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The global food safety challenge is immense ...

Food processors could be the key.

Every year, contaminated foods contribute to more than 600,000,000 cases of foodborne diseases (FBDs), causing almost 1 in 10 people to fall ill and 425,000 deaths.

Children under five suffer the most with **125,000 deaths** annually due to harmful bacteria, parasites, viruses, toxins, and chemicals in their food.

With the highest reported burden of FBD, Africa bears a disproportionate impact. In 2016, **more than 50%** of annual global deaths due to Salmonella were reported on the continent.

These challenges convinced the United Nations, World Health Organization, and Food and Agriculture Organization to declare the first ever World Food Safety Day on June 7, 2019 with the theme, *Food Safety, Everyone's Business*. As the global population approaches 10 billion by 2050, food production will need to increase by 50 to 60 percent. Trade between developing and developed countries will also accelerate, threatening the spread of FBDs around the world. Moreover, between 70 and 80 percent of the global population will be living in urban areas, requiring food to be transported over longer distances. At the same time, rising incomes will drive changes in consumer preferences for more westernized diets heavy in processed foods and animal products that are more prone to contamination.

Without stricter food safety and quality standards and practices, the prevalence of foodborne illnesses and diseases will continue to rise. By 2050, 5 million people per year could die due to industrial food production factors — twice the current number of people killed by obesity and four times the number of people killed in road traffic crashes globally. The food safety threat is particularly severe in low- and middle-income countries (LMICs), where food safety regulation and enforcement is a lower investment priority.





Root Causes of poor food safety and quality in LMICs include:

Lack of Awareness and Understanding	To support implementation of necessary food safety control systems there is a fundamental need for more and better-targeted food safety awareness and understanding.
Subsistence and Informal Food Value Chains	Subsistence production, informal distribution channels, and traditional community markets impede application of broad-based food safety intervention that could affect a larger population base.
Unsafe Food Handling Processes and Practices	Many food aggregators and processors in LMICs lack basic knowledge about Good Hygienic Practices (GHP) and Good Manufacturing Practices (GMP), and the practice of Hazard Analysis and Critical Control Points (HACCP) is not ubiquitous or used to monitor.
Weak Food Safety Infrastructure Systems	Appropriate infrastructure systems are required to tackle even the most basic food safety issues such as access to: safe, potable water as it is a "food" and is a critical input into food safety and sanitation practices; power required for steady production and effective operation of food safety equipment and refrigeration; and storage and transport services including road networks, vehicles, and cold chains to deliver fresh products in a timely manner, especially for perishable foods.
Limited Laboratory Networks	The quantity and quality of private and public laboratories are lacking in LMICs, preventing marketplace monitoring and surveillance to inform key stakeholders on whether interventions are having the desired impact and to allow for timely response and containment of outbreaks.
Slow Consolidation within Food and Agriculture Sectors	Multiple actors within a food value chain require more coordination, training, and enforcement to ensure safe food, especially in highly populated urban environments. Slow economic growth slows consolidation but can be accelerated by targeted institutional investments and incentives.
Low Public Capacity to Prevent and Respond to Outbreaks	LMICs typically lack organized systems for monitoring foodborne outbreaks and analyzing impacts on public health. Specifically, a lack of data limits clear visibility and identification of root causes and design of solutions such as effective regulatory investments.

Proven Solutions exist at each step of the food chain to improve

food safety and quality



STEP 1: PRODUCTION

Support smallholder farmers to improve their productivity and profitability

Increase farmer incomes by connecting them to higher value offtake markets

Encourage a positive cycle of high-quality and safe food products to buyers and feedback and needed services back to farmers



STEP 2: VALUE-ADD

Work with farmer groups, independent traders, and value-add food processors to ensure crops are properly aggregated, sorted, classified, stored, and transported

Create stronger linkages between producers and processors to ensure a more consistent supply of high-quality and safe raw material for food products via smallholder aggregator models and lead firms

Support food processors to adopt appropriate food safety and quality practices from food handling to product packaging



STEP 3: MARKET

Work with exporters and domestic food retailers from micro-retailers to supermarket chains to ensure the safety and quality of food

Work with micro-retailers on inventory controls and product shelf placement to better manage stocks and shelf-life

Support supermarket supplier networks to grow better quality and safer fresh produce such as lettuce and tomatoes



Improve policies and regulations for food safety and quality, specifically support governments to develop and disseminate clear standards that re enforced efficiently and effectively.

Ensure capable indirect support actors exist such as laboratories or training institutes

Keeping food safe is a requirement of all actors at all steps of the food chain. While TechnoServe works with producers, input dealers, aggregators, commercial buyers, and others, our experience points to increasing opportunities to focus on food processors as potentially catalytic actors that can drive food safety improvements up and down the value chain. We see food processing as a gateway to advancing rural based economies, adding value, creating new jobs, stimulating support services, and advancing trade and economic growth.

