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BUILDING A BETTER WORLD: THE CRISIS AND OPPORTUNITY OF COVID-19

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Notes on Contributors	iii
Introduction – Building Back a Better World: The Crisis and Opportunity of Covid-19	
Peter Taylor and Mary McCarthy	1
Local Covid-19 Syndemics and the Need for an Integrated Response	
Megan Schmidt-Sane, Melissa Leach, Hayley MacGregor, Jessica Meeker and Annie Wilkinson	19
Building Forward Better: Inclusive Livelihood Support in Nairobi’s Informal Settlements	
Joseph Kimani, Rosie Steege, Jack Makau, Kilion Nyambuga, Jane Wairutu and Rachel Tolhurst	37
Social Protection, Covid-19, and Building Back Better	
Jeremy Lind, Keetie Roelen and Rachel Sabates-Wheeler	45
Community Leaders and Decentralised Governance: Tales from the SEWA Field	
Paromita Sen and Aiman Haque	65
Food Systems After Covid-19	
Ayako Ebata, Nicholas Nisbett and Stuart Gillespie	73
Covid-19 Response and Protracted Exclusion of Informal Settlement Residents in Freetown, Sierra Leone	
Abu Conteh, Mary Sirah Kamara, Samuel Saidu and Joseph Mustapha Macarthy	95
Building Back Better, Gender Equality, and Feminist Dilemmas	
Sohela Nazneen and Susana Araujo	105
Beyond the Crisis: Irish Aid’s Approach to Nutrition in Tanzania during the Covid-19 Pandemic	
Kim Mwamelo, Peter Nyella and Adrian Fitzgerald	127
Religious Marginality, Covid-19, and Redress of Targeting and Inequalities	
Mariz Tadros, Maryam Kanwer and Jaffer Abbas Mirza	133
Tackling Covid-19 and Building Back Better: The Case of Ethiopia	
Hiwot Mebrate	153
Governance for Building Back Better	
Shandana Khan Mohmand with contributions from Colin Anderson, Max Gallien, Tom Harrison, Anuradha Joshi, Miguel Loureiro, Giulia Mascagni, Giovanni Occhiali and Vanessa van den Boogaard	163
Glossary	181

Food Systems After Covid-19*†

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Abstract Measures to slow down the spread of Covid-19 have had profound effects on the food and nutrition security of poor and marginalised households and communities. This article provides an overview of the effects of Covid-19 on food systems across low- and middle-income countries using resilience and political economy lenses, before proposing approaches to build back resilient and equitable food systems. First, future interventions need to target structural issues that limit people's agency in accessing nutritious and diverse food and production capital. Second, local innovation systems and institutions require investment to create a market environment that benefits domestic (small and medium) enterprises and agri-food supply chain workers without jeopardising the environment. Third, interventions need to be informed by a diverse set of opinions that include the voices of the most marginalised.

Keywords food systems resilience, Covid-19, equity, vulnerability, food security, nutrition security, livelihoods.

1 Introduction⁴

Measures to slow down the spread of coronavirus (Covid-19) have had profound effects on the food and nutrition security of households and communities in low- and middle-income countries (LMICs). More than 820 million people were living with hunger and food insecurity prior to Covid-19 (FAO *et al.* 2019). These people – and millions more who have become impoverished during the pandemic – are at high risk of long-term food insecurity and malnutrition (UN 2020). The current crisis in food systems is not one of falling food availability (Thurlow 2020), but rather one of limited food access for the world's poorest and most vulnerable people as livelihoods are disrupted in order to slow the spread of infection (Tiensin, Kalibata and Cole 2020).

Recent work on inequity in the food system, highlighted by the Global Nutrition Report (Independent Expert Group of the Global Nutrition Report 2020, hereon Global Nutrition Report), reveals



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that going into the crisis, experience of such vulnerability was already far from uniform, and differentiated not only on the basis of social position such as gender, ethnicity, or disability, but also due to underlying political processes that structure access to food systems, exposure to 'commercial determinants', and the right to a voice in how food systems are governed. Covid-19 is only likely to have exacerbated such processes of inequity, but urgent work is needed to understand who has been affected and how.

In this article, we provide an overview of the impact of Covid-19 on food systems – particularly how the pandemic is affecting people's access to viable livelihoods and to nutritious food. Our analysis seeks to understand systemic issues that contribute to inequality in livelihood, food security, and nutrition outcomes between different households and communities within LMICs.

