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SECURITY AND NUTRITION**

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Impacts of COVID-19 on food security and nutrition: developing effective policy responses to address the hunger and malnutrition pandemic

HLPE issues paper



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INTRODUCTION

The COVID-19 pandemic that has spread rapidly and extensively around the world since late 2019 has had profound implications for food security and nutrition. The unfolding crisis has affected food systems¹ and threatened people's access to food via multiple dynamics. We have witnessed not only a major disruption to food supply chains in the wake of lockdowns triggered by the global health crisis, but also a major global economic slowdown. These crises have resulted in lower incomes and higher prices of some foods, putting food out of reach for many, and undermining the right to food and stalling efforts to meet Sustainable Development Goal (SDG) 2: "Zero hunger." The situation is fluid and dynamic, characterized by a high degree of uncertainty. According to the World Health Organization, the worst effects are yet to come (Ghebreyesus, 2020; Khorsandi, 2020). Most health analysts predict that this virus will continue to circulate for at least one or two more years (Scudellari, 2020).

The food security and nutrition risks of these dynamics are serious. Already, before the outbreak of the pandemic, according to the latest *State of Food Security and Nutrition* report (FAO *et al.*, 2020), some two billion people faced food insecurity at the moderate or severe level. Since 2014, these numbers have been climbing, rising by 60 million over five years. The COVID-19 pandemic is undermining efforts to achieve SDG 2. The complex dynamics triggered by the lockdowns intended to contain the disease are creating conditions for a major disruption to food systems, giving rise to a dramatic increase in hunger. The most recent estimates indicate that between 83 and 132 million additional people (FAO *et al.*, 2020)—including 38-80 million people in low-income countries that rely on food imports (Torero, 2020)—will experience food insecurity as a direct result of the pandemic. At least 25 countries, including Lebanon, Yemen and South Sudan, are at risk of significant food security deterioration because of the secondary socio-economic impacts of the pandemic (FAO and WFP, 2020). In Latin America, the number of people requiring food assistance has almost tripled in 2020 (UN, 2020a). Food productivity could also be affected in the future, especially if the virus is not contained and the lockdown measures continue.

The purpose of this issues paper, requested by the Chairperson of the Committee on World Food Security (CFS), is to provide insights in addressing the food and nutrition security implications of the COVID-19 pandemic and to inform the preparations for the 2021 UN Food Systems Summit. In March 2020, the High-Level Panel of Experts on Food Security and Nutrition (HLPE) published an issues paper on the impact of COVID-19 on food security and nutrition (HLPE, 2020a), and in June 2020, its 15th report (HLPE 2020b) provided an update on the ways in which food security and nutrition are affected by the pandemic. In the months following the publication of these reports, we have seen many of the concerns outlined in these reports materialize and we have learned more about the complex ways in which the pandemic has affected food security and nutrition.

This issues paper updates and extends the HLPE's earlier analysis by providing a more comprehensive and in-depth review of the main trends affecting food systems that have resulted from COVID-19 and associated lockdown. It also expands the analysis of the pandemic's implications for the various dimensions of food security (HLPE, 2020b).

¹ Food systems include all the activities that relate to the production, processing, distribution, preparation and consumption of food. The three constituent elements of food systems are: food supply chains, food environments and consumer behavior (HLPE 12, 2017). In this document, the term "agriculture" is used in its broad connotation, which includes farming, animal production, forestry, fisheries and aquaculture, and related activities.

It is vital that the global community continue to monitor the situation closely, respond in necessary ways to avert the worst outcomes with respect to food security and nutrition, and carefully consider how to build more resilient food systems and ensure the right to food, in order to achieve SDG 2. The recommendations starting at page 10 of this document seek to provide guidance for how to proceed along these lines.

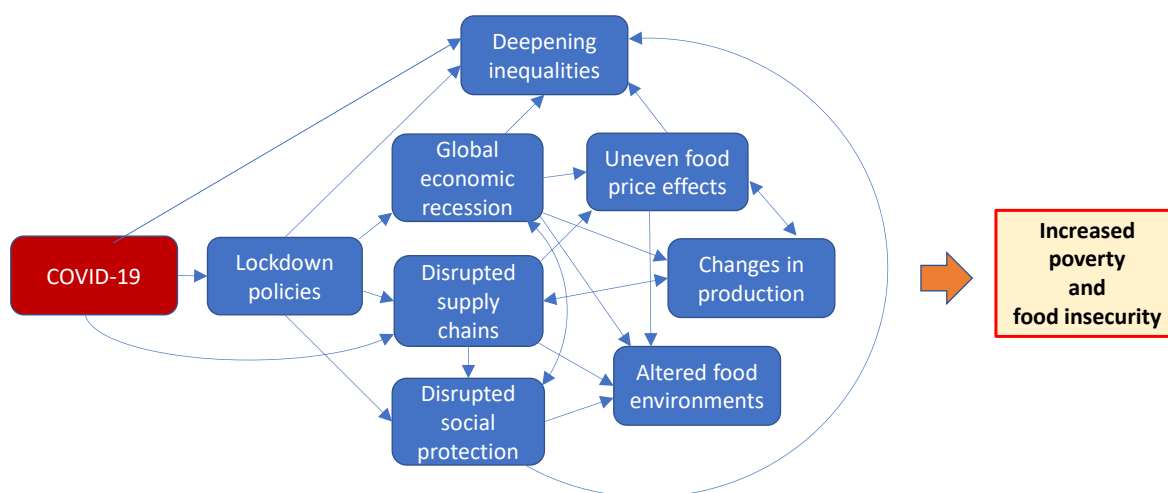
1. HOW COVID-19 IS AFFECTING FOOD SECURITY AND NUTRITION

COVID-19 is a respiratory illness and there is no evidence that food itself is a vector of its transmission (ICMSF, 2020). However, the virus, and measures to contain its spread, have had profound implications for food security, nutrition and food systems. At the same time, malnutrition (including obesity) increases vulnerability to COVID-19. Initial and ongoing uncertainty surrounding the nature of the spread of COVID-19 led to the implementation of strict lockdown and physical distancing policies in a number of countries. These measures caused a serious slowdown in economic activity and disrupted supply chains, unleashing new dynamics with cascading effects on food systems and people's food security and nutrition. Below we outline these dynamics. We then highlight how these trends are affecting the six dimensions of food security proposed by the HLPE in its 15th report—availability, access, utilization, stability, agency and sustainability—which are essential for ensuring the right to food (HLPE, 2020b).

a. Dynamics unleashed by the pandemic are affecting food security and nutrition

A number of overlapping and reinforcing dynamics have emerged that are affecting food systems and food security and nutrition thus far, including: disruptions to food supply chains; loss of income and livelihoods; a widening of inequality; disruptions to social protection programmes; altered food environments; and uneven food prices in localized contexts (see, e.g. Klassen and Murphy, 2020; Clapp and Moseley, 2020; Laborde *et al.*, 2020). Moreover, given the high degree of uncertainty around the virus and its evolution, there may be future threats to food security and nutrition, including the potential for lower food productivity and production, depending on the severity and duration of the pandemic and measures to contain it. Below is a brief overview of these dynamics, which are also depicted in Figure 1. These effects have unfolded in different ways as the pandemic has unfolded over its initial, medium, and potential longer-term impacts, as summarized in Figure 2.

FIGURE 1 | The dynamics of COVID-19 that threaten food security and nutrition



Source: Authors.

Supply chain disruptions

There have been major disruptions to food supply chains in the wake of lockdown measures, which have affected the availability, pricing, and quality of food (Barrett, 2020). The closure of restaurants and other food service facilities led to a sharp decline in demand for certain perishable foods, including dairy products, potatoes and fresh fruits, as well as specialty goods such as chocolate and some high value cuts of meat (Lewis, 2020; Terazono and Munshi, 2020). As the pandemic-related lockdowns took hold in many countries in March-May of 2020, there were widespread media reports of food items being dumped or ploughed back into the fields because of either collapsed demand or difficulties in getting these foods to markets (Yaffe-Bellany and Corkery, 2020). Farmers without adequate storage facilities, including cold storage, found themselves with food that they could not sell.

