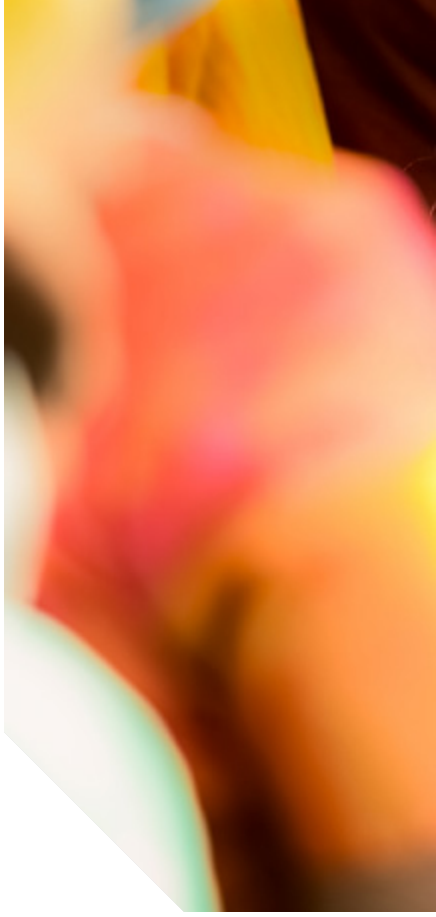
# CHAPTER 1

# Beyond the Pandemic
## Transforming Food Systems after COVID-19

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### KEY MESSAGES

- Before the onset of the coronavirus pandemic, our food systems already faced serious challenges in achieving equitable access to healthy, nutritious food for all; environmental sustainability; and resilience to shocks. COVID-19 has put the world further behind in reaching the UN Sustainable Development Goals (SDGs).
- COVID-19 caused widespread loss of livelihoods and incomes, threatening the food security, health, and nutrition of poor and marginalized people around the world. Countries implemented a variety of measures to mitigate these impacts, including expanded social protection; but some impacts will be long-lasting.
- Food system transformation must be pursued to regain this lost ground and achieve the SDGs by 2030.
- Yet the pandemic and associated policy responses exposed weaknesses and inequalities within food systems, including among different world regions, rural and urban communities, rich and poor populations, and disadvantaged groups such as women.
- Some food systems and sectors were more resilient than others, depending on their structure, governance, and roles of the public and private sector.
- 2020 offered lessons, innovations, and opportunities that can help make food systems more resilient to future shocks and more inclusive, efficient, sustainable, and healthy.

### RECOMMENDATIONS

- Seize the opportunities opened by the pandemic – including growing momentum and lessons learned – to transform food systems to be resilient, healthy, efficient, sustainable, and inclusive.
- Use global events planned for 2021 – including UNFSS, COP26, and the Nutrition for Growth Summit – to put food system transformation prominently on the development agenda.
- Increase resilience for all food system actors through actions that limit the frequency and severity of shocks,

improve communities' ability to anticipate shocks, and build capacity to absorb shocks. This will require better access to finance; flexible social safety nets; competitive markets and trade channels; and investment in rural services, infrastructure, and R&D for improving food production systems.

- Promote the expansion and flexibility of social protection policies to protect vulnerable populations in times of economic, health, or environmental crises.
- Improve access to infrastructure and markets, especially through provision of digital services for market and farming information, education, government interactions, financial transactions, and logistics to reduce inequality and facilitate resilience.
- Seek innovative means of financing food system transformation, including through policies influencing consumer spending and private sector expenditures and profits, support for impact investment, and repurposing of public funding.

The year 2020 was unprecedented in many ways. For rich and poor countries alike, the coronavirus pandemic and the associated policy responses brought a widespread health calamity, economic hardship, severe disruptions to services, and previously unimaginable restrictions on movement. Many poor and vulnerable people have faced serious threats to their immediate food security, health, and nutrition. For the many countries that cannot access or administer vaccines quickly, the pandemic will be prolonged, with worrisome consequences for people's long-term prospects as a result of lost livelihoods, malnutrition, missed education, and depleted assets. The crisis has also highlighted and often accentuated the weaknesses and inequalities already present in our food systems, health systems, and economic systems that leave the poor and vulnerable at risk. A year into the pandemic, loss of incomes, increased food insecurity, and reduced access to healthy diets make it clear that food systems must play a central role in putting us on track to achieve the Sustainable Development Goals (SDGs) by 2030. Food systems need to be transformed to meet those goals, to better prepare us for the next shock, and to benefit the world's poor and vulnerable people and the planet.

Paradoxically, by upending our world, 2020 also offered a wide array of lessons, innovations, and opportunities that can transform our food systems not just to make them more resilient but also to make them more inclusive, efficient, sustainable, and healthy. Although income losses caused dramatic declines in food security and nutrition and increases in poverty, food supply systems proved surprisingly resilient — albeit with large differences across food commodities and regions. Many countries rapidly introduced measures to secure the flow of food products, and governments expanded social safety net programs in new ways to ensure food security. Private sector innovations introduced along food supply chains by both large companies and small and medium enterprises (SMEs) helped to overcome constraints such as lockdowns; they also stimulated investments in technologies and partnerships to keep food supply chains moving. Also importantly, in the face of the pandemic, food systems often proved able to respond rapidly and flexibly. As a result, the willingness and momentum needed to change them for the better notably increased in 2020.

The post-pandemic world thus affords us a unique opportunity to fundamentally transform food systems. The fate of billions of people, many of whom have been pushed back into poverty, food insecurity, and malnutrition, depends on quick and bold action.

## A WORLD OFF TRACK

Prior to the pandemic, our food systems already faced serious challenges in achieving equitable access to healthy, nutritious food for all, environmental sustainability, and resilience to shocks. After decades of improvement, the number of hungry people in the world had been rising again for several years, largely as a result of economic slowdowns, conflicts, and extreme weather events that contributed to food crises in many low- and lower-middle-income countries.[1]

Much of the world is not on track to achieve international targets set for the next decade, including the World Health Assembly targets for 2025 and many of the SGDs. Many countries were already off track for SDG 2: Zero Hunger by 2030 before the pandemic worsened the situation.[2] Our food systems have also failed to make sufficient progress against malnutrition.[3] Many poor countries now face the triple burden of malnutrition, that is, the coexistence of undernutrition, micronutrient deficiencies, and overweight and obesity, and more than 3 billion people worldwide cannot afford a healthy diet (Chapter 3).[4] In addition, agricultural production and other activities along the food value chain are stressing our finite natural resources, biodiversity, and the environment (Chapter 4). Globally, agrifood systems consume more than 30 percent of energy and produce more than 20 percent of greenhouse gases (GhGs).[5] Climate change constitutes one of the greatest threats to our and future generations.

