



Research Article

Agribusiness Prospects and Challenges in Developing Countries: Contribution to Overcoming World Food Crisis in the Post-pandemic Period

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Abstract | In Bangladesh, agro-business is considered a “thrust” sector but remains a largely untapped area that has not developed properly, considering the country's prospects in this particular field. With few exceptions, the agro-industrial sector of Bangladesh remains underdeveloped, and mainly without significant institutional, technical and financial support. Still, the size of the agribusiness sector in the domestic economy is relatively small, and the country's total exports are also negligible. This study aims to determine the prospects and challenges of agribusiness in developing countries considering Bangladesh as an example, and investigate the opportunities. With the country's massive population, agribusiness would grow quickly. Similar factors would increase the demand for food and agricultural goods globally, expanding the country's export prospects. There are several chances for growth in this industry for domestic and international markets. Intermediary-based poor marketing channels, inadequate finance facilities, a lack of infrastructure, and trained personnel are the significant constraints found in the current study. These constraints can be resolved by creating a new marketing channel, enhancing export, minimizing on-season product wastage, processing food and encouraging private investment in the industry. This article recommends a new marketing chain that combines several alternative methods such as food processing, exporting to other countries, and involvement of GOs-NGOs and research institutes with the overall production system in terms of training, information transformation, and market research. The pandemic disproportionately affected various sectors of the Bangladesh economy. In this dark moment, agribusiness has shown a little light. The Coronavirus has created many opportunities in this sector that can help the economy of Bangladesh in the future.

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Introduction

Agribusiness in Bangladesh is still mostly undeveloped as a source of economic diversification (Rahman, 2021). Though it is the country's most important sector, it has not progressed appropriately. The economy relies heavily on agriculture, even though the sector's GDP percentage has continuously declined. However, this is to be anticipated in a developing country (Seraj, 2022). Despite this, almost three-quarters of Bangladesh's population lives in rural areas. The majority of these rural residents are involved in agriculture, either directly or indirectly (World Bank Group, 2016; Asian Development Bank, 2023). Agriculture makes about 11.50 % to the country's GDP in 2021-22 (Bangladesh Economic Review, 2022). The agriculture sector alone employs over half of the country's workforce (FAO, 2022). There are roughly 150 million large, medium, and small agro-based firms in Bangladesh (MOA, 2012). Some companies like Pran Group (Pranfoods, 2023), Square Food and Beverage Ltd. (Genius, 2023), Ispahani Agro Ltd. (Ispahanitea, 2023) etc. export the country's agricultural products to foreign markets. The government has provided specific direct and indirect incentives to encourage the growth of agribusiness in the country (Basic Agriculture Study, 2022). However, neither the public nor private sectors have mentioned large amounts of investment. Cold storage facilities that support the supply chain, particularly the production of fresh produce for domestic and export markets, the reduction of chemical fertilizer use, seed cultivation, eco-friendly jute production supported by jute technology development institutes, shrimp farming, 'Halal' foods, milk and dairy products, and high-value-added foods for export, such as herbs, spices, nuts, and pulses, are compatible for global agribusiness (Rahman, 2021).

The government of Bangladesh has been proactive in promoting the development of the agricultural industry by enhancing crop productivity and growing non-crop agriculture production. To accomplish this, it extends credit and introduces modern agricultural technologies. Agribusiness can provide a livelihood for a significant portion of the rural population. Bangladesh's economy relies heavily on demand-driven agriculture operations. The growth of agribusiness is much higher than the growth of agricultural production but it is insufficient to generate the employment and income growth required to

make an important contribution to poverty reduction (Sarma and Raha, 2017) and the overall growth of the rural economy. In addition to the circumstances mentioned above, the unprecedented stressors on the supply chains of food products brought on by the COVID-19 pandemic have resulted in significant changes in demand and consumption as well as significant difficulties for agricultural workers and production, processing, shipping, and logistics (Koen *et al.*, 2020; Hatab *et al.*, 2021; Yasmeen and Chaudhry 2022).

