

# SMES: KEY DRIVERS OF FOOD SAFETY IN EMERGING ECONOMIES

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by

## FTF Business Drivers for Food Safety Activity

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### Introduction

Food safety is everyone's business – and it's the businesses that make up food systems that are the cornerstone for providing safe food. Today's food systems are increasingly more global, diverse and complex, involving an array of businesses from subsistence farming to multinational food companies. Everyone eats – therefore, everyone relies on local and global food systems. Myriad foods and food ingredients move through this system, including animals and animal products, plants and plant products, vitamins and minerals – as well as recycling and waste. USAID's Feed the Future and Food Enterprise Solutions (FES) have co-created the Business Drivers for Food Safety (BD4FS) program to provide solutions in global investments that strengthen global food systems. FES actively engages the private sector, especially small-medium enterprises (SMEs), to promote food safety. This means that the conditions and measures necessary for food production, processing, storage, and distribution must be in place to ensure a safe, sound, wholesome product that is fit for human consumption. SMEs often face multiple food safety obstacles, like barriers to accessing affordable credit and finance, gaps in the supply chain and lack of credible training. BD4FS takes a multi-disciplinary approach to address these barriers comprehensively and effectively.

For World Food Safety Day, FES will describe four key focus areas of food safety: nutritional impact; the importance of post-harvest food management (PHFM); efficient logistics and cold chain; and affordable, accessible financing.

Our work in PHFM focuses on the issues concerning perishable horticultural crops and animal products, such as post-harvest handling, cooling, field transport, on-farm storage and local processing. BD4FS' logistics and cold chain work centers on keeping food fresh and at optimal temperatures during longer-distance transport, such as from production centers to processing plants, and longer-term storage at both the wholesale and retail levels. Our primary focus is ensuring food safety for optimal nutrition, which means ensuring quality control from farm to fork. Reducing the incidence of foodborne diseases will also allow consumers to derive the full nutritional benefits of food. Finally, a key barrier to the adoption of many of the essential food safety actions (i.e. new technology and infrastructure) is lack of access to affordable financing. FES is working to create new financing opportunities to help SMEs further invest in a culture of food safety.

64 percent of total food consumed in Africa is sourced from SMEs, with only 16 percent coming from larger enterprises. The remaining 20 percent are grown and eaten by farming households.

Source: Alliance for Green Revolution Africa Report.

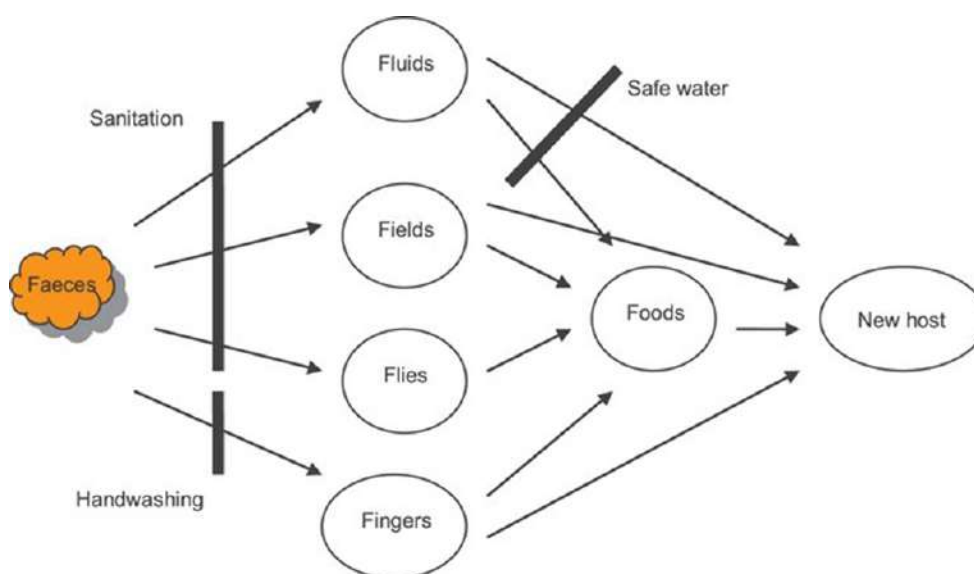
## Key Food Safety Focus Areas

Here, we describe the four key food safety focus areas in further detail and explore the barriers and challenges SMEs face in achieving food safety.

### Focus Area 1: Optimal Nutrition through Food Safety and Food Security

*Food safety and food security* are interrelated concepts with a profound impact on the quality of human life<sup>i</sup>.

**Food safety is a term that encompasses the many facets of handling, preparation and storage of food to prevent illness and injury.** Included under the food safety umbrella are the chemical, microphysical and microbiological aspects of food safety<sup>2</sup>. Unsafe food creates a vicious cycle of diarrhoea and malnutrition, threatening the health and nutrition of the most vulnerable. Globally, diarrhoeal disease is the second leading cause of death in children under five years old and is the leading cause of malnutrition in children under five years old. Forty percent of people sickened by foodborne diseases are children under 5 years of age, with 125,000 deaths every year. <sup>ii</sup> Diarrhoeal deaths are linked to unsafe food, contaminated drinking water, poor sanitation and insufficient hygiene, with human and animal feces as the main sources of diarrhoeal pathogens.



Unfortunately, some of the foods that can do the most to enhance nutrition in low- and middle-income countries (LMICs) are also the riskiest in terms of food safety. The role of fresh fruits and vegetables in nutrition and healthy diets is well-recognized, and in recent years many countries have undertaken various initiatives to encourage consumers to eat more of these highly perishable products. All “perishables” require careful harvesting, crating, transport, storage, and processing under temperature-controlled conditions. Many LMICs do not have the resources to sufficiently regulate how their food system actors (growers, transporters, storage, food processing, etc.) ensure good agriculture practices (GAP).