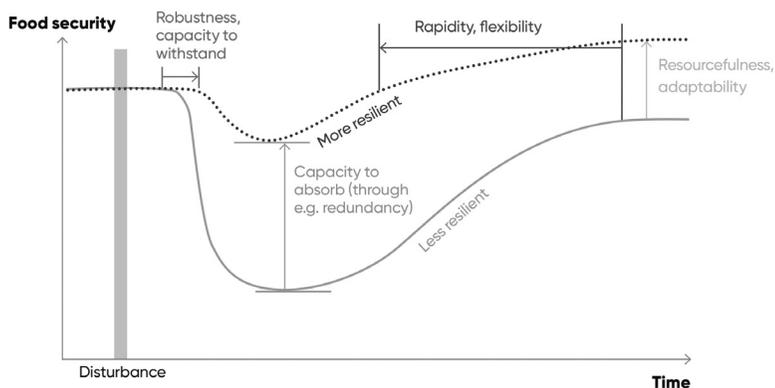
The structure is as follows. Section 2 outlines the methods employed. Section 3 presents the results of the review of effects of Covid-19 on food systems. In Section 4, we analyse systemic factors that drive disproportionate effects of Covid-19 and discuss ways to build more resilient and equitable food systems after Covid-19. We conclude in Section 5 by suggesting three overarching approaches to build resilient and equitable food systems that leave no one behind.

2 Methods

2.1 Literature search

We undertook a desk-based review of the impacts of Covid-19-related measures within LMICs between April and July 2020. We searched for programmes, organisations, and research groups that were documenting the effect of Covid-19 on food systems, food systems jobs, and food and nutrition security in LMICs on Google with search terms such as 'Covid-19' and 'agri-food jobs', 'food security', 'food aid', and 'nutrition'. We included blogs, opinion pieces, research papers, reports, and databases that documented evidence on how Covid-19-related public health measures were affecting food access, particularly to vulnerable populations, and employment and income-generating activities in food systems in LMICs. We excluded evidence from high-income countries as our focus was on LMICs. We also included articles and evidence that link Covid-19 to past experiences of similar pandemics such as the West Africa Ebola crisis (2013–16) and the SARS outbreaks in Asia (2002–03).

Our review was subsequently targeted on organisations that had been key to food and nutrition security as well as ensuring sound working conditions and labour rights prior to Covid-19, and those that actively generated evidence on the effects of Covid-19 on food systems at the time of the review. These include international institutions such as the Food and Agriculture Organization of the United Nations (FAO); the World Food Programme (WFP); the World Bank; the International Labour Organization (ILO); the

Figure 1 Food system resilience

Source Tendall *et al.* (2015). © Elsevier 2015. Reprinted with permission.

United Nations Children's Fund (UNICEF); and the World Health Organization (WHO). In addition, we expanded our literature search to the International Food Policy Research Institute (IFPRI), the Global Alliance for Improved Nutrition (GAIN), the Agriculture for Nutrition and Health (A4NH) programme of CGIAR (formerly the Consultative Group for International Agricultural Research), and thinktanks.

2.2 Analytical frameworks

2.2.1 Resilience

To structure our analysis of the impact of the Covid-19 response on food systems, we employed the analytical framework of food systems **resilience** and incorporated work on the **political analysis** of food system change (Leach *et al.* 2020). While many have applied the resilience concept to different segments of food systems (Ifejika Speranza, Wiesmann and Rist 2014; Tyler *et al.* 2013), Tendall *et al.* introduce the following holistic definition that speaks to the four dimensions of food security, namely, availability, access, utilisation, and stability:⁵

Capacity over time of a food system and its units at multiple levels, to provide sufficient, appropriate and accessible food to all, in the face of various and even unforeseen disturbances (2015: 19).

A resilient food system, Tendall *et al.* (2015) suggest, has four characteristics: (1) robustness and capacity to withstand the shocks; (2) capacity to absorb the shocks; (3) rapidity and flexibility to recover from the shocks; and (4) resourcefulness and adaptability to recover from shocks (see Figure 1). Resilience is a continuous variable, where systems exhibit degrees of resilience, not a dichotomous state, where systems are or are not resilient. Figure 1 shows how a less resilient system would be more impacted by a disturbance and have less capacity (and need

more time) to reinstate the pre-shock state than a more resilient system.

