

Impacts of COVID-19 on Agri-Food Value Chains in the Global South

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ABSTRACT

This paper reviewed the impact of COVID-19 on the agri-food value chains in the Global South. The COVID-19 pandemic significantly affected the food value chain, one of the most critical of activities in an economy. The pandemic resulted in restrictive food trade policies, a curb on the movement of labourers, and increased financial pressure on food value chains, thereby, worsening the food security status in the Global South. Countries imposed trade restrictions to secure food for their domestic consumers. Small-scale firms and poor workers in the import-driven countries bore the major brunt. Food production and distribution networks were put to test, and labour markets shrunk with the OECD estimating a loss of over 500 million full-time jobs as well as an overall projected contraction in the economy by 4.9% in 2020. Bhutan, an import-driven country is no exception. However, most government and media reports hailed Bhutan's success in containing the pandemic through its strategic planning and effective implementation. The Health Ministry's statistics show a minimum number of COVID-19 confirmed cases (2,641) and a high recovery rate (99.39%) with a death rate of merely 0.11%. Due to the lack of robust empirical research, the impact on the agri-food value chain is ambiguous. Overall, considering the impact of COVID-19 in the Global South countries there is a need for a more resilient and responsive agri-food value chain to combat hunger and malnutrition.

Keywords: *COVID-19 Pandemic; Food Value Chain; Food Security; Global South; Lockdown*

1. Introduction

The coronavirus (COVID-19) is an ongoing global concern that has affected the safety and welfare of billions of individuals worldwide (WHO, 2020a). After the 1918 influenza virus (H1N1), 1957 influenza virus (H2N2), 1968 influenza virus (H3N2), and the 2009 Pandemic flu, COVID-19 is the 5th pandemic (H1N) (Liu, Kuo, & Shih, 2020). However, we know much less about the character of this virus and its effect, and we are yet to precisely assess the extent and severity of its impact on the health and wellbeing of people around the globe. According to the WHO (2020b), there have been about 263,563,622 confirmed cases globally and

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5,232,562 deaths as of 3 December 2021. Towards early 2020 when COVID-19 spread rapidly, many countries were forced to enforce public health emergencies. On March 11, 2020, the WHO acknowledged the rapid spread of the virus and alerted countries to take preparatory and appropriate response actions (WHO, 2020b).

The WHO response plan includes strict public health measures to contain the pandemic. These caused the temporary closure of institutions, schools, tourism, restaurants, and restrictions on social gatherings and travel (WHO, 2020a). As a result of the stringent health regulations and the varied responses across governments, the impact spilt over into a complex food crisis globally. Food value chains faced significant disruptions, and widespread hunger has been recorded in early 2020 (UN, 2020). According to Khorsandi (2020), the World Food Programme (WFP) predicted that the crisis would lead to an additional 130 million people facing acute hunger. Experts have affirmed the breakdown of food access for vulnerable communities and the disruption of the supply chain on a global scale (Moseley & Battersby, 2020; Power, Doherty, Pybus, & Pickett, 2020).

The Global South countries, in general, are referred to as underdeveloped or developing nations, and the UN (2020) forecast that many people in the Global South may bear the long-term effects of COVID-19. The pandemic endangers marginalized actors along the value chain, including marginalized women, physically challenged people, and youths. The effect size may vary depending on the locations, pandemic response policies, and virus infection rate. Due to the complex effect of the crisis, generalizing its overall impact on food security is challenging.

Clapp and Moseley (2020) explain that the general contours of these effects can be traced by assessing disrupted food supplies, reduced incomes, price hikes, and levels of food insecurity for many people. Thus, this paper collated and analyzed how the COVID-19 pandemic has impacted the agri-food value chain in the Global South and what policy intervention approaches could be drawn from this experience. The information and data presented are based on secondary sources. First, the assessment of likely implications for a trade route for food supply was carried out, followed by the impact on the input supply chain. Furthermore, this paper analyzed how labour supply was disrupted along the value chain, affecting both producers and workers. The analysis also includes how consumers are affected due to loss in income and increased food prices. Finally, the paper discusses the policy response to the COVID-19 pandemic and attempts to recommend relevant policy measures to build a more resilient food value chain in the Global South.

2. Materials and Method

This paper used a secondary research approach to collate and analyze the impact of COVID-19 on the agri-food value chain. The majority of the information is obtained from published peer-reviewed journals, research articles, and survey and newspaper reports. They were sourced from international journals such as *Agricultural Economics*, *Global Food Security*, and scientific databases like EBSCO host and Science Direct, including Google Scholar. Survey reports from the websites of the International Food Policy Research Institute (IFPRI), Food and Agriculture Organisation (FAO), World Trade Organisation (WTO), and Organisation for Economic Co-operation and Development (OECD) were referred. Country reports were also examined to understand and compare results. Some of the research papers that were not readily accessible were requested from the authors via emails.