Food system transformation is the clearest path to overcoming the massive challenges ahead. What do we need from our food systems? Ideal food systems have five critical attributes (Figure 1).[6] They are **efficient**, providing incentives and removing hurdles for the private sector — from large businesses to smallholder farmers — to deliver efficiencies all along the food supply chain, including in crop production, infrastructure, food storage and transportation, and food consumption. They contribute to global **health**, producing affordable, nutritious foods, boosting demand for them among consumers, and guarding food safety. They are **inclusive** of smallholder farmers and marginalized groups such as women, youth, the landless, refugees, and displaced people, helping them to build decent livelihoods and to benefit as consumers and participants in decision-making. They are environmentally **sustainable**, using technological innovations, regulations, and local collective governance approaches to conserve and protect natural resources as well as biodiversity.[7] Finally, ideal food systems are **resilient**. They must be able to bounce back quickly from more frequent health, climate, and economic shocks, and also provide poor households with stable livelihoods that protect them from these shocks. Strengthening these five food system attributes requires an enabling environment for optimal food system policies, governance, and accountability (Chapter 2).[8]

COVID-19 has highlighted the risk of shocks to our food systems that can lead to multiple supply and demand disruptions. At the same time, ongoing climate-change-induced weather shocks continue. Beyond these, other shocks affected poor countries in 2020. Falling oil prices contributed to declines in incomes and food security in oil-exporting developing

countries. Torrential rainfall in East Africa triggered swarms of locusts, and many countries experienced destructive flooding, typhoons, wildfires, hurricanes, and tropical storms that broke natural disaster records. With the likelihood that shocks, including pandemics and natural disasters, will only become more frequent (Chapter 4), resilience from the farm to the global level must be a focus for food system transformation.

## COVID-19 IMPACTS ON FOOD SYSTEMS

The pandemic and the policy responses adopted to address it have affected our food systems from the global to the local level, setting back already-uneven progress and exposing weaknesses and vulnerabilities. In IFPRI's recent book *COVID-19 & Global Food Security*, we identified many different impacts of the pandemic and pandemic responses on the world's food systems. This report expands on those insights, looking at what we have learned in this first year of the pandemic, with a view to transforming food systems for the long term.[9]

### LOST INCOME

The pandemic's impacts on food security have been induced primarily by falling incomes. The World Bank estimates that the global economy shrank by 5 percent in 2020, with the greatest burden borne by poor people. By the end of 2020, 95 million additional people, mostly in Africa south of the Sahara, were estimated to be living in extreme poverty.[10] IFPRI research estimates that the number of poor people globally is likely to increase by about 150 million, 20 percent above pre-pandemic poverty levels.[11] The experiences of many countries confirm the importance of lost incomes. A survey of mothers in Myanmar found that median incomes declined by a third, leading to a 27 percentage-point increase in income-based poverty over six months. In China, 18 percent of SMEs had closed permanently by May 2020 (often due to lack of consumer demand), representing a loss of 14 percent of total jobs.[12]

Remittance income was particularly affected because of the pandemic restrictions on travel and movement. In 2019, remittances represented more than 10 percent of gross domestic product (GDP) in seven African countries, and were also important for low-income Asian and Latin American countries.[13] As a result of the pandemic, the global flow of remittances has fallen by almost 20 percent, and flows to Africa by 23 percent. This report's Regional Developments section examines this challenge in many countries, from Yemen, where the reduction in remittances lowered household incomes by 12.5 percent, to China, where more than 10 percent of low-income remittance-receiving rural households are expected to fall back into poverty. Recent research also suggests that restrictions on global travel and freight put into place by rich countries to stop the virus's spread represented a larger economic cost for poor countries than their own pandemic restrictions.[14]

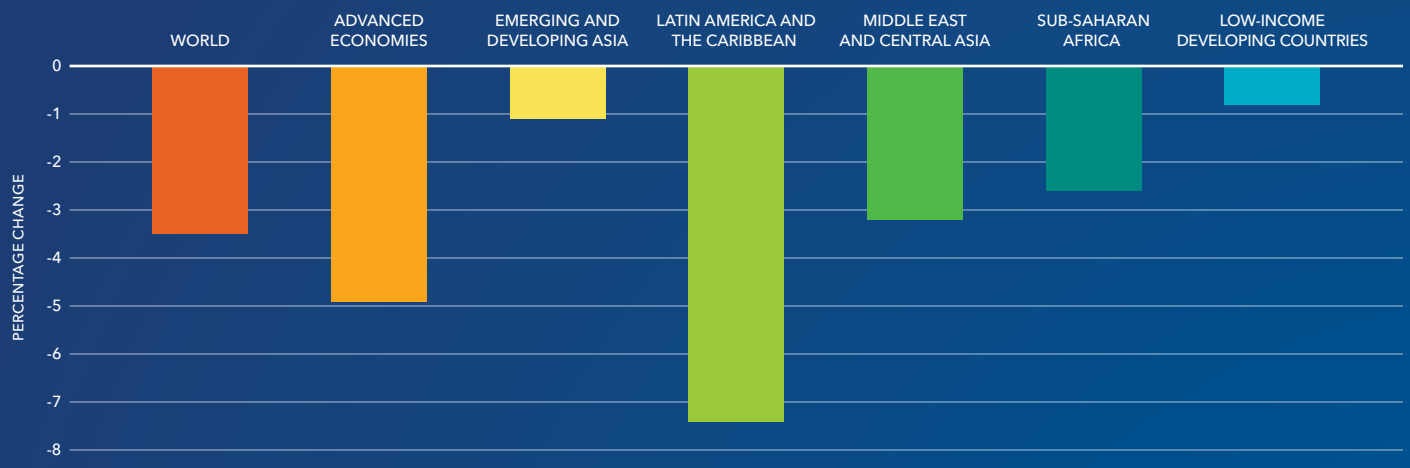
**FIGURE 1** Food system transformation goals


**Source:** Based on S. Fan et al., "Food Systems for Human and Planetary Health: Economic Perspectives and Challenges," *Food System Economics* (forthcoming).