Many researchers have conducted research on different aspects of agro-based industry, agribusiness, and policies for development of the sector. According to (Owoade, 2017) agropreneurs require a mentoring, handholding, and bridging support system to help them transition into higher-value food production using contemporary agriculture and agribusiness technologies and the article argued that improving food security and sustainability requires assisting existing rural small-holder farmers and attracting new, progressive growers. Rahman (2017) presents a brief overview of the agriculture sector in Bangladesh. The purpose of this research is to use secondary data to describe the importance of the agriculture economy of Bangladesh, with an emphasis on obstacles and challenges. Bangladesh's most significant source of agricultural land loss is the rise of rural settlements, followed by urbanization and industry. To ensure food security for the people of Bangladesh which is a serious problem, actions should be taken to prevent agricultural land from being converted to non-agricultural uses (Rahman, 2017). According to (Quddus, 2009) the agricultural industry produces a substantial amount of national income, and the sectors of food processing, tanning and leather finishing, leather industry, sawmills, and wooden furniture have the best prospects for job creation. The central sector of the economy of Bangladesh was food processing, seafood processing, tanning and leather finishing, leather fabrication, cattle, and poultry. Sarma (2014) conducted a study to determine the tactics used in improving beef cattle agribusiness in the Pabna and Sirajganj districts of Bangladesh. The findings showed that the beef cattle sub-sector of agribusiness provides a chance to maximize its strengths while minimizing its deficiencies. In their analysis, (Ali and Islam, 2014) stated that Bangladesh could not achieve long-term economic growth without a strong agriculture sector and a thriving agribusiness sub-sector. This study was performed to determine the potentiality of agro-

based business, elucidate the difficulties faced by entrepreneurs and propose some recommendations on policy formulations for developing agribusiness enterprises in Bangladesh.

Materials and Methods

The authors carried out a survey on September 20, 2022 to collect primary data. Secondary data was collected from various newspapers, journals, reports, and websites. The information gathered is probably going to be utilized to examine current status of agricultural industry of Bangladesh particularly the dynamics of pricing among various market participants. The article provides information about production of several types of crops, animals, and fisheries goods of Bangladesh. The purpose of comparative analysis is to illustrate shifts and patterns in agricultural output. The price variations for numerous agricultural products among various market agents are examined by the writers. MS Excel 2016 is utilized to analyze the data that has been gathered. The authors suggest a new marketing chain for the growth of agriculture in Bangladesh and offer recommendations based on their findings.

Results and Discussion

Current agribusiness situation in Bangladesh

Agribusiness can cover a wide range of subsectors and new products within agriculture and agro-based processing plants, as well as activities and services with increasing value-added. The data gathered and provided for this study was used to analyze the state of the agricultural sector. Various authors have demonstrated that the agricultural industry has progressed over the year, yet it still trails behind its potential. This is true even though the Green Revolution began in the 1960s to get the most out of agricultural production, and the government has worked since the Bangladesh Agricultural Development Corporation (BADC), the Krishi (Agricultural) Bank, rural extension services, and agricultural subsidies, among many other things, to promote and help the sector (Ali and Islam, 2014). However, the development of the agriculture sector has lagged far behind expectations and, undoubtedly, its capabilities. Deb and Zaman (2007) concluded that Bangladesh's agro-related production had expanded significantly over the past 35 years after conducting a thorough analysis of the country's agribusiness.