Resilience can manifest at multiple levels; for example, global/regional/farm/field (Bullock *et al.* 2017) or system/agent/institution (Tyler *et al.* 2013). Within each level, more resilient systems tend towards greater **diversity**. At the field/plot level, a diversity of crop cultivars or animal breeds with distinct genetic attributes can improve resistance to external shocks (Urruty, Tailliez-Lefebvre and Huyghe 2016). Similarly, crops and livestock can be rotated in an integrated system to increase diversity (Bullock *et al.* 2017). Landscape management and the pursuit of diversity within a region can also enhance resilience of the production system in a local area (Urruty *et al.* 2016).

In addition to diversity, fostering the **adaptive capacity** of the system is critical. At the farm level, this may mean keeping animal or crop breeds that are able to adapt to the changing environment (Urruty *et al.* 2016). At a broader spatial scale, for example global/regional (Bullock *et al.* 2017) or system level (Tyler *et al.* 2013), adaptive capacity relates to the extent to which key actors can access information and knowledge, build necessary capacity, self-organise to cope with shocks, and influence policymaking to increase resilience (FAO 2015; Ifejika Speranza *et al.* 2014). Adaptive capacity is also closely linked to redundancy in the system (Ifejika Speranza *et al.* 2014), which may be perceived as inefficiency (Cabell and Oelofse 2012). Redundancy applies to physical, human, natural, financial, and social capitals that allow individuals and groups to respond to shocks (Ifejika Speranza *et al.* 2014).

Another recurring theme in the resilience literature relates to the ability to learn from previous shocks (Cabell and Oelofse 2012; FAO 2015). The way in which a particular system is organised today depends on its past experiences of responding to shocks (Cabell and Oelofse 2012). Ideally, such shocks remain small and frequent so that they do not push a system beyond its limit (FAO 2015). Even in fragile contexts such as Sierra Leone, evidence suggests that the experience of a past epidemic (in this case, Ebola) informed an effective response to Covid-19 (Kamara 2020). 'Careful exposure' to small and recurring shocks can help build a resilient system where investment can be made to cope with similar disturbances in the future (Cabell and Oelofse 2012).

2.2.2 Political economy

While the above framework is helpful in analysing the resilience of food systems, it omits critical aspects of political economy that determine **whose** resilience is prioritised. Without explicit consideration of the poorest or most marginalised groups, the resilience framework risks being anti-poor (Béné *et al.* 2012). For instance, landless labourers may be seen as a reserve of human capital, ready to migrate to where labour is needed. This contributes to redundancy, but is bad for equity. To address this,

Box 1 4Ds for food

- 1 What **Directions** are different pathways headed in? What goals, values, interests, and power relations are driving particular pathways?
- 2 Is there a sufficient **Diversity** of pathways? Are these diverse enough to prevent lock-in, build resilience in the face of uncertainty, and respond to a variety of contexts and values?
- 3 What are the implications for **Distribution**? Who gains and loses from current or proposed pathways?
- 4 What are the implications for **Democracy**, which encompasses equity of opportunity for voice and inclusion, and processes that enable and enhance this?

Source Leach *et al.* (2020). Crown Copyright © 2020
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therefore, we draw on the work of Stirling (2009), the STEPS Centre (2010), and Leach *et al.* (2020) to highlight the implications of choosing different pathways to food system resilience. Pathways will differ with regard to the way power relationships are configured (Leach *et al.* 2020). To address this, we will pay explicit attention to the '4Ds' shown in Box 1 (for further explanation see Leach *et al.* 2020).

3 The effect of Covid-19 and other public health shocks on food systems

3.1 Immediate effects

We first discuss the short-term effects of Covid-19 on food systems in LMICs. Consumers have faced **food price increases** because of temporary food shortages and increased demand. An analysis of 136 countries, for example, indicates that the prices of common food items – such as bananas, tomatoes, onions, eggs, bread, and rice – have increased in 118 countries, ranging from less than 2 per cent in Bangladesh and Nigeria to 23.5 per cent in Rwanda (Nordhagen 2020). This resembles the experience during the 2013–16 West Africa Ebola crisis, where rice and cassava prices went up by 30 per cent and 150 per cent in the region, respectively (FAO 2020a). Increased food prices may particularly affect consumers who are suffering from a fall in remittances. For 2020, the World Bank predicts a 20 per cent fall in global remittances (World Bank 2020a). The ILO estimates an alarming 81 per cent decline of earnings in the African informal sector (ILO 2020), severely affecting consumers' ability to afford food.