### DISRUPTION OF FOOD SUPPLY CHAINS

Food supply chains were disrupted by labor restrictions and falling demand, although impacts varied along the value chains and between countries and commodities (Chapter 6). Food services were particularly affected, and many poor people lost jobs in urban

## REAL GDP GROWTH, 2020




**Source:** IMF, *World Economic Outlook*, January 2021 Update (Washington, DC: 2021).

# TIMELINE OF
# Global COVID-19 Outbreak

**2020**

**JAN**

- **7-9** China identifies new coronavirus and reports first death
- **13-20** Thailand, Japan, and South Korea report first imported cases

**FEB**

- **30** WHO declares a public health emergency of international concern
- **31** Countries begin applying border controls

**MAR**

- **28** 38 countries have imposed travel restrictions
- **11** WHO declares a pandemic

**APR**

- **25** India begins lockdown
- **2** Global cases surpass 1 million

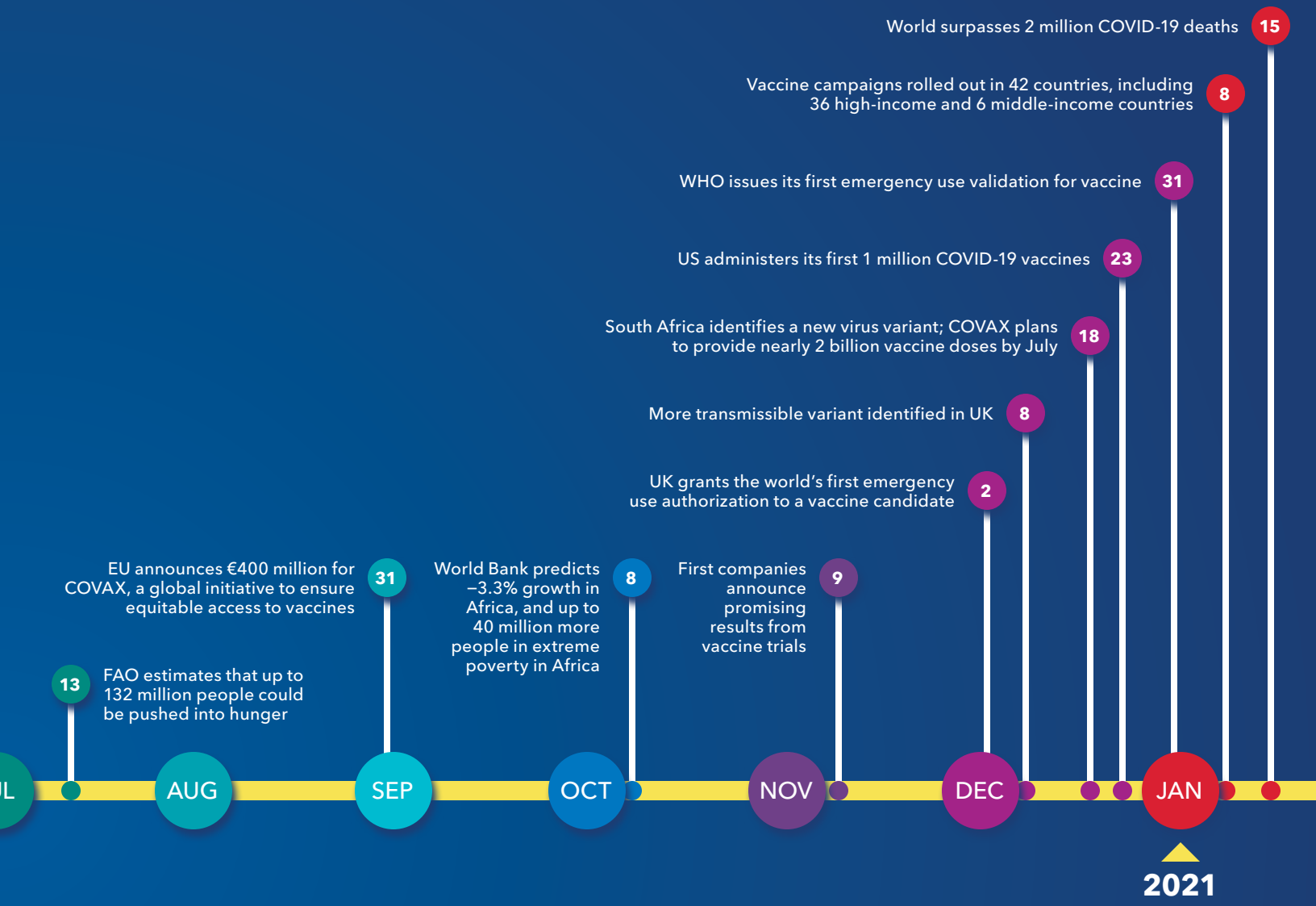
**MAY**

- **13** UN warns against lifting lockdowns prematurely

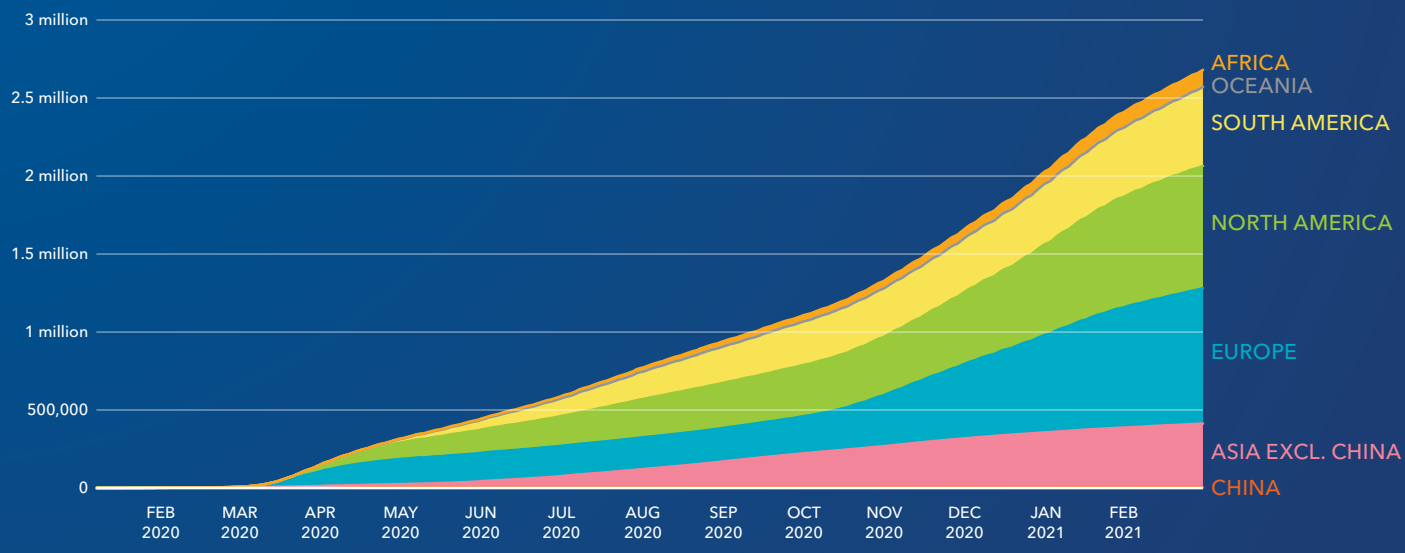
**JUN**

- **15** Global confirmed cases surpass 8 million

**JU**




## CUMULATIVE CONFIRMED COVID-19 DEATHS




**Source:** Johns Hopkins University, CSSE COVID-19 Database (updated March 18, 2021).

areas, especially in the tourism and restaurant sectors. Traditional food systems, with few linkages beyond the farm, and modern, vertically integrated systems were relatively resilient. More vulnerable, however, were food systems transitioning from traditional to modern, which are characterized by longer supply chains and still-fragmented storage, transportation, and services. During the pandemic, these characteristics made it more difficult for actors along transitioning food supply chains to access markets and to procure labor and input supplies, which were affected by drops in demand and government restrictions. For example, in Myanmar, half of retailers of agricultural machinery, such as tractors and combine harvesters, reported a drop in sales of 70 percent or more. They attributed this to movement restrictions as well as decreased machinery imports and decreased local production of machine parts.[15] Modern, vertically integrated supply chains, with more options in terms of suppliers and logistics as well as the ability to move many transactions online, were most able to adjust to pandemic conditions.

Impacts on agricultural production and trade were mixed. Both labor supply and perishable products were notably affected by mobility restrictions. In Senegal, for example, small fruit and vegetable producers were impeded by closure of traditional wet markets and social-distancing requirements, leading to food spoilage and lost income.[16] In many countries, the pandemic struck during the agricultural season, and mobility restrictions reduced the availability of labor for harvesting and other farming activities, with the most severe impacts on farms that rely heavily on hired labor. In Ethiopia, for example, restrictions on mobility constrained the labor supply to rice farmers, about 75 percent of whom rely on hired day-laborers for weeding and harvesting.[17]

Some countries responded to the pandemic with trade restrictions reminiscent of their policy reactions to the 2008/2009 food price crisis. Restrictions on exports can reduce incomes of producers, and run the risk of triggering food price spikes in importing countries.[18] According to IFPRI's Food Trade Policy Tracker, 19 countries introduced export restrictions, with severe effects on importing countries, including some of the poorest countries in Central Asia and Africa south of the Sahara.[19] Kazakhstan's ban on exports of wheat and other products in March 2020 affected 50 percent of neighboring Kyrgyzstan's food imports.[20] However, many of these restrictions were removed or loosened in the second half of 2020, following strong reactions from international organizations.

## FOOD INSECURITY AND NUTRITION LOSSES

The impacts of rising poverty and reduced livelihoods are reflected clearly in rising levels of food insecurity and decreasing diet quality. For example, more than a third of Bangladeshi rural and urban youth reported moderate or severe food insecurity during the country's lockdown period. Unsurprisingly, the highest prevalence of food insecurity was found in groups that had reported losing household income.[21] Coping mechanisms reported by poor Bangladeshis included not eating for an entire day and exhausting household food reserves. Rural Nepalese households found themselves in a similar situation: preliminary surveys found that even six months after an initial lockdown, 40 percent of households were using their savings to cope, and more than 30 percent had reduced their spending on food items.[22]

