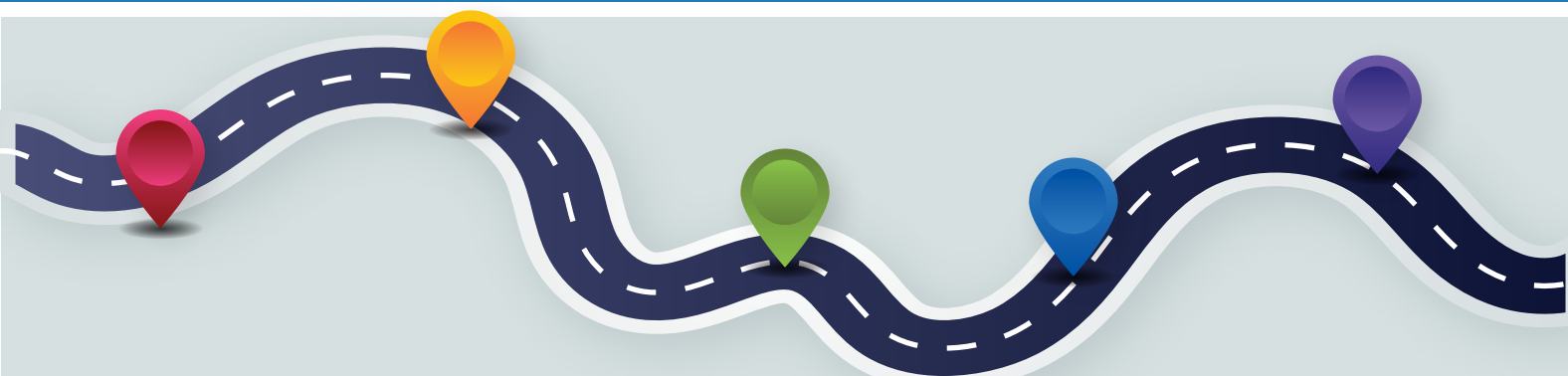


The cold chain:

Traceability for Food Safety: efforts required from the public and private sectors to improve food safety for consumers

Improving the traceability of products and ensuring adherence to food safety standards should be a priority for any country looking to reap the full benefits of their agricultural activities. Digital product tracking systems allow tracing the movement of products and supplies within a supply chain, giving governments, customers, and businesses the means to track the delivery of medicines, equipment, fertilizer, emergency supplies, food, and other items to their destination.¹ They can also provide cross-border transparency, facilitating access to regional and global markets. Traceability systems facilitate effective and efficient responses to contamination or other food safety issues, through the timely identification of problems within the supply chain. In 2013 the Government of Bangladesh passed the Bangladesh Food Safety Act and in 2015, it established the Bangladesh Food Safety Authority (BFSA) to regulate and ensure food safety in Bangladesh. It is also important that other stakeholders in the food systems be involved in the process of ameliorating, strengthening, and optimizing the systems for better quality, safe food. The private sector will need to be the main driver and investor in the implementation of product traceability efforts. Motivated by consumer demands and standard compliances, the private sector can also gain efficiency and mitigate food safety risks by implementing these systems.^{2 3}



While the costs of incorporating traceability systems seem high, the potential benefits make for a considerable business case to the private sector. The growing middle class,⁴ now amounting to about 37 to 40 million people⁵ and expected to reach 33% of the population by 2030,⁶ offers a sustainable consumer-base demanding safe, high quality products. For local consumption or for international trade, private entities have an incentive to improve their traceability capacity. Especially when dealing with perishable products, traceability can play a pivotal role in profitable supply chain management.^{7 8 9} Thailand has been able to introduce traceability techniques for some commodities like chicken, seafood, and fruits and vegetables to document the origin, date of harvest, location and temperature during shipping.¹⁰ Whether it is to gain local trust and consumers or to decrease the number of recalls when trading, traceability offers tangible utility to balance its cost.