Measures to close schools have been widely adapted across LMICs in an effort to slow down the transmission of coronavirus

(WFP 2020). As a result, **access to school meals** has been restricted for 368 million children, some of whom rely on school meals for regular intake of healthy and nutritious food (FAO 2020a). Concerns that schools may become infection hotspots as appropriate physical distancing and hygiene measures are impossible (*ibid.*) can disincentivise parents from sending children to school, despite the epidemiological evidence in this area still being uncertain. This may affect their nutritional status as well as education opportunities, with long-term consequences on human capital.

Decreased **access to healthy and nutritious food for key groups**, such as pregnant and lactating women and young children, can lead to serious nutritional deficiencies with short- and longer-term implications on child health (A4NH 2020). There are also concerns that obesity and associated non-communicable diseases (e.g. diabetes) will increase due to an increased (absolute and relative to whole diet) dietary consumption deriving from ultra-processed foods, combined with restrictions on physical activity (WHO 2020).

Access to **food aid in conflict-affected areas** has been restricted e.g. food aid for refugees and internally displaced persons (IDPs) in Iraq (Karasapan 2020). Yemen, for instance, relies on imports to supply 90 per cent of its food (Alles 2017). Weak infrastructure and inefficient institutions hamper trade, resulting in high food prices. Protracted conflict also destroys livelihoods (Tandon and Vishwanath 2020) and subsequent purchasing power. Covid-19-related disruption of food imports will likely make the situation worse for the 24 million people who currently require humanitarian assistance (Karasapan 2020). In Egypt, Lebanon, and Libya, Covid-19 has reduced food imports by 31 per cent, 39 per cent, and 36 per cent respectively (Laborde, Mamun and Parent 2020). The negative effects of the pandemic on health care and food access in conflict-affected areas will be borne disproportionately by women (ICG 2020).

On the supply side, food systems in LMICs suffered from a **decline in output**. Rapid country studies show that in Nigeria and Rwanda, agri-food gross domestic product (GDP) decreased by 18 per cent and 27 per cent following periods of lockdown measures lasting five and six weeks, respectively (Thurlow 2020). Falling consumer income (including from remittances) and purchasing power was a major driver behind this rapid decline in agri-food GDP. Low-income households were particularly hard hit. The same studies show that while non-poor urban households in these countries experienced a 41 per cent income decline, the poorest quantile experienced a 23 per cent income decline (*ibid.*). Such an income shock will potentially be devastating for the poorest households across Africa, who have limited savings and assets to respond to the economic contraction from Covid-19.

The harvesting and transportation of agricultural produce has been disrupted by **labour shortages**, as occurred in the SARS and Ebola outbreaks (FAO 2020a). Farmers were unable to sell produce at all, or sold it at a loss, affecting their long-term income. Transportation restrictions led to **input price increases** (*ibid.*). Because farm inputs may be imported, supplies of seed, animal feed, fuel, machinery, and chemical inputs can be hampered (*The Economist* 2020).

Due to the **closure of retail markets**, many small-scale retailers lost outlets for their businesses, while consumers were unable to access fresh produce (FAO 2020a). In some countries, the policy response to Covid-19 disadvantaged informal retailers (Battersby 2020), many of whom are women (Kawarazuka, Béné and Prain 2018; Skinner 2016). This affects not only the retailers themselves but also downstream value chain actors such as traders, processors, and farmers.

Where producers rely on **export markets to sell fresh produce**, disrupted international trade has led to commodity price crashes, significantly decreasing farmers' income (*The Economist* 2020). Because perishable vegetables and fruits are more vulnerable to transportation restrictions and supply chain disruption than grains (FAO 2020a), strict controls on transportation have prevented effective sales of these healthier food items. As a result, Covid-19-related lockdowns can lead to greater food waste (*The Economist* 2020) and increased consumption of processed food (WHO 2020).