Dietary quality and diversity were affected foremost through declining incomes but also through trade and movement restrictions that have disproportionately affected the availability of nutritious perishable products. Several studies, including from Guatemala and China, illustrate households' dietary shift away from more expensive nutritious foods, such as fruits, vegetables, and animal-sourced foods, toward cheaper staple foods.[23] In addition, lockdowns affected food security and nutrition through public sector channels. Lockdowns shuttered schools and daycare centers, which provide critical meals and supplementary nutrition to hundreds of millions of young children. India's Mid-Day Meal program, for example, covers 80 percent of primary-school-aged children in the country, improving not only nutrition but also learning outcomes and gender equity; the country's school closures likely exacerbated food insecurity and malnutrition, especially for girls and disadvantaged populations.[24]

The decline in food security and sound nutrition will have long-lasting development effects. Early in the pandemic, IFPRI researchers and their colleagues projected that even short lockdown measures implemented in tandem with restrictions on mobility and food system

disruptions would lead to a 7 to 9 percent decrease in gross national income (GNI) in most low- and middle-income countries (LMICs), as compared with pre-pandemic projections. Applying these estimates to 118 LMICs suggested that moderate or severe wasting (low weight-for-height) among young children could increase by 14.3 percent, adding an estimated 6.7 million more wasted children in 2020.[25]

## MAGNIFYING DIFFERENCES AND SHORTCOMINGS

The pandemic has been a stark reminder of the greater vulnerability of the **poor** and other disadvantaged groups. Wealthier households in LMICs generally experienced larger percentage declines in income, primarily because they were likely to work in industry and service jobs that were disrupted by COVID-19 shocks and restrictions. Poor households, however, suffered far more detrimental impacts on food security, livelihoods, and wellbeing. Because these households spend a larger share of income on food, so loss of income increases their food insecurity, and they have fewer assets to help them mitigate shocks.[26] In Ethiopia, for instance, poorer households were far more likely to report high stress than were wealthier households.[27] Food security and livelihoods were most negatively impacted in places where food value chains were poorly integrated.[28] The pandemic has also disrupted vital services upon which poor communities rely, including public sector programs for poverty alleviation, health, and food and nutrition, such as school-feeding programs and work-for-food programs.

The impact of COVID-19 on the **rural–urban** gap is more complex.[29] On the whole, urban households experienced larger income losses because they rely on income from industry and service sectors that was severely affected by lockdowns and economic recession. For many urban poor, their sole productive asset is their physical labor, which many were prevented from using due to pandemic-related restrictions. Agriculture and agrifood systems, with the exception of food services and restaurants, have been more resilient, both because consumers prioritize food when incomes decline and because agrifood systems were generally exempted from lockdowns and movement restrictions. For this reason, the rural poor who depend on income from agriculture and other agrifood activities were partially buffered from the shock. Nevertheless, poverty has risen in both urban and rural areas, and due to larger rural populations living close to the poverty line, rural areas account for more of the people pushed into poverty. This reflects the particular vulnerability of rural households and underscores how even small income losses can lead to critical deteriorations in welfare. Falling remittances from urban workers and workers abroad have also spread the effects of urban income losses to the rural poor.

