

## CHAPTER 2

### FOOD SECURITY

# The Global Food System under Radical Change

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### KEY FINDINGS

- Food is at the heart of reductions in global poverty and improvements in nutrition. Yet dysfunctional food systems also contribute to rising obesity and hunger and to environmental degradation.
- Radical global changes, including rising antiglobalism and emerging technologies, are creating new challenges and opportunities for progress.
- Addressing these global trends will be critical to ensure food systems can end hunger and malnutrition for all within environmental boundaries (climate, water, biodiversity, pollutants).
- Global integration of national food systems—through the flow of goods, investments, people, and knowledge—will be key to progress, but will require good governance and strong commitment from the international community.

### KEY RECOMMENDATIONS

- Encourage an open, efficient, and fair trading system, especially for agricultural goods, through reform of trade, domestic support, and investment policies to

promote nutrition, health, inclusiveness, and environmental sustainability.

- Support rural development to break the vicious cycle of conflict, food insecurity, and migration and to improve the livelihoods and food security of refugees.
- Invest more in research and innovation for food systems to increase sustainability of production and processing, make healthy foods available, and improve employment opportunities.
- Promote evidence-based policy making to support government investments that are coherent across the food system, recognize trade-offs, and harness agriculture's contribution to environmental sustainability.
- Promote cooperation and mutual learning among stakeholders and across sectors to accelerate progress toward ending hunger and malnutrition.
- Promote leadership and commitment for the SDGs at global, regional, and local levels to ensure follow-through on international commitments.
- Leverage new opportunities in emerging technologies and knowledge-sharing to maximize the benefits of sustainable food systems for all.



Food systems have been central to recent unprecedented reductions in global poverty, hunger, and undernutrition, and will be the foundation of future progress. There is no more important and valuable human endeavor than growing, making, and preparing the foods that nourish and sustain us. Yet food is among the leading causes of our global health and sustainability crises.<sup>1</sup> Efforts to sustainably end hunger and malnutrition will depend on reshaping our food systems. Radical global changes, including rising antiglobalization sentiment and emerging technologies both inside and outside the agriculture sector, are creating new challenges and opportunities. How these global trends are managed will be crucial for ensuring that food systems can deliver sufficient nutritious, affordable, delicious, and healthy food for all within planetary boundaries.

### FOOD SYSTEMS CALLED ON TO DO BETTER

Addressing radical global changes is critical to improving the contribution of food systems. After a period of prolonged decline, world hunger is again on the rise, millions of children remain stunted, and nearly 2 billion adults are overweight or obese.<sup>2,3</sup> In

part due to globalization, many national food systems are rapidly ushering in a transition toward animal-based and processed foods that are too salty, too sugary, or too high in fat—a transition strongly linked with the increase of diet-related noncommunicable diseases such as heart disease and diabetes.<sup>4</sup> Moreover, the global food system—which includes all actors and sectors involved in producing, distributing, retailing, and consuming food—and national food systems are at the center of many environmental challenges facing the planet. Nearly 85 percent of global water use goes to agricultural irrigation, of which 15–35 percent is unsustainable.<sup>5</sup> Close to a quarter of all global land is degraded.<sup>6</sup> Food systems contribute about one-fifth of all greenhouse gas emissions, and agriculture is a primary cause of biodiversity loss.<sup>7</sup> Overall, agrifood systems have been largely successful in feeding a growing number of people, but are pushing planetary boundaries in terms of greenhouse gas emissions, biodiversity loss, freshwater use, and both nitrogen and phosphorous cycles, risking expensive, potentially irreversible environmental change.<sup>8</sup>

As acute as these challenges are, food systems are uniquely positioned to reverse course to become the primary driver of improved human

and environmental health. To do so, they must be transformed into restorative food systems to support healthy diets for all. Global models forecast that the combination of shifting toward healthy diets, increasing production efficiency, and reducing food waste and loss has potential to provide healthy diets for 9.5 billion people in 2050, while reducing food's land and climate footprints. Food systems must be more lucrative for smallholders, women, and youth, as such groups are critical in meeting emerging demand for a diversity of safe and nutritious foods, and smallholder farming must transition toward providing quality jobs. For food systems to support sustainable development, the global integration of national food systems—through the flow of goods, investments, people, and knowledge—will be key, provided their integration is governed appropriately.