2.1 Conceptual framework

To adequately capture the impact of the COVID-19 pandemic on the food value chain, the review is split into four segments: 1. trade route and processing, 2. input supply and services, 3. producers, and 4. consumers (Figure 1). When countries have declared a state of health emergency and lockdowns were enforced to curb the further spread of the virus, the immediate impact was observed on international trade routes and food processing industries. Therefore, firstly, the impact on the trade routes was reviewed as in how lockdown protocols affected transportation and food processing. Due to the closure and restriction in transportation and the resulting hoarding of food commodities, there was an uneven increase in food prices. So, the impact of food prices on producers and consumers along the value chain was assessed. In the second stage, the effect on input supply and services was analyzed, followed by the impact on the producers. Lastly, this study delves into how consumers, in general, are affected, and how COVID-19 has impacted food security.

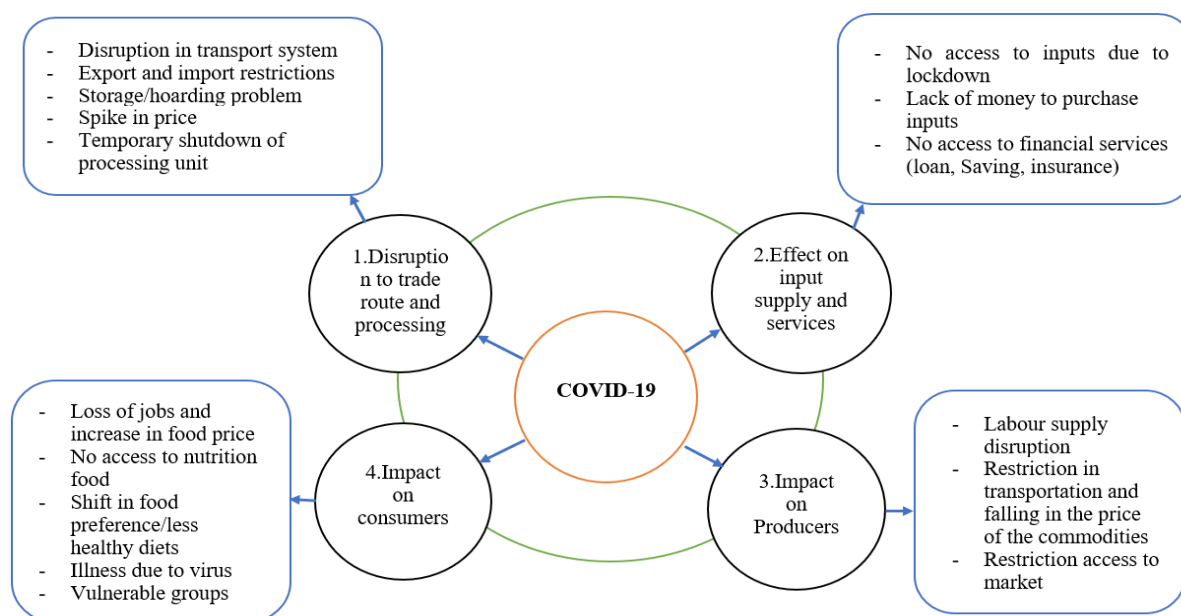


Figure 1: Conceptual framework for the impact of COVID-19 on the food value chain

3. Results and Discussion

3.1 Covid-19 effect on trade route and processing in Global South

COVID-19 crisis was not the first pandemic to have impacted the food value chain, particularly international trade. Several past pandemics and calamities have had major effects (Liu et al., 2020). According to Clapp and Moseley (2020), policy responses to past crises have somehow rendered countries' food systems vulnerable to Covid-19. Food policies have enabled food systems to be highly interconnected and economically efficient, yet largely exposed and highly vulnerable to such disruptions. It is estimated that about 80% of the world's population depends on food imports, and the expenditures on food imports in 2019 was three times the amount spent ten years ago (Economist, 2020). Nearly 20% of the dietary energy supply (DES) of a country's population comes from imported food (FAO et al., 2020). These figures suggest that many countries rely on both the export and import of significant quantities of food. The COVID-19 pandemic interrupted trade due to the closure of the international borders and restrictions on imports and exports. For example, Ukraine and Russia controlled the export of wheat and other cereal grains, which affected around 5% of global food calories (Laborde, 2020). In some countries, due to the shortage in the food supply, the ensuing demand spike led to an increase in the price of several food items. Further, the delay in transport and differences in the timing of COVID-19 lockdowns across different countries led to interruptions in food delivery as a direct result of missing intermediates (Bacchetta et al., 2021). According to

