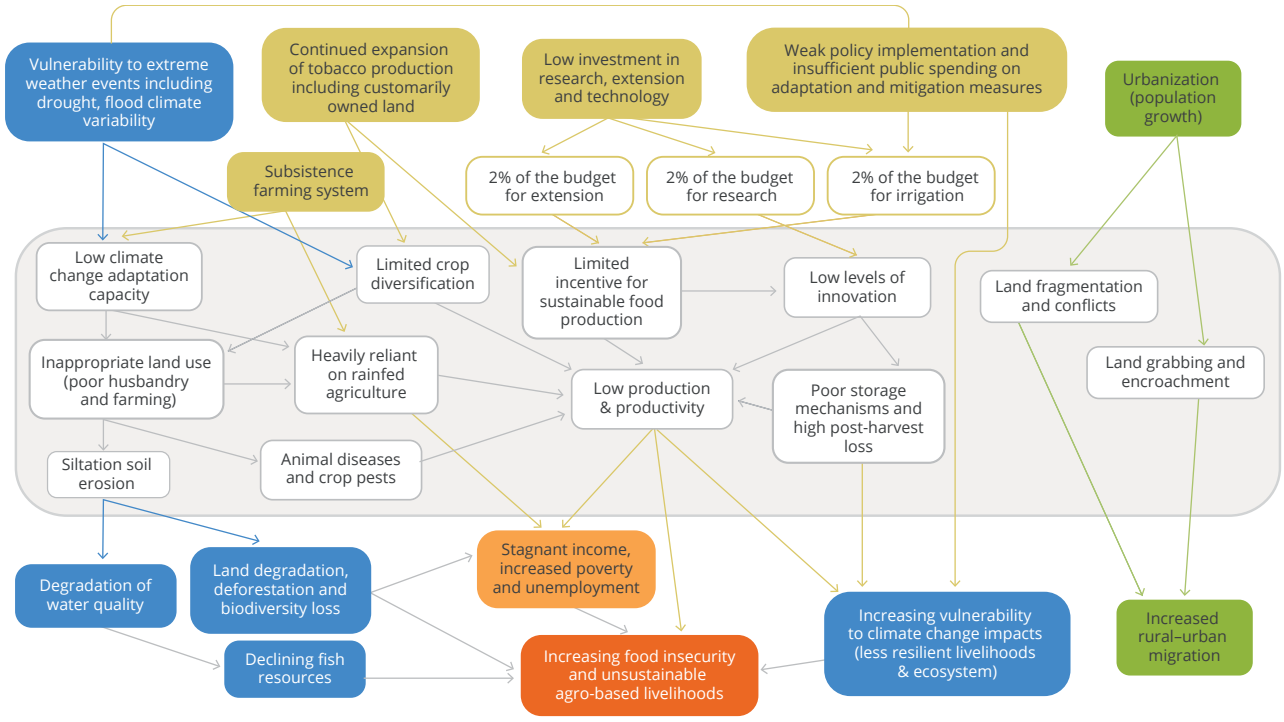
Malawi's food system remains unsustainable and increasingly vulnerable to climate change and environmental challenges, with particular risks for the rural poor. It relies on smallholder farmers of limited resilience, who predominate in agriculture, but whose focus on rainfed maize production exposes the food system to the worst impacts of climate variability and weather shocks such as droughts and floods.

The threat of increasing extreme weather events, as well as crop diseases and pests previously unknown in Malawi, poses substantial threats to farmers with limited access to productive resources, limiting production and productivity and undermining efforts to feed its people.

More than four out of every five Malawians (83 percent) are engaged in the agrifood system for their livelihoods, mostly in rural areas (Thurlow, 2021). Their traditional farming practices rely on rain, with little use of external inputs such as improved seeds, breeds and fertilizers, and limited mechanization for preparing the land, harvesting and threshing (**Figure 14**).

In the 2015/16 production season, for example, the El Niño climate pattern brought dry spells to the central and southern regions of Malawi and floods in the northern region. This severely impacted agriculture, with resulting food insecurity affecting about 6.7 million people (World Bank, 2021a).