The movement of food through the channels of international trade was especially affected by lockdown measures. As borders closed and demand for certain food items dropped, food producers reliant on selling their crops via distant export markets were highly vulnerable, particularly those producers focused on perishable food and agricultural products, such as fresh fruits and vegetables or specialty crops, such as cocoa (Clapp and Moseley, 2020). In the early months of the outbreak of COVID-19, some food exporting countries also imposed export restrictions on key staple food items like rice and wheat, which led to some disruptions in the global movement of these staples as well as higher prices of these crops relative to others (Laborde *et al.*, 2020). Certain countries, including those with high prevalence of food insecurity, are highly dependent on imported food and on commodity exports (FAO *et al.*, 2019), which may make them particularly vulnerable to these types of supply chain disruptions. Many of these export restrictions were lifted by August 2020, although the risk remains that such restrictions might be re-imposed, depending on the severity of any future spikes in the disease and the re-imposition of lockdown measures.

Disruptions to food supply chains also resulted when food system workers experienced high rates of illness, leading to shutdowns and some food processing facilities such as meat packing, for example (CFS, 2020; Stewart *et al.*, 2020). Labour-intensive food production has also been especially affected by COVID-19 among food system workers, including production systems that rely on migrant farmworkers (discussed in more depth below), who face barriers to travel and who often work in cramped conditions on farms and in food production facilities, some of which had to close temporarily to contain outbreaks (Haley *et al.*, 2020).

These disruptions to supply chains affected food availability in some cases, especially where foods were not able to reach markets, which in turn put upward pressure on prices of some scarce goods, as outlined below. The quality of food environments was also affected, leading to some shortages in fresh fruits and vegetables, also discussed below.

Global economic recession and associated income losses

The COVID-19 pandemic triggered a global economic recession which has resulted in a dramatic loss of livelihoods and income on a global scale (World Bank, 2020a). The resulting drop in purchasing power among those who lost income has had a major impact on food security and nutrition, especially for those populations that were already vulnerable. Those in the informal economy are especially affected. In Latin America, for example, over 50 percent of employment is in the informal sector (FAO and CELAC, 2020). According to the International Labour Organization (ILO), more than the equivalent of 400 million full-time jobs have been lost in the second quarter of 2020 with a number of countries enforcing lockdown measures (ILO, 2020a). Developing countries in particular have been deeply affected, as they were already entering recession by late 2019 (UNCTAD, 2020a). Global growth is expected to fall dramatically in 2020, with various estimates showing a drop in the range of 5 to 8 percent for the year (IMF, 2020; OECD, 2020). Global remittances—a major source of finance in developing countries—are expected to drop by around 20 percent (World Bank, 2020a).

According to World Bank estimates, an additional 71 to 100 million people are likely to fall into extreme poverty as a direct consequence of the pandemic by the end of 2020 (World Bank, 2020a). The World Food Programme estimates that an additional 130 million people will face acute hunger as a result of the crisis, nearly doubling the 135 million people already facing acute hunger (Khorsandi, 2020). Already, a number of severe hunger hotspots have emerged. As the UN reports, some 45 million people have become acutely food insecure between February and June 2020, mainly located in Asia and Sub-Saharan Africa (UN, 2020b).

As food demand has contracted due to declining incomes, food producers' and food systems workers' livelihoods are further affected: food systems are estimated to lose 451 million jobs, or 35 percent of their formal employment (Torero, 2020). Similarly, the UN estimates that around one third of food system livelihoods are at risk due to the pandemic (UN, 2020b).

Widening societal inequities

The global economic slowdown triggered by the pandemic, as well as the spread of the disease itself, has exacerbated existing societal inequities in most countries (Ashford *et al.*, 2020). These inequities are affecting rights as well as access to basic needs such as food, water, and health care, and access to jobs and livelihoods, all of which have implications for food security and nutrition. Food insecurity already disproportionately affects those people experiencing poverty and who face societal discrimination, and it is these very people who are at higher risk of contracting COVID-19 and who have less access to health care services (Klassen and Murphy, 2020). COVID-19 has also exacerbated inequities in access to safe sources of water and basic

sanitation. According to the WHO, one in three people lack access to safe drinking water and basic handwashing facilities (WHO, 2020b). People without access to these services, which are vital for health and safe food preparation, are more likely to contract the disease, compounding existing inequities (Ekumah et al., 2020).

Many food system workers face precarious and unsafe work conditions, which have been exacerbated by the COVID-19 crisis. These workers are often paid low wages and lack protective equipment (Klassen and Murphy, 2020), and in some regions, such as in sub-Saharan Africa, South and South-East Asia and some countries in Latin America, the majority work under informal arrangements (ILO, 2020b). Agriculture in many countries depends on migrant workers, many of whom work under casual employment arrangements where they have few rights and are vulnerable to exploitation (FAO, 2020a). As such, migrant labourers frequently face poverty and food insecurity and have little access to healthcare and social protection measures. Migrant food system workers have experienced higher incidences of COVID-19 infection as compared to other populations (Klassen and Murphy, 2020), including because they are more exposed to the virus due to cramped work, transport and living conditions (Guadagno, 2020). In some countries, lockdown measures have been coupled with temporary suspensions of workers' rights (European Parliament, 2020; IFES, 2020, online).

Gender inequities have also been exacerbated by the crisis, as women face additional burdens during COVID-19—as frontline health and food system workers, unpaid care work, community work, which has increased during lockdowns (McLaren et al., 2020; Power, 2020). Women are also at risk of an increase in domestic violence due to the recession and confinement at home when lockdown measures are in place (FAO, 2020b; WHO, 2020a). These inequities affect women and their prominent roles in food systems, including as primary actors ensuring household food security and nutrition, as well as being food producers, managers of farms, food traders, and waged workers. According to FAO, the agricultural activities of rural women have been affected more than those of men (FAO, 2020b). This gender dimension is important because women, in their caregiving roles for the sick, children, and the elderly, are likely at greater risk of exposure to COVID-19, with knock-on implications for food production, processing and trade (Moseley, 2020).

Disruptions to social protection programmes

Social protection programmes have been disrupted by the pandemic, which in turn are affecting food security and nutrition. When the lockdowns began, most schools were closed, resulting in the loss of school meal programmes in both high- and low-income countries. The WFP estimates that 370 million children have lost access to school meals due to school closures in the wake of the pandemic (WFP, 2020a). In some countries, governments and the WFP are developing alternative means by which to reach school-aged children with food assistance, including take-home rations, vouchers, and cash transfers (WFP, 2020b). While alternative school lunch arrangements (such as in Cameroon (WFP, 2020c) may close the gap in some instances, in other cases such options are not in place, adding to the financial burden of poor households struggling to feed their families (Moseley and Battersby, 2020).

The global economic recession that resulted from the pandemic and measures to contain it have also strained governments' capacities to provide social protection for those most affected by the crisis (FAO and WFP, 2020). In April, the G20 governments offered to freeze the debt service payments for 73 of the poorest countries, an initiative endorsed by the G7 governments, in order to free up funds to address the fallout from the pandemic. Fully implementing this initiative has been challenging, however, affecting the ability of the poorest countries to provide social

protection for their populations through this crisis. According to the UN Commission for Africa (ECA), Africa needs \$100 billion to finance its health and safety net response (Sallent, 2020). Most countries may have or will need to borrow money to finance their response, but unfortunately several countries are constrained in how much they can borrow by already high debt to GDP ratios (Sallent, 2020).

Altered food environments

Food environments have been deeply altered by the pandemic. Lockdown measures and supply chain disruptions outlined above have changed the context and thus the way people engage and interact with the food system to acquire, prepare and consume food. The closure of restaurants and food stalls meant people who relied on foods prepared outside the home for their meals suddenly found themselves preparing food at home. But because of rigidities in supply chains, foods that previously were produced and packaged specifically for food service were not easily repackaged for retail sale and home use.

As the COVID-19 pandemic unfolded, many countries moved to shut down informal food markets, which governments saw as spaces for potential disease transmission, reflecting a 'formality' bias in public health and food policy (Battersby, 2020). Informal markets are extremely important as sources of food and livelihoods in developing countries (Young and Crush 2019). In South Africa, formal food retail outlets, which sell processed and packaged foods, were allowed to remain open while informal and open air food markets, which typically sell more fresh fruits and vegetables, were shut down (even though open air markets are actually safer in terms of person to person transmission (Moseley and Battersby, 2020)). This move was especially detrimental to poor people who are more reliant on such markets for food because they can buy produce and foodstuffs in smaller quantities. After lobbying from academics and civil society, these markets were eventually allowed to reopen.

