

# The cold chain:

## A pillar in Bangladesh's journey toward food sovereignty

While Bangladesh has made significant progress in decreasing malnutrition and scarcity of food, there is still room for improvement when it comes to food sovereignty.<sup>2</sup> An interesting opportunity for improvement for the country would be to reduce food wastage and improve its trade balance. Between 2010 and 2021 alone, Bangladesh imported an average 616 thousand MT of perishable food products; in 2020 the total value of perishable products imported by Bangladesh amounted to USD 800 million.<sup>3</sup> Beyond the international repercussions of relying on food imports, this lack of food sovereignty in Bangladesh is affecting the production, purchase, selling and consumption of foods across the nation. The development and strengthening of Bangladesh's cold chain infrastructure would be one of the best first steps to help the nation achieve food sovereignty. The development of cold chain infrastructure and services would enable the country to improve its nutritional outcomes and hence human capital prospects; help reduce its negative trade balance and foster its economic independence; strengthen Bangladesh's geopolitical position within the region and support its international relations policies; and generate new employment opportunities and nurture domestic political stability.



Food sovereignty emphasizes **localized food economies** and sustainable access to **culturally appropriate** foods and practices.



The Government of Bangladesh has made commendable progress over the past **40 years** in achieving food sovereignty (i.e., food grain production tripled between 1972 and 2014, from **9.8** to **34.4** million tons).<sup>1</sup>



As **globalization** continues and international tensions **intensify**, **food sovereignty** will be increasingly more important to guarantee a country's self-sufficiency and socioeconomic stability.



Developing Bangladesh's cold chain capacity could lead to significant **reductions** in **post-harvest loss**, reduce the demand for imports and therefore help decrease Bangladesh's trade deficit.



Both, the **government**, and the **private sector**, have a role in **improving** and **developing** of the temperature-controlled logistics sector; similarly, both have a lot to benefit from it.

<sup>1</sup> World Bank (2016). "Bangladesh: Growing the Economy through Advances in Agriculture."

<https://www.worldbank.org/en/results/2016/10/07/bangladesh-growing-economy-through-advances-in-agriculture>

<sup>2</sup> Food sovereignty is the ability for nations to have secure access to healthy food produced through sustainable methods.

<sup>3</sup> LixCap market study (2020).

Uncertain crop yields and inefficient and insufficient infrastructure limit the ability of agribusinesses to commercialize their production and give access to healthy, nutritious food to consumers. Bangladesh has 9.2 million hectares of arable land (70% of the country's land)<sup>4</sup> growing more than 100 types of vegetables, 70 types of fruits, 60 types of spices in addition to the production derived from livestock and fisheries.<sup>5</sup> In addition to food diversity, in 2021 alone, it is estimated that Bangladesh locally produced 8.7 million MT of fruits and vegetables, 5.2 million MT of fish/seafood, and 920 thousands MT of meat (white, red, and processed meats).<sup>6</sup> Bangladesh's struggle with achieving food sovereignty is not necessarily related to the ability to produce food items, but rather its inability to keep the product fresh and transport it safely after harvest. It is estimated that producers experienced 27% of post-harvest loss (PHL) for vegetables and 23% PHL for fruits products in 2021.<sup>7</sup> This PHL could have been prevented if the appropriate pre-cooling,<sup>8</sup> temperature-controlled vehicles<sup>9</sup> and temperature-controlled warehousing<sup>10</sup> were utilized throughout the handling of produce. Figure 2 shows Bangladesh's position vis a vis other countries from a cold chain storage capacity point of view. If Bangladesh were able to increase its cold chain storage capacity and its quality, the country would be able to unlock its agricultural potential, and boost its population, economy, geostrategy and employment outlooks.