Disadvantaged groups have suffered most during the pandemic, due to the economic, legal, and social barriers they already faced and their reliance on informal work. **Women** account for 39 percent of employment globally but incurred 54 percent of total job losses during the pandemic, reflecting their heavy representation in informal activities.[30] In many poor countries, women have experienced increases in their already-heavy workloads. In an April 2020 survey conducted in rural India, about 50 percent of households reported that women were spending more time fetching water and firewood, in comparison with earlier in the year.[31] Stress on households sparked by lost incomes and stay-at-home orders too frequently leads to increased domestic violence that most affects women and children. In Peru, researchers reported that calls to the national domestic violence hotline increased by 48 percent between April and July 2020.[32] Yet, national policy responses have largely failed to adopt a gender-sensitive approach, and risk leaving women further behind. For example, Myanmar increased the availability of low-interest loans to farmers, an opportunity that women are less likely to make use of than men because women are rarely legal landowners.[33]

Responses to the pandemic also amplified the **digital divide** between rich and poor. Rich communities were able to rely on Internet services to access schooling, market information, health services, and more, while poor communities were left in relative isolation. These impacts may be long-lasting; for example, disruptions in schooling will likely lead to lower lifetime earnings, poorer health, and less opportunity for many children in developing countries to escape poverty.

Beyond this broad-brush description of the gaps exposed by the pandemic, the Regional Development section in this report also identifies important **regional and national differences** in policy reactions, demographics, food and economic system structures, and how these influence the pandemic's impacts on citizens. How the pandemic will evolve in different regions and its long-term impacts are still unknown; we have just a snapshot from 2020.

Countries in South Asia, for example, initiated strict lockdown measures at the earliest stage of the pandemic, keeping COVID-19 cases low, and spent sizable resources on their already-large social protection networks, on support to agriculture, and on maintaining food price stability. But the region's labor markets, especially in the nonfarm and informal sectors, proved to be fragile, due in part to their reliance on migrant workers. The drastic reduction in international remittances was also a big blow.

Similarly, countries in East and Southeast Asia suffered from the loss of international and domestic remittances, with rural households suffering the most. The region has also faced a challenge in reaching the urban poor, many of whom work in the informal sector and are not covered by existing social protection systems. Expansion of regional trade, however, has helped East Asian countries mitigate the impacts of global trade restrictions; many exports, including agricultural products, have been rerouted to China.

Central Asian countries quickly enacted policy measures to contain the virus, but still experienced a contraction in GDP, closure of SMEs, and isolation of some segments of society, especially in rural areas with poor digital connectivity. The pandemic also exposed the weaknesses of many of the region's economies, including dependence on remittances and on a few trading partners and commodities subject to price volatility. Fortunately, agricultural growth remained relatively robust and intraregional trade mitigated some of the pandemic's effects.

Africa south of the Sahara has recorded relatively few COVID-19 deaths, but short-term policy responses and the global recession have interrupted 25 years of economic growth, with decreases in household incomes, lost employment, increased poverty and food insecurity, and protests over lockdowns. Some countries were able to invest heavily in social protection measures, but rates of coverage remain low compared to the global average, and the high costs of pandemic-response programs may risk a fiscal crisis.

Latin America and the Caribbean have been hard hit, due to a high level of urbanization and the ease with which the virus spreads in dense environments. As in other developing regions, employment in the informal sector, which lacks social safety nets, is common and has been severely disrupted by movement restrictions. The region also has among the highest rates of obesity and overweight, increasing the death rate, and for many, the severity of the disease.

Finally, in the Middle East and North Africa region, the pandemic led to falling remittances and incomes, especially in the service and industry sectors. Food services and tourism-related businesses suffered the most severe disruptions, disproportionately harming urban dwellers employed in those sectors, while other parts of the agrifood system have proved more resilient.

## A UNIQUE OPPORTUNITY FOR TRANSFORMATION

Despite the many negative impacts of the pandemic, the health, economic, and food disruptions have opened opportunities for fundamental change. COVID-19 magnified many long-term weaknesses, such as persistent inequalities and poorly integrated supply chains, that must be addressed. But it also highlighted the benefits of investments and policies that have created an enabling environment for private sector innovation, with flexible markets and appropriate infrastructure, and of sound policy systems that are able to respond quickly and nimbly. The chapters in this report examine the lessons learned about what worked well and can provide building blocks for food system transformation.

As of early 2021, there is considerable hope that the rapid development and deployment of effective vaccines will relieve the disease threat. However, the emergence of new coronavirus variants, the difficulty of ensuring an adequate supply of vaccines, and the challenge of vaccinating all people, particularly the poor, is almost certain to prolong recovery in many places. Although it seems increasingly likely that the world will have to learn to live with the virus, its impact will ebb,

## BOX 1 INTERNATIONAL EVENTS TO PROMOTE FOOD SYSTEM TRANSFORMATION

Several major international policy events planned for 2021 can help build the necessary political will and provide momentum for overhauling food systems to meet global goals. These global initiatives will help countries to tap into funding, research, and communities of practice to build capacity for change.

The 26th United Nations Climate Change Summit (COP26) may be the most important UN summit since the Paris Agreement. Amid worrying reports on the world's GhG emissions trajectory, despite the dip in emissions during the pandemic, COP26 represents a chance for countries to pivot their post-pandemic recovery plans toward environmental sustainability. Given the large contribution of plant and animal agriculture to GhG emissions and other natural resource degradation, transforming food systems to be sustainable is critical to achieving environmental and climate change goals.

The UN Food Systems Summit aims to "launch bold new actions" to make progress on the SDGs, explicitly recognizing that achieving each of the goals will require sustainable, healthier, and more inclusive food systems. The event is a powerful call for action to change food systems at all levels. It also aims to create a system of accountability, under which countries will monitor and report progress toward food system transformation.

The Tokyo Nutrition for Growth Summit will encourage governments, businesses, multilateral organizations, and donors to make concrete financial, programmatic, and impact commitments in three focus areas: health, resilience, and transforming food systems so that they promote safe, sustainable, and healthy foods. Other events in 2021 where food system transformation should be considered include the World Trade Organization Ministerial Conference and the UN Biodiversity Conference (COP15).

allowing attention to focus on the longer-term agenda of transforming food systems to be healthier and more efficient, sustainable, inclusive, and resilient.