Crop, livestock, and fishery production have all risen dramatically. The amount of paddy produced in Bangladesh in 2021 was 56.9 million tons. From 15.1 million metric tons in 1972 to 56.9 million tons in 2021, Bangladesh's production of rice and paddy expanded at an average yearly rate of 2.89 percent (Knoema, 2023). The production of numerous other crops, including potatoes, corn, fruit and vegetables, and other activities with value addition, has also increased. However, they indicate that wheat and sugarcane production have fallen, while the jute cultivation area has reduced, despite production increasing somewhat due to greater yield. Bangladesh harvests 0.08 million tons locally and around 1.3 million tons' sugar import mostly from India (Relief, 2012). According to (Zhu and Sur, 2008) food demand in Bangladesh and worldwide is quickly changing. Due to economic expansion, growing wages, and urbanization, demand is shifting away from traditional staples and toward high-value food products, including fruits and veggies, seasonings, seafood, and livestock products, which require processing before going to market. Furthermore, milk production is around five and fish production is approximately 2.9 times higher than 1972/73. In 2004/05, shrimp production reached 110 million tons. Bangladesh's agricultural production system has changed from being a system centered on subsistence to one driven by commerce and extremely responsive in pricing, policy, and freer trade. About 90 different types of vegetables are farmed in Bangladesh (BOI, 2010). However, despite the abundance of land, there are significant gaps in local materials and an underutilization of the nation's agricultural potential. The BOI (Board of Investment) asserts that these gaps offer several opportunities for investors wishing to increase and process agro-based products to satisfy rapidly increasing domestic demand and exports. Here are some examples of potential investments: Building cold storage facilities to support all phases of its supply line, developing processing plants for both domestic and global markets, increasing fertilizer output, expanding shrimp production, increasing milk and milk products, and producing high-value export goods like pulses, herbal products, and seasonings are just a few examples (BOI, 2010). Talukder (2013) say that all types of rural families saw a medium to high rise in real earnings, but non-farm households saw a bigger rise than farm households because customer prices went down significantly. According to a World Bank study, 35 to 50% of rural income in developing nations comes from non-farm activities, and for

the landless and very poor, sustainable household income gains are linked to non-farm salaries. Families depends on only farming are poorest (Independent, 2016). Farm households benefit from the increased output but lose money as producer prices fall. The two opposing pressures of increasing productivity and lower product prices affect each other's benefits by affecting farm household income growth. Medium and large farmers benefit the most from an increase in real income, (marginal farmers who cultivate 0.5 to 1.49 acres, small farmers who cultivate 1.50 to 2.49 acres, medium farmers who cultivate 2.5 to 7.49 acres, and large farmers who cultivate over 7.5 acres land.) while small farmers benefit the least (MOA, 2012).

This indicates that wealthy families saw a much greater increase in real earnings than low-income families, which has a negative impact on the distribution of income and widens the gap between wealthy and less well-off families. The industry faces structural issues notwithstanding its modest starting point. Strikes, like *hartals* and road blockades, are common in business, and they exacerbate the logistical constraints of food movement within the country, hurting farmers the most. The poultry business suffered BDT 3.8 billion in losses from October to December 2013, resulting in the closure of 30% of farms. In the long run, poultry and livestock subsectors have much more potential for development and expansion (Ali and Islam, 2014). The agriculture sector of Bangladesh involves nearly half of the working population and accounts for only 14.74 percent of the country's GDP; there is a clear necessity to increase operational proficiency (Bangladesh Economic Review, 2022; Seraj, 2022). Growing economic conditions and rising disposable incomes will increase demand for meat. Effective

disease management is also expected to aid the sector's comeback. One significant aspect to highlight is Bangladesh's gradual entry into the international agribusiness trade. For instance, Bangladesh is currently exporting a variety of semi-processed and processed agricultural products to Europe, the Middle East, Asia, and North America. It includes frozen vegetables, fish, and fish products (Munna, 2016). This procedure offers new opportunities for private sector involvement in high-value agricultural crops and seed production (FAO, 2017).

Challenges of agribusiness inception and continuation in Bangladesh

The agricultural sector of Bangladesh is highly disregarded field in the country. It was not as diversified as the prospects of this particular area. Three-fourths of the whole population of Bangladesh resides in rural areas, and the majority of rural in habitants are involved directly or indirectly with large areas of the agricultural economy. The existing agro-business in Bangladesh is based on intermediaries, also known as middlemen or agents (Hossain and Hossain, 2013). In the current system, intermediaries are highly favored. Because of the syndicate of intermediaries, producers are deprived of reasonable prices, and consumers have to buy their products at high prices. For an effective and sustainable supply chain, intermediaries are very vital. However, strict oversight by the authorities should be in place to outlaw the unethical practices of market agents. For this current study, researchers conducted a survey that elucidates the price differences among the market agents and the price differences between retailers and producers, which have increased a lot during or after the COVID-19 Pandemic (Table 1). In the