¹ O'Hara, Cory. "Developing-Country Producers and the Challenge of Traceability." USAID Frontiers in Development. Web. <https://www.usaid.gov/sites/default/files/documents/1868/CoryOHara.pdf>

² Feed the Future, EEFS Project (2019). "Food Safety and Trade: The role of traceability systems," Agrilinks. U.S. Government's Global Hunger & Food Security Initiative. <https://agrilinks.org/post/food-safety-and-trade-role-traceability-systems>

³ Setboonsarng, Sununtar; Sakai, Jun; Vancura, Lucia (2009) : Food safety and ICT traceability systems: Lessons from Japan for developing countries, ADBI Working Paper, No. 139, Asian Development Bank Institute (ADBI), Tokyo. <https://www.econstor.eu/bitstream/10419/53743/1/604642695.pdf>

⁴ According to the Asian Development Bank (ADB) those categorized within the middle class earn between USD 2 and 20 per day.

⁵ Billah M. (2020). "Who are the middle class in Bangladesh," The Business Standard. <https://www.tbsnews.net/feature/panorama/who-are-middle-class-bangladesh-141073>

⁶ The Daily Star (2015). "Middle-class expanding." <https://www.thedailystar.net/frontpage/middle-class-expanding-168316>

⁷ Japan International Cooperation Agency (JICA) (2019). Data Collection Survey on Food Hygiene and Food Safety in Bangladesh. <https://openjicareport.jica.go.jp/pdf/12360087.pdf>

⁸ Korber Supply chain (2020). "6 Traceability tips for cold storage."

<https://www.korber-supplychain.com/about-us/blog/6-cold-storage-traceability-tips/#::~:~:text=Traceability%20plays%20a%20pivotal%20role,from%20post%2Dharvest%20to%20distribution.>

⁹ Setboonsarng, Sununtar; Sakai, Jun; Vancura, Lucia (2009) : Food safety and ICT traceability systems: Lessons from Japan for developing countries, ADBI Working Paper, No. 139, Asian Development Bank Institute (ADBI), Tokyo. <https://www.econstor.eu/bitstream/10419/53743/1/604642695.pdf>

¹⁰ IBM (2010). "IBM, FXA and Thailand's Ministry of Agriculture Join Forces on Global Food Safety," PR NewsWire.

<https://www.prnewswire.com/news-releases/ibm-fxa-and-thailands-ministry-of-agriculture-join-forces-on-global-food-safety-89258817.html>

Following public health safety concerns in mid-2000s in Japan, private sector stakeholders established the Oita Dried Shiitake Traceability Council and the Kyoto Egg and Poultry Safety Promotion Council with the financial support of local governments. The councils introduced record-keeping at multiple production stages using low-cost digital technology, providing a model for developing regions who want to verify the authenticity of local products and respond rapidly to outbreaks.¹¹ The increasing adoption of applications such as Farmforce in some developing regions and Solutions¹² in Haiti are other examples of merging technology with smallholder agriculture to meet international traceability requirements and improve farmer's financial prospects.¹³ It is clear from these examples that food safety/traceability initiatives benefit whole supply chains down to the farm-level.¹⁴ It requires investment and large-scale collaboration, but product tracking and digital inventory will help Bangladeshi businesses to better access the global market.

Apart from ensuring traceability, businesses in the agriculture sector need to ensure that their supply chains protect food quality and reduce product waste. Agro-businesses around the globe use technology that controls the temperature in temperature-controlled vehicles, reefer containers and temperature-controlled warehouses. The combination of these assets is essential for businesses to get their products to market with less waste or spoilage. When developing or acquiring these assets, compliance with food agricultural practices like the Global Agricultural Practices (G.A.P), Good Hygiene Practices (GHP), relevant ISO certifications, and the Hazard Analysis and Critical Control Points (HACCP) framework are essential.



The government and the private sector should continue to invest in building and strengthening traceability capabilities as well as following relevant food safety standards. For long-term effect, food-safety related knowledge and capacity development on food safety topics is essential. The Bachelor of Science degree course in food safety and management at Bangladesh Agricultural University is a commendable first step to build leadership and knowledge in this space.¹⁵ Intergovernmental projects like the one with the Japan International Cooperation Agency (JICA) - "Strengthening the Inspection, Regulatory and Coordinating Function of the Bangladesh Food Safety Authority (BFSA)"¹⁶ and the "Food and Chemical Lab Expo-2022" co-organized by BFSA and the United States Department of Agriculture - Bangladesh Trade Facilitation (BTF) project¹⁷ are two examples of the kinds of development cooperation that could assist the progress of food safety and traceability standards in Bangladesh.