## MEGATRENDS AFFECTING GLOBAL AND NATIONAL FOOD SYSTEMS

Recent antiglobalization sentiment, especially the potential resurgence of trade protectionism, risks slowing progress toward achieving the Sustainable Development Goals (SDGs), greater economic growth, and improved food security and nutrition.<sup>9</sup> Trade is not only necessary to feed growing populations, it also has the potential to raise incomes and provide access to more diverse foods at lower, more stable prices (Chapter 3). Trade also has an important, though little explored role in shifting food production from regions of high environmental risk (carbon-rich forests, water-scarce lands) to areas of lower environmental risk. For these benefits to be experienced by all, trade must be inclusive.

International investments must be a component of investment strategies for creating employment, boosting incomes, developing rural infrastructure, and introducing new technologies, among other benefits that improve livelihoods. Yet at times, such private investments result in exclusion of people from the food system, environmental unsustainability, and even conflict, as well as the introduction of new challenges such as obesity—thus fueling antiglobalization arguments. Carefully designed policies can maximize the contribution of investments to sustainable food security and nutrition and minimize the associated risks (Chapter 4).

Global governance failures and weakening commitments in the international community to a sustainable future are likely to have negative impacts on agriculture, food security, and nutrition. For example, declining commitment of countries to the Paris Agreement on climate change may increase exposure of agriculture and food production to climate shocks and natural resource depletion, and also increase agriculture's pressure on planetary boundaries. Local governance and coordination have the potential to help cities, districts, and provinces play key roles in promoting improved livelihoods, sustainability, and nutrition. Without appropriate global and local governance and coordination mechanisms that work based on evidence and trust, decision makers will face challenges in reacting to short-term and emerging crises, rather than successfully preventing those crises (Chapter 8).

Forced migration and protracted conflicts were major drivers of the rise in global hunger and the persistence of undernutrition in recent years. Currently, out of the 155 million stunted children globally, 122 million live in conflict areas, and conflicts continue to displace people—the number of forcibly displaced people doubled between 2007 and 2016, to about 64 million people.<sup>10</sup> Conflicts, migration, and food insecurity can form a vicious cycle.<sup>11</sup> And when borders are tightened or closed, the flow of migrants is restricted, and threats to food security and nutrition increase for those who would have migrated and their families (Chapter 5). Moreover, conflict is often compounded by the impacts of ongoing climate change, further affecting food security and livelihoods.<sup>12</sup> Innovative solutions are needed to break the cycle of conflict and hunger in migrant source countries, while providing support to migrants and host countries.

At the same time, the global flow of knowledge and emerging technologies are on the rise. Open access to knowledge and data and effective information networks, particularly for farmers, businesses, and governments, can contribute to improving food security and nutrition (Chapter 6). Many innovative technologies inside and outside of the agriculture sector could be game changers for the future of food systems—gene sequencing, gene editing, vertical farming, precision agriculture, lab-grown meat, big data, and innovations in information and communication technologies show great promise for making food systems more interconnected, climate-resilient, and efficient, although the benefits and risks of these technologies are not fully understood.

## ADDRESSING THE CHANGES

Addressing these radical global changes can provide avenues to transform the global food system, moving toward a system that is driven by better nutrition, health, sustainability, and greater inclusiveness. Major food system levers to tackle health and sustainability and contribute to the SDGs center around increasing sustainable production efficiencies (more food with less impact), reducing food waste and loss, and shifting diets—notably shifting toward plant-based diets in developed countries with high meat consumption. The following key actions are required in support of these central priorities for food system transformation.

### ENCOURAGE AN OPEN, EFFICIENT, AND FAIR TRADING SYSTEM

Considering the important role of trade in reducing hunger and malnutrition and in avoiding environmental harm, trade and related domestic policies must support and enhance an open, transparent, and inclusive trading system, especially for agricultural goods. Indeed, appropriate tools and policies that consider the trade-offs and potential unintended consequences of open trade must be employed to directly address global and local challenges instead of hindering trade. Countries should reduce trade distortions by reducing high import tariffs and eliminating export bans and restrictions in order to expand secure and equal access to markets for food and agricultural products, particularly for nutritious and sustainably sourced foods (Chapter 7).<sup>13</sup> To encourage fair competition in the presence of large multinational players along the value chain, developing countries will have to strengthen domestic policy and legislation, such as antitrust laws, to prevent or govern monopolistic structures and market behavior. Responsible investments can be encouraged with strong international principles and by giving priority to investments that provide inclusive benefits for food security and nutrition, for example through productive, well-targeted, nutrition-driven social protection measures. Countries must also eliminate inefficient domestic support policies and redirect public resources to food system investments with greater impact. Rural infrastructure and agricultural research and development (R&D), for example, can substantially increase agricultural productivity growth and reductions in poverty.<sup>14</sup> Indeed, investments in these

public goods, as well as in sustainable agriculture and farm extension, can support domestic producers and improve local diets without violating international trade rules.