Given their position between farmers and retailers, food processors can drive food safety improvements due to two primary reasons. First, for most food products, contamination can be controlled during processing as raw material is transformed into a final food product Working at the nexus for end consumption. If of agricultural food processors follow proper food safety development and procedures from raw material collection entrepreneurship, to contaminant TechnoServe employs a removal to plant and worker hygiene multifaceted approach to packaging and to address food safety, quality, storage, there is a lower likelihood that and other challenges end food products within complex contaminated. are Second, food processors food systems. located are closer to production rural areas. therefore, and can act as trusted information brokers and

better communicate quality and safety requirements from retailers back to farmers to improve their crop and earn more money in the long-term.

TechnoServe has always engaged food processors within our broader agricultural value chain programs, but in the last ten years, in partnership with many of the world's leading food companies, we have directly supported these critical actors to build competitive businesses, improve availability of quality and safe foods, and strengthen agricultural markets. To date, we have trained over 1,000 food processors and provided customised technical assistance to 300+ high potential processors that has led to new investments totalling more than \$14 million, the creation of 550 new jobs, strengthened markets for approximately 1 million smallholder farmers and improved the standards, quality, and access of staples as well as therapeutic and supplementary foods for the most vulnerable populations. We have also directly supported more than 70 government and nongovernment institutions to improve the overall enabling and business environment across eleven LMICs. As a result, our perspective and approach on the most effective way to stimulate commercially led and sustainable improvements in food safety and quality is informed by our decades long experience and network of world-renowned experts.

> We engage the food processing industry at the macro-, meso-, and micro-levels of the market system. At the macro-level, we work partnership in with public, private, and civil society actors that are responsible for ensuring а facilitative enabling environment. For example, we support government actors to develop, promote, and enforce train, various food safety and quality standards and regulations. We have found there is often a disconnect and animosity between regulators and private industry around required product standards. As a result, we create

forums where stakeholders have a safe space for dialogue. We also conduct market and sector studies to help inform government policy and to build the evidence base to incentivize individual food processors and other actors to adopt behavior changes. For example, we conducted a study on major food safety threats affecting the health and wellbeing of populations in Nigeria, Burkina Faso, and Ethiopia that identified major risks associated with foodborne illness in six value chains: cassava, poultry, beef, maize, sorghum, and dairy. At the meso-level we run sector wide trainings (SWTs) that address common problems that cut across a majority of food processors (e.g. we will train all rice processors on the correct drying practices and equipment in a given region). SWTs provide an opportunity to introduce ourselves as well as identify motivated food processors for our work at the microlevel—customized one-on-one support.

One of the biggest challenges we face with food processors is overcoming their reticence to invest in food safety and other improvements such as fortifying with vitamins and micronutrients. Many food processors have concerns about the increased cost and whether a market will exist for these improved food products. Moreover, food processors are reluctant to share critical information about their business because they are afraid of increased government scrutiny, which hampers our ability to provide the best advice and technical assistance. Our experience has taught us that we need to build a larger pipeline, provide more lead-time to on-board management, and most importantly work directly with the food processor to develop a strong business case for investment. Due to the low accessibility and availability of affordable food products in LMIC markets, rural consumers will purchase whatever is on the shelf, regardless of the product's quality or safety. As a result, many food processors are unmotivated to invest in new systems and procedures without a clear indication of increased revenues and profitability.

Our decade of experience supporting food processors has showed that we need to provide solutions to both the business and technical needs of the food processor. On the business side, we collaborate on strategic planning, sales and marketing, and supply chain management, among others. On the technical side we advise on the

proper selection and use of processing equipment and production line efficiency and packaging and labeling, in addition specific solutions to related to food safety and quality. Here, we work with food processors introduce to quality management systems (QMS) such as GMP and HACCP to trainings on food safety standards, workplace safety and hygiene, and Sanitary

Ghana ENGINE Unlocks New High-Value Markets

Funded by DFID, we enabled 90 businesses to achieve regulatory compliance with the Food and Drugs Authority, Ghana Standard Authority, Food Research Institute, Environmental Protection Agency, and Registrar General Department to improve food safety standards in order to access high value end markets such as Shoprite supermarkets.

Sector-Wide Trainings for Key Government and Industry Stakeholders

In Ethiopia, we have delivered SWTs on Mycotoxin Control, Food Safety Management, Milling and Baking Science and Technology, along with Business Management and Wheat Flour and conducted targeted trainings for the Food, Beverage and Pharmaceutical Industry Development Institute (FBPIDI) and Food and Medical Health Care Control Authority (FMHACA) on eight topics including Quality / Environmental Management Systems and Food Guidelines for Importers and Processors. and Phytosanitary (SPS) and aflatoxin control. In addition to the targeted business and technical support, we also support food processors to source more raw material from smallholders as time and time again we learn that one of the biggest challenges food processors face is to source reliable volumes of highquality raw materials. We recently completed an intensive examination of smallholder aggregation models and developed a set of recommendations to identify the most appropriate models and training programs for

different types of food processors. We also support food processors in product development and improvement to extend the shelf-life or improve the nutritional value of food products, especially for base of the pyramid consumers.