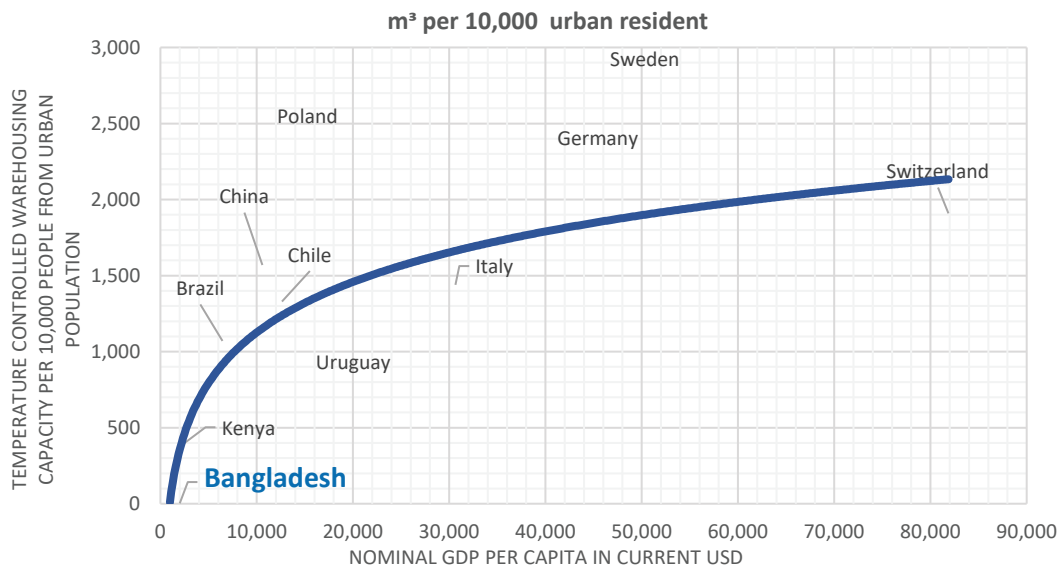


Figure: Cold storage capacity per 10,000 people from urban population in m<sup>3</sup> vs. nominal GDP per capita (2020)

Self-sustenance through food sovereignty can trigger great social benefits throughout Bangladesh. Great strides have been made and over 75% of the population has improved access to food;<sup>11 12</sup> developing the appropriate cold chain capacity has the potential to help the remaining 25% prevalent among key demographics. Improvements in food provision could have a tremendous impact on youth, the working class and the nation's long-term development. A study conducted in 2014 found that lack of nutrition cost Bangladesh more than 7,000 crore Taka (about USD 1 billion) in lost productivity each year without including the additional health care costs.<sup>13</sup> The ability to secure food sovereignty would contribute to helping youth's prospects flourish, opening opportunities to achieve higher levels of education, develop more skillsets, improving retention of information / learning and thus ameliorating the country's long-term development.<sup>14</sup> Improving access to safe, nutritious food is the cornerstone of a healthy population that can do more and strives for more.

<sup>4</sup> FAO (2021). "GSARS in Asia Pacific Country Series: Bangladesh country profile.

[https://www.fao.org/fileadmin/templates/rap/files/Project/Global\\_Strategy\\_Country\\_Pages/Bangladesh/160121\\_GSARS-AP\\_Bangladesh\\_flyer.pdf](https://www.fao.org/fileadmin/templates/rap/files/Project/Global_Strategy_Country_Pages/Bangladesh/160121_GSARS-AP_Bangladesh_flyer.pdf)

<sup>5</sup> ADB. "Dysfunctional Horticulture Value Chains and the Need for Modern Marketing Infrastructure: The Case of Bangladesh". Asian Development Bank. 2020.

<sup>6</sup> FAO and Ministry of Agriculture Bangladesh, Towards a Food Secure Bangladesh: Country Programming Framework 2010-2015, May 2011

<sup>7</sup> LixCap forecasts based on FAO historical data.

<sup>8</sup> Pre-cooling: As goods arrive from the field, they need to be suitably cooled. This process adds to the shelf life of products, improves their overall quality, and contributes to their sanitary treatment, limiting the spread of possible diseases and insects

<sup>9</sup> Temperature-controlled vehicles: can vary in size and are equipped with refrigeration systems and insulated boxes to ensure products are in a temperature-controlled environment.

<sup>10</sup> Temperature-controlled warehousing: refers to the storage facilities, vehicles, maritime vessels, refrigerated containers (reefers), equipment, processes, and services keeping perishable food and pharmaceutical products under a controlled temperature environment. This is also known as the "Cold Chain" and it ensures the goods' safety and quality, while also extending the product's shelf life.

<sup>11</sup> Pamuk, Haki, Mohammad Jahangir Alam, and Thomas Tichar. "Scoping study on fruits and vegetables: Results from Bangladesh." Wageningen Economic Research, 2021.

<sup>12</sup> USAID (2021). "Bangladesh: Nutrition Profile." [https://www.usaid.gov/sites/default/files/documents/Copy\\_of\\_tagged\\_Bangladesh-Nutrition-Profile.pdf](https://www.usaid.gov/sites/default/files/documents/Copy_of_tagged_Bangladesh-Nutrition-Profile.pdf)

<sup>13</sup> UBINIG (2014). "Country Report: Situation of Nutrition and food sovereignty in Bangladesh." <https://apnnet.org/wp-content/uploads/2014/08/Nutrition-and-Food-Sov-in-Bangladesh.pdf>

<sup>14</sup> Waber, Deborah P., et al. "Impaired IQ and academic skills in adults who experienced moderate to severe infantile malnutrition: a 40-year study." Nutritional neuroscience. 2014

