

AFRICAN FOOD SYSTEMS

A REGIONAL, DATA-BASED SNAPSHOT



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ABOUT GAIN

The Global Alliance for Improved Nutrition (GAIN) is a Swiss-based foundation launched at the UN in 2002 to tackle the human suffering caused by malnutrition. Working with governments, businesses and civil society, we aim to transform food systems so that they deliver more nutritious food for all people, especially the most vulnerable.

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GAIN BRIEFING PAPER SERIES

GAIN Briefing Notes provide essential information in a succinct, accessible form to support informed decision making by stakeholders in the food system to improve the consumption of nutritious, safe food for all people, especially the most vulnerable.

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SUMMARY

Leaders worldwide are increasingly focused on food systems, and how they influence health and nutrition, livelihoods, equity, the economy, and the environment. African leaders are at the forefront of this evolution, shifting gears from a sectoral focus on agriculture to grapple with food systems as a whole. To help guide food systems transformation towards a more equitable, sustainable, and resilient future, a range of indicators need to be tracked. Existing African initiatives to track progress and identify food system opportunities and challenges offer valuable lessons to all regions of the world. However, these can be further enhanced through a more holistic perspective, covering supply chains, food environments, and nutrition and environmental outcomes. In advance of the 2022 AGRF Summit, the Global Alliance for Improved Nutrition (GAIN) and AGRA produced a report to provide African leaders with cutting-edge data tools to do just this.

This briefing paper summarises the main results of that effort. The work draws on the monitoring functions of the Food Systems Dashboard, the most comprehensive effort to gather, screen, organise, and link a large set of existing food system indicators for all countries, including the 55 in Africa. Food Systems Dashboard data are used to examine African food systems and take stock of continental patterns and variations across regions, exploring food systems domains that show progress as well as trends that may require more attention and investment from African leaders. The paper concludes with implications for taking action, strengthening monitoring systems, and bolstering accountability.

KEY MESSAGES

- The Food Systems Dashboard helps complement existing African initiatives by making food systems data available in one easy-to-use platform.
- Data analysed indicate some shared challenges in food systems across the African continent, such as food affordability, as well as some shared areas of strength, such as low environmental footprints of consumption.
- The data also highlight differences across countries and regions; for example, Central Africa faces more challenges related to undernutrition, Northern Africa has higher levels of diet-related non-communicable diseases, and Southern and Central African food systems generate higher greenhouse gas emissions and more pressure on biodiversity.
- These country and regional anomalies often indicate positive (or negative) deviants that can be the subject of further analysis of policy relevance.
- Though merely a starting point, the data considered here have implications for action, data collection, and accountability.

BACKGROUND AND OBJECTIVE

In a world of commitments, goals, and objectives, what cannot be measured, cannot be managed. This is particularly true of food systems. Leaders worldwide are increasingly focused on food systems and how they shape decisions on what to grow, what to eat, how to process and store it, and how to advertise and market it. These decisions, in turn, are seen to affect population health and nutrition as well as support livelihoods, equity, the economy, and the environment. Governments and institutions are thus taking on bold new objectives and layering previous food-related goals of scale and productivity with new ambitions for social and environmental resilience. African leaders are at the forefront of this evolution, shifting gears from a sectoral focus on agriculture and beginning to grapple with food systems as a whole—steering their transformation towards a more equitable, sustainable, and resilient future (1).

To help guide food systems along this transformative pathway, governments have outlined a range of indicators that need to be charted. However, there are few coordinated efforts to monitor these diverse drivers, domains, and outcomes of food systems (1). Existing African initiatives to track progress and identify food system opportunities and challenges offer valuable data and information on key topics, but they could be enhanced through more visibility on supply chains, food environments, nutrition outcomes, and environmental sustainability. In anticipation of the 2022 Africa Green Revolution Forum (AGRF), GAIN and AGRA leveraged their existing partnership to produce a [report](#) to provide African leaders with cutting-edge data tools that can help complement these existing initiatives and be employed to describe their nations' food systems and diagnose the most urgent areas for action.

