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# Editorial: COVID-19: food system frailties and opportunities

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COVID, food systems, resilience, preparedness, global perspectives

## Editorial on the Research Topic

### COVID-19: food system frailties and opportunities

One hundred years ago the Great War was followed by the Spanish Influenza pandemic which killed more people. Currently, we are witnessing the opposite: a pandemic followed by war in Ukraine which has lasted more than 590 days, at the time of writing. The COVID pandemic brought the world to its knees with shutdowns separating families, isolating the elderly and lonely, stopping commerce, closing school lunches and much more. Most of the world was caught unprepared. Food prices increased to 120% and supply chains were severely tested. Just as the pandemic was abating, the war involving major grain and fertilizer producers has considerably deteriorated the situation. The Food prices have now reached 160% and are still rising (Osendarp et al., 2022): food and energy have become weapons of war. In the winter, people have had to choose whether to “Eat or to Heat.” It is extremely distressing that some 23 years into the 21st century we have already been visited by the four horsemen of the Apocalypse—Pestilence (COVID, MERS, SARS, Ebola, avian and swine flu, and more), War, Famine, and Death. To this list must be added the threat of climate change. However, the scientific and political collaborations, and the lessons learnt in surmounting COVID show that we do have the capabilities to overcome these major challenges. These efforts must be continued and extended to make the world safer for all humankind.

Therefore, this Frontiers Research Topic is of high relevance in considering the responses to enable strengthening food systems to cope with future crises to global food security. Twenty-two articles have been accepted by the editors for publication out of 29 that were submitted. The articles consider food systems world-wide—eight countries in Asia, seven from North America, three in Africa, two each from Central and South America and one from Australia and Europe.

The challenges to Food security affected initially its stability dimension and the ability to withstand shocks, but soon involved the whole pathway of availability (at national level), accessibility (household level), and utilization (individual) and also to include sustainability (Berry et al., 2015). The new food security dimension of agency (Clapp et al., 2022) was very engaged in the responses of the social media providing positive coping strategies (including humor) (Peng and Berry, 2021) and negative influences such as anti-vaccination messages (Wilhelm, 2023). The urgency of the situation, unfortunately, placed the on-going challenges of sustainability and climate change in the background, as well as the pandemic of obesity and malnutrition which affects far more people than were stricken by COVID.

Responses were considered at different levels—governments, non-profit organizations, the private sector and communities (Måren et al.) and involving most of the actors along the food chain, especially farmers (Connors et al.; Ebel et al.; Ghosh-Jerath et al.). The articles may also be grouped into three principal categories essential for dealing with the COVID

pandemic, future zoonoses and general disaster risk reduction (Sendai framework, UNISDR, 2015): prevention and preparedness (5); resilience (10), and policy (7). Some articles cover more than one of these areas.

With regard to short term actions for pandemics, plans must be put in place for national food storage and local food distribution (DuPuis et al.) during lockdowns especially for at risk groups—homeless, unemployed, elderly, lonely and more. In India, farmers with more crop diversity were more resilient to disruptions in the markets (Connors et al.). An important practical step, for example, is to ensure the continuation of school meals programs.

National and supra-national organizations will have to guarantee that medical aid and vaccinations will be available to countries with weak public health infrastructures. As the pandemic is retreating, there should be national and international mechanisms to help economic recovery in low- and middle-income countries, where the resource-poor became unemployed (Joshi et al.) and more food insecure, especially in informal settlements around urban areas (Chege et al.).

Actions for the long term include: helping developing countries access the major securities of food, energy and water. Establishing national committees for contingency plans for emergency disasters, which should deal with all aspects of risk management. Health infrastructures must be strengthened regarding personal protective equipment, intensive care units and staff training. Global alert networks should operate for disease surveillance and control of animal markets (Leahy et al.). Further, it will be important to empower the civil society to counter misinformation on the social media, especially against anti-vaccination campaigns and anti-public health recommendations (Wilhelm, 2023). In Bangladesh, there was fake news that poultry could transmit the disease (Sattar et al.). There is a consensus that transparent communication with the general public is of utmost importance to ensure compliance with the public health and other measures necessary for crisis management, particularly when they affect personal liberty and movement.

Other considerations identified by the authors necessary to build resilient food systems, deal with unexpected compound risks from extreme weather events (Vyas et al.); attempts at dietary manipulation with flavonoids for protection (Ghidoli et al.); ensuring food safety hygiene of food handlers and food supply chain (Nurul Eiman et al.); developing cultural ecosystem services such as community gardens. These provided positive connection with other gardeners and safe spaces of refuge and joint activities such as composting, food donation (Falkowski et al.). Resilience to market disruption was linked to crop diversity in India (Connors et al.), and to sanitation in The Gambia (Sidebottom et al.).

In the global food system, many small farmers experienced economic difficulties (Daley et al.) and depended on off-farm incomes (Ebel et al.). Their work was hindered by restrictions in movement of farm labor and supplies (Ghosh-Jerath et al.). The shock of the pandemic did not affect the system equally. Some supply chains lost business while others experienced increased demands. Consumers were not fully confident in the supply chains (Jones et al.). Overall, exorbitant food prices tested the preparedness of family food security (Dou et al.; Munonye et al.). There were also the dangers of food hoarding as consumers attempted to increase their household food security in response to the unpredictable fluctuations and uncertainty in food supplies.

However, we believe that the global experiences during COVID may be leveraged to produce positive reactions at national and international levels for planning food systems toward the Sustainable Development goals. But for this to occur, requires a major re-thinking of the policies, methodologies and science involved in the multi-disciplinary activities of food systems (Béné, 2020). The move should be made toward complex adaptive systems where a perfect understanding of the individual parts does not automatically convey a perfect understanding of the whole system's behavior. These systems are dynamic and non-linear with both positive and negative feed-back loops, multiple interconnections; and synergies & trade-offs (Nayak and Waterson, 2019; Deconinck, 2021).

Among the opportunities identified in this Research Topic we note: transformation of food systems toward sustainability (Frank et al.) from agro-ecology, finding alternative practices by local food actors to form self-organized producer groups. To improve food security by decentralizing the food supply chain (Tirado-Kulieva et al.), whereby local producers and vendors collaborated to maintain food availability and multi-level interventions involved government, industry, academia and the general population. Alternative seafoods networks encouraged local and direct marketing, providing functional diversity in the food chain (Stoll et al.).

Opportunities arose to gain access to the diverse wild food environment and revitalize bio-cultural resources (Ghosh-Jerath et al.). There were also innovations using e-marketing, relying on family jobs and sharing information for positive resilience effects as found across the USA, China and Norway (Måren et al.).

We hope that this Research Topic will be used by all the actors in sustainable food systems, and especially policy makers, to learn lessons from this past pandemic (Klassen and Murphy, 2020), to be better prepared for the next one which will surely come. These, and more, are necessary to safeguard the survival of our planet (Smil, 2022; Rockström et al., 2023).

## Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

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## Conflict of interest

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