Laborde, Martin, and Vos (2020), the economic consequence in the United States, China, and Europe due to the pandemic has severely affected emerging countries through declines in trade and remittances, causing higher economic costs and hunger in these countries. Qualitative research in Latin America and the Caribbean shows that food loss and waste due to disruption in the transport system by COVID-19 was 49%, and an additional 18% through interruption in food trade (FAO & ECLAC, 2020). In the Bolivarian Republic of Venezuela, about 5 000 tonnes of vegetables that are shipped weekly remained in the fields due to lack of transport.

Several countries have imposed trade restrictions to secure food for their domestic consumers. Intuitively, the restrictions of export on staple foods by exporting countries will cause world prices to rise.

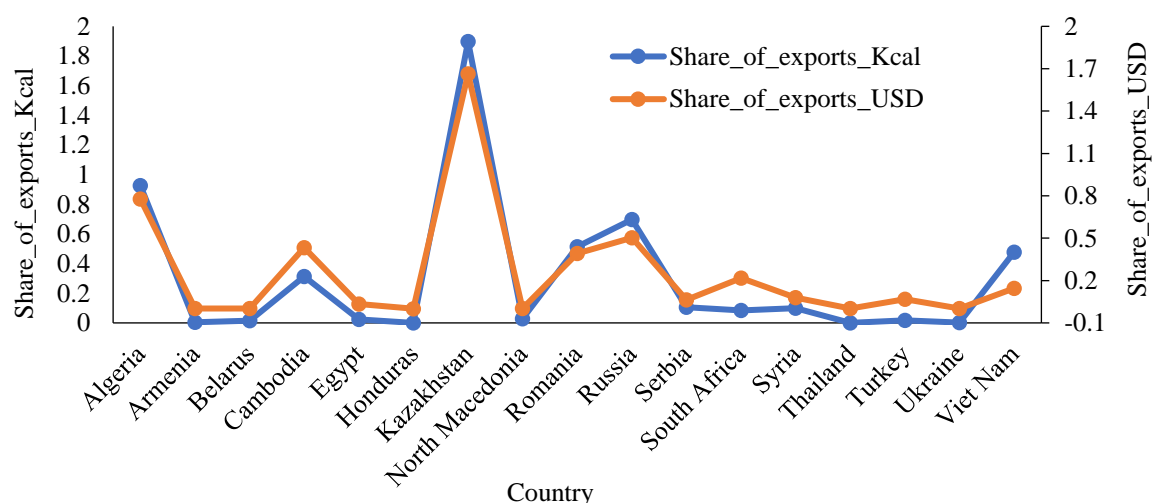


Figure 2. Share of restricted product in the country food exports measured in Kcal and USD.
Source: Adapted from Laborde et al. (2020).

However, the global markets for staple crops remained good as they were well-stocked before the pandemic (UN, 2020a) except for the increase in market prices for wheat and rice. The world market prices for rice increased by 20% between January and May 2020 (Aday & Aday, 2020). This was because of the export restrictions imposed by major exporting countries and panic buying (Aday & Aday, 2020). According to IFPRI (2020), about 19 countries took measures to restrict exports of 27 food products due to the COVID-19 outbreak in the beginning. These restrictions adversely affected the food calories of the importing countries like Tajikistan, Uzbekistan, Afghanistan, and Azerbaijan by 79%, 70%, 61%, and 54%, respectively (IFPRI, 2020). Kyrgyzstan was also affected by the ban on the export of wheat and wheat flour by Kazakhstan.

The COVID-19 pandemic has a heterogeneous effect on food prices. In some countries, the disruptions in international trade triggered an increase in local prices, limiting the affordability of foods (Devereux, Béné, & Hoddinott, 2020). For example, Hirvonen, Abate, and de Brauw (2020) found that the pandemic led to significant increases in vegetable prices in Ethiopia, thereby, impacting the livelihoods and the diets of urban households. According to Espitia, Rocha, and Ruta (2020), countries that depend on imports experienced the highest rise in food prices. For instance, between February 2020 to July 2020, countries like Guyana, Venezuela, and Zambia saw a considerable increase (29%, 47%, and 49.8%, respectively) in local food prices, compared to developed nations such as Switzerland, the United Kingdom, and Canada that experienced stable or only moderate increases (Figure 2). In contrast, global cereal stocks were high, and generally, prices decreased at the start of the pandemic (FAO, 2020). Similarly, meat, dairy, sugar, and cooking oil prices also decreased towards the end of August 2020 (FAO, 2020).

