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Policy Brief

A GLOBAL PERSPECTIVE ON HOW TO IMPROVE AGRIFOOD SYSTEM RESILIENCE FROM FARM TO FORK

Task Force 4

Food Security and Sustainable Agriculture

Andrea Cattaneo (FAO)

Ahmad Sadiddin (FAO)

Maximo Torero (FAO)

Sara Vaz (FAO)

Abstract

In a world where agrifood systems are becoming more exposed to shocks and stresses than ever, this brief recommends that the G20 focuses on preparing for disruptions, both expected and unexpected. It will be essential to: (i) guarantee diversity of food sources including production, stocks, international trade partners and supply chains; (ii) improve connectivity through more robust food transport and information networks; (iii) improve risk management and early warning capacities, and (iv) ensure economic access to healthy diets by all, which calls for a different mix of interventions in low-, middle-, and high- income countries.

Challenges

Agrifood systems have always been exposed to adverse natural hazards, such as droughts, floods, storms, as well as pests and disease. The COVID-19 pandemic delivered a further massive shock, with impacts felt most by the poor and vulnerable, as lockdowns reduced their access to employment and livelihoods, leading in turn to reductions in food spending reducing food security and nutrition of many.

Considering the middle of the projected range, an estimated 768 million people, or 9.9 percent of the global population, suffered from chronic hunger in 2020, an increase of nearly 118 million compared to 2019. The war in Ukraine, given the importance of its agricultural exports, is likely to impact food prices, further worsening world hunger. And so it is that shocks ranging from droughts and floods to armed conflict and price instability, aggravated by longer-term stresses such as economic inequalities and climate change, threaten all segments of agrifood systems. The world's most vulnerable and food-insecure populations are disproportionately affected, as well as those dependent on agriculture, who are on the front line facing multiple shocks and stresses. Most live in low-income countries, where the capacity to afford healthy diets is also the lowest.

However, the COVID-19 pandemic has also shown that many people, who in normal times could afford a healthy diet, found themselves at risk of not being able to afford it. Middle-income countries are particularly at risk. Recent estimates indicate that, on top of the 3 billion people who cannot afford healthy diets, an additional 1 billion people are at risk of not being able to afford it if a shock reduces their incomes or purchasing power by one-third, the majority of whom live in middle-income countries. This underlines the importance of building resilient agrifood systems that ensure continuous access to healthy diets for all amid any disruption.

Proposals for G20

Throughout history, agri-food systems have been affected by different shocks and stresses. More recently, however, the severe impact COVID-19 has had on societies, combined with the current uncertainty surrounding international affairs, has created both the demand and the momentum for resilience building in agri-food systems. This calls for policies that will strengthen agri-food systems' resilience capacities – that is, their capacity to prevent, anticipate, absorb, adapt and transform in the face of shocks and stresses.

Crucial to this will be understanding the interlinkages between different levels and actors in agri-food systems well before a shock hits. This is because rapid, effective actions require collaboration between various supply chain actors who operate at different levels of the agrifood systems. For example, during the COVID-19 pandemic, when food suppliers faced a sudden drop in customers shopping in stores or dining in restaurants, many agri-food businesses switched to e-commerce through logistics firms that had previously not operated in the food sector.

Approaches to building resilience also need to be tailored to the wide range of shocks agrifood systems face, both predictable and unpredictable, and to how they spread. Preparing for unpredictable shocks requires assessing the structural characteristics of agrifood systems, including their absorptive and adaptive capacities. The capacity to absorb shocks without much disruption is provided by the diversity of commodities in an agrifood system and of trade partners, as well as robust transport networks. Adaptive capacity is determined by the diversity of specific actors and responses. For shocks that can be anticipated, risk management strategies – including multi-risk assessments, timely forecasts, early warning systems and early action plans – complement absorptive capacity by helping all agrifood system actors prevent and anticipate major disruptions. Finally, resilience requires a focus on vulnerable households and small-scale producers who are disproportionately affected, and identifying risk-informed policies, practices and enabling conditions that improve their resilience.The following sections highlight these important areas of focus and provide policy recommendations. In principle these areas of focus are to be viewed as part of a policy portfolio approach to build resilience. However, in the proposed framework, the relative importance of each focus area will depend on country context.

Ensuring resilience through diversity in supply chains and trade

As mentioned, ensuring diversity of actors and responses is essential to build agri-food system resilience. Diversity provides a network for learning and transformation, for preventing risks and buffering shocks, and for ensuring agility in responses to varying needs and opportunities. Diversity in agri-food systems means the production of different commodities and reliance on different sources of food supply and demand, both domestic and external. Food supply chains

with access to more diversified input sources and output markets are also less vulnerable. Likewise, reliance on multiple trading partners can enhance resilience by "importing" from different sources of supply or "exporting" to diverse demand outlets, thus diluting the impact that shocks in one place can have in other regions and sectors. The following are entry points to improve resilience through diversity.