Shrinking international trade and foreign direct investment (FDI) may contribute to **short-term food shortages and price spikes** of key commodities. Some national governments have placed export bans on key food items, such as Cambodian and Vietnamese government bans on rice exports (Laborde *et al.* 2020). As of 28 April 2020, one estimate found that African countries were unable to import up to 39 per cent of their imported calories (*ibid.*).

3.2 Longer-term effects

Economic shocks triggered by lockdowns could have enduring **impacts on poverty** and hunger. In Nigeria and Rwanda, for instance, Thurlow (2020) estimates that national poverty rates will increase by 15 and 27 percentage points, respectively. Overall, the number of hungry and food-insecure people could double due to livelihood and income loss, and food price inflation from Covid-19-related measures (*The Economist* 2020). This includes remittances lost from disturbances in domestic, regional, and international migration, and shrinking FDI leading to job losses (Seric and Hauge 2020). Poorer households rely more on remittances from domestic migrants than richer households, highlighting the importance of internal migration for particularly vulnerable people (Adhikari 2020). The longer the lockdown,

the higher the risk of people losing income and being forced to consume or **sell agricultural assets** such as livestock and seeds for the next cycle of cultivation (FAO 2020b). This has long-term consequences for poverty, access to nutritious food and, therefore, the overall health of millions of people.

Long-term agricultural productivity is also at risk. Government funding is being reallocated from 'non-essential' service provision to efforts to tackle the spread of the coronavirus (FAO 2020a). As a result, **agricultural extension** services that farmers rely on might be temporarily or permanently closed. Small-scale, resource-poor farmers who keep non-cash crops or livestock tend to rely on public extension services more than medium- and large-scale farmers who might have better access to private sector service providers (Muyanga and Jayne 2008). This will have a significant impact on the uptake of new, improved practices and long-term productivity. In turn, this could affect the livelihoods and income of marginalised farmers and their long-term health and nutritional status.

Countries affected by **environmental disasters** prior to the Covid-19 outbreak are particularly vulnerable. In Ethiopia, Kenya, and Somalia, almost 12 million people were affected by failed harvests due to severe droughts and outbreaks of desert locusts (FAO 2020b). Pastoralist communities were forced to move to other areas in search of feed for their animals, increasing the risk of conflict between pastoralists and local residents (*ibid.*). In Burkina Faso, decreased food production has led to conflicts and internal displacement (A4NH 2020).

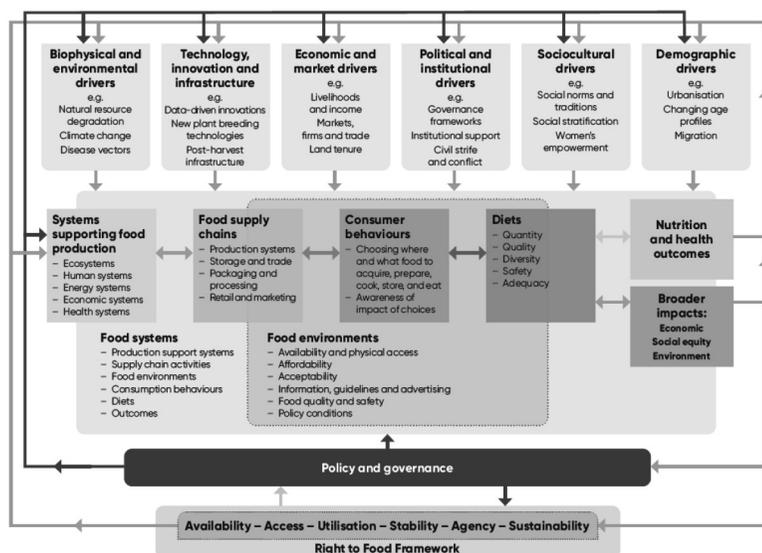
4 Strengthening food systems resilience: power, equity, and agency

The evidence presented in Section 3 shows how the measures to curtail the spread of Covid-19 are affecting poor and vulnerable groups and individuals in LMICs more significantly than others. We argue that this is because food systems across LMICs lack **resilience** and **equity**. In order to reduce such vulnerability during crises, we now assess common approaches for addressing food and nutrition insecurity with regard to their effects on resilience and equity of food systems.