Figure 14. Drivers of smallholders' vulnerability to climate and environmental shocks



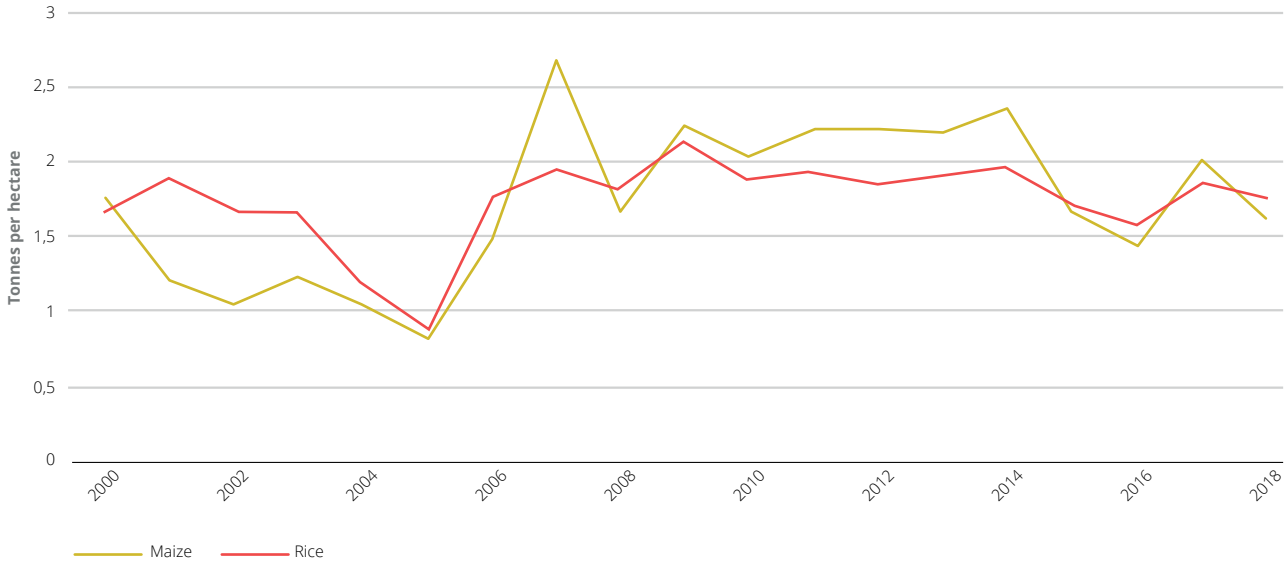
Source: Developed by the authors, 2021

The issues of **security of land tenure**, including title, control and access, are of paramount importance to achieve food security and the Sustainable Development Goals. Smallholder farmers currently own and use about 4 million hectares of Malawi's 5.7 million hectares of arable land, with the rest under commercial estate agriculture (CIAT and World Bank, 2018). The most common of the country's two tenure systems is customary tenure, dominated by smallholders and where the government devolves the land administration rights to traditional leaders or chiefs. In this system, farmers have holding rights but no official titles and the land cannot be used as collateral to obtain loans for investment. The average landholding under this arrangement is less than 1 ha and fragmentation is an increasing issue, along with land-grabbing and encroachment, which fuel land conflicts. Farmers have little incentive to make investments on these small plots and often resort to monocropping or unsustainable practices that result in soil exhaustion, and eventually in reduced productivity and increasing poverty, with reduced resilience to climate risks and market shocks alike.

In the **system under which estate farms operate**, an individual has the legal right (lease) to use land as collateral. Large commercial farms are often engaged in production of tobacco – the dominant export commodity, tea and other non-staple crops. Given its export orientation (offering greater returns as a cash crop), there is a tendency towards expanding tobacco production on customary land, which results in competition for land for food production.