Food sovereignty is a powerful variable that impacts Bangladesh's economic position internationally and domestically. For example, Bangladesh's reliance on neighbors like India for supplying important staple foods can become a liability for the country's economy and stability. Between 2020 and 2021, Bangladesh had a negative trade balance with India of USD 14 billion (this includes perishables and non-perishables).<sup>15</sup> To lessen Bangladesh's sensitivity toward external occurrences, it is necessary for it to invest in the infrastructure capacity needed to achieve food sovereignty: cold chain logistics. Increasing the cold chain capacity of the country (in terms of vehicles and storage) would allow it to decrease the amount of food loss thus increase the amount of food available and the lifespan of produce thereby stabilizing the supply of products and decreasing seasonality risks. These improvements in food availability would lessen the country's demand for imports, reduce the negative trade balance and protect the nation's food supply from external shocks. Domestically, a more stable supply chain reduces the costs of trading and thus the cost of doing business. Furthermore, the availability of more primary products has the potential to trigger a raise in the food processing business,<sup>16</sup> opening new opportunities for profit and employment in Bangladesh.

Reaching food sovereignty by strengthening the logistics sector through the cold chain can have great positive impacts for Bangladesh's development. Vietnam is an excellent example of how investing in domestic logistics capacity can massively benefit a country's economic growth.<sup>17</sup> Improvements in the country's cold chain logistics (capacity, service provision and availability) would help generate employment, amp up the skill of the population into higher profit services, better Bangladesh's position to receive foreign direct investment and thus international business. To capitalize on the opportunities the cold chain logistics sector can unleash, the following actions are recommended:



- 1 Encourage private sector investments in the cold chain industry by reforming and implementing private sector-friendly policies (i.e., reduction of tariffs for cold chain equipment, improving reliability of electricity supply, applying preferential tax rates on cold chain logistic businesses, etc.).
- 2 Ensure systems are in place to coordinate between producers and logistic providers so that assets and services are available when and where needed (help decrease fragmentation in the sector and decrease the information gap around the availability of services).
- 3 Facilitate access to land for the development of temperature-controlled logistics projects at key locations such as ports, airports, markets, etc. (currently there is no formal, large and modern cold storage at the port of Chattogram nor at the Dhaka Airport).
- 4 Invest in capacity building related to logistics and encourage international economic development donors to focus on this area.
- 5 Develop a national cold chain strategy with actionable and measurable objectives and tasks (can be part of the Logistics Policy).
- 6 Update and enforce legislation on food safety by adopting a modern food safety act and financially, legally, and operationally empower a dedicated government entity to enforce it.

<sup>15</sup> DW "India, Bangladesh begin talks on economic partnership". Accessed 23 September 2022. <https://www.dw.com/en/india-bangladesh-begin-talks-on-economic-partnership/a-63029811>

<sup>16</sup> Food processing is the transformation of agricultural products into food, or of one form of food into other forms. Food processing includes many forms of processing foods, from grinding grain to make raw flour to home cooking to complex industrial methods used to make convenience foods. Some food processing methods play important roles in reducing food waste and improving food preservation, thus reducing the total environmental impact of agriculture and improving food security. For example, food processing would entail turning tomatoes into tomato sauce or ketchup, fruits into jams and juices, etc.

<sup>17</sup> Nguyen, Chi Dieu Thi, Bao Thai LUONG, and Huong Lan Thi HOANG. "The impact of logistics and infrastructure on economic growth: Empirical evidence from Vietnam." *The Journal of Asian Finance, Economics and Business* 2021.

As the decision to increase production must come with the capacity to store and distribute perishable foods before they expire, the most beneficial course of action for Bangladesh would be to expand its investments in temperature-controlled logistics. Through the development of the cold chain, Bangladesh can massively expand shelf life of perishable items while reducing PHL and wastage. This would foster economic independence by energizing the agricultural and agribusiness sectors with new opportunities for processing raw materials, and improving food security for vulnerable populations through expanded, reliable access to food. These advancements would bolster the economic position of the nation and increase its geopolitical relevancy and independence through expanded influence in agricultural markets. None of this is without precedent. Bangladesh has already found incredible growth within the garment industry having arranged the necessary policies and logistic processes to make it a successful industry, the same can be done to the agricultural, food processing, agribusiness, and service sector.

The Bangladesh Trade Facilitation project aims to expand cross-border trade in agricultural goods and food products. The objective is to address systemic constraints at Bangladeshi ports; simplify and automate import and export processes; improve the capacity of Government regulatory agencies, laboratories, and warehouses; and to foster investment in cold storage facilities and temperature-controlled logistics.

## Implementing Organizations



### Disclaimer:

This material is based upon work supported by the U.S. Department of Agriculture, Foreign Agricultural Service under Food for Progress Program, Federal award No. FCC-388-2020/003-00. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.