Differentiated responses to these changes have emerged. A recent study suggests that poor households are likely to shift their spending away from fresh fruits and vegetables with high micronutrient content to less nutrient-rich staple foods as a direct result of the pandemic (Laborde, Martin and Vos, 2020). Other studies also showed a shift towards consumption of more processed foods (Bracale & Vaccaro, 2020). At the same time, in North America, there was a resurgence of interest in community supported agriculture (CSA) subscriptions, as people increasingly grew concerned about the safety of shopping in supermarkets and desired more direct access to fresh fruits and vegetables (Worstell, 2020), meat and fish products. CSA farms, however, were unable to meet all of this demand. There was also increased interest in home and community gardening as people sought to grow their own food to ensure their food security and nutrition (Lal, 2020). These changes to food environments had variable impacts on food diversity and nutrition.

Localized food price increases

Global cereal stocks are at near record levels and world food commodity prices overall fell in the initial months of the pandemic. However, the overall food price index trends mask wide variability in food commodity prices in the wake of the lockdowns. Initially, prices for meat, dairy, sugar and vegetable oil fell sharply, while prices for cereal grains remained steady. As the pandemic deepened, price trends have shifted, with meat prices rising, for example, as meatpacking workers experienced high rates of illness in some countries and meat-processing plants closed temporarily in order to halt transmission of the disease in worker communities (Waltenburg *et al.*, 2020; EFFAT, 2020).

Further, there have been localized price changes affected by the dynamics of the pandemic, with some countries seeing localized food price increases, including countries that depend on food imports (Espitia *et al.*, 2020). For example, Venezuela and Guyana saw food price increases of nearly 50 percent as of late July 2020, whereas Kenya saw food price rises of only 2.6 percent (FAO, 2020c). This uneven food price impact is the product of several complex factors, including export restrictions initially placed on some cereal crops such as rice and wheat by several exporting countries, as noted above (Laborde *et al.*, 2020). In the case of rice, for example, prices increased in Thailand, Vietnam and the US by 32, 25 and 10 percent respectively, between February and mid-April 2020 (Katsoras, 2020). Currency depreciation in countries affected by the global recession also contributed to higher localized food prices for countries that rely on imported foods (UNCTAD, 2020a).

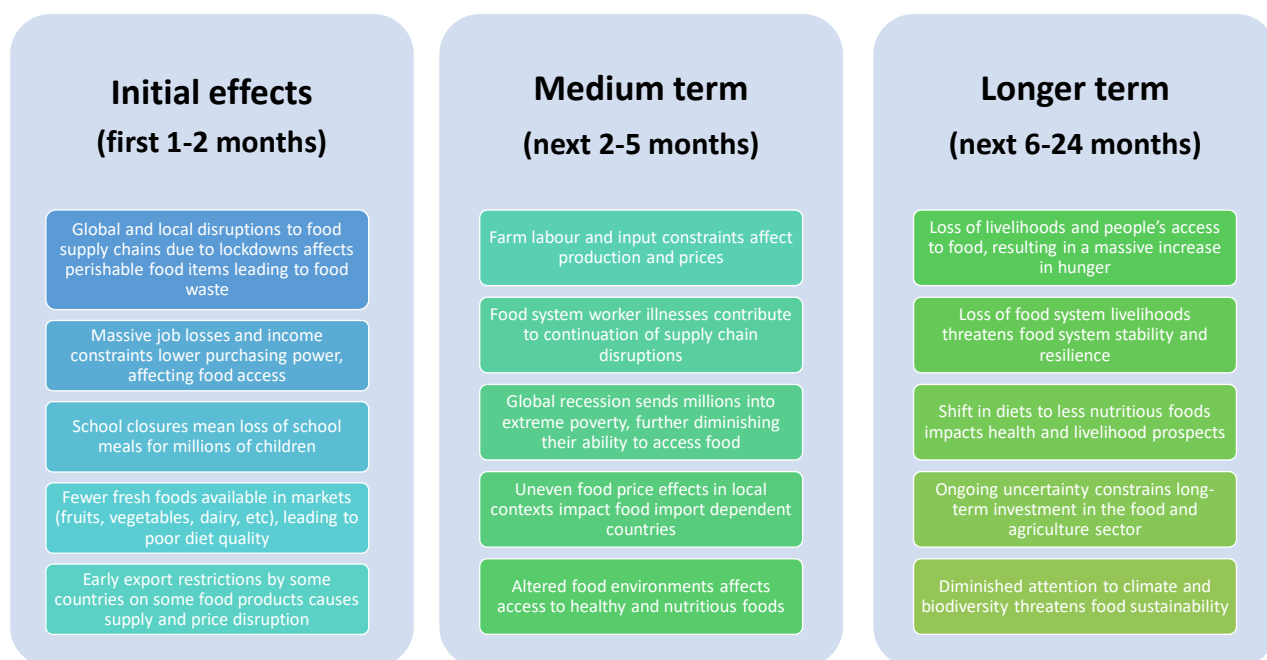
Food price increases have also resulted from disrupted supply chains that have affected the cost of shipping (FAO, 2020c). These localized price increases directly impact food security and nutrition by making food more expensive and thus more difficult to access, especially for people with limited incomes.

Potential for changes in production

As noted above, global cereal stocks were at near record levels at the start of 2020, and food supplies generally were not in short supply. The dynamics outlined above, however, could change due to the high degree of uncertainty surrounding the virus and its evolution and societal impact. It could potentially affect production levels going forward, depending on how long the pandemic lockdown measures last, whether they are repeated, and the uncertainty regarding the timing and extent of these measures.

Labour-intensive crops, often cultivated with a migrant workforce in some countries, particularly horticultural products such as fresh fruits and vegetables, are likely to be more affected by the disruptions noted above. Horticultural production, processing and export has expanded dramatically in many developing countries over the past several decades (Van den Broeck and Maertens, 2016), and these countries could experience production shocks due to labour shortages and transportation issues, which could affect incomes and thus food access. Cereal production, especially in industrialized countries where the use of highly capitalized equipment is common, is less likely to be impacted (Schmidhuber and Qiao, 2020). Supply chains for agricultural inputs, such as seeds and fertilizer, has also been affected by lockdown measures, making them both scarce and more expensive, as has already been reported in both China and West Africa (Arouna *et al.*, 2020; Pu and Zhong, 2020).

FIGURE 2 | COVID-19 impact on food systems over time



Source: Adapted from Clapp, 2020.

b. Implications for the six dimensions of food security

The dynamics outlined above affect food security and nutrition in complex ways. The HLPE Global Narrative report highlights six dimensions of food security, proposing to add *agency* and *sustainability* as key dimensions alongside the four traditional “pillars” of food *availability*, *access*, *stability* and *utilization* (HLPE, 2020b). The COVID-19 pandemic is affecting, or has been affected by, each of these dimensions, illustrating the importance of each of these dimensions in interpreting the food security and nutrition implications of the crisis, including the proposed addition of agency and sustainability. These connections are discussed briefly below and illustrated in Figure 3.

Availability: While world grain stocks were relatively high at the start of the pandemic and remain strong, this global situation masks local variability and could shift over time. Grain production in high-income countries tends to be highly mechanized and requires little labour, making it less vulnerable to disease outbreaks among farm workers. In contrast, cereals production on smaller farms in lower income countries tends to be more labour intensive and female dominated. In contrast to grains, supply chains for horticulture, dairy and meatpacking are more vulnerable to the impacts of COVID-19 in higher income countries because of their more labour intensive nature, susceptibility to food worker illnesses, and corporate concentration leading to larger farms and processing facilities where disease outbreaks may spread rapidly. Disruptions in supply chains for agricultural inputs could also affect food production going forward.