COVID-19, like other crises, has triggered reactions from governments, the private sector, farmers, consumers, and the international development community, many of whom altered their roles, operations, and behaviors in ways that were previously constrained by a variety of political, social, technical, and economic barriers. This normalization of out-of-the-box approaches has fundamentally changed thinking about the potential of food system transformation, making this the right time for the deep changes that are needed. As the Global Panel on Agriculture and Food Systems for Nutrition's latest Foresight report states, transformation will depend on "the political will and courage to reform outdated policies and a sustained commitment to act."[34]

Upcoming global summits and new thinking have the potential to be catalytic (Box 1), but the real transformation must occur in regions, countries, and communities through policies, investments, and actions that adapt and build on past successes and address weaknesses. Financing these changes will also require innovative approaches and mechanisms from the global to the local level to support public and private sector investments in transformation (see the special section: Financing the Transformation to Healthy, Sustainable, and Equitable Food Systems, following this chapter). What is encouraging is that the pandemic has already triggered transformations within the public and private sectors. In many cases, these short-run actions meant to deal with an immediate crisis will have long-run benefits.

Since the pandemic's onset, governments have adopted a variety of response policies, from increasing spending on health systems and vastly expanding social protection to supporting private businesses.[35] Social protection efforts served to test the effectiveness of pro-poor interventions and policies. Ethiopia's flagship Productive Safety Net Program, for example, offset nearly all of the pandemic's negative impacts on the food security of participating households, especially poorer households and those living in remote areas[36] In India, efforts were made to incorporate migrant workers into social protection programs;[37] and in Bangladesh, cash transfers were substantially expanded. Other efforts focused on the informal sector, composed of small vendors who were especially hard hit: Burkina

Faso, for example, created a fund for women who sell fruits and vegetable in informal markets. Such actions showcase ways to support small actors who are critical to urban food systems.[38]

The private sector's experience sheds further light on how food systems can become more resilient. Some food systems have proved to be more resilient than others, depending on their structure, ability to quickly adapt to shocks, and the government's role in supporting value chains.[39] For example, large, vertically integrated fruit and vegetable companies in Senegal, which can control their suppliers, distributors, and retail locations, were able to provide protective gear and safer transport and invest in cooled storage capacity; as a result, they fared better than smaller, less integrated companies.[40]

Almost everywhere, businesses that were able to digitalize quickly, from food delivery in urban areas to market information provision in a mobile format, proved to be far more resilient throughout the pandemic. Their experience offers lessons about the potential for the digital revolution — from drones monitoring crop quality to the urban poor accessing mobile banking — to make food systems more resilient.

Some innovations foster resilience while also contributing to other attributes of an ideal food system. For example, the emergence of SMEs devoted to solar-powered transportation and cold storage of fruits and vegetables can help make local food systems more resilient, environmentally sustainable, nutrition-driven, and inclusive.

## BUILDING A MORE RESILIENT FUTURE

The innovations in the public and private sector in response to COVID-19 are encouraging, but much more remains to be done. The chapters in this report provide a strong set of policy recommendations targeted to different aspects of food system transformation and to different regions and countries. Many of these focus on inclusion, efficiency, health, and sustainability. The pandemic is above all a test of resilience to a shock, and so in this final section we focus on the lessons about resilience in food system transformation. For many countries, the end of the pandemic is not yet in sight, and other shocks — including new diseases, conflicts, natural disasters, and climate-change-induced disruptions — are likely to become more frequent.

Making food systems more resilient requires a set of actions, many of which must be adjusted to local circumstances and food system characteristics. Three types of measures are needed. First, the best way to build resilience into our food systems is through shock prevention, and when shocks can't be avoided, to **limit the frequency and magnitude of shocks**. Some ongoing vulnerabilities, such as those due to climate change and inequality, were exacerbated during the pandemic. Therefore, investing in mitigating predicted multiple shocks now — for example, investing in climate change mitigation — will reduce the likelihood and magnitude of various shocks, such as droughts and flooding, in the future. Another example is reducing inequality. Promoting inclusiveness in economic systems is likely to reduce or prevent social conflicts that are an important source of food insecurity and welfare declines.

Second, resilience implies the capacity to **anticipate shocks**. Information is crucial to help people, businesses, and governments prepare for shocks. Investments in early warning systems, development of improved data and indicators, and digital technology are examples of ways to increase access to information. In the case of COVID-19, dynamic metrics for tracking the transmission of the virus, including speed, acceleration, and persistence of COVID-19 cases, and indicators of the impacts of policy responses are useful. Similar indicators should be developed for tracking other potential shocks such as climate events, civil conflict, and pest infestations.[41] The Food Security Portal, facilitated by IFPRI and supported by the European Commission, provides data on dynamic developments in food systems around the world, including food price volatility, so that policymakers can respond in a timely way.[42] (See more about the resources offered by IFPRI on page 18).

Increasing access to information and communications for everyone can play a vital role in building capacity of diverse groups to strengthen resilience. The rise of digital tools and services during the pandemic illustrated how unequal access can affect people's lives and livelihoods. Governments must aim to close the digital divide and ensure that all their citizens have access to the benefits of the digital revolution, particularly in food systems, by investing in rural energy, mobile ICT networks, and big data analytic systems geared toward smallholders

and disadvantaged communities. The private sector also has a critical role to play, as its investments in digital services and e-commerce can open opportunities for the integration of small farmers, SMEs, and consumers in future food systems.

Third, improving the capacity of all actors in our food systems to **absorb shocks** is the final piece of the resilience puzzle. Capacity enhancement requires a variety of instruments, such as better access to finance (liquidity); flexible social safety nets; lower transaction costs in value chains; competitive markets for inputs, outputs, and logistics; reliable trade agreements; investment in rural services, infrastructure (including digital connections), and R&D for improving food production systems; and more. At the global and national levels, multilateral financial institutions will need to address the liquidity constraints of many developing countries. Small producers and SMEs need access to credit, capital, and insurance to mitigate risk. Social safety nets can protect the most vulnerable people from shocks and also lead to gains in welfare and food and nutrition security. Conditional cash transfer programs, for example, have proven impacts on poverty reduction, household food consumption, and dietary diversity.[43] These transfer programs can also be used to build up women's control over resources, enhance their empowerment, and strengthen their social networks.