The COVID-19 crisis has affected food security for households in Papua New Guinea both through disruptions in trade and an increase in the price of food commodities (Schmidt, Dorosh, & Gilbert, 2021). Since Papua New Guinea is a rice importing country with as much as 95% of its rice coming from imports, trade restrictions by major rice exporters led to a surge in the price in the domestic market. Between December 2019 and September 2020, Thailand and Vietnamese rice prices have increased by 25% on average (Schmidt et al., 2021). Schmidt et al. (2020) estimate that the rise in the rice price might lead to a fall in rice consumption by 17% for the poor. On the other hand, when restrictive export policies were applied, local producers could not sell, leading to wasting as well as economic losses (Arianina & Morris, 2020).

In Ghana, the demand for tilapia fish has drastically reduced due to closures in the tourism and hospitality industries. Most fish farmers had difficulty selling their fish products because of low demand and higher transportation costs during the COVID-19 pandemic. The crisis has diminished incomes for most actors along the aquaculture value chain and this could also affect future production (Ragasa, Amewu, & Asante, 2021). Likewise, the horticulture produces in Kenya too suffered. Kenya export about 80% of its horticulture produces to the European Union (Roussi, 2020). Due to the pandemic regulations, export contracts were cancelled, leaving products on the farm to rot (FAO, 2020a; Roussi, 2020).

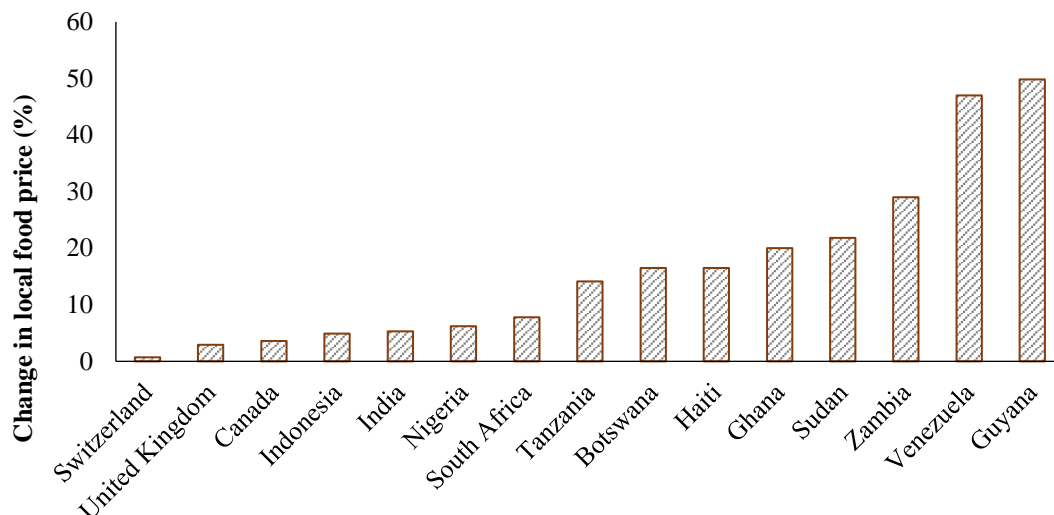


Figure 3. Variation in local food prices in the wake of COVID-19 (Feb. 14, 2020, to July 09, 2020) in some developed and Global South countries. *Source: Adapted from Clapp and Moseley (2020)*

Similarly, in East Africa and India, most horticulture produces rotted on the way because drivers found themselves having to spend days at border crossings for COVID screening, while the price in the city markets soared. In May 2020, exporters of mangoes from India to US markets faced increased freight costs of about 300% (Parkin and Rodrigues 2020), rendering such small businesses altogether unprofitable. Mango exports from Guatemala to the US too suffered shipment cancellations (FAO & ECLAC, 2020). In India, the nationwide lockdown forced the closure of feed mills, hatcheries, and processing plants. A decrease in demand from Europe and the United States reduced exports of frozen shrimp, which account for 70% of Indian seafood exports (Parkin & Rodrigues 2020). Similar impacts have been reported in Myanmar and Bangladesh (Mamun, Shieh, & Belton, 2020). The pandemic has disrupted international trade, leading to food crises affecting the livelihoods of a large proportion of humanity, especially the Global South countries.

