

A food systems approach: Setting the table to address agriculture's triple challenge

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Imagine the concept of 'food systems approach' as organising a concert to bring together a wide range of performers across different genres, from classical orchestras and folk singers to rock bands and hip-hop musicians. To make it work, you need to take the relationships and power dynamics of all the stakeholders into account, who despite conflicting interests and external influences have to collaborate for a shared cause. Obviously, when looking at food systems, the stakeholders are not musicians, but people who produce, distribute or consume food. And instead of harmonising different music genres, their shared cause is the triple challenge of 1) ensuring that the growing global population has access to enough good-quality food; 2) providing livelihoods for the millions of people working in agriculture and the food supply chains; and 3) that all this is done sustainably.

Complete reset

The complexity of food systems goes far beyond supply chains and is deeply entwined with other systems, such as energy and water. One example is how electricity load shedding and water mismanagement hamper Africa's farmers. Experts with vastly different agendas now agree on one issue: current food systems are unsustainable and require a complete reset.

This is radical. Resetting an entire system will require dramatic changes in mindset, policy, actions, and finance. An additional investment of around US\$30 trillion annually is needed, according to Vanessa Adams, VP of strategic partnerships and chief of party, partnership for inclusive agricultural transformation in Africa at the [Alliance for a Green Revolution in Africa](#) (AGRA). The alliance has acted as a voice of Africa in the global food systems dialogue and at the COP26 Climate Summit.

Adams was the keynote speaker at a roundtable discussion called "A Food Systems Approach: Setting the Table to Address Agriculture's Triple Challenge", held by [Corteva Agriscience](#) and the Gordon Institute of Business Science's (GIBS) Entrepreneurship Development Academy. She outlined that while Africa's food systems don't contribute significantly to the world's greenhouse gas emissions, the continent is plagued by food loss and food waste due to supply chain inefficiencies. Other challenges relate to food quality and food safety, which contribute to malnutrition and health costs.

"Over the past two years, the conversation has shifted from the classic 'invest in agriculture' to thinking comprehensively about food systems," said Adams. "Whether it's regenerating soil fertility, inclusivity of indigenous populations, and thinking more strategically, even about replacing certain ingredients and using traditional recipes that are more nutritious and have increased protein for children. Some of Africa's largest food processors are now working with procurement to improve school feeding and participate in coalitions around Zero Hunger. We see an increased willingness for public-private dialogue and mutual flagships."

Better nutrition

Africa has a major health crisis on the horizon because most of the available food is unsustainable and unhealthy. "Our obsession with creating cheap food over the last four decades has led to a situation where the food we consume is making us ill," warned Sheryl Hendriks, professor of food security and head of the Department of Agricultural Economics, Extension and Rural Development, at the University of Pretoria. The health impacts are already visible and require more integrating models of understanding our existing production systems; how population growth changes and aspirations – such as for the Western diet in Africa – are going to affect the future demand for food; and how the current production and processing systems are going to respond to making food healthier.

Covid-19 learnings

The pandemic was a wake-up call for public health by demonstrating that comorbidities worsened the health outcomes for infected people. This emphasised the need to overhaul the current food system because of its links to chronic diseases such as diabetes.

Covid-19 has also magnified other food systems-related issues, such as the disruption of trade corridors and the lack of real-time data and analytics for decision-makers. In response, efforts are underway to integrate food balance sheets across trade corridors to improve planning and awareness. Having this data available could also improve the accessibility to insurance, such as crop insurance for small-scale farmers.

Covid-19 has accelerated digitisation, down to last-mile partnerships within Africa's food supply chains. AGRA is, for example, working with more than 5,000 village-based advisors who are using smartphones to access information and connect farmers in their ecosystems, helping them with access to improved inputs as well as market and weather information. Another example is Corteva Agriscience's [Advanced Maize Seed Adoption Programme](#) in Ethiopia, where Adams witnessed how excited farmers are to get access to seeds and fertilisers and, contrary to traditional view, how open to behaviour change and new technologies. She said it's crucial that the last-mile delivery is consistent, that the cost of delivery is reduced and that more diversified seeds are made available. Visible and transparent supply chains can increase the linkages to more structured, liquid markets, such as the JSE in South Africa.

Growing more food

Africa currently has enough food to feed itself, except for climate change and conflict hotspots. However, food production must be scaled up significantly to cater for the projected population growth by 2050.

Corteva Agriscience is developing technologies to improve soil health, for example through solutions for nitrogen management and crop rotation. Corteva actively supports a wide variety of desired agriculture systems - regenerative, sustainable, organic and conventional - that help prevent erosion from wind and water and keep nutrients where plants can access them. The company leverages its science expertise, technology, operational facilities, and deep agricultural knowledge to collaborate with the food industry to solve difficult problems. The company is also working with policymakers, as policy changes can accelerate soil regeneration, climate adaptation, and the acceptance of modern breeding tools and technologies. Corteva's innovations include seeds that are adapted to changing climate conditions, including water scarcity and pests.

Eric Dereudre, Corteva's head of global government affairs and business advocacy, noted that farmers can be a cause of climate change (e.g. increased greenhouse gases emitted by cattle); they can be a victim of climate change (e.g. crops and livestock impacted by heat and drought); and a solution to climate change (through carbon sequestration, as discussed at COP26).

Food, fuel, fodder

Climate resilience is about having a diversity of crops, according to Tatjana von Bormann, a food system, strategy, and strategic foresight specialist. She pointed out the importance of growing crops that are appropriate for a specific ecosystem, although this is not always possible for farmers pressured by the large, industrialised food system to get the price, scale and technologies right. In a scaled-up production system, it's important to understand how changes in consumption drive demand for products that are not suited for certain environments. Prof. Hendriks said, "We have to promote the consumption of foods that are going to benefit the African system and our health, while not overriding the potential of our soils. We need to balance the competition between food, fuel and fodder – looking at how we allocate the proportion of land to those different production systems and their interaction on the environment."

Gender justice

Women are critical in feeding Africa, yet women farmers still lag 30% behind their male counterparts in profitability and

productivity. Their key constraints are land ownership, access to finance and training for leadership roles. The Corteva Women Agripreneur Programme at GIBS seeks to address this through an immersive intervention that develops the entrepreneurial, leadership and business skills of women farmers. Incidentally, the roundtable discussion coincided with the graduation of programme participants at GIBS.

"We have only nine harvests left to achieve the 2030 Sustainable Development Goals," said Adams, urging Africa not to waste time with duplication or replication of existing solutions and rather focus on leapfrogging. Now players from all sectors need to take the baton and address the triple challenge to get the global food systems to perform sustainably and in harmony.

Built for the future

Collaboration across governments, non-governmental organizations, and businesses is needed to reverse the seven-year rise in global hunger and to strengthen food-system integrity. Agricultural innovation offers solutions to all three of those challenges. By helping farmers grow food sustainably, by sustaining farmers' livelihoods, and by working collaboratively with the food industry, agricultural innovators are helping increase food security worldwide.

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