Access: More than any other dimension of food security, food access has arguably been the most affected by the COVID-19 crisis. The global economic recession triggered by lockdowns has had a very negative impact on people’s ability to access food. As the crisis drags on, short-term coping strategies (e.g., savings, the selling of animals and assets) are reaching their limits or have been exhausted, and in developing countries have limited capacity to provide extensive social safety nets (Gerard *et al.*, 2020). Poor households operate on tight budgets with little to no discretionary

spending. This means that, in the absence of social safety nets, spending on food declined as incomes declined during the COVID-19 pandemic. These losses have affected low waged workers, some farmers, and informal traders and hawkers. Food price rises, where they occurred, have directly affected households' ability to purchase enough food. Comorbidities have also deeply impacted some populations, particularly marginalized groups, making them more vulnerable to COVID-19, resulting in higher mortality and morbidity rates, with implications for labour, income and access to food for lower income groups (Moseley and Battersby, 2020).

Utilization: Utilization and nutrition have been affected by the pandemic in important ways. Good nutrition is essential for supporting the human immune system and reducing the risk of infections. However, as people's ability to access food diminished in the crisis, this had a negative impact on their ability to afford a healthy diet (FAO *et al.*, 2020). This impact is felt especially in low and middle-income countries, where people typically spend a higher proportion of their income on food compared to people in high-income countries, with the poorest households typically spending around 50-80 percent of their income on food (FAO, 2011). The shift in consumption toward more processed foods and fewer fruits and vegetables during the crisis, as noted above, also contributes to poor nutrition. These sorts of dietary shifts could have reinforcing impacts, as people who are experiencing malnutrition—in any form—are more vulnerable to contracting the disease and developing complications (Micha *et al.*, 2020). Access to clean water and safe sanitation is essential for good hygiene as well as safe food preparation, both vital for ensuring good nutrition, but the pandemic widened inequities with respect to access to these vital services, thus affecting nutrition while at the same time increasing disease risk.

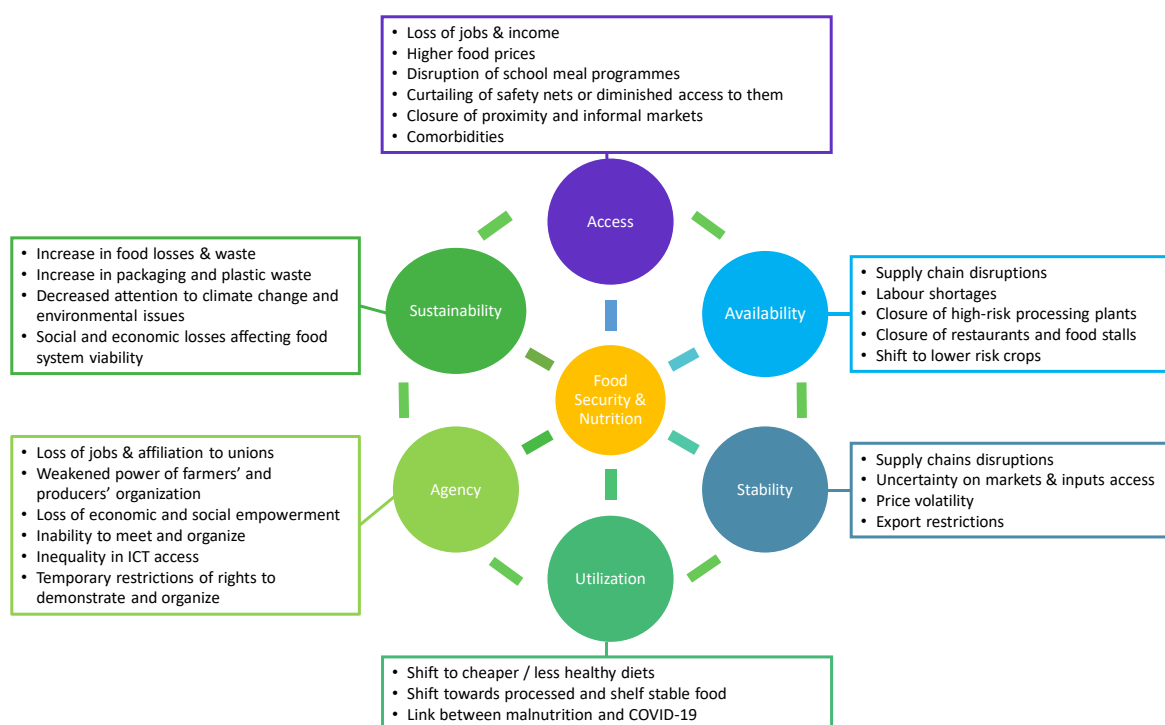
Stability: The severe disruptions to food supply chains noted above are affecting the stability of global food supply and access (Bene, 2020). The export restrictions placed on staples like wheat and rice led to higher world prices for those crops, compared to prices for other foods, which generally fell (FAO, 2020c). Although most of the COVID-19 food export restrictions were temporary, the risk remains that countries may impose new export restrictions (Espitia *et al.*, 2020). The upward pressure on food prices in some local contexts also affects food system stability, and ongoing economic uncertainty, which has contributed to these trends by affecting currency values and presents an ongoing risk to stability in global food markets. Uncertainty over the evolution of the pandemic and of restrictive measures also influences the ability and willingness of people and firms to invest in the agrifood sector (UNCTAD, 2020b).

Agency: The most marginalized food system participants—including food producers and food system workers—have had little agency as the crisis has unfolded. As outlined above, food system producers and workers have been on the front lines and have suffered higher rates of disease and are affected by supply chain disruptions the most. The loss of jobs and livelihoods negatively affects agency, for example by weakening memberships of workers' unions, and the capacity of unions to defend the rights of workers that may have lost formal contracts. Youth and women have been disproportionately affected by these impacts. Collective action and the ability to organize have been curtailed by physical distancing measures and lockdowns, as well as government emergency measures in some cases. The pandemic has also negatively affected women's economic and social empowerment, which limits their agency (FAO, 2020b).

Sustainability: The pandemic is intertwined with the sustainability dimension of food security in complex ways. The expansion of industrial agriculture is associated with a rising prevalence of zoonoses—diseases that transmit from animals to humans—of which COVID-19 is a prime example (Everard *et al.*, 2020). Fragile ecosystems, especially the degradation of wildlife habitats, are widely seen as a key driver of closer human-wild animal interaction that creates an increased opportunity for diseases to be transferred between them. Once the disease began to spread

widely, the initial stages of lockdown measures, noted above, resulted in a dramatic increase in food waste due to restaurant closures and declining demand for certain types of foods (Sharma *et al.*, 2020). The pandemic has also resulted in an increase in the use of single-use plastic food packaging and carrier bags, which are not easily recycled (Vanapalli *et al.*, 2020). The pandemic also raises the risk that attention and funding will be diverted from climate change and environmental concerns such as biodiversity loss (Barbier and Burgess 2020), which can affect longer-term sustainability in the food system. The longer-term viability of food systems is also affected by the social and economic losses, the shift in production modalities and the loss of jobs and livelihoods that resulted from the pandemic.

FIGURE 3 | The impact of COVID-19 food system dynamics on the six dimensions of food security



Source: Authors.

2. RECOMMENDATIONS

The HLPE's Global Narrative report proposed **four urgent policy shifts** necessary to achieve food security and nutrition and secure the right to food (HLPE, 2020b). The COVID-19 pandemic makes abundantly clear why these shifts are needed.

The first policy shift is a **transformation of food systems as a whole**. In practical terms, this means moving from a singular focus on increasing food supply through specialized production and export to making fundamental changes that diversify food systems, empower vulnerable and marginalized groups and promote sustainability across all aspects of food supply chains, from production to consumption. As is clear from the nature of the food security and nutrition impact of the pandemic, increased food production alone is not sufficient to address this crisis.

The second shift is to **shape food policies in ways that recognize inter-system linkages**, ensuring, for example, that food systems, ecological systems, and economic systems create positive

synergies, rather than working at cross-purposes. The pandemic has made clear that appreciation of intersystem linkages is vital, as we are seeing complex dynamics resulting from ecosystem-food system linkages that resulted in an increased incidence of zoonoses, which, in turn, resulted from an expansion of industrial agriculture. The disease itself is interlinked with food systems in complex ways. Furthermore, lockdown measures are resulting in huge economic shifts that directly affect food security and nutrition.

The third shift is to **incorporate greater understanding of the complex interaction of different forms of malnutrition** occurring simultaneously within societies, including not just hunger and undernutrition, but also obesity and micronutrient deficiencies. The pandemic has made the need for this shift abundantly clear, as those experiencing malnutrition—in any form—are more vulnerable to the disease.