Our process begins with a business and quality audit to understand business goals and objectives and identify red flags in terms of how their products adhere to government and industry standards. We use this opportunity to build trust and relationships with key decision makers and influencers. Next, we work with management to develop a business case for food safety and quality and/or other improvements that considers the market context and need, which ranges from complying with new regulations to penetrating new market segments. Once we secure buy-in, we develop a project charter that articulates expectations and effort that all parties sign. A food technologist and/or business advisor is then assigned to manage the various interventions and coordinate with technical experts either from TechnoServe or outside parties such as Partners in Food Solutions, a non-profit consortium mobilising the global expertise of General Mills, Cargill, Bühler, Royal DSM, the Hershey Company, and Ardent Mills. Compliance with food safety and quality standards requires food processors to invest in a series of progressive solutions of steps and a processor cannot

progress to the next level without first having completed the previous step: 1) GMPs; 2) HACCP; and 3) Food Safety Management System (FSMS). Given our focus on small and medium enterprises, we primarily concentrate on the first two recommendations according to the business lifecycle of the client.



Good Manufacturing Practices

A set of practices aligned to the guidelines and standards set by the Codex Alimentarius Commission and national agencies authorizing and licensing the manufacture and sale of foods and beverages (e.g. Kenya Bureau of Standards) that set the minimum requirements that a food processor must meet to ensure consistent quality of their product and protect consumers from harm. We implement a five-step process: audit, training, gap identification, gap closure, and review. This is typically a quick win and enables us to introduce more advanced food safety and quality systems. We are also translating much of the material to a mobile based app that will allow us to monitor and provide continuing updates.



Hazard Analysis and Critical Control Point

A systematic and preventative approach to food safety arising from biological, chemical, or physical hazards in the production process. If unaddressed these may cause the finished food product to be unsafe. By introducing controls and checks at critical points, risk is reduced to an acceptable and safe level. HACCP is more rigorous than GMP and may require some capital investment e.g. in changes to the process flow or to infrastructure. HAACP is a more complex intervention that encompasses seven core steps from hazard and critical point analysis to corrective actions to record keeping. We bookend the core process with ensuring top management buy-in and general HACCP training with external audit and verification.



Food Safety Management Systems

A system of processes and tools to pursue certification against an international standard of Food Safety Management System (FSMS, ISO 22000), or Food Safety System Certification (FSC 22000). Whereas HACCP is focused purely on food safety, ISO 22000 goes further and examines overall business processes and structures. FSC 22000 is a bit more limited but is recognized by the Global Food Security Initiative (GFSI), ISO 22000 is not. FSMS are beyond the scope of most SME processors and are more likely to be pursued by processors seeking to access global supply chains where certification against a GFSI recognized standard may be required.



"When TechnoServe first came, **we had five staff members.** When we saw that things were selling so much, we added a night shift and I hired more and more workers.

Now we have 12 people!

When customers come to the bakery and see things have changed, the walls are bright and it's clean, it has made us go a notch higher."

Caroline Adongo Obuya, Owner of Kinda Bakery in Kenya

As a result of TechnoServe's assistance, Caroline increased her production capacity and number of employees and, due to improvements in food safety and quality, she accessed new markets.





Haiti Hope Develops Food Safety Plans for the Mango Value Chain

To enable Haitian mango producers to comply with the new Food and Safety Modernization Act enforced by the U.S. Food and Drug Administration and deliver to high value markets such as Whole Foods, we identified and scaled a locally developed traceability solution. In conjunction with the Haitian and U.S. governments and the private sector, TechnoServe conducted an industry workshop to assist exporters in implementing the new food safety system that included a public database of over 5,000 compliant farmers. We also employed HACCP decision trees to identify food safety issues throughout the mango value chain. On-farm, we trained farmers on pesticide use and freshwater quality, harvesters and field grading personnel on hygiene, and worked with Producer Business Groups (i.e. cooperatives) to ensure latrines existed at aggregation points and that records were kept in the event of an FBD outbreak. While ensuring high food safety and quality standards requires the active participation of all direct and indirect actors within a food value chain, in our experience, working directly with food processors will generate a catalytic impact from farm to fork.

TechnoServe's Impact Food Safety and Quality

278 Food processors that have received food quality management training

- **46** Food quality manuals produced
- 28 New food quality certificates obtained
- **638** Food processors that have applied new and/or improved technologies



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WHO WE ARE

TechnoServe is a leader in harnessing the power of the private sector to help people lift themselves out of poverty. A nonprofit organization operating in 29 countries, we work with enterprising men and women in the developing world to build competitive farms, businesses, and industries. By linking people to information, capital, and markets, we have helped millions to create lasting prosperity for their families and communities. With 50 years of proven results, TechnoServe believes in the power of private enterprise to transform lives.