This briefing paper summarises the main results of that effort. The work draws on the publicly available and easy-to-use monitoring functions of the [Food Systems Dashboard](#), the most comprehensive effort to gather, screen, organise, and link a large set of existing food system indicators for all countries, including the 55 in Africa (2). The Dashboard data are used to examine African food systems and take stock of continental patterns, exploring food systems domains that show progress as well as trends that may require more attention and investment from African leaders. The paper concludes with implications for taking action, strengthening monitoring systems, and bolstering accountability.

METHODS

The Dashboard, co-led by John Hopkins University and GAIN and launched in June 2020, aims to bring together data from diverse sources to provide a snapshot of food systems across their many domains. It uses clear thresholds and criteria for data inclusion, ensuring that indicators are vetted. The Dashboard currently includes over 200 key indicators for 230 countries, drawn from public and private sources. These are embedded in a framework that illuminates how different sectors—agriculture supply chains, distribution infrastructure, food environments, and consumer behaviour—push and pull the food system towards various environmental and health outcomes (1). The

Dashboard has three key functions: to *describe* food systems by visualising data across countries or within a country-specific profile, to *diagnose* challenge areas by comparing them to relevant global benchmarks, and to help policymakers *decide* how to meet these challenges. A recent review of 13 food and nutrition systems dashboards found the Dashboard to be the top-performing dashboard in this space (3).

The Dashboard sees its work as parallel and complementary to other existing tracking and accountability metrics and tools, including the ongoing work of AGRA and the African Union, including through the Comprehensive Africa Agriculture Development Programme Biennial Review; as useful, it can provide a one-stop-data resource for stakeholders working to transform African food systems.

This paper draws primarily on the Dashboard 'diagnosis' tool, which is based on a peer-reviewed, expert driven methodology to select the most relevant indicators and establish a system of cut-offs to determine how different sectors of a country's food system are performing (4). It uses 39 indicators across four domains: (I) food supply chains, (II) food environment, (III) nutrition outcomes, and (IV) environmental outcomes. It identifies whether a given country is facing a likely challenge area (coded as red), a potential challenge area (yellow), or are unlikely to face a challenge in their food system for a given metric (green). Unfortunately, for many countries, missing data currently obstructs visibility into food systems performance: only 22 of 55 countries analysed here have data for all diagnostic indicators, while eight countries are missing data for more than 10 of the 39 indicators.

While full execution of a 'food system diagnosis' requires local expertise, context-specific knowledge, and political will in order to transform data into roadmaps for action, the metrics explored here can shed light on general trends.

FINDINGS

Grouping countries in different ways can reveal shared challenges and opportunities. For example, certain patterns emerge in viewing countries by income group (e.g., with hunger and unaffordability of a healthy diet being most prevalent in lower-income countries)—the full report explores this in greater detail. Here, we focus on regional comparisons. Each country has a unique food system, and sub-national granularity offers meaningful insights, but much can be gleaned from inspecting patterns across countries and regions (see Figure 1). For example, regional comparison shows Central Africa to have more likely or potential challenge areas for undernutrition of infants, young children, and women of reproductive age, whereas countries in Northern Africa have higher prevalence of diet-related non-communicable diseases (NCDs) in their populations. Southern and Central African food systems appear to generate higher greenhouse gas (GHG) emissions and place significant pressure on biodiversity. Eastern Africa sees relatively good performance for adult diabetes and child wasting, but signs of a double burden of malnutrition have surfaced in other indicators. There seems to be considerable crop species richness

(diversity) in Western Africa, as well as sufficient energy in the food supply, but affordable, healthy diets appear to be out of reach of most consumers.