Finally, transformative food policies must also be flexible to allow for diverse approaches, to **fully take into account the specificity of each context**. The variable impact of the pandemic on food security and nutrition in different locations and for different populations and groups highlights why this fourth shift is so important, including the variable impact on food system workers, farmers in different countries and for different crops, gender-differentiated impacts and populations in crisis contexts.

The recommendations below support these broad shifts. While some of these recommendations address concerns that have emerged in the short, medium and longer term, in general we move from those addressing short-term problems to those necessary for building longer-term resilience.

1. Implement more robust targeted social protection programmes to improve access to healthy and nutritious foods

While governments may be facing budgetary constraints, now is not the time to be cutting back on social safety net programmes, especially those that improve household access to healthy and nutritious food. Income assistance, vouchers for household food purchases, renter eviction protections, housing assistance, and school lunch programmes have all been shown to be effective means of support in some social contexts (Gerard *et al.*, 2020). Vouchers for food purchases should function in formal and informal markets and allow for adequate fruit and vegetable purchases. In cases where schools are closed for extended periods due to COVID-19, governments need to think creatively about how to deliver alternatives to school lunch (WFP, 2020b). In other cases, public works employment programmes have allowed governments to build or maintain vital infrastructure and provide employment during an economic recession. However, agencies should recognize that food-for-work programmes have been problematic in rural areas if they interfere with agricultural work calendars. In those areas facing significant food supply disruptions, emergency food aid is vital. Unfortunately, the international community has fallen short in providing the necessary assistance needed for this year (Khorsandi, 2020).

Priority actions include:

- Provide adequate emergency food aid, wherever possible with local and regional purchase of foods for food assistance.
- Provide debt relief to governments struggling to maintain necessary social safety nets.
- Maintain robust social safety nets recognising that household food expenditures rise and fall in relation to other expenditures (e.g. on housing, health care, education, etc.).
- Design food assistance programmes that offer adequate access to healthy food, not just sufficient calories.

- Whenever possible, provide alternatives to school lunch programmes when schools are closed.
- Allow for adequate access to health care, including access to mental health services, in the design and implementation of social safety nets.

2. Ensure better protections for vulnerable and marginalized food system workers and farmers who are disproportionately affected by the crisis

The COVID-19 pandemic has clearly revealed that food system workers are critical to the response to the emergency. However, despite being essential workers, food system workers often lack labour rights, as legislation in this area is weak in many countries (Yeshanew, 2018). Given the extent to which food systems depends on a variety of types of labour, from small scale family farm labour, to food processing workers, to migrant farm labour, it is essential to ensure that all food system workers, including migrant labour, are granted clear and protected rights within legislation at the national level, in line with internationally recognized standards. This includes access to safe working conditions and paid sick leave, access to social protection and adequate living conditions that ensure their safety and wellbeing, including for migrant workers (World Bank, 2020b). Expanding access to social protection, including health insurance, transfers to mitigate income losses and measures to support production (e.g. seeds distribution) to small-scale farmers is key to reduce their vulnerability (FAO, 2020d). Such protections would strengthen the resilience of food systems in the face of crises such as that unleashed by COVID-19.

Specific recommendations include:

- Ensure food system workers' rights are recognized and integrated in national legislation; promote and enforce compliance with established norms.
- Ensure food systems workers have access to full protection from hazards and risks (in terms of personal protective equipment, distancing measures, clear health and safety guidelines, paid sick leave, adequate sleeping, eating and sanitary facilities, quarantine shelters).
- Pay special attention to migrant workers in the food system to ensure they are protected from health risks, have access to health services and social protection.
- Implement mechanisms to protect farmers and small-agricultural producers from uncertainties and income losses, such as specific insurances, transfers and inputs distribution.

3. Provide better protections for countries that depend on food imports

Countries that depend on food imports are especially vulnerable to international supply chain disruptions caused by COVID-19. Some of these countries may have the opportunity to better balance their food sourcing portfolios, while others may face real ecological limitations to producing more food at home (Clapp, 2017). In particular, it is important that international food trade not be constrained in a crisis or weaponized by those countries that are exporters. Export restrictions, for example, have been associated with higher food prices, and put food import reliant countries in a difficult situation (Laborde *et al.*, 2020). Given that circumstances in each country with respect to their capacity to produce and/or import food vary, it is important to provide adequate policy space for governments to pursue policies that best minimize risks associated with reliance on imported food in order to build greater food system resilience. At the same time, for those countries that have the capacity to do so within their ecological boundaries, improving domestic food production capacity, including in crops in which they wish to reduce their reliance on imports, can be a way to reduce price risks and build local market resilience in

the medium and longer-term. Improving domestic storage capacity also increases countries' ability to ensure food availability through crises (Viatte et al. 2009).

Specific recommendations include:

- Discourage food export restrictions to protect countries reliant on food imports.
- Provide policy space and support to countries seeking to improve their domestic food production capacity within their ecological boundaries in the medium and longer-term.
- Encourage countries to build up better long-term grain storage capacity.

4. Strengthen and coordinate policy responses to the COVID-19 pandemic impact on food systems and food security and nutrition, including at the international level

The HLPE's Report 15 stresses that the urgent and deteriorating conditions resulting from the COVID-19 crisis "demands measures to improve food systems to make them not only more resilient to crises, but also more equitable and inclusive, empowering and respectful, regenerative, healthy and nutritious, as well as productive and prosperous for all" (HLPE, 2020b). Yet thus far, there has been a lack of international policy coordination and response to the COVID-19 pandemic's impact on food security and nutrition. The pandemic clearly illustrates the interconnected nature of food systems with health systems, economic systems and environmental systems, and as such, policy responses require coordination across different governance systems – including at the international level – that address the various ways in which the crisis is affecting food security and nutrition. The CFS is the obvious and appropriate policy coordinating body at the international level to lead in the development of a global policy response to COVID-19 and its impact on food security and nutrition. In 2009, the Committee on World Food Security (CFS) underwent reforms to make it a more inclusive international governance body whose purpose is to be the foremost body in the establishment of international norms and guidance on food security and nutrition policy (McKeon, 2015). To accomplish this role, the CFS has, as a core function, a role in facilitating the sharing of national experiences among its members, as well as developing guidelines that outline best practices for achieving FSN goals. The CFS has established guidelines for monitoring CFS decisions and guidance (CFS, 2013), and as such could serve as an important focal point for information on policy responses regarding the impact of the pandemic on FSN, in order to better facilitate policy coordination across different governance areas and among governments.

Specific actions to support this recommendation include:

- Recognize the role of the CFS as a lead body in coordinating an international governance response to the impact of COVID-19 on FSN.
- Create a task force led by the CFS to track the food security impacts of COVID-19.
- Establish a reporting system for CFS member states to share information and experiences with respect to the impact of COVID-19 on FSN in local and national contexts.
- Develop a global campaign to educate and inform the public on nutrition-sensitive practices to prevent and manage COVID-19 infections at household and individual levels.
- Include food system workers and agricultural producers' organizations in COVID-19 decision processes at national and international levels.

5. Support more diverse and resilient distribution systems, including shorter supply chains and territorial markets

The widespread disruptions to food supply chains resulting from the pandemic indicate a need for more resilient food distribution systems. Although various types of supply chains have been disrupted by the pandemic, those that are elongated and complex—especially for perishable and specialized agricultural crops—have been particularly affected. Producers and consumers in low-income countries are most vulnerable to these disruptions, although producers in all regions of the world have felt these impacts. As these dynamics unfolded, there has been growing interest in bolstering local and regional markets to build greater resilience into food systems by shortening supply chains. These more localized markets, sometimes referred to as “territorial markets” (Kay *et al.*, 2016), are the dominant types of markets for local foods in developing countries and have increasingly grown in importance in developed countries in recent decades as farmers’ markets have been redeveloped with rising demand for local food. These types of markets typically provide outlets for foods from diverse production systems that are often better able to respond to disruptions and changes in demand of the sort we have seen in the wake of COVID-19. Markets embedded in local and regional contexts are also important in strengthening livelihood opportunities for local food producers, processors, and sellers. They also have the potential to reduce national and community dependence on distant transnational corporations that dominate transactions in concentrated global supply chains (HLPE, 2020b). There is, however, often a lack of infrastructural support for the development of territorial markets, including storage facilities for example. Innovations such as digital e-commerce platforms that are specifically designed for small- and medium-scale enterprises and not subject to control by large corporations can also support locally embedded markets that are better able to respond to supply chain disruptions unleashed by COVID-19 (Reardon and Swinnen, 2020). National and local governments can play a big role in strengthening infrastructure for territorial markets (Blay-Palmer *et al.*, 2020).