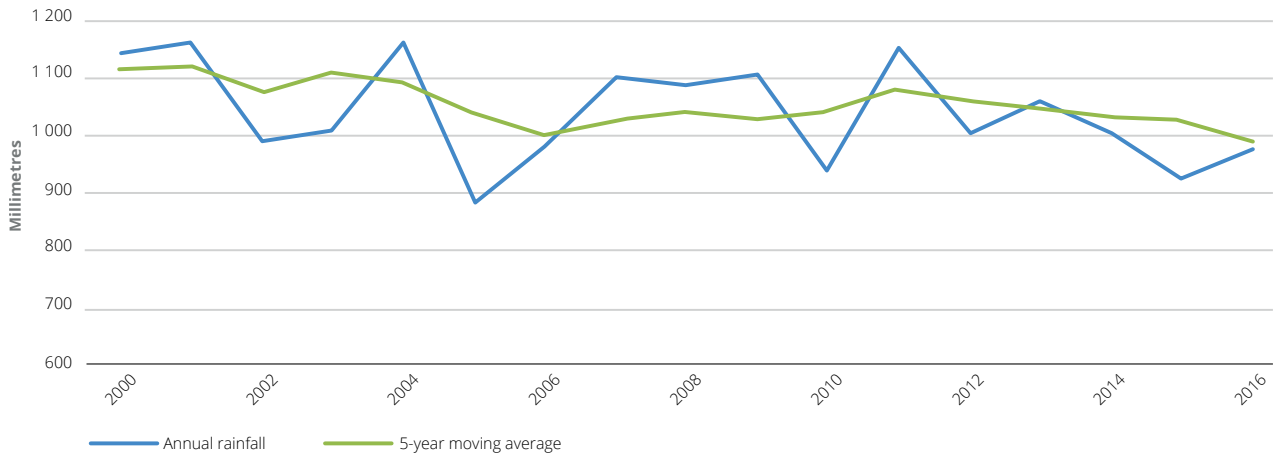
The **subsistence farming system**, associated with low crop diversification, has not only left the food system vulnerable to the vagaries of climate change, pests and animal diseases, but has also witnessed stagnation in productivity. For instance, Figure 15 illustrates agricultural productivity has not been improving sustainably, with negligible rises in maize and rice yields over the past two decades (World Bank, 2021a). In Malawi, food production follows the trend in rainfall distribution, shown in **Figure 16**, which demonstrates unsustainable and declining patterns.

Figure 15. Staple food yield (maize and rice) trends in Malawi (2000–2018)



Source: FAOSTAT. 2022. Production Database. https://www.fao.org/faostat/en/#data

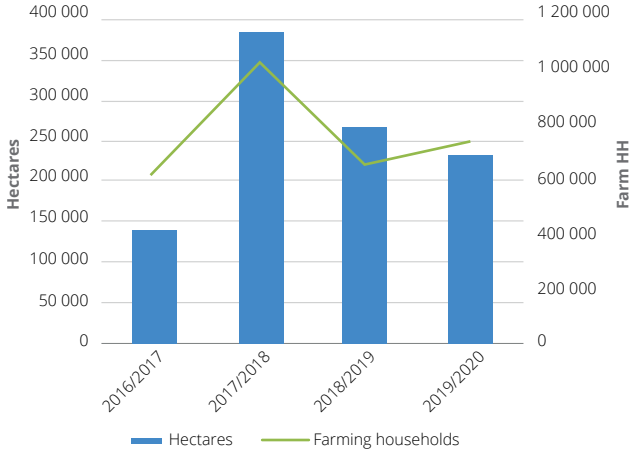
Figure 16. Rainfall distribution (2000–2016)



Source: World Bank. 2022. Climate Change Knowledge Portal. https://climateknowledgeportal.worldbank.org/country/malawi/climate-data-historical

Furthermore, linked to changes in weather, **new plant and animal diseases** have recently emerged and, in the case of fall armyworm, for example, had a substantial impact on food production, posing a major threat to food security in Malawi. FAW infestation reached prominence in Malawi in December 2016 (**Figure 17**) and although the pest mainly attacked maize, by 2019/20 it also damaged production of sorghum and millet (Government of Malawi, 2020).