The disruption in the supply chain has also affected the processing sector. Processing units were temporarily shut down due to either the outbreak of the disease or as precautionary measures. In Ghana, for example, about 534 employees contacted the virus at a fish-processing factory (Aday and Aday, 2020). In general, the UN (2020) predicted that the jobs in food processing, food services, and distribution would struggle by 60 % (around 650 million jobs) due to the pandemic. These include small-scale producers, youth, women, seasonal workers, migrants, and distributors, including informal food sellers (UN, 2020).

3.2 Covid-19 impact on input and services in the food value chain

Agricultural activities are season-bound with proper and largely fixed schedules. Since all processes and stages in an agri-food value chain are firmly connected, a small delay or disruption in one stage can affect production in other stages, ultimately affecting the whole value chain. A study carried out by Love et al. (2021) and Ragasa et al. (2021) found that most fish farmers in China, Ecuador, Norway, and Ghana were affected by disruptions in input supplies. Studies show that about 54% of fish farmers experienced difficulties accessing inputs, mainly fish feeds. For instance, fish farming in China saw a decrease of 40% - 50% in early 2020 as compared to 2019 (Clavelle, 2020). Shortage of farm inputs and a surge in input prices were also reported in many countries due to border closings. Ethiopia, Myanmar, Latin America, and the Caribbean experienced a shortage of farm inputs and increased prices for vegetable production. The price of fungicides, insecticides, herbicides, fertilizers, and improved seeds increased (Diao et al., 2020; FAO & ECLAC, 2020; Hirvonen, Minten, Mohammed, & Tamru, 2021). Pesticides production in China declined sharply due to lockdown measures affecting the producers (OECD, 2020). In West Africa, the Mali government has rolled back subsidies on fertilizers, further raising the cost of production (Diarra, 2020).

In Myanmar, some rural communities are at risk of losing their land because they used their landholdings as collateral for loans. Due to Covid-19-enforced lockdowns, economic activities took a backseat, leaving communities with little means to repay loans (Oxfam, 2020). An increase in the price of agricultural inputs, including seeds and fertilizers, creates challenges for farmers. Farmers are not able to buy inputs due to a loss in income. According to Oxfam (2020), closures of Myanmar's borders with China have hindered the supply of raw materials from the beginning of 2020, even before the virus was reported in Myanmar. Another study in Myanmar found that about two-thirds of the financial services in communities were disrupted, and banks were closed for several months. There were shortages of money in the ATMs, and further, people faced challenges in meeting credit officials from banks (MAPSA, 2021). The unavailability of such facilities could have largely hampered the farmers in Myanmar from purchasing agriculture inputs. Therefore, COVID-19 impact on the input and services could potentially disrupt agricultural production over the following season and further into the future.

3.3 Impact on the producers

The COVID-19 pandemic regulations have hampered production capacities, mainly through the disruption of labour supply. Farm production in developing countries is generally labour-intensive with a string of processes such as ploughing, planting, harvesting, post-harvest

handling, and transportation that usually entails workers working in close coordination. Prohibition of mass gatherings as part of the COVID-19 safety protocol directly hindered food production. Amare, Abay, Tiberti, and Chamberlin (2021) reported that Nigeria saw a significant reduction in labour market activities. The study observed a positive relationship between the number of confirmed cases and the reduction in major economic activities. About 72 % of households reported a decline in farming income, while 84 % reported a reduction in income from non-farm businesses. Poor households living in remote areas and with high rates of infection experienced deterioration in food security (Amare et al., 2021). On the other hand, urban households did not suffer much from food insecurity, although economic activities were significantly reduced. This could be most likely attributed to better underlying food security and improved market access in urban areas.

Studies carried out in India, Thailand, Ecuador, and Ghana on seafood companies found that most of the employees lost their jobs, exposing them to substantial food security risks (Havice, Marschke, & Vandergeest, 2020; Marschke et al., 2021; Reardon & Swinnen, 2020). According to Wang et al. (2021), the restrictions on labour mobility were reported as the primary cause of substantial income declines in rural livelihoods in Hubei Province, China, the initial epicentre of the pandemic. The findings confirm that about 74% of respondents reported that villagers had stopped working due to closures of workplaces. These figures rise further if rural workers who are unable to reach workplaces due to travel restrictions are also included. Consequently, most villagers (92%) had to forego substantial income.