Facilitate international trade to ensure diversified food availability. Diversifying trading partners and traded foods is key to building absorptive capacity to supply shocks. Countries are, therefore, encouraged to eliminate or reduce trade-restricting measures that prevent or constrain trade in food, and should refrain from introducing them in times of crisis. Ways of reducing trade barriers include digitalization of trade procedures (e.g. accepting electronic phytosanitary and veterinary certificates), improved transparency in trade policies, and strengthened international governance and coordination mechanisms to prevent adverse use of trade policies. Free trade areas can commit countries to avoid introducing measures adverse to trade partners, especially during shocks. Ensuring stability, transparency and consistency of national trade policy interventions is also important for managing expectations and building trust.

Allow for a mix of traditional, transitional and modern food supply chains. These supply chains play different roles within a national agri-food system, but all can act as buffers against shocks and stresses of different types. Transitional and modern supply chains, being long and serving wide geographical areas, can more easily respond to local shocks and ensure food availability in the directly affected areas. Large-scale agrifood companies, which dominate the modern food supply chains, have more access to capital and resources. Their financial strength enables them to buffer against shocks for long periods. At the same time, modern, but short, food supply chains, such as vertical agriculture, can also strengthen resilience, namely by reducing exposure to biotic and abiotic risk factors by producing food in closed environments.

Traditional and local chains, particularly those based on small-scale producers and small and medium agrifood enterprises (SMAEs), also play an important role in improving resilience, especially when they have access to adequate credit sources and infrastructure. This was evident during the COVID-19 pandemic, when many local supply chains proved to be quite nimble in their response to demand shifts.

Ensure diversity in market channels and food stocks. In local civil society, diverse market channels – from cooperatives to community-supported and urban agriculture – can provide food security and nutrition to citizens and fill specific market niches. Another buffering strategy is to resort to food stocks, incurring a cost for procurement and storage, but that can make up for shortfall in supply caused by disruptions.

One concern on diversification is that it could lead to less efficiency that is generally gained through specialization and optimization. However, diversification at agrifood system level does not necessarily limit efficiency. If trade-offs exist, the appropriate choice of diversification will depend on the balance between efficiency losses and the benefits of increased resilience.

Better connectivity is essential for resilience building

Agri-food systems rely on connectivity to physical and other infrastructures to function, such as communications and transport networks, crucial for ensuring a diverse supply of food and rapid recovery after shocks. Well-connected agri-food systems can recover from disturbances faster by shifting routes of transport and commercialization of food products, agricultural inputs and labour, as well as channels for knowledge and financial resources. For example, during the COVID-19 pandemic, China opened a green channel for fresh agricultural products and used e-delivery platforms to resolve the logistical challenges connected to small-scale producers accessing urban communities, while minimizing the potential risk of infection from visiting crowded food markets. The following will be needed, among other things to ensure connectivity.

Provide robust transport networks, which play a fundamental role in ensuring physical access to food and absorbing shocks. During regional weather anomalies and yield losses, for example, food supply chains may need to rely on alternative pathways to maintain their core functions. Robust transport networks prevent also increases in travel time with the knock-on effect on food costs. However, an analysis on the resilience of food transport networks in 90 countries representing 7 billion people in 2017 finds that closure of critical links can be incredibly costly. This indicates there is a need to improve basic infrastructure and services, such as roads, transport or storage facilities, in cities, towns and surrounding rural areas, and creating better links between them. To ensure international trade connectivity, other physical infrastructure (e.g. ports and international railway system) is also key.

Foster innovation in distribution strategies and broad participation. The distribution systems of small-scale producers and many SMAEs tend to be fragmented and less efficient than the centralized networks of modern food supply chains, making regionally produced food more expensive. Creating an enabling environment and encouraging coordination along food supply chain actors – e.g., through producer associations, cooperatives, consortia and agro-industrial clusters – can help small-scale producers and many SMAEs overcome scale-related constraints. This can facilitate their access to markets and finance and allow for more resilience-building investments. Logistics can then be improved through optimized routing and scheduling and consolidation of delivery routes and development of logistic centres.

Leverage information and communications technology (ICT) and digital tools for logistics. Central and local governments, together with the private sector, NGOs and international development agencies, have an important role to play in supporting ICT. Scale-appropriate ICT can provide tools for detecting early risk signals, making timely forecasts, adopting early

warning strategies and realizing response diversification. ICT and digital tools can also dramatically increase access to information in the agriculture sector, opening the way to substantially improve the effectiveness of agricultural extension, advisory services and learning. They also contribute to informed decision-making regarding natural resources, cropping systems, pests, diseases, etc. Following the COVID-19 pandemic, there has been a global trend to create more online direct distribution links between farmers and consumers, such as e-commerce, which can improve access to fresh food, including fruits and vegetables.