In sum, a wide set of measures are needed to make our food systems more resilient. The ongoing pandemic has shone a harsh light on the vulnerabilities of our food systems, but has also proved that food systems can be resilient and that adaptations and innovations can be greatly accelerated. Food systems in developing countries have typically been less resilient and more vulnerable, causing the greatest harm to the poor and disadvantaged. Looking forward, measures for resilience need to be embedded in longer-term transformation strategies to make food systems more efficient, inclusive, sustainable, and healthy. In addressing resilience, we must pay special attention to the most vulnerable households and communities in our food systems.

All this requires a purposeful transformation of our food systems, globally and locally. Careful research and analysis are required to identify the most effective measures for such a transformation. The chapters in this report provide a series of evidence-based ideas and recommendations – supported by high-quality research, some produced over a span of decades and some in the midst of the pandemic – for making such a transformation possible.

# TOOLS AND RESOURCES

## TOOLS

### AGRICULTURAL PRODUCTION AND STOCKS MONITOR

Visualizing production and stocks of key crops at global and country levels, with comparisons to levels during the 2008–2009 food price crisis.

EXPLORE

### COVID-19 FOOD PRICE MONITOR

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# Financing the Transformation to Healthy, Sustainable, and Equitable Food Systems


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Our agrifood systems must undergo profound change to address the interlocking challenges of persistent rural poverty, climate change and environmental degradation, and the triple burden of malnutrition. Food systems are largely market driven – through the production choices of farmers and large and small businesses in food trade, transport, distribution, and services, as well as by consumer choices. But governments can steer the decisions made by these actors through policies, regulations, and investments in public goods (such as infrastructure), many of which are discussed in this report. These instruments can also leverage private sector finance for investments in food systems. Transformative change toward climate-resilient, sustainable, inclusive, and healthy food systems, however, will require fundamental reorientation of market incentives and investments.

Purposeful transformative change will also require adequate finance. Estimates of the financing needs for achieving the UN's Sustainable Development Goals (SDGs) are substantial, ranging from US$50 billion to well over $1 trillion per year over the next decade, depending in part on which SDGs are included.[1]

How can we mobilize the necessary resources? Here, we present a basic framework of key fiscal and financial mechanisms to help orient an actionable agenda. This framework is built around six intervention areas for both incentive reform and financial resource mobilization to promote investments in food system transformation: (1) consumer expenditures on food; (2) agrifood business profits and savings; (3) fiscal measures (public expenditures and taxes); (4) international public finance (official development assistance [ODA] and nonconcessional lending by bilateral donors and multilateral development banks [MDBs]); (5) bank finance; and (6) capital market finance (Table 1). The first two areas of intervention and financing sources can be considered "internal" to food systems' economic actors, while the other four are "external" to them.

Food system transformation will require a fundamental rethinking of existing financing mechanisms. This rethinking should be guided by four key objectives: (1) ***repurposing*** finance and public support to promote better food systems in each area/funding source; (2) ***reducing*** finance that is destroying or degrading the natural-resource base of food systems; (3) ***optimizing*** finance through de-risking investments in better food systems; and (4) ***scaling up*** and leveraging finance flowing to investments in better food systems.[2]

**Consumer expenditures** are a critical driver of food system outcomes. They not only reflect dietary choices and people's ability to access food, which are key to nutritional and health outcomes, but they also form the demand side of the market for food producers and intermediaries. Consumer spending determines the revenue stream for food retailers and for suppliers in both downstream and upstream segments of food supply chains, thus influencing potential net profits of these actors and their investment choices. Therefore, public policies that affect consumers' incomes and their food options and choices will also shape investment decisions and financing requirements of farmers, agrifood businesses, and commercial and food service operators. Policy tools that

can be useful for influencing food demand (both its level and composition) include nutritional and environmental education, targeted taxes and subsidies, and food standards and other regulations, as well as income and nutrition support through social safety nets.

Significant **private sector investments** are needed to transform our food systems and achieve the SDGs. These efforts will have to come from all private actors — from small-scale farmers and agrifood businesses to large-scale global and national food processors, retailers, and aggregators. Public policies can influence the size and allocation of those private investments and operating expenditures. Macroeconomic and trade policies, for instance, can improve the general business environment by fostering price stability and competitiveness for domestic production. Through targeted provisioning of public goods, such as support for appropriate education and skills training, R&D, and basic infrastructure, governments can promote a wide range of changes, such as better access to markets for smallholders and the development and adoption of sustainable production. Within food value chains, institutional reforms and policy initiatives that help improve market functioning and de-risk private sector investments will attract resources for investments that would otherwise not occur. Such initiatives would typically aim to improve the competitive operation of markets, strengthen contract-farming systems, improve access to value chain finance, and strengthen risk management. Credit guarantees and robust markets for innovative insurance, such as parametric (for example, weather-indexed) insurance, could help strengthen risk management. Environmental regulations (such as those protecting forests and ecosystems) plus expanded programs of payment for environmental services, along with food quality regulations and standards and stricter labeling requirements, could trigger shifts in private investment toward sustainable production of more nutritious foods.

**Fiscal measures** intended to influence consumer demand and agrifood sector profits and investments for food system transformation will have to be aligned with overall government fiscal priorities, on both the expenditure and revenue sides. In the context of a broader public expenditure review, an essential starting point would be to rethink existing subsidies and other support measures for agricultural production and food consumption. Based on OECD estimates for 54 countries, these support measures added up to about $600 billion per year in 2017–2019, of which about 56 percent was incurred as a direct fiscal cost in the form of coupled and uncoupled subsidies and other general support expenditures for producers; 11 percent as fiscal expenditures that support food demand by consumers; and the remainder being the imputed costs of international trade measures, primarily implicit transfers from consumers to producers.[3] These agricultural support measures have been maintained over a long period of time in many countries and have contributed to the current unhealthy and environmentally unsustainable production and consumption patterns. Repurposing this existing agricultural support to forms that align with the objectives of food system transformation thus seems to offer a first important step toward reorienting both consumer demand and private investment decisions. It should be noted that currently more than half of all agricultural support is provided by developing countries, though only abut $50 billion of that is provided in the form of subsidies by developing countries other than China.