Table 1: *Change of price at different market agents (Data collected by researcher's own survey on 20th September 2022).*

Market agents/ Price of products	Producer (P)	Bepari/ Suppliers (B)	Aratdar/ Brokers (A)	Retailer (R)	% Of differences between R and P
Potato (<i>Solanum tuberosum</i>)	10	13	15	22	120
Chili (<i>Capsicum frutescens</i>)	25	30	34	40	60
Pointed gourd (<i>Trichosanthes dioica</i>)	12.5	14	20	23	84
Brinjal (<i>Solanum melongena</i>)	20	23	28	41	105
Cauliflower (Summer) (<i>Brassica oleracea</i> var. <i>botrytis</i>)	57	70	83	120	110.5
Chicken (Broiler) (<i>Gallus gallus domesticus</i>)	100	108	120	140	40
Chicken (Sonali) (<i>Gallus gallus domesticus</i>)	155	170	200	220	41
Rohu (<i>Labeo rohita</i>)	225	230	258	280	24.44
Katla (<i>Labeo catla</i>)	196	210	233	270	37.77
Mrigel (<i>Cirrhinus cirrhosus</i>)	145.5	150	165	185	27.14

current traditional market system, infrastructure transport facilities, lack of skilled human resources, price balance, storage and processing facilities, absence of reliable information sources, financial incapability, etc., are the main constraints. The government must use greater caution in making the policy to overcome the impacts of the post-Covid-19 situation (Golam, 2021). The fish market in Bangladesh is mainly middleman dependent (Ahsan, 2011). The producer does not set the price of the fish. The price of fisheries commodities is determined by an open auction. As a result, the middleman deprives the fishers of their fair value through syndicates (Alam *et al.*, 2010).

There is mango, jackfruit, litchi, pineapple, guava, lemon, banana, ceruse, pumelo, etc. orchards on thousands of acres of hilly areas of the hill tract of Bangladesh. Nearly eight thousand acres of regional land were planted with fruit trees in 2020-21. About 38 thousand small and large-scale entrepreneurs are farming 44 different fruits in Rangamati, Bandarban, and Khagrachhari, including mango, banana, jackfruit, papaya, pineapple, and oranges (Chakma *et al.*, 2022). The fruits begin to ripen together in different gardens of the hills. It is challenging to collect ripe fruits; many times, these fruits rot in the trees. If these fruits are adequately harvested, they could be used throughout the year. However, due to a lack of cold storage and fruit processing facilities, raw fruits rot within a short period of time. Poor farmers give up crops at low prices for fear of decay (Ahmed and Ahmed, 2013). Farmers from remote hilly areas do not get a fair price for these crops by bringing them to the market with difficulty (Rasul and Thapa, 2006). There is also the harassment of extortionists. Extortionists is done on road or market in the name of various organization during transportation. Brokers and peddlers must be clutched when bringing their products to the market. Crop prices fluctuate at the whim of brokers. In this condition, the market price of the crop decreases a lot. The farmers are deprived of this. On the contrary, there are local taxes on different armed groups. Destitute farmers were then forced to give up their crops at low prices (Green News, 2022).

Scope of developing a vigorous agribusiness system in Bangladesh during the new normal period

Several countries have taken steps to restrict agricultural exports as part of the continuing COVID-19 crisis to safeguard their domestic food security. This decision could have severe unintended consequences for

disadvantaged people in food-importing countries, such as rising costs and exacerbating food insecurity issues that the COVID-19 outbreak has already intensified. The participation of agriculture and food product exports in 2020 is represented in Figure 1. The bar graph shows that Bangladesh's participation in the agriculture export industry is relatively low compared to other countries. However, each year, roughly 31% of food produced in Bangladesh is lost due to inefficient transportation, processing, and alternate markets such as exportation (Roy, 2021). Imports of agricultural products from China are restricted in the Republic of Korea, Mongolia, Indonesia, India, Pakistan, Kyrgyzstan, Kazakhstan, Tajikistan, Jordan, Turkey, Azerbaijan, Georgia, Egypt, Cameroon, Mauritius and Russia as of March 6, 2020 (Cao *et al.*, 2020). Largely populated countries such as China and India prohibit food exports from safeguarding their food security. It is high time for Bangladesh, an agriculturally based country, to increase food quality to compete in the international market and boost the overall agri-business structure and financial sector.