Figure 17. Prevalence of fall armyworms



Source: Government of Malawi. 2020. Agriculture Sector Performance Report: June 2020. Ministry of Agriculture, Irrigation and Water Development, Lilongwe.

Tackling such problems requires giving attention to the **limited investment in R&D**, which leads to low levels of innovation (both in crop and livestock production), which consequently results in low capacity in climate-smart technologies (e.g. improved seeds, animal breeds) and poor technology adoption. This in turn makes smallholders less resilient. Innovation and investment are also lacking in storage technology and post-harvest handling techniques, resulting in high produce losses and food safety issues.

Moreover, **policy implementation gaps** – particularly in climate-resilient technologies and mitigation measures – contribute to smallholder vulnerability to weather-related shocks.

Many factors undermine the resilience of households, leaving them vulnerable to climate and environmental challenges. Among them are low productivity, degraded soils, limited production inputs, poor market and transport infrastructure, weak support services and insecure land-tenure systems. These combine to overwhelm limited coping strategies, undermine livelihoods and contribute to food insecurity (**Table 2**) (World Bank, 2021b).

Table 2. Total and share of food-insecure people in Malawi (2007/08–2019/20)

Consumption period	Total number of food-insecure people (million)	Total rural population (million)	Proportion of food-insecure rural people (%)	Proportion of food-secure rural people (%)
2007/08	0.06	11.31	0.6	99.4
2008/09	0.61	11.62	5.3	94.7
2009/10	0.28	11.95	2.3	97.7
2010/11	0.51	12.28	4.1	95.9
2011/12	0.27	12.62	2.2	97.8
2012/13	1.97	12.96	15.2	84.8
2013/14	1.86	13.31	13.9	86.1
2014/15	1.31	13.66	9.6	90.4
2015/16	2.8	14.01	20	80.0
2016/17	6.7	14.37	46.6	53.4
2017/18	1.04	14.72	7.1	92.9
2018/19	3.3	15.07	21.9	78.1
2019/20	1.1	—	7.0	93.0

Note: Food-insecure people are individuals who will not be able to meet their annual minimum food requirements (using the survival threshold); data from the Annual Assessment and Analysis reports of the Malawi Vulnerability Assessment Committee (2017–19) and World Bank.
Source: World Bank. 2021. *Malawi – Irrigation, Rural Livelihoods and Agricultural Development Project, and Agricultural Development Program Support Project (English)*. Washington, D.C., World Bank Group. http://documents.worldbank.org/curated/en/515771612377662563/Malawi-Irrigation-Rural-Livelihoods-and-Agricultural-Development-Project-and-Agricultural-Development-Program-Support-Project

Systemic Levers

The following potential levers could help to address the vulnerability of farmers and to boost resilience.

1. **Introduction and promotion of supplemental irrigation for increasing resilience to the effects of climate change and risks**

Given the risks of rising temperatures and extreme weather events resulting from climate change, and the likelihood of more severe droughts in future, reliability of water supply has a crucial role to play in stabilizing agricultural production and raising productivity in Malawi. Since only about 4 percent of cultivated land in Malawi is under irrigation (CIAT and World Bank, 2018), the introduction and scaling-up of irrigation could have a substantial impact on production of the rainfed crops on which Malawi currently relies, and is likely to continue to rely in future. This stabilizing effect, if implemented at a reasonable scale to achieve a broad impact, could help to increase yields, ensure farmers are able to maintain some output and continue to reap income, and maintain their livelihoods even in times of poor rainfall. Investment in irrigation systems (e.g. drip irrigation) could contribute to this in Zone 2 (shore of Lake Malawi) and Zone 6 (Lower Shire – Nsanje and Chikwawa), where water supplies are readily available. The main hurdle in the way of introducing or expanding supplemental irrigation is a lack of funds for investment in water infrastructure. Additionally, weak coordination of policies and targeting of efforts to address the impact of climate change, and a lack of secure land tenure, present difficulties in encouraging such investment, which also disproportionally affect women farmers, who have less access to irrigation technologies.