¹¹ Setboonsarng, Sununtar; Sakai, Jun; Vancura, Lucia (2009) : Food safety and ICT traceability systems: Lessons from Japan for developing countries, ADBI Working Paper, No. 139, Asian Development Bank Institute (ADBI), Tokyo. <https://www.econstor.eu/bitstream/10419/53743/1/604642695.pdf>

¹² Solutions, Haiti, website: <https://solutions.ht/portfolio-slider/>

¹³ Feed the Future, EEFS Project (2019). "Food Safety and Trade: The role of traceability systems," Agrilinks. U.S. Government's Global Hunger & Food Security Initiative. <https://agrilinks.org/post/food-safety-and-trade-role-traceability-systems>

¹⁴ Setboonsarng, Sununtar; Sakai, Jun; Vancura, Lucia (2009) : Food safety and ICT traceability systems: Lessons from Japan for developing countries, ADBI Working Paper, No. 139, Asian Development Bank Institute (ADBI), Tokyo. <https://www.econstor.eu/bitstream/10419/53743/1/604642695.pdf>

¹⁵ Henderson B. (2022). "FAO Evaluates Food Safety in Bangladesh," Food Safety Magazine. <https://www.food-safety.com/articles/7768-fao-evaluates-food-safety-in-bangladesh>

¹⁶ JICA (2021). Press release: Signing Record of Discussions on Technical Cooperation Project: The Project for Strengthening the Inspection, Regulatory and Coordinating Function of the Bangladesh Food Safety Authority (BFSA). <https://www.jica.go.jp/bangladesh/english/office/topics/press210203.html>

¹⁷ The Business Standard (2022). "First-ever food lab expo in Dhaka today." <https://www.tbsnews.net/bangladesh/first-ever-food-and-chemical-lab-expo-begins-dhaka-493470>



Food is a critical source of public safety and livelihoods. In Bangladesh, about 30 million people suffer from at least one form of food-borne disease annually.^{18 19 20} The most common food-related illnesses are diarrheal diseases, enteric fever, and hepatitis.²¹ In 2015, the Dhaka-based Institute of Epidemiology, Disease Control and Research (IEDCR) recorded 30,000 cases of enteric fever and 500 cases of acute hepatitis. In 2018, over 1 million cases of diarrhea were identified.²² While the government of Bangladesh has instituted improvements that have reduced food borne diseases, further work is necessary to prevent avoidable illnesses that have larger repercussions on the availability of people to work, family incomes and educational outcomes of the population. Consumers, therefore, must be the balance of power demanding the public and private sector to provide higher quality food that is safe. Nevertheless, the socioeconomic benefits that can be unlocked through better food safety measures and traceability would allow businesses to adhere to internal standards and hence trade more, it would decrease the burden on the public health system, and it would ameliorate the lives of the people, allowing them to work, learn and live in better conditions.

¹⁸ Suman S., Manyam S., Satyanarayana K.V., Vijayaraghavan K. (2021). "Food Safety System in Bangladesh: Current Status of Food Safety, Scientific Capability, and Industry Preparedness" Feed the Future, U.S. Government's Global Hunger & Food Security Initiative.

<https://ag.purdue.edu/food-safety-innovation-lab/wp-content/uploads/2021/01/FSIL-Food-Safety-System-in-Bangladesh.pdf>

¹⁹ Khairuzzaman, M.D.; Chowdhury, F.M.; Zaman, S.; Al Mamun, A.; Bari, L. Food Safety Challenges towards Safe, Healthy, and Nutritious Street Foods in Bangladesh. *Int. J. Food Sci.* 2014, 2014, 483519

²⁰ Md. Hasan Al Banna, et al (2022). "Assessment of Food Safety Knowledge, Attitudes and Practices of Food Service Staff in Bangladeshi Hospitals: A Cross-Sectional Study," *Nutrients*, MDPI.

²¹ Food and Agricultural Organization of the United Nations. (n.d.) Improving food safety in Bangladesh: Study tour on food-borne illness surveillance.

<http://www.fao.org/in-action/food-safety-bangladesh/news/detail/en/c/346448/>

²² DGHS. Real Time Health Information Dashboard. 2020. Available online: http://103.247.238.92/webportal/pages/dashboard_child_imci.php

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.