4.1 Tackling malnutrition in all its forms

Covid-19-related shocks have highlighted the vulnerability of food systems in many LMICs. A population that is chronically food insecure and/or malnourished has little capacity to withstand and recover from shocks. Many LMICs are now grappling with a double burden of malnutrition (DBM) in which undernutrition (e.g. wasting, stunting, and micronutrient deficiencies) coexists with overweight, obesity, and diet-related non-communicable diseases (Black *et al.* 2016; Popkin, Corvalan and Grummer-Strawn 2020). In the 2010s, Uganda, Rwanda, Tanzania, and Malawi all experienced DBM with more than 30 per cent of

Figure 2 Determinants of healthy eating



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adults overweight. Malnutrition can also be perpetuated across generations: obesity in pregnant and lactating women can exacerbate the early growth and development of their children, particularly when the mothers were undernourished in their early life (Wells *et al.* 2020). The long-term impacts of Covid-19 on malnutrition across the life course have yet to be fully understood, but we emphasise that food system vulnerabilities need to be understood with sensitivity to malnutrition in all its forms, lest it be assumed that only those living in situations of acute food insecurity are the most affected. This is particularly so given that the relationship between obesity and the vulnerability and severity of Covid-19 remains a key concern and area of further research (Kassir 2020).

In order to employ the concepts of resilience and the 4D framework across the food system, we refer to the work by the High Level Panel of Experts on Food Security and Nutrition (HLPE) (see Figure 2), which highlights six dimensions of food and nutrition security: availability, access, utilisation, stability, agency, and sustainability (HLPE 2020). Beyond the relationship between systems supporting food production and people's immediate food environment and consumption habits, their work draws attention to neglected factors of the 'missing middle' between farms and consumers (Béné *et al.* 2019) as well as broader social, economic, and political drivers such as levels of natural resource degradation, innovation, and social norms. Such an understanding needs to be coupled with frameworks

focusing on malnutrition (rather than broader food system issues) (e.g. UNICEF 2019) which show the interrelationship between food, care, and broader health and sanitation environments in determining nutritional status.

As well as food-related factors, nutrition is influenced by care, health, and sanitation environments – and by wider structural drivers. For instance, unemployment and precarious employment make it more difficult for individuals to spend time on shopping, cooking, and sharing food with their family members (Friel *et al.* 2017). Likewise, vulnerable and marginalised people are at a higher risk of food-related illnesses partly because of their living environment influenced by their access to financial, human, physical, and social capital (Black *et al.* 2016). Basic water, sanitation, and hygiene (WASH) is often lacking in their homes (Prüss-Ustün *et al.* 2014), making food cooked at home unsafe. This can lead to diarrhoea or other gut conditions which weaken the body's immune system and make it harder to absorb and assimilate nutrients (Havelaar *et al.* 2015). These social and structural determinants are key to improving individuals' nutrition status.

Many responses to food and nutrition insecurity, however, fail to address systemic drivers of malnutrition (Friel *et al.* 2015). This may be due to underlying power relationships that influence both consumers and producers across food systems (Global Nutrition Report 2020). Powerful actors within food systems – agribusinesses, multi-national food corporations, and international donors and policymakers – influence the ways in which governments and international agencies fund agricultural research and development (R&D) and intervene in food systems. This influences how food systems are structured in individual countries, and the conditions under which individual families and people are able to select what they eat, when, and how much (*ibid.*).

For example, at a global level, agricultural production and R&D are often **directed** towards increasing the productivity of staple grains (Pingali 2015). CGIAR allocates half of its funding to staple crops (Hawkes *et al.* 2020). At a national level, Malawi is an example of a country where agricultural policies focus heavily on maize because of its perceived importance for national food security and political stability (Chirwa and Chinsinga 2015). This, in turn, skews government policies and donor-funded interventions that farmers receive towards staple grains, closing down the pathway to **diversifying** people's diets as well as livelihoods (Hawkes *et al.* 2020). This may also increase the availability of oily processed food and animal products (*ibid.*). Livestock and aquaculture can generate more income than grain (Belton, Filipski and Hu 2017). A shift away from grains could help diversify production systems and economic activities, increasing the resilience of food systems overall.

Regarding **distribution** and equity, in order to ensure that food systems support the nutritional status of the poorest members of societies, there is a need to go beyond targeting individual knowledge and attitudes to improve food environments. Value chains create winners and losers, the latter often living and working in precarious conditions (Barrientos, Gereffi and Rossi 2011). While international trade can help **diversify** food sources and thereby contribute to resilience (Marlow and de Souza 2020), the goal of accelerating economic development and GDP growth usually favours large-scale businesses and FDI, and marginalises small- and medium-sized businesses across LMICs (Thow and McGrady 2014).