The effect of COVID-19 on production companies varies due to the differences in their economies of scale. Van Hoyweghen et al. (2021) found that large fresh fruits and vegetable companies in Senegal were barely affected compared to the smaller firms. These large firms are vertically integrated into the value chain as well as export-oriented. They managed to limit labour supply disruptions during the COVID-19 outbreak by supplying their workers with health-protective gears, expanding the number of shifts, and providing safer transport facilities. In contrast, small domestic companies showed little capacity to adjust and respond to the shock. They were severely affected by a lack of access to credits and cold chain facilities (Van Hoyweghen et al., 2021). At the same time, Minten, Mohammed, and Tamru (2020) found that small vegetable farms in Ethiopia are less affected than medium-sized farms by the pandemic-induced labour disruptions because smaller farms relied less on hired labour. This finding is consistent with that of Reardon and Swinnen (2020) who report that labour disruption due to

COVID-19 restrictions shows an inverted U-shaped relationship with economy of scale; that is, medium-sized firms relatively show high dependence on hired labour.

Smallholder farmers were adversely impacted due to restrictions in transportation and a slump in the selling price. For instance, cocoa prices in Ghana, Côte d'Ivoire, and Nigeria declined by 25% between the end of February and mid-July 2020 (Clapp & Moseley, 2020). Interestingly, it is reported that the pandemic did not severely affect some rural agriculture production areas because they were geographically located far away from urban densities (Moseley & Battersby, 2020), and were mostly insulated from rising COVID-19 cases in the urban areas.

3.4 COVID-19 impact on consumers

During pandemics, the cost of food becomes more relevant to consumers. The situation turns worst when the prices of the essential food items increase and their income shrink. However, Clapp and Moseley (2020) observed that the current COVID-19 crisis did not cause a dramatic surge in food prices in the global market but instead had an unforeseen impact on food systems that are often difficult to disengage. At first, food supplies were disrupted due to lockdown measures, and people working in the food system got infected with the virus. This was followed by massive job loss caused by the pandemic, leading to increased hunger (Clapp and Moseley, 2020). Several combining factors have been attributed to unequal food prices at local and global scales that have worsened hunger in many developing countries. People's ability to buy food was hugely affected (Clapp and Moseley, 2020). The International Monetary Fund (IMF) projected a 4.9% overall economic contraction by the end of 2020 (OECD, 2020), and developing economies are expected to fall by around 3% on average (IMF, 2020). The global economic contraction is primarily the result of jobs lost due to lockdown measures during the pandemic. According to the International Labour Organization (ILO, 2020), more than 500 million full-time jobs have been lost since the start of the pandemic. The loss of jobs and income is bound to severely affect food security because of the direct implications on their ability to purchase food.

A survey in Myanmar between January and June 2020 (n =1,072) showed that 51% of respondents lost jobs in various livelihood activities. People without land were mostly affected more by the crisis, mainly because of loss in farm incomes and the absence of non-farm employment (Ragasa et al., 2021). The authors also found that women and men in these landless households were equally affected by lower wages and lack of farm work during COVID-19. The loss of jobs and increase in the food prices in the market put people in

worsening situations. For instance, FAO estimated that undernourishment overall could rise between 83 and 132 million (FAO et al. 2020) with a drop in income. According to the UN (2020), about 45 million people became acutely food insecure, of which the majority (33 million) are in South and Southeast Asia, followed by sub-Saharan Africa South (12 million).

Dietary preferences are also influenced by food shortages, increases in food prices, and lack of money. COVID-19 disrupted markets, mainly the perishable food commodities compared to staple foods. The disruptions in perishable food items supply aggravated income-related issues, causing poor households to shift their consumption and reduce dietary diversity (Clapp and Moseley, 2020). This is consistent with the study conducted in Ethiopia, India, and Guatemalan (Ceballos, Hernandez, & Paz, 2021; Harris et al., 2020; Hirvonen et al., 2021) that discounts in household food consumption primarily reduced purchases of nutritious foods such as fruit, meat, eggs, and dairy. Such poor dietary patterns may potentially affect human health and development, especially the growing children and women. The ability to cope with income shock due to the COVID-19 pandemic varies among low-income households. Hirvonen et al. (2021) found that a rundown of savings was the first recourse as a coping strategy in Ethiopia, but fewer households possessed enough savings to meet their food needs for a month or more.

Aday and Aday (2020) found that the closure of the hotels and open area services for eating affected the purchasing habits and shifted the demand for food from retail and supermarkets. He claims that almost 100% of the customers purchase food from supermarkets during the COVID-19 pandemic. They buy food items that can be stored for an extended period and stock them at home due to misinformation. Food stocking led to increasing prices and a shortage of stocks in supermarkets, affecting most consumers in developing countries (Aday and Aday, 2020).