Specific actions along these lines include:

- Invest in enhanced territorial market infrastructure at the regional, national and local levels.
- Carefully review policies that may unjustifiably privilege formal retail food outlets over more informal markets that provide points of connection between small producers and lower income consumers, including periodic rural markets and street vendors.
- Consider adopting stronger regulation, including competition policy, to empower small and medium agrifood enterprises (SMEs) to participate in national, regional and global supply chains.

6. Support more resilient food production systems based on agroecology and other sustainable forms of food production

Strengthening food system resilience is critical for an effective response to the COVID-19 pandemic. As international supply chains are strained by COVID-19, relocalizing food production, or seeking a better balance between imported and locally produced food, is a sound strategy for building robustness and resilience. While some have advocated for industrial food production techniques as the best way to boost food production at home, this approach is limited because it is inaccessible to the poorest of the poor due to cost; often requires purchased external agricultural inputs that are similarly subject to supply chain disruptions; and may be unsustainable in terms of waste and environmental impacts (Moseley, 2017; Gengenbach *et al.*, 2018). Agroecology, for example, is the science of leveraging ecological interactions within farm fields to improve crop yields and minimize input costs and waste (HLPE, 2019). Agroecology provides a

strong response to the COVID-19 food security and nutrition crisis because it is a sustainable strategy for boosting food production at home that is accessible to all types of farmers, both rich and poor (Altieri and Nicholls, 2020). Research suggests that agroecology is just as effective as conventional methods for improvements over the long run, especially when the system is examined in terms of energy input versus output (Badgley *et al.* 2007; Brzozowski and Mazourek, 2018). Smart plant combinations, and mixed cropping strategies, may also reduce or spread out labour demands. There is a strong need for more research and training to support a transition to more agroecological production systems that can build food system resilience. In the current context, because of the risks posed by COVID-19 to in-person training, such efforts would require masks and physical distancing, and in some cases could be supported with digital communication technologies, provided those technologies are centred on the needs of poor farmers and the data is openly accessible. Home gardens and urban agriculture can also prove more resilient to shocks and disruptions and ensure access to more varied and nutritious food for the urban poor (Lal, 2020). Sustainable fisheries and aquaculture provide important sources of nutrition and are key for livelihoods and employment (Love *et al.* 2020; Bennett *et al.*, 2020).

Specific recommendations include:

- Invest in more agroecological research-action projects.
- Support the development of an agroecology curriculum at schools of agriculture in a range of countries.
- Given that the majority of agricultural development assistance projects support conventional or industrial agricultural approaches, work to support more projects that encourage agroecology and other sustainable forms of agriculture.
- Include support for individual and community responses, such as home and community gardens.
- Ensure sustainable fisheries and aquaculture, as well as animal production and forestry, are integrated in policy responses to COVID-19 so as to reap their full potential in terms of nutrition and livelihoods.

REFERENCES

- Altieri, M.A. & Nicholls, C.I. 2020. Agroecology and the reconstruction of a post-COVID-19 agriculture. *The Journal of Peasant Studies*, 47(5): 881-898.
- Arouna, A., Soullier, G., del Villar, P.M. & Demont, M. 2020. Policy Options for Mitigating Impacts of COVID-19 on Domestic Rice Value Chains and Food Security in West Africa. *Global Food Security*, 26: 100405.
- Ashford, N., Hall, R., Arango-Quiroga, J., Metaxas, K., and Showalter, A. 2020. Addressing Inequality: The First Step Beyond COVID-19 and Towards Sustainability." *Sustainability* 12(13): 5404.
- Badgley, C., Moghtader, J., Quintero, E., Zakem, E., Chappell, M., Avilés-Vázquez, K. & Perfecto, I. 2007. Organic agriculture and the global food supply. *Renewable Agriculture and Food Systems*, 22(2): 86-108.
- Barbier, E., & Burgess, J. 2020. Sustainability and development after COVID-19. *World Development* 135 (November 1, 2020): 105082.
- Barrett, C. 2020. Actions now can curb food systems fallout from COVID-19. *Nature Food*. 1: 319-320.
- Battersby, J. 2020. South Africa's lockdown regulations and the reinforcement of anti-informality bias. *Agriculture and Human Values*, 37: 543–544.
- Béné, C. 2020. Resilience of local food systems and links to food security – A review of some important concepts in the context of COVID-19 and other shocks. *Food Security*, 12: 805-822.
- Bennett, N., Finkbeiner, E., Ban, N., Belhabib, D., Jupiter, S., Kittinger, J. Mangubhai, S., Scholtens, J., Gill, D., & Christie, P. 2020. The COVID-19 Pandemic, Small-Scale Fisheries and Coastal Fishing Communities. *Coastal Management* 48(4): 336–47.
- Blay-Palmer, A., Carey, R., Valette, E. & Sanderson, M. 2020. Post COVID 19 and food pathways to sustainable transformation. *Agriculture and Human Values*, 37: 517–519.
- Bracale, R. & Vaccaro, C.M. 2020. Changes in food choice following restrictive measures due to COVID-19. *Nutrition, Metabolism and Cardiovascular Diseases*. 30(9): 1423-1426.
- Brzowski, L. & Mazourek, M. 2018. A Sustainable Agricultural Future Relies on the Transition to Organic Agroecological Pest Management. *Sustainability*, 10: 2023.
- Clapp, J. 2017. Food self-sufficiency: Making sense of it, and when it makes sense. *Food Policy*, 66: 88-96.
- Clapp, J. 2020. Covid-19 and Food Security Implications. Webinar presentation, The Ceres2030 project, April 7 2020. (also available at <https://www.iisd.org/events/virtual-meeting-covid-19-global-food-security-implications-english-version>)
- Clapp, J. & Moseley, W.G. (forthcoming). This Food Crisis is Different: COVID-19 and the Fragility of the Neoliberal Food Security Order. *The Journal of Peasant Studies*.
- Committee on World Food Security (CFS). 2013. *A framework for monitoring CFS decisions and recommendations*. Fortieth Session. Rome, FAO. 7-11 October. (also available at <http://www.fao.org/3/mi320e/mi320e.pdf>).
- Committee on World Food Security (CFS). 2020. *COVID-19 is threatening food security and workers' health*. Discussion paper for 21 July 2020, CFS Open Meeting.