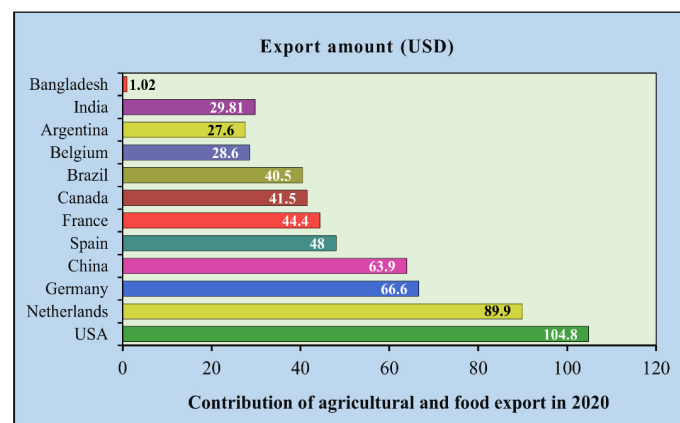


Figure 1: Contribution of agricultural and food export in 2020 (Ahmed, 2021a).

Critical aspects required to focus on after the pandemic

Some unconscious farmer does not follow any standard for chemical fertilizers and pesticides in crop production. As a result, exporting our agricultural products abroad is impossible. Organic farming and integrated pest management (IPM) systems should be introduced to develop quality to international standards. Lots of food is wasted due to a lack of adequate storage facilities. Export-oriented food processing industrial factories should be established. The yield of our native crop varieties is very low. Emphasis should be placed on research to increase the yield of import-dependent crops such as spices, nuts, pulses, etc. Bangladesh lags far behind in the

halal meat market. In order to take place in the global processed food markets, the private sector needs to provide incentives. Critical aspects required to focus on after the pandemic are organic farming and integrated pest management (IPM) systems, ensuring storage facilities, increasing the yield of import-dependent crops, and the establishment of export-oriented food processing industries. The demand for Venami shrimp (*Litopenaeus vannamei*) is increasing day by day in the international food market (Putri, 2019). It is time to take planned steps for the export of crabs and Venami shrimp. It should be ensured that the fishers get a fair price for their product. If necessary, a fish market can be started in the upazila under the supervision of DoF, where consumer can buy fisheries products directly from the fishers.

Plausible role of Bangladesh to overcome the global food crisis

As a result of the current political polarization in the world, neutral countries like Bangladesh can play a role in tackling the global food crisis. Considering the war situation, evaluating whether food exports can be made to war-torn countries in Europe-Arab-Africa or economic downturn countries like Sri Lanka or Afghanistan is crucial. A long-term plan of five or ten years can be drawn up to create an export-oriented market for raw and processed food, where the government will purchase the produce of the farmers directly and market it according to the quality of the product. In this activity, the help of prominent NGOs in the country can be obtained. In order to increase the quality of the produce, the farmers should focus on producing exportable food grains, vegetables, and fruits through training. One-fifth of perishable vegetables and crops are destroyed annually because of inadequate storage or transportation systems (Haque *et al.*, 2022). Again, in the Sylhet and Chattogram division, many remain fallow every year (Muttaleb *et al.*, 2017). Cropping systems and land use in Sylhet region (Muttaleb *et al.*, 2017). Assume the government takes the initiative for proper transportation and storage facilities and brings uncultivated land under a cultivation scheme. In that case, the country will produce a lot of extra food every year, which eventually might help to strengthen the country's position in the global food market. Another agricultural product that can play an essential role in meeting the current global food situation and nutritional needs is honey. Honey is now being produced on a commercial basis in Bangladesh. It has already positioned itself in the global market. In

2020 only in Japan, Bangladesh exported 400 metric tons of honey. Besides, Bangladeshi honey is being exported to India and various countries in the Middle East (Ahmed, 2021b). Currently, China ranks first in honey production, New Zealand ranks first in exports, America ranks first in imports, and Bangladesh ranks 83rd in exports to the world honey market (Rahman, 2022).