In many parts of Asia, Sub-Saharan Africa, and Latin America, most workers are engaged under informal arrangements, where their rights are unclear (FAO, 2020b). These workers have suffered from COVID-19 infections due to a lack of clarity on their rights and limited access to healthcare and social support services at their workplaces (FAO, 2020b). Such unfavourable circumstances could increase the extent of malnutrition of breadwinners and their dependents in a household. Another study in China found that labour movement restrictions caused a decrease in rural income, and many people were separated from their work in urban areas (Swinnen & Vos, 2021). Similarly, Guatemala, India, Myanmar, and Nepal reported a significant reduction in remittance incomes (Ceballos et al., 2021; Diao et al., 2020; Nicola et

al., 2020). This decline in remittance might have exposed those households more vulnerable to food insecurity and reduced diet due to lack of money. The diets of the school students from low-income family backgrounds were also affected by the pandemic. According to the survey, ten million Latin American and Caribbean students were put at risk because of school closure, whose almost only food source was school meals (FAO & ECLAC, 2020). Introspectively, economically vulnerable food consumers are the most affected group in the food value chain.

3.5 The case of Bhutan – a summary

Bhutan - a small mountainous landlocked country seems to be coming out of the crisis in a different way. It may appear to be an outlier in many ways, such as its geographical location, governance, economy, and social-cultural attributes. Although located in between two global giants - China and India, where COVID-19 cases are recorded the highest in the region, Bhutan wisely planned and implemented its strategies to safeguard her countrymen and everyone within from the pandemic. At the time of preparing this manuscript, Bhutan recorded only 2,641 COVID-19 confirmed cases with a high recovery rate (99.39%) and the lowest death rate of 0.11% in the world, clearly indicating the achievements Bhutan has made in successfully containing the pandemic (MoH, 2021).

However, due to the lack of empirical studies, the impact on the agri-food value chain is ambiguous. While detailed and proper research in the coming years will significantly contribute to our understanding of the impacts of the pandemic, a cursory look at the developments in the aftermath of the pandemic does indicate some form of minor disruption in the country's food system as a result of the restrictions imposed to contain the pandemic. Supplies of food commodities were affected by panic buying and hoarding (Yuden, 2020a) while the price of imported fruits at the country's central market nearly doubled. The pandemic also exposed the country's lack of a reliable and efficient marketing and distribution system when as the first lockdown came into effect in August 2020, both the government and the public were caught unprepared (Yuden, 2020b). Collection and distribution of fresh food commodities like vegetables amongst the consumers suffered. Although exports did not suffer altogether, border restrictions and associated COVID-19 measures that neighbouring India enforced slowed down Bhutanese exports. Perishable commodities like cole crops that make up the major export volume in summer for farmers were affected when regulated markets in West Bengal closed due to the pandemic (Giri, 2020).

On the flip side, the pandemic provided an opportunity to raise domestic food production. A

few reported incidences of disturbance in farm inputs supply did not have major adverse effects on production, and the nationwide lockdown probably did not cause serious unsettling disruption in farm labour set-up. On the contrary, the 2020 production figure for most agricultural commodities in Bhutan shows an increase over the previous year's figures (RSD, 2021). This can be largely attributed to the many measures the government put in place to offset the effects of the pandemic – of relevance is the Economic Contingency Plan (ECP) prepared and launched in May 2020 (Pem, 2020). The ECP put in a series of coping measures in the three important sectors of labour, tourism and agriculture. The first series of the ECP for agriculture with an outlay of Nu. 200 million targeted boosting the production of cereals, lentils, oilseeds, and vegetables through a range of support across the value chain that include technology, marketing, value-addition, and year-round accessibility. As of October 2021, the intervention directly helped produce a little over 30,974 Mt of cereals, oilseeds, grain legumes and priority vegetables such as chilli, onion, and tomatoes. Farmers sold around half of the produce which generated total revenue of Nu. 385.78 million (DoA, 2021).

3.6 Policy discussion

The current pandemic has forced policymakers and analysts to debate the need for interventions that help restructure food value chains to mitigate stress and shocks on essential food trade and improve the resilience of value chains. For example, certain factions in the US (Lighthizer, 2020) declare an end to what they claim as the era of offshoring US jobs while some call for larger autonomy in the US food value chain system, asserting that principles of food autonomy and support for local markets should gain centre stage. On the contrary, some economists are not convinced about the need for a restructuring of value chains as the best policy response. Freund (2020) and Miroudot (2020) argue that taking supply chains back home would challenge economic wisdom and that self-sufficiency-centred production will not benefit global value chains. Since most of the Global South are import-driven countries, the strategy of restructuring value chains to limit dependency on imports could further deteriorate the existing hunger and malnutrition status.