2. **Support adoption and practices of crop diversification and climate-smart agriculture for sustainable transition of the food system**

The focus on maize – with the impact of this on dietary diversity and climate vulnerability – makes it imperative to encourage a much greater variety of crops, to improve nutritional content and increase farmers' resilience to climate shocks. Legumes, cassava, sweet potato, and other vegetables are among those that could provide a greater nutritional range and contribute to efforts to improve health outcomes as well as food security. By encouraging the use of varietals shown to be adaptable to rising temperatures, Malawi could increase subsistence farmers' resilience in future, helping to stabilize incomes. An important aspect in implementing this lever would be to encourage reforms to the agricultural input subsidies, adjusting the focus to encourage take-up of a wider range of improved crops. The historical significance of maize in Malawi and existing investment in its production could prove to be substantial hurdles to change and greater diversity. Furthermore, efforts to encourage increasing crop variety would also need to address government policies that have encouraged tobacco monocropping. An additional effort in Malawi would be to adopt climate-smart agriculture – promoting application of **conservation agriculture** (minimum tillage, mulching and other measures), **agroforestry**, and increased adoption of **improved varieties** (early maturing and drought-tolerant crops). It would be essential to improve, encourage and expand extension services, if Malawi were to embrace the adoption and practice of climate-smart agriculture.

3. **Redouble efforts to tackle new plant and animal diseases, including research and development and considering resistant crops**

Ensuring that food security in Malawi is not further undermined by plant and animal diseases requires investment in research and development, as well as adoption of improved crops and varieties that are able to resist diseases and pests that threaten food production. Crucial R&D into technologies and approaches (e.g. biological control, integrated pest management) are needed to help to stop the spread of fall

armyworm and limit its impact on food crops. The main hindrances to this lever include possible lack of access to financial resources (that may be allocated to input subsidies rather than R&D), a lack of advanced technology, standardized laboratory equipment and research facilities, and well trained personnel.

4. **Introduction of land certification programmes to enhance tenure security of rural households**

Insecurity of land tenure remains an issue for most rural households, despite the introduction of new land legislation in 2016, allowing smallholders to hold legal title to their plots. This legislation is not yet well implemented and insecurity continues to limit smallholders' access to credit and motivation to invest in their small plots. Action points that could help to address this are:

i. fast-tracking operationalization of land tenure laws (certification schemes); and
ii. empowering community land tenure committees on governance and administration of land.

Effective application of these levers, by providing security of tenure and allowing smallholders to use their land as collateral, could help to improve access to credit, providing resources and encouraging investment in productive assets and in soil and water conservation measures. Implemented effectively, this could improve yields, agricultural productivity and household incomes. An additional effect would be that legal title may help to reduce land-related disputes, where these occur. Achieving these changes and impacts would need government commitment to enforcing the appropriate legislation and an effort to take up plot-level mapping and collection of boundary information for land registration.

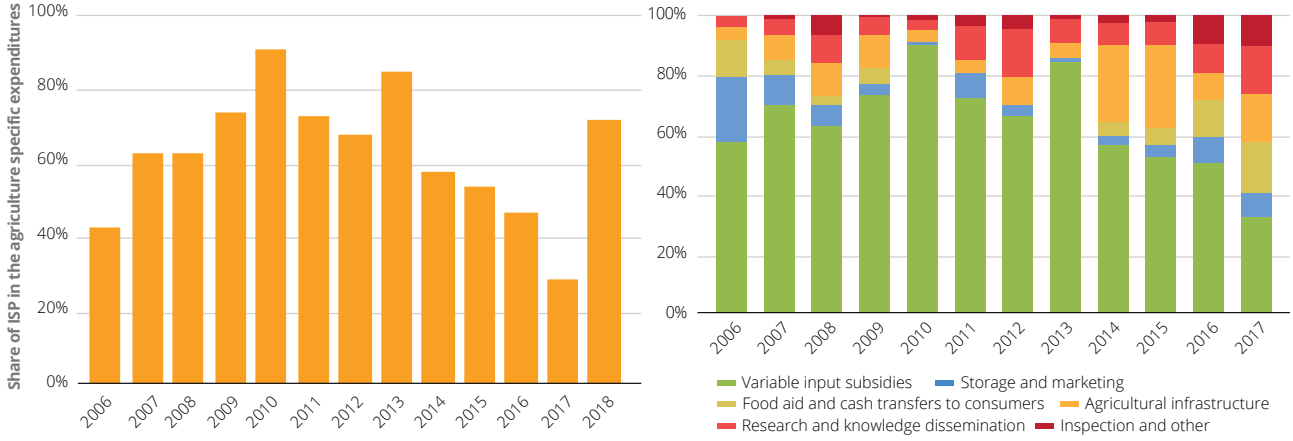
Key Sustainability Question 3: Can the main agricultural policies move beyond subsidies for maize?