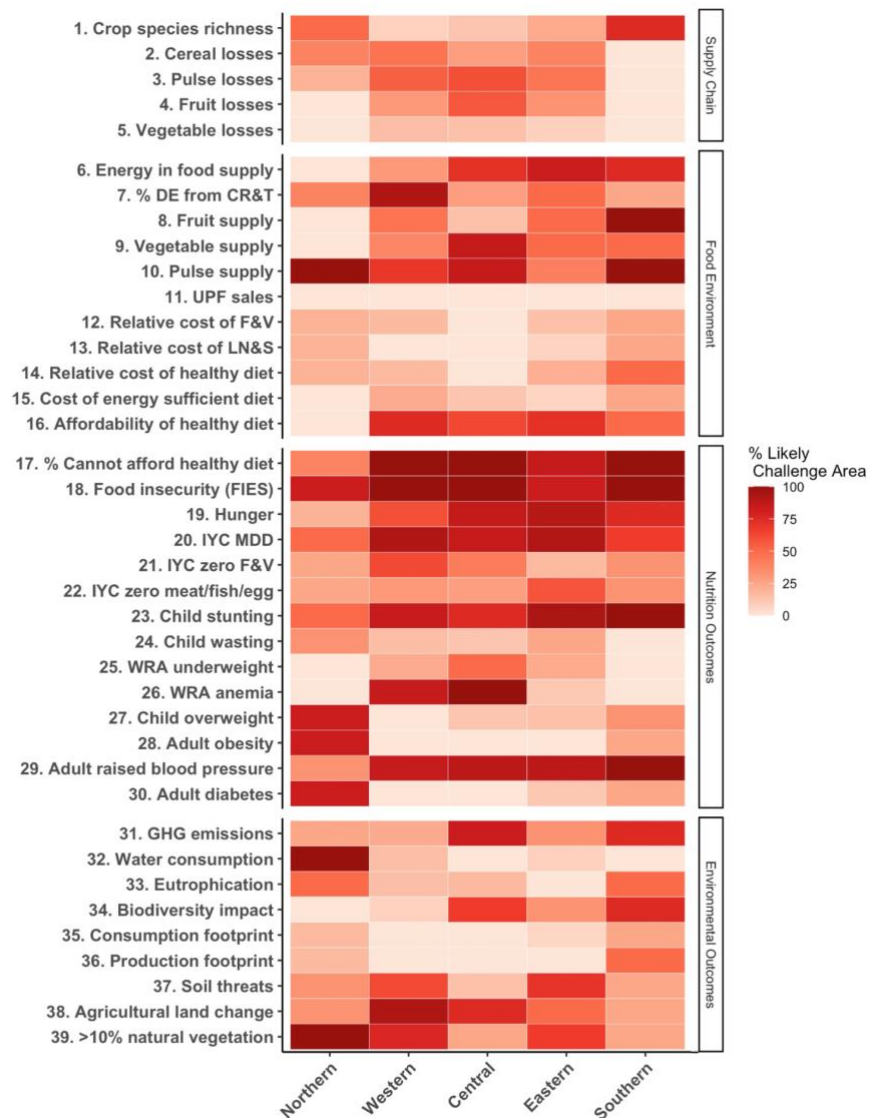


Figure 1. Percentage of African countries with likely challenge areas, by region. The colour indicates the percentage of countries facing likely challenge areas.

Further dividing the regional results by country (Figure 2) demonstrates that these regional patterns are challenged by several exceptions; these positive anomalies may hold lessons for other countries.