- Ekumah, B., Armah, F.A, Yawson, D.O., Quansah, R., Nyieku, F.E., Owusu, S.A., Odoi, J.O. & Afitiri, A. Disparate On-Site Access to Water, Sanitation, and Food Storage Heighten the Risk of COVID-19 Spread in Sub-Saharan Africa. *Environmental Research*, 189: 109936.
- Espitia, A., Rocha, N. & Ruta, M. 2020. *Covid-19 and Food Protectionism*. Policy Research Working Paper 9253. Washington, DC, World Bank. (also available at <http://documents1.worldbank.org/curated/en/417171589912076742/pdf/Covid-19-and-Food-Protectionism-The-Impact-of-the-Pandemic-and-Export-Restrictions-on-World-Food-Markets.pdf>).
- European Federation of Food Agriculture and Tourism Trade Unions (EFFAT). 2020. *Covid-19 outbreaks in slaughterhouses and meat processing plants: State of affairs and proposals for policy action at EU level*. Brussels, EFFAT. (also available at <https://effat.org/wp-content/uploads/2020/06/EFFAT-Report-Covid-19-outbreaks-in-slaughterhouses-and-meat-packing-plants-State-of-affairs-and-proposals-for-policy-action-at-EU-level-30.06.2020.pdf>).
- European Parliament. 2020. *The impact of COVID-19 measures on democracy, the rule of law and fundamental rights in the EU*. Briefing Requested by the LIBE committee Monitoring Group on Democracy, Rule of Law, Fundamental Rights. (also available at [https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/651343/IPOL_BRI\(2020\)651343_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/651343/IPOL_BRI(2020)651343_EN.pdf)).
- Everard, M., Johnston, P., Santillo, D. & Staddon, C. 2020. The role of ecosystems in mitigation and management of Covid-19 and other zoonoses. *Environmental Science & Policy*, 111: 7-17.
- FAO. 2011. *The State of Food Insecurity in the World 2011: How does international price volatility affect domestic economies and food security?* Rome, FAO. (also available at <http://www.fao.org/3/a-i2330e.pdf>).
- FAO. 2020a. *Migrant Workers and the COVID-19 Pandemic*. Rome, FAO. (also available at <http://www.fao.org/3/ca8559en/CA8559EN.pdf>).
- FAO. 2020b. *Gendered impacts of COVID-19 and equitable policy responses in agriculture, food security and nutrition*. Policy brief. (also available at <http://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1276740/>).
- FAO. 2020c. *Food Outlook - June 2020*. (also available at <http://www.fao.org/3/ca9509en/ca9509en.pdf>).
- FAO. 2020d. *Social protection and COVID-19 response in rural areas*. Policy brief. (also available at <http://www.fao.org/3/ca8561en/CA8561EN.pdf>).
- FAO & CELAC. 2020. *Food security under the COVID-19 pandemic*. (also available at <http://www.fao.org/3/ca8873en/CA8873EN.pdf>).
- FAO, IFAD, UNICEF, WFP & WHO. 2019. *The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns*. Rome, FAO. (also available at <https://www.wfp.org/publications/2019-state-food-security-and-nutrition-world-sofi-safeguarding-against-economic>).
- FAO, IFAD, UNICEF, WFP & WHO. 2020. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome, FAO. (also available at <https://doi.org/10.4060/ca9692en>).
- FAO & WFP. 2020. *FAO-WFP early warning analysis of acute food insecurity hotspots*. July 2020. Rome, FAO & WFP. (also available at <http://www.fao.org/documents/card/en/c/cb0258en>).

- Gengenbach, H., Schurman, R., Bassett, T., Munro, W. & Moseley, W. 2018. Limits of the New Green Revolution for Africa: reconceptualising gendered agricultural value chains. *The Geographical Journal*, 184(2): 208-214.
- Gerard, F., Imbert, C. & Orkin, K. 2020. Social Protection Response to the COVID-19 Crisis: Options for Developing Countries. *Oxford Review of Economic Policy*, August 29, 2020, graa026. <https://doi.org/10.1093/oxrep/graa026>.
- Ghebreyesus, T.A. 2020. WHO on Coronavirus Pandemic: “The Worst Is Yet to Come” [video]. [Cited 31 August 2020]. https://www.youtube.com/watch?v=l-x6ZYQ_vg
- Guadagno, L. 2020. *Migrants and the COVID-19 Pandemic: An initial analysis*. International Organization for Migration. (also available at <https://publications.iom.int/system/files/pdf/mrs-60.pdf>).
- Haley, E., Caxaj, S., George, G., Hennebry, J.L., Martell, E. & McLaughlin, J. 2020. Migrant farmworkers face heightened vulnerabilities during COVID-19. *Journal of Agriculture, Food Systems, and Community Development*, 9.3: 1-5.
- HLPE. 2017. *Nutrition and food systems*. <http://www.fao.org/3/a-i7846e.pdf> (HLPE 12).
- HLPE. 2019. Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. HLPE report 14. Rome. 163 pp. (also available at <http://www.fao.org/3/ca5602en/ca5602en.pdf>)
- HLPE. 2020a. *Interim Issues Paper on the Impact of COVID-19 on Food Security and Nutrition (FSN)*. Rome, The High Level Panel of Experts on Food Security and nutrition (HLPE). (also available at http://www.fao.org/fileadmin/templates/cfs/Docs1920/Chair/HLPE_English.pdf).
- HLPE. 2020b. *Food Security and Nutrition: Building a Global Narrative towards 2030*. Report 15. Rome, HLPE. (also available at <http://www.fao.org/3/ca9731en/ca9731en.pdf>).
- International Commission on Microbiological Specifications for Foods (ICMSF). 2020. “ICMSF1 opinion on SARS-CoV-2 and its relationship to food safety.” September 3. International Union of Microbiological Societies. (<http://www.icmsf.org/wp-content/uploads/2020/09/ICMSF2020-Letterhead-COVID-19-opinion-final-03-Sept-2020.pdf>).
- International Foundation for Electoral Systems (IFES). 2020. *Elections Postponed Due to COVID-19 - As of August 11, 2020*. [online]. [Cited 20 August 2020]. https://www.ifes.org/sites/default/files/elections_postponed_due_to_covid-19.pdf).
- International Labour Organization (ILO). 2020a. COVID-19 and the world of work. Fifth edition. *ILO Monitor*. 30 June 2020. (also available at https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_749399.pdf).
- International Labour Organization (ILO). 2020b. SDG Labour Market Indicators. 8.3.1 Informal employment: [Annual](#); accessed on 01/09/2020
- International Monetary Fund (IMF). 2020. *World Economic Outlook Update, June 2020*. <https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020>
- Katsoras, A. 2020. Cracks are Emerging in the Global Food Supply Chain. National Bank of Canada. (also available at https://www.nbc.ca/content/dam/bnc/en/rates-and-analysis/economic-analysis/GeopoliticalBriefing_200629.pdf).

- Kay, S. *et al.* 2014. *Connecting Smallholders to Markets: Analytical Guide*. Civil Society Mechanism (CSM). (also available at http://www.csm4cfs.org/wp-content/uploads/2016/10/ENG-ConnectingSmallholdersToMarkets_web.pdf).
- Khorsandi, P. 2020. WFP chief warns of 'hunger pandemic' as Global Food Crises Report launched. *World Food Programme Insight*, 22 April 2020. (also available at <https://insight.wfp.org/wfp-chief-warns-of-hunger-pandemic-as-global-food-crises-report-launched-3ee3edb38e47>).
- Klassen, S. & Murphy, S. 2020. Equity as Both a Means and an End: Lessons for Resilient Food Systems from COVID-19. *World Development*, 136: 105104.
- Laborde, D., Martin, W., Swinnen, J. & Vos, R. 2020. COVID-19 Risks to Global Food Security. *Science*, 369(6503): 500-502. (also available at <https://science.sciencemag.org/content/369/6503/500>).
- Laborde, D., Martin W. & Vos, R. 2020. Estimating the poverty impact of COVID-19: The MIRAGRODEP and POVANA frameworks. IFPRI Technical Note, IFPRI. (also available at <https://tinyurl.com/y9fazbfz>).
- Lal, R. 2020. Home gardening and urban agriculture for advancing food and nutritional security in response to the COVID-19 pandemic. *Food Security*, 12: 871–876. (also available at <https://doi.org/10.1007/s12571-020-01058-3>).
- Lewis, L. 2020. Coronavirus serves up a surplus of Wagyu beef. *Financial Times*. April 3 2020. (also available at <https://www.ft.com/content/bb540839-2f63-43bc-897c-b73b2d9f6dc7>).
- Love, D., Allison, E. H., Asche, F., Belton, B., Cottrell, R. S., Froehlich, H. E., et al. 2020. Emerging COVID-19 impacts, responses, and lessons for building resilience in the seafood system. Preprint. SocArXiv, June 27, 2020. (also available at <https://doi.org/10.31235/osf.io/x8aew>).
- McLaren, H.J., Wong, K.R., Nguyen, K.N. & Mahamadachchi, K.N.D. 2020. Covid-19 and Women's Triple Burden: Vignettes from Sri Lanka, Malaysia, Vietnam and Australia. *Social Sciences*, 9(5): 87.
- McKeon, N. 2015. *Food Security Governance: Empowering Communities, Regulating Corporations*. London, Routledge.
- Micha, R., Mannar, V., Afshin, A., Allemandi, L., Baker, P., Battersby, J., Bhutta, Z., Chen, K., Corvalan, C., Di Cesare, M. and Dolan, C. 2020. *2020 Global Nutrition Report: Action on Equity to End Malnutrition*. (also available at <https://globalnutritionreport.org/reports/2020-global-nutrition-report/>).
- Moseley, W.G. 2017. A risky solution for the wrong problem: Why GMOs won't feed the hungry of the world. *Geographical Review*, 107(4): 578–583.
- Moseley, W.G. 2020. The Geography of COVID-19 and a Vulnerable Global Food System. *World Politics Review*, May 12. (also available at <https://www.worldpoliticsreview.com/articles/28754/the-geography-of-covid-19-and-a-vulnerable-global-food-system>).
- Moseley, W.G. & Battersby, J. 2020. The Vulnerability and Resilience of African Food Systems, Food Security and Nutrition in the Context of the COVID-19 Pandemic. *African Studies Review*, 63(3).
- OECD. 2020. *OECD Economic Outlook, June 2020*. (also available at <http://www.oecd.org/economic-outlook/june-2020/>).