Trade policies must strongly factor into strategies for nutrition, health, inclusiveness, and sustainability for trade to help fuel food system transformation. To ensure state-of-the-art food safety and protect human health from foodborne diseases, developing countries should strive to build capacity to implement tested and proven international standards and guidelines and receive assistance in doing so. In addition to enhancing awareness, stakeholder engagement, and collaboration among governance structures for food safety, greater investments in R&D and information and communication technologies will be needed to improve food-safety testing and surveillance. The potential negative impacts of global free trade on nutrition and health, including greater access to unhealthy foods, need to be addressed.<sup>15</sup> Trade policies must also support inclusiveness for developing countries to foster opportunities for value addition and create rural jobs for small producers.<sup>16</sup> For trade policies to help advance environmental sustainability, governments should consider phasing out fossil fuel subsidies in favor of investment in renewable energy.

Strengthening regional and local trade can increase market opportunities and access to more healthy and nutritious foods, provided regulations and incentives exist to mitigate increased access to unhealthy foods. Africa lags behind other regions in intraregional trade; regional issues of productive capacity, trade-related infrastructure and services, private sector engagement, and diversification of traded products must be addressed to increase trade both regionally and more broadly. Facilitating local trade to improve nutrition and livelihoods while reducing food loss is likewise important. Improvements in urban–rural linkages through strengthened value chains, better coordination, and investments in rural infrastructure and intermediate towns will be essential for reaping the benefits of regional and local trade.<sup>17</sup>

### SUPPORT RURAL DEVELOPMENT TO ADDRESS CONFLICTS AND FORCED MIGRATION

Investing in agriculture and rural development can help to slow or even halt the vicious cycle of conflict, food insecurity, and forced migration. Early warning systems and social protection programs



must be strengthened to help policy makers and populations respond to and mitigate the impact of shocks, including rising food prices, loss of agricultural livelihoods, and negative weather events such as drought. Local agriculture must be supported through measures such as diversification, training, extension, and investments in postharvest infrastructure to increase resilience and help rural populations prevent and recover from conflict. Ensuring that marginalized populations—including women, smallholder farmers, and minority groups—are equitably included in such investments, as well as in access to natural resources, can reduce the tensions that often lead to conflict and forced migration.

Investments are also needed in strengthening livelihoods and food security in countries hosting refugees. Such support tends to be a cost-effective means for refugees to improve their integration in the labor market and society at large and helps them restore their livelihoods.<sup>18</sup> Integration can generate social benefits in the long run for recipient countries, and potentially for countries of origin if migrants return when the conflict ends. Fostering economic opportunities and providing access to jobs for migrants will help to relieve fiscal pressure and other burdens on host countries. Moreover, these actions can stimulate the local economy which, especially in cases of protracted displacement, can contribute to social inclusion and cohesion and help integrate migrants into the economy.

### INVEST MORE IN RESEARCH AND INNOVATION

Research and innovation are essential to promote an agrifood system that is nutritious and healthy, environmentally restorative, climate smart, and lucrative—particularly for smallholders, women, and youth. Expanding investments in agricultural R&D will yield high returns in terms of reductions in poverty and regional inequality as well as improved rural incomes.<sup>19</sup> It is encouraging that developing countries are increasing investments in agricultural R&D—for example, China tripled its investment between 2000 and 2013—but developed countries should not lag in these investments.<sup>20</sup>

Frontiers for sustainable intensification and nutrition-driven technologies must be advanced. For example, breeding high-yielding, climate-ready, high-nutrition crop varieties through biofortification has shown promise.<sup>21</sup> Increasing the yield potential of the vast diversity of currently underutilized

species also has potential to improve food availability and nutrition, as do low-cost technological and financial innovations geared to smallholders. Policy innovations have immense potential to improve nutrition, health, and sustainability. For example, behavior change communication can help stimulate nutrition knowledge and steer consumer demand toward healthier and more sustainable foods.<sup>22</sup> Innovations in carbon tax policies addressing unsustainable food production have the potential to reduce greenhouse gas emissions and improve human health.<sup>23</sup> Institutional innovations, such as public-private partnerships for sustainability and nutrition, should be explored.