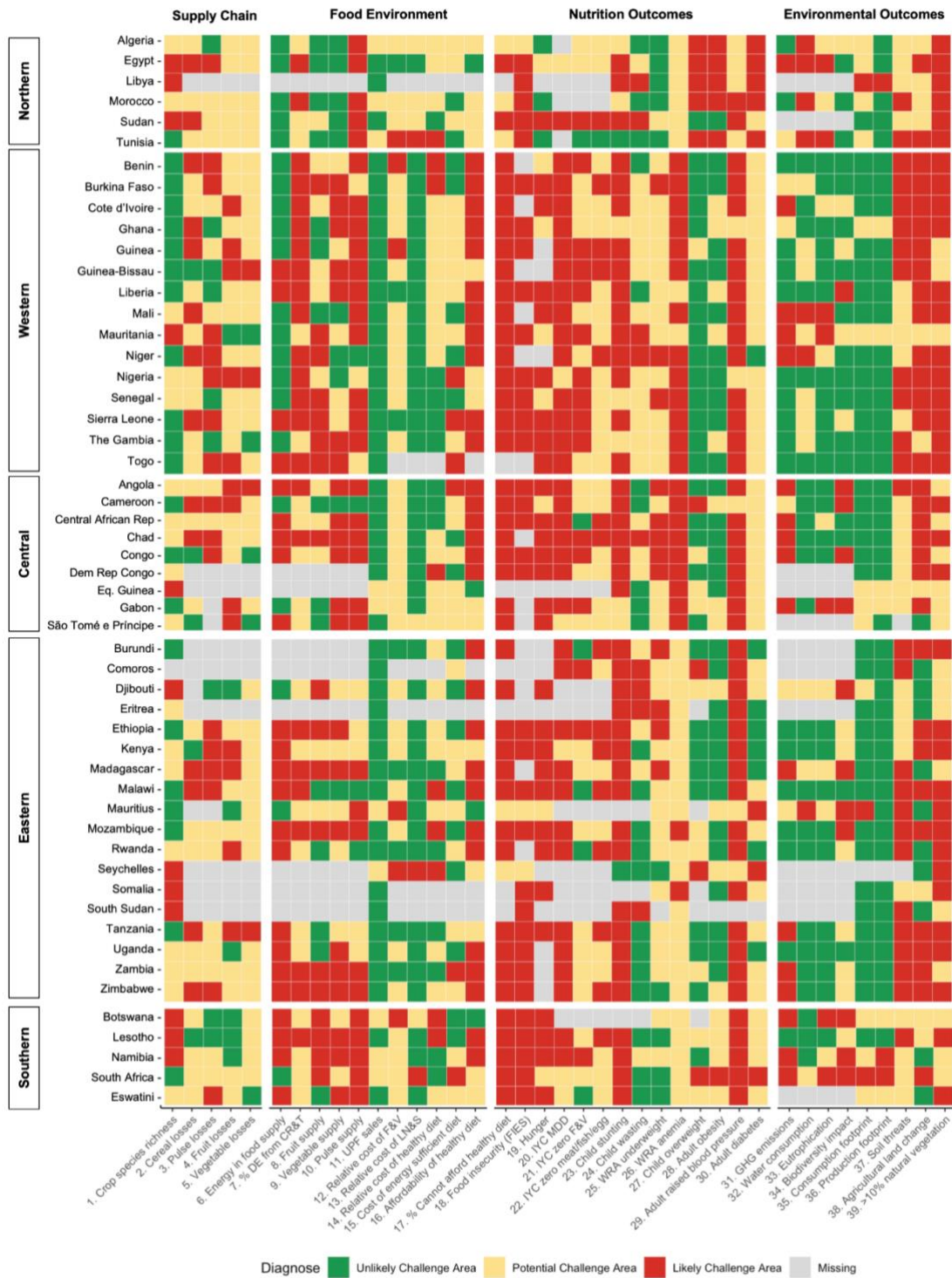


Figure 2. Food systems performance of African countries, grouped by region.

NORTHERN AFRICA

A closer look at Northern Africa shows promising anomalies in the supply chain, including abundance of nutritious food groups like fruits and vegetables, and relative affordability of a healthy diet. Several countries, however, appear to experience a high prevalence of NCDs.