- Power, K.** 2020. The COVID-19 Pandemic Has Increased the Care Burden of Women and Families. *Sustainability: Science, Practice and Policy*, 16(1): 67-73.
- Pu, M. & Zhong, Y.** 2020. Rising Concerns over Agricultural Production as COVID-19 Spreads: Lessons from China. *Global Food Security*, 26: 100409. (available at <https://doi.org/10.1016/j.gfs.2020.100409>).
- Reardon, T. & Swinnen, J.** 2020. "COVID-19 and Resilience Innovations in Food Supply Chains." *IFPRI blog*, July 6 2020. (available at <https://www.ifpri.org/blog/covid-19-and-resilience-innovations-food-supply-chains>.)
- Sallent, M.** 2020. External debt complicates Africa's COVID-19 recovery, debt relief needed. *Africa Renewal*, July 2020. UN Economic Commission for Africa. (also available at <https://www.un.org/africarenewal/magazine/july-2020/external-debt-complicates-africas-post-covid-19-recovery-mitigating-efforts>).
- Schmidhuber, J. & Qiao, B.** 2020. *Comparing crises: Great Lockdown versus Great Recession*. Rome, FAO. (also available at <http://www.fao.org/3/ca8833en/CA8833EN.pdf>).
- Scudellari, M.** 2020. How the pandemic might play out in 2021 and beyond. *Nature*. **584**: 22-25 August 5. <https://www.nature.com/articles/d41586-020-02278-5>
- Sharma, H.B., Vanapalli, K.R., Cheela, V.R.S., Ranjan, V.P., Jaglan, A.K., Dubey, B., Goel, S. & Bhattacharya, J.** 2020. Challenges, opportunities, and innovations for effective solid waste management during and post COVID-19 pandemic. *Resources, Conservation and Recycling*, 162: 105052.
- Stewart, A., Kottasová, I. & Khaliq, A.** 2020. Why meat processing plants have become COVID-19 hotbeds. *CNN*, June 27. (available at <https://www.cnn.com/2020/06/27/health/meat-processing-plants-coronavirus-intl/index.html>).
- Terazono, E. & Munshi, N.** 2020. Choc waves: how coronavirus shook the cocoa market. *Financial Times*, July 30. (also available at <https://www.ft.com/content/37aa0ac8-e879-4dc2-b751-3eb862b12276>).
- Torero, M.** 2020. Prepare food systems for a long-haul fight against COVID-19. [online]. Washington, DC, IFPRI. [Cited 31 August 2020]. <https://www.ifpri.org/blog/prepare-food-systems-long-haul-fight-against-covid-19>.
- United Nations (UN).** 2020a. *The Impact of COVID-19 on Latin America and the Caribbean*. Policy Brief. July. (also available at <https://unsdg.un.org/resources/policy-brief-impact-covid-19-latin-america-and-caribbean>).
- United Nations (UN).** 2020b. *The Impact of COVID-19 on Food Security and Nutrition*. June. (also available at https://reliefweb.int/sites/reliefweb.int/files/resources/sg_policy_brief_on_covid_impact_on_food_security.pdf).
- UNCTAD.** 2020a. The Covid-19 Shock to Developing Countries: Towards a 'whatever it takes' programme for two-thirds of the world's population being left behind. March 2020. (also available at https://unctad.org/en/PublicationsLibrary/gds_tdr2019_covid2_en.pdf).
- UNCTAD.** 2020b. *World Investment Report 2020: International production beyond the pandemic*. Geneva, UN. (also available at https://unctad.org/en/PublicationsLibrary/wir2020_en.pdf).

- Vanapalli, K.R., Sharma, H.B., Ranjan, V.P., Samal, B., Bhattacharya, J., Dubey, B.K. & Goel, S. 2020. Challenges and strategies for effective plastic waste management during and post COVID-19 pandemic. *Science of The Total Environment*, 750: 141514.
- Van den Broeck, G. & Maertens, M. 2016. Horticultural exports and food security in developing countries. *Global Food Security*, 10: 11-20.
- Viatte, G., De Graaf, J., Demeke, M., Takahatake, T. & Rey de Arce, M. 2009. *Responding to the Food Crisis: Synthesis of Medium-Term Measures Proposed in Inter-Agency Assessments*, FAO. (also available at <http://www.fao.org/3/a-i0769e.pdf>).
- Waltenburg, M.A., Victoroff, T., Rose, C.E., Butterfield, M., Jervis, R.H., Fedak, K.M., Gabel, J.A. *et al.* Update: COVID-19 Among Workers in Meat and Poultry Processing Facilities — United States, April–May 2020. *Morbidity and Mortality Weekly Report*, 69: 887-892. Centres for Disease Control and Prevention. (also available at <http://dx.doi.org/10.15585/mmwr.mm6927e2>).
- World Bank. 2020a. Global Economic Prospects, June 2020. Washington, DC, World Bank. (also available at <https://www.worldbank.org/en/publication/global-economic-prospects#overview>).
- World Bank. 2020b. *Potential Responses to the COVID-19 Outbreak in Support of Migrant Workers*. (also available at <https://openknowledge.worldbank.org/handle/10986/33625>).
- World Food Programme (WFP). 2020a. *Global Monitoring of School Meals during COVID-19 Closures*. [online]. [Cited 31 August 2020]. <https://cdn.wfp.org/2020/school-feeding-map/>
- World Food Programme (WFP). 2020b. *Responding to the development emergency caused by COVID-19. WFP's medium-term programme framework*. June 2020. Rome, WFP. (also available at <https://www.wfp.org/publications/responding-development-emergency-caused-covid-19-wfps-medium-term-programming>).
- World Food Programme (WFP). 2020c. How school feeding persists in spite of Cameroon's coronavirus closures. *World Food Program Insight*, 26 May. (also available at <https://insight.wfp.org/how-school-feeding-persists-in-spite-of-camerouns-coronavirus-closures-4f9c88618e78>).
- World Health Organization (WHO). 2020a. *Gender and COVID-19*. Advocacy Brief. 14 May 2020. (also available at <https://www.who.int/publications/i/item/gender-and-covid-19>).
- World Health Organization (WHO). 2020b. 1 in 3 people globally do not have access to safe drinking water – UNICEF, WHO. News Release. New York, Geneva, WHO. (also available at <https://www.who.int/news-room/detail/18-06-2019-1-in-3-people-globally-do-not-have-access-to-safe-drinking-water-unicef-who>).
- Worstell, J. 2020. Ecological Resilience of Food Systems in Response to the COVID-19 Crisis. *Journal of Agriculture, Food Systems, and Community Development*, 9(3): 23-30. (also available at <https://doi.org/10.5304/jafscd.2020.093.015>).
- Yaffe-Bellany, D. & Corkery, M. 2020. Dumped Milk, Smashed Eggs, Plowed Vegetables: The Food Waste of the Pandemic. *New York Times*, April 11. (also available at <https://www.nytimes.com/2020/04/11/business/coronavirus-destroying-food.html?searchResultPosition=1>).
- Yeshanew, S. 2018. *Regulating labour and safety standards in the agriculture, forestry and fisheries sectors*. Rome, FAO. (also available at <http://www.fao.org/3/CA0018EN/ca0018en.pdf>).

Young, G. & Crush, J. 2019. *Governing the informal food sector in cities of the Global South*. Hungry Cities Discussion Paper 30. (also available at <https://hungrycities.net/wp-content/uploads/2019/04/DP30.pdf>).