Further investigation to assess the impact of different investments in nutrition-driven technologies and innovations for hunger and malnutrition reduction are needed to fill a knowledge gap in this area. Promoting the use of evidence-based research to set priorities and fine-tune strategies, as well as investing in data collection systems and capacity building for research, continue to be imperative. Collaborative research efforts such as the EAT-Lancet Commission report (forthcoming) can provide an essential evidence base for establishing universal dietary and health guidelines, within which food systems should operate.

### BREAK THE SILOS

Countries' experiences of success—and failure—can help to inform and shorten the learning curve for others. Speeding progress will depend on assembling and sharing the relevant knowledge across sectors and local, national, and international levels. Stakeholders can support mutual learning by providing opportunities for sharing key experiences on what has and has not worked in improving food security and nutrition; promoting technology transfers; building capacity; and improving infrastructure in developing countries. Networks such as the C40 Food Systems Network in partnership with the EAT Foundation provide opportunities for cities in the global North and South to learn from each other. Interdisciplinary collaborations can play an important role in coordinating and synthesizing the evidence on healthy diets from sustainable food systems. Understanding the complexities of and linkages among food system components is key to enabling an integrated food systems approach in policy making.

In addition, in this period of growing antiglobalization sentiment, avenues for cooperation among stakeholders and across sectors and subnational jurisdictions must be reinforced. Investments via channels of South-South cooperation can help accelerate progress toward the end of hunger and malnutrition. Joint ventures, cooperation contracts, and public-private partnerships offer possible means of working together toward this end. Global initiatives will facilitate knowledge exchange and multisectoral cooperation: Compact2025—an initiative of the International Food Policy Research Institute—brings stakeholders together to share knowledge and spur innovation for accelerating progress to end hunger and undernutrition by 2025. The EAT Foundation facilitates collaboration across sectors—science, business, policy, and civil society—and across the food-health-sustainability nexus to advance healthy diets from sustainable food systems.

#### PROMOTE LEADERSHIP AND COMMITMENT TO THE SDGS

Strong political will and leadership are key ingredients for accelerating progress toward achieving food security and improved nutrition. To build momentum toward these goals, leaders from all relevant sectors and fields will have to champion the SDGs—the anchor of the global development agenda. At the global level, leaders must follow through on international commitments, including the UN Decade of Action on Nutrition—a unified effort to implement the Second International Conference on Nutrition (ICN2) Framework for Action—and the Paris Agreement on climate change. Global initiatives can help champion food security and nutrition, among other SDGs. In addition, global institutions can serve as coordinators to enhance the effectiveness, efficiency, and productivity across sectors and countries of global efforts on food security and nutrition.

Regional commitments are critical. For example, African countries should continue to monitor progress toward the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods, while engaging with regional commitments on environmental health. Country-level leadership and champions who work to end hunger and malnutrition are among the most important drivers of change. Some encouraging campaigns include China's

commitment to achieving Healthy China 2030 and Ethiopia's Seqota Declaration on ending undernutrition by 2030.

Local governance will be increasingly important. For instance, cities have a growing role to play as urban populations expand across the world and poverty, food insecurity, and malnutrition become increasingly urban problems.<sup>24</sup> Cities may be better poised to address these challenges nimbly than national governments. Local policies must be context specific; for example, in Africa, where many urban poor people get their food from informal food markets, governance for food safety must be improved while institutionalizing regular engagement between local governments and informal workers.<sup>25</sup> Cities can also act as leaders in creating stronger climate policies. For example, 12 cities in the United States that have joined the C40 Cities Network are leading the way on climate action through investment and collaboration.<sup>26</sup>

#### FOOD CAN FIX IT

Food can fix many problems, but to do so food systems must be reshaped for nutrition, health, inclusion, and environmental sustainability. Growing antiglobalization pressures create additional challenges for food to help achieve these goals. New opportunities—especially in emerging technologies in and outside of the agriculture sector and new global forums for fostering multisectoral collaboration, sharing knowledge, best practices, and research—must be leveraged through appropriate actions to maximize benefits for all. Indeed, how these actions are implemented will be crucial to ensuring that no one is left behind and to minimize negative trade-offs in achieving economic, social, and environmental goals. Similar to the science-based goals set for climate change, a strong evidence base is needed for healthy and sustainable diets, and would contribute to agreement on targets. Evidence encourages stakeholders to act with confidence and greater speed, and facilitates the assessment of progress. Evidence-based policies will enhance competence, and global cooperation will foster trust; both are key to ensuring that food system changes are broadly accepted and contribute positively to global development in a rapidly changing world.