The effect of the COVID-19 pandemic on the food value chain varies across places due to its infection rate and the type of response measures adopted. For instance, poor households in urban areas experienced more challenges to food insecurity due to more infection rates and lockdown. Similarly, small food producers in remote areas and infection zones are more vulnerable to food insecurity because of lockdowns. At the individual or community level,

people strived to string together their different mechanisms to cope with the situation. A study in Myanmar showed that people resorted to borrowing from friends or selling their household assets such as gold, land, or jewellery (Ragasa et al., 2021). However, these alternatives typically were not sufficient to prevent increased food insecurity for extended periods.

Political governments, global leaders, and various international organizations can play a significant role in coping mechanisms against this pandemic. On the international trade front, world leaders could come together and facilitate trade routes to remain open for essential food transport following hygienic practices. Stringent regulations like lockdowns in the early phase of the pandemic significantly affected the food value chain. Countries must find ways to lift export bans and import taxes to make food supplies available and affordable. Yet, such measures including working from home were the only effective response to temper the overall impact on the health and wellbeing of the people.

On the consumer's side, governments can link producers and consumers without intermediaries during such pandemics. Furthermore, governments could introduce support systems like buying back schemes. For example, Ceballos et al. (2021) found that wheat farmers in India were guaranteed ready markets through buying-back system at fixed prices. This has averted wheat price declines and offered income protection to wheat growers, and made wheat available to consumers.

While COVID-19 has revealed food value chain vulnerabilities, it has also prompted new ideas and opportunities in using technology and organizing food value chains. In a major crisis, value chain experts tend to reinvent business procedures (Reardon & Swinnen, 2020), and likewise, the COVID-19 pandemic has triggered a rise in the usage of digital platforms for organizing food delivery and food services. Although digital platforms have been in use, they were primarily limited to developed countries. The pandemic brought digital technology to the fore, thereby, reinforcing its importance and role, and its subsequent diffusion in developing countries became faster (Reardon & Swinnen, 2020). Businesses found themselves increasingly shifting to e-commerce. Government and policymakers should hence emphasize the extension of modern technologies to facilitate the food value chain to preempt such eventualities in times of crisis.

The pandemic also provided opportunities for businesses all over in building reliable and long-term workforce through skilling initiatives for local employees to prevent meltdowns as a direct consequence of relying heavily on foreign labour. Smallholder farmers have faced difficulties

in exporting their produces to the market due to travel restrictions. Building agricultural production collection centres or improved storage structures in the communities can facilitate marketing and minimize food waste. Governments could also support interest-free loans to needy farmers so that production could resume and ensure that the food supply chain remains uninterrupted. Further, the facilitation of timely support in input supply is essential so that the food production in the coming season is not affected. Establishing proper biosecurity is also seen as one of the necessary arrangements to ensure health and food safety throughout the value chain.

4. Conclusion

The ongoing COVID-19 pandemic has impacted the lives of billions of people throughout the world, putting all critical value chain agents at risk. Besides food producers and consumers, migrant farm labour and food processing workers were also affected, leading to food supply disruptions. The global economic recession as an immediate fallout from the pandemic resulted in massive job losses and worsened access to food due to increasing food prices. Export restrictions and increases in freight costs gave rise to highly uneven food prices, thus highlighting the risks in import-dependent Global South countries. On the other hand, smaller farmers in rural areas could not sell their produce due to restrictions in movement, resulting in their produces getting damaged in the field and storage. Bhutan, an import-driven country is no exception to this. Although national newspaper and country reports mentioned successful stories in containing the virus, the implication on its food value chain needs further empirical research and analysis for future policy intervention.

Overall, producing excess food for global value chains does not promise markets for poor producers or access to food for those who have their incomes compromised. Instead, more diverse production and enhanced trading platforms need to be prioritized. Global rules of trade may require a relook to assure affordable food for all in such times of distress, and move away from restrictive policies like export bans. Furthermore, smallholder farmers and vulnerable workers should be supported financially. The use of modern technology, e-commerce, artificial intelligence, and robotics could be explored to complement human labour to reduce disease spread and ensure uninterrupted food distribution during such crises. Considering the extent of food import dependence in many Global South countries, keeping the trade routes open is very important to reduce hunger and malnutrition.

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