Creating an enabling environment for food supply chains through risk reduction measures

The performance of any food supply chain is the outcome of numerous decisions taken by the various actors – also in connected input and services supply chains – and how these decisions interact and change under diverse conditions. An enabling environment is needed to facilitate the management of risk by individual actors. The following are among the key enabling conditions.

Improve risk management and early warning capacities to help predict the likelihood and impact of shocks. This will include components such as agroclimatic monitoring, disaster and crisis risk and vulnerability assessments (including pests and diseases), and agricultural damage and loss data. These data should be made available to enhance risk- and crisis-informed decision-making. Early warning systems enable anticipatory action to mitigate the effects of shocks and therefore must be coupled with actionable alerts that trigger immediate action and emergency response mechanisms. This implies connecting these systems to a range of government institutions and local stakeholders through clear anticipatory action and contingency plans with funding to take the necessary actions. Ensuring access to ICT, training, and financial support needed to adopt agroclimatic early warning systems is key to make these systems accessible to small-scale producers.

Widen access to business tools that enhance agility and flexibility. Resilience of supply chain actors can be improved by enhancing business literacy, developing and promoting business innovation and incubation services, as well as providing training on *ex ante* measures in preparation for shocks. Given the growing importance of e-commerce, governments and development partners should further invest in hard and soft infrastructure. Finally, funding research and development and agricultural extension services focused on agricultural adaptation strategies, including climate change adaptation and best agronomic practices (e.g., improved varieties and better nutrient management) is also needed.

Enhancing the resilience capacities of vulnerable households

A key characteristic of agrifood systems' resilience is its capacity to ensure access to a healthy diet. However, in low-income countries in Asia and sub-Saharan Africa, more than 80 percent of the population cannot access a healthy diet and are in dire need of greater affordability

independently of shocks. There are also numerous countries, mostly middle-income, where many who can afford a healthy diet are at risk if a shock occurs. Policies and investments will depend on the country context; however, low-income countries may place more emphasis on addressing structural issues such as income levels and distribution, while others may focus more on risk management and diversification. The following are two areas with potential to improve resilience of vulnerable households.

Facilitate better risk management and household resilience capacities. Rural households are highly vulnerable to shocks, including extreme weather events, environmental disasters and financial and economic crises. Such shocks affect their livelihoods and can undermine their asset base and their capacity to manage risks effectively. Key interventions that can enhance the resilience of rural livelihoods include expanding access to assets, supporting income diversification and improving access to social services (e.g. education and sanitation).[11] Such interventions should be supplemented by actions to strengthen local support networks, improve infrastructure, and enable services for inputs and market access. Enhancing extension services will help small-scale producers manage crops, soil, water, nutrients, pests and diseases. Policies and interventions that target households comprising mainly women and girls are strongly encouraged because they pay the heaviest toll during and after shocks. Specifically, by expanding their access to education, productive assets and decent employment.

Design social protection policies that improve household resilience and help them avoid negative coping strategies detrimental to their livelihoods and their capacity to face future risks and shocks. They are particularly relevant for vulnerable rural households, including those involved in small-scale fisheries and aquaculture activities, as well as informal workers and the urban poor. When designed to be gender- and nutrition- sensitive and responsive to multiple risks and shocks, social protection programmes can provide timely support to at-risk and crisis-prone populations. They can expand benefits according to the emerging needs of potential beneficiaries, help to fill poor households' consumption shortfalls, and enable them to invest and engage in productive activities. Social protection systems may also allow an increase in caseloads through contingency funds triggered by early warning systems as well as standard operating procedures.

In this way, social protection can help safeguard access to food in the face of shocks and prevent ripple effects through food supply chains. If well designed, it enables synergies with support programmes and investments, strengthening both the resilience and sustainability of small-scale producers' livelihoods. In Ethiopia, for example, the Productivity Safety Net Programme (PSNP) focuses on chronically food-insecure households, providing cash or food transfers on a predictable basis for five years, along with financial and technical support. The goal is to help these households build assets that can sustain them through future crises, while

contributing to building rural infrastructure. Policy reforms aimed at strengthening links between social protection and productive support programmes are highly encouraged.