The amount of honey produced in Europe meets only 60% of the European demand, and the remaining 40% of the demand is met through imported honey. Of this 40% of its internal demand, Europe imports only about 30% from Ukraine and about 20% from China. About 24% of the world's honey production is produced in China. The European Union is the second largest producer of honey after China, which accounts for 12% of the world's total production, and Canada is third (Agriculture and Rural, 2021) (Figure 2). In 2021, the commercial production of honey in the country was only 12 thousand metric tons, and the natural extraction of honey was about 150 tons. The concerned persons said that if the honey production sector is given due importance, it is possible to produce more than 1-1.5 lakh metric tons in the country. Besides establishing itself as a honey exporting country in the world market by giving importance to beekeeping, it is possible to increase the production of agricultural products by 20-30% through bee pollination as a result of beekeeping (Bhel, 2015). Testing of Bangladeshi honey in the laboratory of BCSIR has shown that the quality is at an international level (Mukul, 2018). Therefore, it is necessary to give due importance to the production and marketing of honey considering the current world food situation and the overall aspect of nutritional needs.

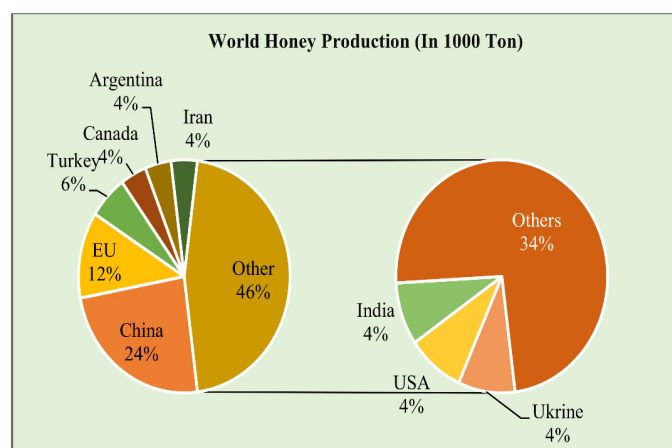


Figure 2: World production of honey per country in 1000 T (Agriculture and Rural, 2021).

Recommendations for agri-business development

During the new normal period, Bangladesh's government must create a long-term strategy, it would about ten to fifteen years. Because of the global economic slump, obtaining loans from developed countries will be more difficult. As a result, it is essential to consider how to make the most of inadequate domestic resources. The government should develop the following incentives to help people overcome their problems. Because there is no alternative market for producers, the existing marketing structure benefits intermediaries rather than producers. In our research, we suggested a new marketing chain that combines several alternative methods such as food processing, exporting to other countries, and so on (Figure 3). We also tag several GOs-NGOs and research institutes with the overall production system regarding training, information transformation, and market research in the suggested system.

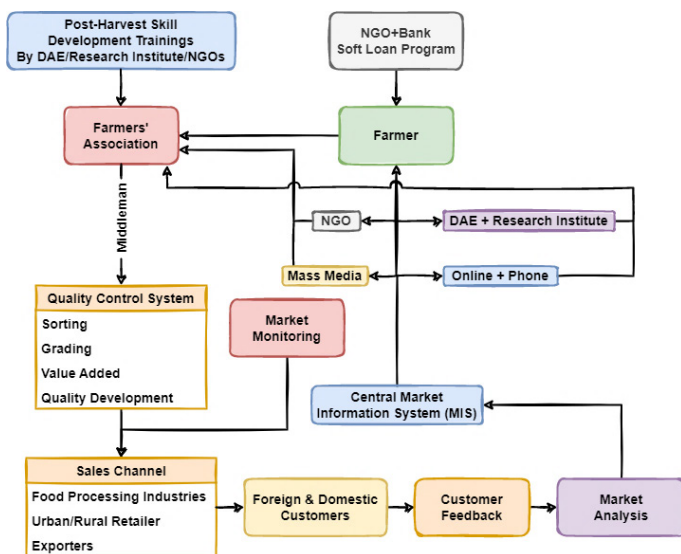


Figure 3: Proposed agri-business chain developed by (Haque et al., 2022). DAE, Department of Agricultural Extension.