Malawi is one of the countries in sub-Saharan African that has invested a substantial share of its budget in agriculture in the last two decades (African Union, 2022). It has achieved significant success and has been suggested as a possible example by the promoters of a green revolution in Africa, including foreign donors and the government. This success, however, seems to have reached its limits in terms of production, and to be detrimental to nutrition, food diversity, development of extension services, and food system resilience. Transformation would require the government to reorient its policy tools over the medium term to address these challenges.

Since Malawi gained independence in 1964, the evolution of its agricultural sector can be divided into three phases (Douillet, 2011). From 1964 to 1979, policies continued to prioritize the large export-oriented estates inherited from the colonial economy, but controlled by the public sector. Smallholders and farm workers received little support, gradually becoming pauperized. In the 1980s and 1990s, with high public debt and external crises, Malawi turned to the IMF and World Bank, and shouldered structural adjustment programmes. These led to changes in production: smallholders began growing tobacco, which became their main source of income, and maize became even more prominent among their food crops. Liberalization of the markets – for inputs and products – left smallholders more exposed to greater economic and weather shocks (through price shocks). From the late 1990s, input subsidies were reintroduced for maize, to combat food insecurity.

As a result, agricultural policies in Malawi have continued to focus heavily on subsidies for maize inputs over the last 15 years or so. Approximately 50 percent of the budget of the Ministry of Agriculture is allocated to the Affordable Inputs Programme (AIP). While this has been decreasing, from approximately 75 percent in 2009–2011, it is still among the highest in sub-Saharan Africa (Pernechele *et al.,* 2021). This policy focuses on the distribution of vouchers for smallholder farmers to buy fertilizers and seeds at reduced prices, particularly for growing maize (**Figure 18**).

Figure 18. Share of input subsidies in the agriculture spending of the Ministry of Agriculture



Source: Pernechele, V., Fontes, F., Baborska, R., Nkuingoua, J., Pan, X. & Tuyishime, C. 2021. *Public expenditure on food and agriculture in sub-Saharan Africa: trends, challenges and priorities*. Rome, FAO. https://doi.org/10.4060/cb4492en. p. 45; (calculations based on the FAO-MAFAP database)

Many questions have been raised about the efficacy and wider effects of this programme. In principle, subsidizing the maize production of smallholders could help to boost production of their own food. That should free up land for crop diversification, subsequently improving the economic resilience of farmers, mitigating the degradation of soil, raising the nutritional value of diets, lowering food prices for consumers, and reducing gender inequalities.

In practice, these linkages have not been conclusively proven. Many farmers remain poor and economically vulnerable and increases in maize production and yields have been modest at the farm level among poor farmers (Lunduka, Ricker-Gilbert and Fisher, 2013). Maize monocropping is still widespread (Kankwamba, Kadzamira and Pauw, 2018) and the nutritional value of diets is still low. Calls to address these issues have been made repeatedly by donors and academics, and these have been included in objectives of the agricultural policies themselves.