Across Northern African countries, the *Food Supply Chain*—which includes production systems, input supply, food storage, and distribution logistics—has several potential or

likely challenge areas. Exceptions include Tunisia's high crop species richness score (average number of crops per unit of land), and Algeria's low pulse losses. Indicators for the *Food Environment* show good food systems performance in several areas, like sufficient dietary energy, and an abundant supply of fruits and vegetables. However, pulse supply across the region is a likely challenge area, as is the cost of many healthy foods relative to that of starchy staples; Egypt appears to have the most affordable healthy diets in the region (relative to household food expenditure).

Nutrition Outcomes vary in Northern Africa. While regional prevalence of underweight in women of reproductive age is low, anaemia remains a potential challenge area for all countries. Child stunting and wasting are likely or potential challenge areas in some countries, while adult and child overweight or obesity prevalence and adult NCD prevalence are likely challenge areas across much of the region. In terms of *Environmental Outcomes*, indicators that merit further exploration in Northern Africa include high water consumption and eutrophication from fertiliser runoff and other industrial activities; however, the ecological footprint of food production and biodiversity impacts is low across most of the region.

WESTERN AFRICA

Western Africa is distinct in its potential for agricultural diversity and appears to have sufficient energy in the food supply. But affordable, healthy diets seem to be out of reach for most consumers, and infants, young children, and women of reproductive age are at risk of not attaining adequate diets.

In Western Africa, crop species richness stands out as a *Food Supply Chain* strength, indicating the region's capacity for producing a wide range of agricultural commodities. However, post-harvest losses in the cultivation of cereals, fruit, and pulses are common in many countries. In the *Food Environment*, certain healthy foods like pulses, nuts, and seeds appear to be relatively affordable across the region, compared to the cost of starchy staples. Mixed results are seen with fruit and vegetables, which seem to be within reach for consumers in Sierra Leone and Liberia, but more expensive in other Western African countries. Overall, the supply of several recommended foods, including fruits, vegetables, and pulses, has room for improvement, with a few exceptions in Mali, Guinea, and Ghana. The affordability of a healthy diet is a potential or likely challenge area in all countries. Finally, there appears to be high reliance on starchy staples (cereals, roots, and tubers) in Western African diets, pointing to opportunities for improving diet diversity across the region.

Nutrition Outcomes show that undernourishment is the main driver of malnutrition in the region: all countries with available data face likely challenge areas for food insecurity, and likely or potential challenge areas for hunger; infant dietary diversity; child stunting; and underweight and anaemia in women of reproductive age. In terms of NCDs, we see that prevalence of child overweight and adult obesity are unlikely challenge areas for most countries, while raised blood pressure and diabetes in adults are potential or likely challenge areas across the region (with the exception of Niger). *Environmental Outcomes* in the region are mixed: while most countries have a relatively low consumption and food production footprint, the Sahel subregion faces

challenges with GHG emissions, water consumption, and eutrophication. The impact of food systems on local biodiversity is relatively low across the region, with the exception of Liberia.

EASTERN AFRICA

Eastern Africa appears to experience considerable agricultural losses, and the cost of a healthy diet is relatively high. While the region sees promising performance on outcomes like adult diabetes and child wasting, signs of a double burden of malnutrition surface in other indicators.

Across its *Supply Chains*, Eastern Africa faces likely or potential challenge areas in bringing key commodities to market, with many countries reporting relatively high post-harvest losses of pulses, cereals, fruits, and vegetables. Uganda's supply chains, however, appear to experience better retention of fruit crops, as do Kenya's supply chains when it comes to cereals. Eastern African countries have several likely or potential challenge areas in the *Food Environment* related to the availability of food, including the supply of fruits and vegetables, pulses, and the overall dietary energy supply. While the premium that individuals must pay for pulses, nuts, and seeds is relatively low, healthy diets overall appear to be financially out of reach for several countries—and in Zambia, even affordability of an energy-sufficient diet is a likely challenge area.