Farmers are often illiterate; nevertheless, have included a window in the suggested system to boost post-harvest technological development skills through DAE, research organizations, and various NGOs. It helps to improve the quality of farm products and adds value, making it easier for exporters to send their products to the right countries, particularly in Europe and North America. Research team advocated that a central market Information System be established to collect client feedback and evaluate consumer demands. Market data that is reliable is scarce in developing countries. In the proposed system, farmers can collect information over the phone through a call center, online, through the Department of Agro-

Marketing, and through related NGOs.

Syndicate is a significant issue for the equitable distribution of benefits across all supply chain stakeholders. Illegal methods, such as syndicates and illegal stockpiling, impede benefit distribution. Dishonest marketers are less likely to engage in unethical marketing techniques when proper monitoring is in place. To combat mobility restrictions or delays, the government must focus on the export of processed foods.

The number of seasonal fruits produced in the remote hill tracts of Chattogram makes it easy to manufacture jams, jellies, juices, and pickles. It is possible to preserve it throughout the year by processing various fruits, including jackfruit, pineapple, litchi, and mango. These preserved fruit juices could even be exported abroad after meeting domestic demand. Crops grown in remote hilly areas should be procured through government marketing agencies or the army and marketed across the country. In hilly areas, including the Sylhet division, uncultivated land should be included in cultivation.

In the winter, most vegetables are produced in this country. Much of the raw material produced during this period was wasted due to a lack of storage and an inadequate transportation system. The government buys these products from farmers, and after processing, they can be distributed among vulnerable communities as part of the national food program. These processed foods can also be distributed as nutritious food for school-going children.

A long-term plan, can be drawn up to create an export-oriented market, where the government will purchase the produce of the farmers directly and market it according to the quality of the product. In this activity, assistance from notable NGOs in the nation can be sought. In order to increase the quality of the produce, the farmers should focus on producing exportable food grains, vegetables, and fruits through training.

Conclusions

Bangladesh is an agriculture-based economic country. Although the agricultural sector's GDP is declining annually, most of the country's labor force is still dependent on this sector. However, in the post-

independence period, the marketing system of this country did not reach the stage where modernization was required to keep pace with the world. Agribusiness has remained in the primitive traditional style. In the new normal period after the COVID-19 pandemic, food-producing countries like Bangladesh have the opportunity to play a role in tackling the global food crisis. For this, we must focus on modernizing the marketing system step by step by through far-reaching and realistic planning. The combination of government, NGOs, and even the private sector can create an effective marketing system that will benefit the entire economy, starting with the marginalized population. Bangladesh will be able to play a role in achieving global food security to some extent. Now is the time to modernize the ancient marketing system and keep pace with the developed world.

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Novelty Statement

In this paper, an attempt has been made to see what can be done to achieve global food security in the post-Corona and current unstable global situation.

Author's Contribution

Md. Rahat Uz Zaman and Md. Maniruzzaman: Conceptualization.

Md. Maniruzzaman and Md. Kamrul Haque: Manuscript writing.

Md. Yeamin Hossain and Md. Kamrul Haque: Methodology.

Md. Alauddin, Md. Abdul Baki, Md. Mustafizur Rahman: Data collection.

Md. Mahmudul Hasan, Rumana Biswas, Tahmina Akter Rimi: Investigation.

Md. Yeamin Hossain and Md. Rokonzaman: Formal analysis.

Md. Rahat Uz Zaman: Supervision.

All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors have declared no conflict of interest.

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