One difficulty for moving from maize input subsidies, as expressed in the stakeholder consultations, is the politicization of maize. This concept encapsulates several phenomena. Firstly, access to maize, as the main source of food energy, is viewed as a key component of the social contract. Thus, agricultural policies for maize are critical for the legitimacy of political institutions and politicians. Furthermore, in practice, the weakly targeted distribution of vouchers for input subsidies can be vulnerable to capture in a political system heavily based on patronage and a highly unequal social structure (Gini index of 45.1 on average over the period 2010–2019) (Ulimwengu *et al.,* 2021). Although poor smallholders are meant to benefit most, regions and individuals with higher commercial and political clout tend to receive more subsidies (Mdee et al., 2021; Chinsinga and Poulton, 2014; Lunduka, Ricker-Gilbert and Fisher, 2013; Ricker-Gilbert, Jayne and Chirwa, 2011). This phenomenon has become more prominent due to increased political instability in recent decades.

The subsidies emerged in their contemporary form after the period of structural adjustment programmes, in a context of international donors promoting technology-based intensification and increased private-sector participation. Seeds promoted by the programmes are mostly hybrid varieties – a choice that has reinforced the power of multinational firms guaranteed a stable market with a narrow range of technologies. This has pushed domestic seed companies into strategies of renting seed-producing capacity from these firms.

The input subsidies satisfy the government and politicians by reinforcing their legitimacy. For donors, input subsidies seem a “quick-fix” to food insecurity and a tool for engaging the private sector, especially multinationals. For seed companies and agrodealers, the benefits include a large competitive advantage (Chinsinga, 2011).

This convergence of interests helps to explain the stability of the share of input subsidies in public expenditure on agriculture over two decades, and why efforts to redirect some spending towards extension services, infrastructure, and direct support of consumers, have been short-lived.

In recent years, the government and international donors have pushed for smallholder crop diversification. The input subsidy programme has increased support for accessing legume seeds. While the socioeconomic impacts have been positive in protecting some smallholders from dropping out of farming, such outcomes depend on context – and need to be complemented by improved extension services – especially for households new to farming (Matita *et al.,* 2021). Fine-tuning this policy would therefore increase its efficiency.

Levers

Possible levers to encourage evolution of the input subsidies programme would be:

i. Sharpen implementation to increase productivity and diversification by small-scale farmers. This would require refining and more accurately targeting the beneficiaries, promoting farmer training and education programmes. It would be necessary to ensure that the broadest base of small-scale beneficiaries would be able to improve their knowledge of techniques and inputs that could help to raise their productivity and thus benefit their livelihoods. This would make the agricultural input programme more effective in increasing production volumes among small-scale farmers, rather than boosting incomes of those already better off, who often benefit from the programme as currently implemented.

ii. Farmer education, along with nutritional advice, would also help to strengthen efforts to diversify the crops produced. By increasing support for legumes, as an example, and further expanding the offered range of seeds, fertilizers and crop varieties suited to local conditions and which stand a better chance of coping with climate change, farmers could be encouraged to use their input subsidies to embrace more variety.

iii. Investing more in production and market infrastructure could make a substantial difference in helping to increase small-scale farmers' output and in getting any excess produce to markets. Even if only incremental at farm level, this could have widespread impact if combined with the targeting of the beneficiaries mentioned above.

iv. Performing a precise yearly evaluation of the actual impacts of the policy could make a significant difference in helping to adjust and fine-tune, making it more responsive and effective in bringing about change. While policy stability is important to secure buy-in from farmers, adjustments and small modifications, as identified by thorough reviews, could help to ensure that the programme evolves with the situation as it changes, to ensure the desired outcomes. Increasing the reliability of agricultural statistics could also be a key point here in improving the tools available for policy evaluation and assessment.

More broadly, political debate is needed to address misdirection of the input subsidy programme and ensure it benefits those who need it most – rather than the influential and the powerful. Such debate could also help to improve the long-term coherence of policies.

Transition to sustainable food systems

Malawi aspires to be "an inclusively wealthy and self-reliant nation", as articulated in the **MW2063 First 10 Year Implementation Plan (MIP-1)**. Replacing the Malawi Growth and Development Strategy (MGDS) III as the country's new medium-term development strategy, the MIP-1 provides a guide to help Malawi become a middle-income economy and achieve most of the Sustainable Development Goals by the year 2030.