Avoid unintended consequences of policies that would weaken resilience

Focus on policy coherence for mainstreaming resilience in national planning across sectors. As in other domains, policy coherence is essential when addressing the needs of agri-food systems. It is important to recognize that policymaking can have unintended consequences, and policies need to be coordinated across sectors. To avoid implementing restrictions that hurt its agri-food system actors, policymakers must understand how agri-food systems function and how their actors interact. During the COVID-19 pandemic, for example, South Africa deemed the wood sector non-essential, which harmed fruit growers who rely on wooden crates to distribute their products. Conversely, in countries where agriculture was deemed essential, the sector remained relatively resilient. In Mexico, the agriculture sector was considered a priority activity and food prices remained relatively stable.

Policy coherence is important with regard to subsidies and other instruments of agricultural support. Although subsidies may protect individual producers in the short to medium term, this may be at the cost of making the entire agri-food system less resilient, with negative impacts reverting back to individual producers. To meet the challenge of policy coherence and coordination in building resilience, all sectors and layers of government institutions must be involved. More emphasis must be given to the need for vertical alignment of policies and actions at national and subnational levels. In particular, empowering local government in responding to shocks and building resilience is crucial.

Conclusions

This brief explored policies and investments that build the resilience of national agrifood systems, as well as individual food supply chains, activities and actors. The focus was on safeguarding agrifood systems' functions as a whole and reducing risks and vulnerabilities for actors along agrifood value chains. Table 1 summarizes the different entry points to manage risk (more predictable shocks) and uncertainty (shocks difficult to foresee) in agrifood systems that were introduced in this brief, and the contextual factors to be considered. These entry points are policies and interventions that encourage diversity, connectivity and flexibility.

Table 1 Entry points to manage agrifood system risk and uncertainty

	SHOCKS DIFFICULT TO FORESEE	→	MORE PREDICTABLE SHOCKS
	ENSURING DIVERSITY	MANAGING CONNECTIVITY	MANAGING RISKS
CONTEXTUAL FACTORS	• Promote gender equality and support youth • Pursue policies and regulation to protect the environment • Safeguard macroeconomic stability • Ensure broad access to financial services • Support local/indigenous knowledge systems	• Encourage and promote effective partnerships for sustainable development • Promote an open, inclusive and equitable multilateral trading system	• Implement national adaptation plans for climate change • Ensure well-coordinated and coherent policies for long-term macroeconomic stability
NATIONAL AGRI-FOOD SYSTEMS	• Ensure diversity of food production, market channels and trade partners (both domestic and external)	• Invest in robust and redundant food transport networks • Invest in infrastructural connections to international markets (e.g. ports)	• Promote disaster risk reduction and disaster risk assessment • Prepare national plans for drought management • Carry out multi-risk assessments within and across sectors and levels
FOOD SUPPLY CHAINS AND ACTORS	• Allow for a mix of traditional, transitional, and modern food supply chains, including short, local food supply chains • Promote inclusiveness for SMAEs	• Diversify sources of supply and output markets • Enable and invest in stronger rural–urban linkages, especially for short supply chains • Expand and improve access to ICT	• Ensure timely forecasts and tools for detecting early risk signals • Establish and improve early warning systems
HOUSEHOLDS AND LIVELIHOODS (small-scale producers and vulnerable households)	• Support the diversification of on- and off-farm income sources • Promote good agricultural approaches and practices • Expand access to credit and insurance to the most vulnerable	• Expand access to ICT and agricultural extension services • Support collective action by small producers to develop bargaining power	• Promote access to productive assets • Expand access to social services and education • Implement targeted and timely social protection assistance for vulnerable groups • Fund R&D relating to agricultural adaptation strategies

In sum, acknowledging that trade-offs can arise, this brief recommended assessing the critical role of ensuring diversity, international trade in agri-food systems, and robust infrastructure in response to shocks and stresses that may be unforeseen. The importance of managing known risks through disaster risk management plans was also highlighted.

This brief also identified the key interventions that can enhance the resilience of food supply chains and their actors. They include maintaining diversity within supply chains, improving connectivity through innovative strategies for food transport and distribution and leveraging ICTs, as well as improving risk management and the capacity to take action based on early

warning information. They also focus on helping small-scale producers, small and medium enterprises and vulnerable households gain access to resources they need to enhance their resilience. The emphasis that policymakers may put on different recommendations will depend on how they assess the vulnerabilities of their agrifood systems. For example, for countries that already have early-warning systems in place this will likely not be a priority and will focus efforts on other areas relevant for building resilience.

One overarching recommendation is that there is a need to focus policies and investments in many low- and middle-income countries to ensure that vulnerable households have access to healthy diets – even when incomes are affected by a shock. Support may differ depending on country contexts, ranging from improving livelihoods through better productive capacity of smallholders to broader social protections programs for managing risks of shortfalls in income. Policies that improve economic access to healthy diets can benefit the lives of up to 4 billion people, and therefore should be viewed as high priority.

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