Nutrition Outcomes vary across countries. While child wasting is not a large issue for most countries, indicators for food insecurity, undernourishment, and child stunting show that much of Eastern Africa is grappling with undernutrition. Anaemia is a challenge area for women of reproductive age across the region, most pronounced in Somalia and Mozambique. Child overweight and adult obesity prevalence are relatively low in Eastern Africa, but adult raised blood pressure is a likely challenge area for most countries. Most of Eastern Africa's *Environmental Outcomes* do not stray from continental trends (low consumption and production footprints, low water consumption), but food systems-related GHG emissions appear to present a likely challenge area for Tanzania, Madagascar, Zambia, and Zimbabwe. Impact on biodiversity is a key concern for food systems in this region, with Malawi and Uganda as the positive outliers.

CENTRAL AFRICA

Central Africa is marked by varied supply chain and food environment realities, with anomalies on both sides, and appears to have more challenge areas for infant and young child nutrition and women of reproductive age.

In Central Africa, the *Food Supply Chain* has several contrasting realities. High post-harvest losses of fruit and pulses are seen in several countries, with Cameroon and Chad also facing cereal losses. Congo Brazzaville is an anomaly here: losses are an unlikely challenge for multiple crop categories. The *Food Environment* shows several countries facing low supply for vegetables and pulses, and many with insufficient energy in the overall food supply. Of all food systems in Central Africa, Cameroon appears to perform the best here, with an adequate supply of fruits, vegetables, and

pulses. For many countries, the relative cost of pulses, nuts, and seeds seems to be manageable for consumers, compared to the cost of starchy staples. Sales of ultra-processed foods are low across the region—only Equatorial Guinea and Gabon experience elevated sales, indicating a potential challenge area.

In the realm of *Nutrition Outcomes*, Central Africa has several likely or potential challenge areas for infant and young child nutrition, as well as problematic dietary outcomes for women of reproductive age. Though child wasting is an unlikely challenge area for most countries except Chad, much of the region shows a high prevalence of child stunting. Adult raised blood pressure is a likely challenge area for all countries in the region, except for Cameroon, but other NCD risks do not afflict many countries in Central Africa, with the exception of Cameroon's high prevalence of overweight in children. *Environmental Outcomes* across Central Africa are marked by high GHG emissions from food systems and high rates of agricultural land change. Additionally, many countries experience soil threats as a potential challenge area. Water consumption is an unlikely issue for most countries, and the consumption and production footprint of food systems are low in much of the region. However, there is a region-wide pattern of food systems placing pressure on biodiversity, except in Chad and the Central African Republic.

SOUTHERN AFRICA

Southern Africa experiences relatively low crop losses, but overall energy supply is not always sufficient and healthy diets appear to be out of reach for many. Several NCDs are prevalent, and food systems seem to generate relatively high greenhouse gas emissions, in addition to placing considerable pressure on biodiversity.

In the *Food Supply Chain*, Southern Africa has mixed performance: crop species richness shows a likely challenge area for Namibia and Botswana but not in South Africa. While losses of cereal, pulse, fruit, and vegetable crops are less pronounced, there is room for improvement in supply chains across the region. Data on *Food Environments* show that the adequate supply of nutritious fruits, vegetables, and pulses is a likely challenge area everywhere, except for Eswatini. Total dietary energy in the food supply is a likely challenge area in all countries except South Africa. The region has elevated sales of ultra-processed food—presenting a potential challenge for countries like Botswana, Namibia, and South Africa. Though the relative cost of pulses, nuts, and seeds compared to starchy staples is low, consistent with many African countries, healthy diets in Southern Africa are generally unaffordable for consumers (aside from in Botswana).

Nutrition Outcomes in Southern Africa exhibit patterns commonly seen during nutrition transitions (5): challenge areas related to high prevalence of NCDs (adult obesity, raised blood pressure, and diabetes) alongside those related to anaemia among women of reproductive age and stunting in young children. Aside from relatively sustainable water consumption, *Environmental Outcomes* in Southern Africa are more likely to be areas of concern than in other African regions. Food system-related GHG emissions are relatively high, as is the impact on local biodiversity. Eutrophication is a

likely challenge area in Namibia and South Africa, which have relatively higher production footprints than their neighbours.