Achieving the goals of this strategy and ensuring the structural transformation of Malawi's economy will depend on its ability to steward a transition to more sustainable, inclusive and resilient food systems. This assessment report has highlighted the critical importance of food systems to several national goals: food security, nutrition and health; viable livelihoods and job creation for inclusive economic growth; environmental sustainability and resilience; and territorial balance and equity. It also shows that despite significant commitment and budget allocation to the agriculture sector, Malawi remains vulnerable to diverse shocks (largely agroclimatic) leading to production variability and negative impacts on minimally diversified, maize-dominated diets.

Regular, high expenditure levels on agricultural input subsidies have undoubtedly helped to mitigate widespread chronic poverty in rural Malawi. As the persistent high rates of food insecurity, nutrition and poverty attest, however, subsidies are neither able to ensure food security nor transform the food system into a dynamic, poverty-reducing motor of inclusive, sustainable and resilient economic growth.

Although Malawi has made demonstrable progress in reducing chronic and acute malnutrition and certain micronutrient deficiencies over the years, food insecurity remains pervasive and food systems are vulnerable to diverse shocks. In addition, high rates of stunting persist among children, and micronutrient deficiencies (e.g. anaemia in women of childbearing age) are prevalent. Further, government policy documents point to the lack of progress in advancing on most development indicators in the country.

The time is ripe for Malawi to transform food systems as a motor of sustainable, inclusive and resilient socioeconomic development in the country, and capable of driving the agenda to achieve MIP-1 goals. With 70 percent of Malawi's population under 70 years of age, the food system is the only sector capable of generating inclusive economic growth for young women and men in production, industry and service sectors, allowing Malawi to capture its demographic dividend. The need for more varied food in Malawi's diets, as well as the necessity to increase climate resilience, brings attention to Malawi's focus on maize, which currently poses substantial nutrition risks in terms of nutritional diversity as well as climate vulnerability.

This assessment has strongly advocated for the diversification of the agriculture sector to support dietary diversity, livelihood and job creation, enhanced climate resilience and more equitable territorial development. Achieving these multiple goals will require tough choices on how to prioritize the repurposing of Government budgets to help catalyse transformative change. A diversification agenda will require a significant retooling of research and support services, renewed commitment to a policy and incentive environment in support of private actors (i.e. producers, traders, processors, and agribusiness) and the reprioritization of national budget and investment. Addressing the dependence on rainfed agriculture, the transition out of subsistence agriculture, enhanced market and

agro-industry development, endemic gender inequalities and implementation of land reforms are critical parts of a sustainability agenda.

However, agriculture cannot achieve national MIP-1 goals by itself. A food systems policy and investment agenda would require sustained multisector engagement that mobilizes institutional evolution, transformative policy and budget support and investment in each sector (i.e. from the Ministry of Agriculture). This would be needed for the sustainable transformation of food systems and the Malawian economy (e.g. transport, renewable energy, environment, education, health, commerce and trade, and urban development). A comprehensive, human capital development programme and an enabling business environment must accompany the sustainable food systems transformation agenda to provide both young women and men with the skills and the incentives to lead this transformation agenda.

Progress on transformative budgets, policies and investments to support MIP-1 and the sustainable transformation of food systems will require Malawi to build on its rich participatory culture and processes to further strengthen the institutional architecture or platforms to guide and drive the transformation agenda. The 2021 UN Food Systems Summit national dialogues initiated a conversation around food systems in Malawi with civil society and the private sector. Malawi could build on these dialogues and roadmap, and the results of this assessment to strengthen multi-stakeholder, multisectoral and multifinancing platforms. An improved institutional architecture, platforms and governance processes can help realize a vision of sustainable food systems in the MIP-1, leading to the development of an operational action plan that structures and prioritizes diverse sectors, partner interventions and investment in support of food systems goals. Ensuring coherence between a structural agenda and short-term responses to mitigate negative impacts of diverse shocks would be a key aspect of this.

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