Without effective regulation, many for-profit actors would not act in the interest of public health (Ebata *et al.* 2019; Baker *et al.* 2020). Limited market competition gives oligopolists lobbying power over national governments and can lead to worsening public nutrition and health outcomes (Thow and McGrady 2014). The negative effects of increasing industry influence can be mitigated by governance that develops transparent and accountable value chains – thus improving **democracy** – and pressures from consumers in both domestic and international markets (Dallas, Ponte and Sturgeon 2019; Lema, Rabellotti and Gehl Sampath 2018).

4.2 Fostering adaptive capacity and resource access by addressing power relationships

A key aspect of resilient systems is effective communication and opportunities for learning. The quality of information and users' trust in extension workers was found to be critical in improving food security for vulnerable groups such as female-headed households in Kenya (Kassie, Ndiritu and Shiferaw 2012). However, these very groups may be prevented from accessing high-quality and timely extension services due to remoteness and prejudice. Female farmers in Malawi, for example, are regarded as illiterate and ignorant by many extension workers, hampering their access to information and knowledge (Mudege *et al.* 2017). Similarly, a study of the Fulani pastoralist community in rural Nigeria showed how it was cut off from timely veterinary services because of remoteness and persistent miscommunication and misunderstanding between veterinary extension workers and the pastoralists (Okello *et al.* 2014). Engaging with these marginalised actors in a dialogue with decision makers can foster a **diversity** of perspectives that contribute to designing pathways that build resilient and equitable food systems. This was evident in Sierra Leone, where experiences of Ebola motivated the early engagement of local leaders and cross-party cooperation in their initial Covid-19 response (Kamara 2020).

Another challenge for poor and marginalised people is the lack of access to the unequal **distribution** of production resources such as land (Fischer, Gramzow and Laizer 2017; Pritchard *et al.* 2019)

and low-interest credit (Ebata *et al.* 2020). In Myanmar, for instance, farmers are able to access low-interest government loans only if they possess a title to rice fields (*ibid.*). As most farmers do not own the fields they cultivate and/or they earn income from non-rice crops or animal keeping, they are forced to turn to private high-interest loan providers. This depletes their financial capital and, as a result, traps them in persistent poverty. Limited access to assets is consistently shown to hamper the adoption of production technologies that are profitable and/or resilient to climate change (Cavanagh *et al.* 2017; Deressa, Hassan and Ringler 2011; Serfilippi, Carter and Guirkingner 2020). Lifting such systemic barriers is absent from many efforts to increase investment in agricultural technology. Again, this will require a dialogue with policymakers to facilitate smallholder access to production inputs.

Fostering local innovation systems is another critical vehicle to increase learning opportunities for local businesses. Insertion into global value chains has the potential to improve the GDP of LMICs (Lee, Szapiro and Mao 2018). However, the local innovation capacity crucially determines the **distribution** of such benefit, i.e. whether businesses in LMICs can benefit from participating in global value chains that often impose higher quality and production standards than domestic markets (Lema *et al.* 2018). It is critical to invest in agricultural R&D in sustainable production methods, product quality and safety improvement, and the processing of primary agricultural commodities. A multi-stakeholder innovation platform, such as the East Africa Dairy Development (EADD) in Kenya, is one example where challenges and opportunities in the current agricultural innovation systems can be identified (Kilelu, Klerkx and Leeuwis 2013).

In promoting international trade, the welfare implications for participants in global value chains need to be carefully monitored. In some cases, female casual workers can increase their income by working for an export farm (Maertens and Swinnen 2012). However, labour conditions, occupational safety, and labour rights need to be carefully evaluated to achieve inclusive growth (ILO 2017). Government regulations, consumer pressures for fair working conditions, and effective accountability mechanisms can foster global and local governance that ensures the **democratic** processes of value chain development (Dallas *et al.* 2019).