IMPLICATIONS

The Dashboard diagnostic data can be used to gain high-level insights on the challenge areas that regions face; identify country anomalies amid regional trends that can be the subject of further analysis; and track potential and progress across the continent. Though merely a starting point, the data considered here have implications for action, data, and accountability.

Domains indicating potential and progress include crop species richness across West Africa, which may indicate strong opportunities for nutrition-sensitive agriculture, and high fruit and vegetable supply across Northern Africa suggesting potential for these nutritious foods to be brought within reach of consumers at affordable prices. Across the continent, sales of ultra-processed foods present an unlikely challenge area in most countries at present, but these are growing quickly (particularly in DRC, Ethiopia, and Eritrea) and can be expected to grow amid ongoing nutrition transitions and urbanisation—suggesting course corrections may be needed to create demand for minimally processed nutritious foods while minimising growth in ultra-processed food sales. Finally, while child wasting and stunting remain a cause for concern in many countries, there are signs of steady progress, with 15 African countries achieving childhood wasting prevalence within the acceptable range of less than 5% and 7 countries showing children stunting prevalence below 19% (6).

Domains in need of further support include supply chain losses, diet quality and cost, and climate change mitigation. Whether at production, processing, or retail levels, losses are increasingly avoidable and can be targeted with data-driven approaches: better tools and assistance can be delivered to smallholder farmers, new low-cost technologies can help improve storage and distribution, and the small and medium enterprises that play a key role across supply, processing, distribution, and storage networks (7, 8) can be further supported. Next, though diet quality and diet diversity are inadequate in many countries, the opportunities to improve this are vast; solutions will need to focus on improving affordability, which will require commitment, creativity, and new partnerships between public and private actors to create demand for nutritious foods and set up incentives for businesses to produce them affordably. Such efforts will need to consider the growing double burden of malnutrition, with undernutrition and diet-related NCDs often co-existing within countries. Finally, food production and consumption apply pressure on environmental systems, but with the right information, African nations can use approaches such as crop diversification and incentives for sustainable production to leapfrog some of the problems higher-income countries now face and achieve healthy food futures alongside continental environmental stewardship.

The analysis also has implications for data and for accountability. The gaps in the Dashboard data for Africa highlight the need for further data collection in many countries—especially for comparable indicators with clear targets—and make a case

for subnational granularity. A commitment to the use of high-quality data by decision-makers can help to generate demand for this kind of relevant, useful, and updated information—and incentivise its collection. Access to country-level insights that cut across food systems domains can support advocacy and accountability mechanisms, which can link commitments to actions, and eventually to impact. For example, the CAADP Biennial Review Process could potentially benefit from the inclusion of a broader slate of food systems indicators, such as those presented in the Dashboard (a topic covered in greater detail in [the full report](#)). Improved data access can also support other food system actors, like civil society, encouraging them to continue to hold others accountable and draw attention to key topics.

CONCLUSIONS

This briefing paper has drawn on a new GAIN-AGRA report to explore the state of African food systems, using data and tools from the Food Systems Dashboard. The visualisations presented here show a new way to approach food systems performance; by highlighting areas of potential and likely challenges, they can open lines for future inquiry into better understanding food systems within the African context. The figures also hint at a complex landscape of positive (or negative) deviants; further investigating these and the reasons behind their existence could help inform future policy decisions to support food system transformation.

Finally, the data presented here make it clear that better monitoring is increasingly within reach with new, easy-to-use, and integrated resources like the Dashboard. The 2021 United Nations Food Systems Summit demonstrated that policymakers, researchers, and business leaders are keen to embrace the interconnected world of agriculture, nutrition, health, and sustainability through a food systems lens (9). In this context, data visualisation tools help make it feasible to prioritise actions across diverse domains, and AGRA and GAIN are committed to helping African stakeholders take advantage of the full range of tools and data that can best serve the African continent's food system transformation.

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