However, countries with limited fiscal resources have little funding that can be repurposed. The global recession provoked by the pandemic and lockdown measures have severely weakened the fiscal position of most countries in the world, particularly low-income countries, limiting their capacity to counteract adverse economic impacts and protect the poor.[4] Economic recovery is likely to be slow in low- and lower-middle-income countries and may be quite challenging without sustained external financial support to strengthen their budgets.[5]

Here, concessional and nonconcessional **international public finance** could make a difference, if scaled up substantially. According to the latest numbers (2019), current funding allocated to agriculture, rural development, and food security is limited, amounting to about $17 billion per year, of which about $12 billion is provided as ODA, with an additional $2 billion for emergency food assistance.[6] The global recession has put further pressure on already vulnerable donor aid budgets. Nonconcessional loans from the World Bank and regional MDBs mainly go to middle-income countries, and net flows (that is, disbursements minus repayment of previous loans) are even lower than those of ODA. Substantially increasing net flows would require commensurate expansion of the capital base of the MDBs. Yet, even if somewhat limited in scale, lending from these sources could have greater impact if used strategically to support the

realignment of national public spending mentioned above and to leverage blended forms of finance designed to de-risk private sector investments in sustainable food systems.

External sources of financing — namely, loans from the banking system or financial operations in capital markets — can expand and supplement the internal sources mentioned. Financial institutions and investors tend to perceive investments in agriculture and agrifood systems as being of high risk and low return. Regarding the **banking system**, existing macroeconomic policies, regulatory frameworks, financial instruments, and delivery systems need to be carefully reviewed in each country context to identify the obstacles that constrain access to finance for agrifood businesses, especially for small-scale farms and small and medium enterprises (SMEs). Removing or reducing these obstacles within the broader financial system is important to ensure access for these and other often-marginalized actors. Many efforts to improve financial inclusion have focused on specialized mechanisms, such as microcredit schemes or mobile payment systems for the poor, but although these mechanisms can improve financial inclusion, they generally cannot provide finance on the scale needed to induce transformative change. For this, credit supplies from the broader banking system will be needed, as well as other financial services for farmers and SMEs in food value chains.

To this end, improving the business environment and incentives for agrifood system transformation, including the instruments for de-risking as well as fiscal and macroeconomic measures that raise the profitability of sustainable and healthy food production will be essential. Depending on the context, strategic use of government or donor-supported development finance to mobilize commercial bank lending, as well as provision of seed money for the development of cooperative savings and loans associations and digital payment platforms for farmers and agrifood businesses could catalyze significant shifts in commercial bank lending. As part of this reorientation of financial systems, renewed consideration could be given to allowing national development banks as well as central banks to engage in development financing in low- and lower-middle-income countries with underdeveloped capital markets. In the 1960s and 1970s, both types of financial institutions played a substantial role in financing rural and agrifood sector development in a number of developing countries through dedicated lines of credit. In subsequent decades, the role of national development banks and "developmental central banks" was largely curtailed, a decision that should be reassessed.[7]

Global and national **capital markets** offer another major potential funding source for transformative investments in agrifood systems. For instance, in 2020, the issuance of "green bonds" exceeded US$1 trillion. Other options are impact investors, investors with environmental, social, and governance (ESG) requirements, sovereign funds, and a variety of other potential institutional and private investors, all provided that the investable vehicles and financial structures meet the risk/reward profiles and other conditions that those economic actors expect. At present, however, investments in projects and financial vehicles related to agrifood system transformation are small, possibly because many ventures are considered high risk. Also, transaction costs to develop "bankable" projects and to design and launch new categories of asset classes are high. To overcome these hurdles, one possibility is to create a special *facility for project preparation, incubation, and acceleration*. This facility would help investors and food sector actors develop a portfolio of projects and investable financial instruments with the adequate balance of risk and return to mobilize the funds of investors seeking stable, long-term returns while supporting aspects of the SDGs, such as socially and environmentally sustainable food production by small producers.[8]

Additionally, as noted, official international finance, public sector expenditures, and even philanthropic funds can be used as blended finance, guarantees, absorption of "first losses," and other means to de-risk private investments. Digital innovations (such as crowdsourcing and investment-opportunity exchanges) could also reduce the transaction costs of connecting small and medium investors with options for financing transformative activities in food systems.

In sum, substantial financial resources will be needed to transform food systems in ways that contribute to achieving the SDGs. The variety of funding sources and policy interventions to finance such transformation outlined here should be further explored and acted on. The first-ever UN Food Systems Summit in 2021 will provide a crucial forum for transforming these ideas into concrete action areas to *repurpose, reduce, optimize, and scale up* finance, and to identify how financial innovation can contribute to the transformation of our food systems.

**TABLE 1** Sources of funding and areas for realignment of investment incentives

| AREAS FOR INCENTIVE REFORM AND FINANCING SOURCES | POSSIBLE POLICY INSTRUMENTS |
|---|---|
| CONSUMER SPENDING ON FOOD | ▪ Nutrition education<br>▪ Regulations and stricter labeling requirements and food standards to support healthy, sustainable diets<br>▪ Consumer taxes on unhealthy and unsustainably produced foods and subsidies to support healthy, sustainable diets<br>▪ Social safety nets with nutritional aspects |
| FARM AND AGRIFOOD BUSINESS PROFITS AND SAVINGS | ▪ Macroeconomic and trade policies for sustainable, healthy diets<br>▪ Producer taxes on unhealthy and unsustainably produced foods, and subsidies to support nutritious and sustainable food production<br>▪ Provision of public goods (infrastructure, R&D)<br>▪ Policies and regulations for market competition, contract farming, and value-chain financing<br>▪ Regulations and food standards to promote healthy, sustainable diets |
| PUBLIC SECTOR FINANCE | ▪ Public expenditure reviews with an expanded focus on SDGs, particularly those related to nutrition, poverty, environmental sustainability, and employment<br>▪ Reallocation of resources from existing agrifood sector support to promote healthy diets and sustainable production. |
| CONCESSIONAL ODA AND NON-CONCESSIONAL LOANS BY MDBS AND BILATERAL AGENCIES | ▪ Budget support to low- and middle-income countries to enhance fiscal resources and for reprioritization of public expenditures in support of achieving the SDGs<br>▪ Loans and grants to prepare specific projects and de-risk private sector investments |
| BANKING SYSTEM | ▪ Strategic use of blended finance mechanisms to de-risk lending for agrifood system transformation<br>▪ Seed money to develop cooperative banking and digital platforms<br>▪ Unconventional monetary policies to finance specific interventions, including through "development finance" by central banks and reassessment of the role of national development banks |
| CAPITAL MARKETS | ▪ Creation of a project preparation/incubation/acceleration facility to develop projects and investable options for private sector environmental, social, and governance (ESG) and impact investors, and other potential actors in capital markets<br>▪ Use of ODA, MDB lending, and public budgets to de-risk agrifood investment ventures and to leverage blended finance<br>▪ Digital and other institutional arrangements to link potential investors with opportunities |