Finally, international agencies and donors are powerful in setting **directions** for food system development in LMICs. In this political process, the voices of poor people are usually silenced and marginalised in policymaking and implementation. A political economy analysis of the response to the Avian influenza outbreak in 2008, for example, indicated that a common policy response to a public health crisis may disproportionately affect poor members of our societies. In China, policymakers were quick to claim that the Avian influenza outbreak was driven by small-scale poultry

farmers and traders despite science being inconclusive about the cause (Scoones and Forster 2008). The standard advice by international organisations such as the Food and Agricultural Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE) to install the mass culling of animals disproportionately affects poor and marginalised actors in food systems while large-scale producers have assets to survive the crisis (Pongcharoensuk *et al.* 2012). These power imbalances must be carefully tackled to ensure that food systems are equitable and leave no one behind.

5 Conclusions

Responses to curtail the spread of Covid-19 have exposed the vulnerability in food systems – both on the consumption and production sides – that had pre-dated the epidemic. These responses disproportionately affect poor and marginalised people.

Applying a food system resilience concept through a political economy lens, we suggest ways to build back resilient food systems that are equitable. First, future interventions need to target structural issues that limit people's agency in accessing nutritious and diverse food, and production capital – not only physical, but social and human – that help them move out of persistent poverty and tackle climate change. Second, investment needs to be made to strengthen local innovation systems and institutions – both formal and informal – to create a market environment that benefits domestic (small and medium) enterprises and agri-food supply chain workers without jeopardising the environment. Third, interventions need to be informed by a diverse set of opinions that include the voices of the most marginalised.

Afterword

This review was originally commissioned to provide a rapid conceptual and empirical take on the Covid-19 crisis in relation to food security, vulnerability, and resilience, based on the materials available up until July 2020. As we revise this at the end of this tumultuous year, a wealth of new material and analysis on Covid-19 has been published as global and national actors and researchers take stock of the immediate and medium-term impacts of the pandemic on food systems and the most vulnerable. Our intention in this short Afterword is not to further review these studies, but to note that many of the trends identified earlier in the year and summarised in this study continue, with some trends clearer and yet others still uncertain. While the global trade in agri-food products and agri-food production have not yet been significantly affected by the pandemic, (see, for example World Bank 2020b), the wider issues of poverty, power, equitable livelihoods, and access to public services that were highlighted in this review are coming to the forefront in many analyses.

Data gathered from rapid phone surveys, for example, demonstrate now that income has been affected in around 62 per cent of households surveyed, while 36 per cent of people surveyed stopped working completely between April–July (*ibid.*). Other reports have highlighted the gendered power dimensions to the crisis, with women subject to additional care burdens and expectations, growing levels of domestic violence, livelihood disruptions and, in some countries, restrictions on their mobility and livelihoods out of line with those experienced by men (Fuhrman *et al.* 2020). Hunger is on the rise in many countries (World Bank 2020b), with 30 per cent of the respondents to one phone survey in Malawi noting that they 'went without eating for a whole day because of lack of money or other resources' (*ibid.*, unpaginated); similarly 18 per cent in Nigeria and 16 per cent in Kenya (Carreras, Saha and Thompson 2020).

Several reports have noted how children have been particularly affected by the crisis, not only due to family food or income difficulties, but also because of the significant detriment to essential health services and education – with UNICEF reporting that around one third of 140 reporting countries had a drop in coverage for routine vaccinations (UNICEF 2020). While some health services, including routine child vaccinations, have resumed near to normal service in many (though not all) countries, education – a key long-term determinant of nutritional status and food environments – remains severely disrupted (*ibid.*). In some contexts, predatory commercial actors have made use of the crisis to break international codes on the promotion of breastmilk substitutes, which can have devastating impacts on child mortality and morbidity (van Tulleken *et al.* 2020). Meanwhile, other reports have highlighted the special plight of IDPs and other migrants; or people living in situations of broader political instability and conflict (IOM and WFP 2020).

While it will take years before the full impacts of the Covid-19 crisis on the food system, food system resilience, and lives of the most vulnerable are fully known, we underline the need for such studies to be undertaken with serious consideration of the multiple ways in which the world's poor are vulnerable to Covid-19. These are not always revealed in aggregate attention to food supply or price data, and with proper attention to impacts across an array of structural determinants, including gender, power, equity, and the role of commercial and market forces in people's broader food environments.

Notes

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- 4 This article is based on a Positioning Paper written in July 2020; it contains an Afterword which provides an update on the global situation as at the time of revision in November 2020.
- 5 See *Report of the World Food Summit*, 1996.

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