Green vegetables are the commodity group of highest concern from a microbiological safety perspective. Leafy green vegetables have been associated with multiple outbreaks of foodborne disease and illness across the world. As more leafy green vegetables move through the food chain, there is increased risk of introducing and spreading food-borne illnesses to more people.

Meat, milk, eggs and fish supply vital micro-nutrients and high-quality proteins essential for growth and health, and their production and marketing supports the livelihoods of many households. More than 80 percent of the animal-sourced food produced in LMICs is sold in under-regulated informal markets, despite the numerous health risks that exist along the value chain for livestock and fish products. In Kenya, Mali and Uganda, for example, 80 to 90 percent of raw milk is purchased from vendors or small-scale retailers. A recent study shows that 70 percent of urban households regularly buy their foods from street vendors.<sup>iii</sup> The inability to consistently provide safe, quality food is often what prevents smallholder farmers from growing their businesses and moving up the value chain to more lucrative opportunities.

**Food security exists when all people, always, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life<sup>iv</sup>.**

Understanding and increasing food security calls for practitioners to consider gender: improving food safety and quality in LMICs can only be achieved by properly considering both women's and men's roles in food systems. Women play significant roles in production, processing, and food preparation and are usually in charge of their family's nutrition. Women are more likely to spend their incomes on food and children's needs: a child's chances of survival increases by 20 percent when the mother controls the household budget.<sup>v</sup> They are on the frontline of food safety and they are integral to reducing contamination in the food supply. Studies have demonstrated that small-scale processing of food products is often carried out by women, while more modern, industrialized operations are often dominated by men, particularly in managerial and ownership roles. Women carry out most informal food processing, which normally takes place at home and ensures a diverse diet, minimizes losses and provides marketable products. However, it also introduces a number of risks and burdens, such as contamination from poor hygiene, lack of sanitation and lack of access to clean water.

The food system is a complex web of actors and activities involving the production, processing, transport, sale and consumption of food.



## Focus Area 2: Post-Harvest Loss and Food Management

Post-harvest loss (PHL) can occur in any food system when foods are mishandled or the post-harvest chain from farm to market is poorly managed. PHL is often defined as food losses occurring in the period between harvest and sale. This period includes harvesting (cutting or picking fruits and vegetables) sorting, grading, packing, pre-cooling, storage and processing. Food waste is defined as food losses that occur during final distribution (when unsold foods are discarded at the retail level) and consumption stages (before, during, or after cooking and serving foods in the home or at food service locations).

PHL in developing countries can range from 30 to 50 percent. FAO has documented global losses for root and tuber crops to average 45 percent<sup>vi</sup>. Fruit losses range from about 20 percent for mangoes in India<sup>vii</sup> to more than 60 percent for



On left: Use of traditional wood or fiber containers which are difficult to clean and do not provide protection when stacked. Right: Use of reusable, clean, vented plastic crates for transport, storage, and marketing of horticultural crops. Submitted by PHL expert Lisa Kitinoja. (Photo credits: Janne Remmy (tenga baskets in Tanzania))

tomatoes in East Africa<sup>viii</sup>, while quality losses for leafy vegetable crops in hot climates in West Africa can be extremely high (80 percent of amaranths are lost in Benin<sup>ix</sup>). There is very little study of the economics of PHL or the nutritional loss and food safety problems PHL causes<sup>x</sup>. Handling produce gently, using improved shipping and packaging

containers, and proper temperature and managing relative humidity (e.g. cold chain management) reduces PHL. For horticultural crops, each crop has an established safe temperature that is best for successful long-term storage. Processing foods or transforming them (i.e. cooking them) to make food products with longer shelf life also reduces PHL.

PHL increases whenever fresh produce is handled roughly (thrown, dropped or squashed, as in many wet markets), packed into poor-quality containers (such as large sacks or rough baskets), exposed to temperatures that are higher than the recommended lowest safe temperature for handling and storage, or experiences unexpected delays and exposure to sun or rain during the periods between harvesting and processing, or harvesting and consumption.

There are five major categories of PHL for horticultural crops:

- **Physical losses** occur due to rough handling, damage during harvesting, use of improper containers (containers too large or flimsy to protect the produce when stacked), use of poor quality storage (too hot, too dry, or pest-infested) or exposing harvested produce to sun, heat, rain or dust during handling, processing or marketing.
- **Quality losses** appear as changes in color (e.g. yellowing of green vegetables or fruit browning after an injury), appearance, texture or flavor. They can occur due to water loss (appearing as shriveling, wilting or dulling of surface shine), exposure to dust or debris, sunlight and heat, or attack by pests (such as fungi, insects or rodents).
- **Nutritional losses** begin immediately after fruits and vegetables are harvested. Losses of water-soluble vitamins such as Vitamin C increase with time, improper temperature management, and any conditions that allow water loss<sup>xi</sup>. Losses of calories, phytonutrients, vitamins and minerals also occur when produce is damaged and discarded before consumption.
- **Food safety losses** are related to both physical and quality losses, since GAP protocols require field sanitation, use of clean water for washing, clean containers for packing, use of appropriate pesticides and sanitizing agents, and labor following safe hygiene practices. If produce is contaminated by physical items (such as wood, metal or plastic debris), chemical substances (via incorrect sanitation solutions or pesticide residues), or biological matter (food-borne pathogens such as bacteria or viruses, or toxins produced by biological contaminants), damage can lead both to quality losses with associated loss of market value, physical losses as foods are sorted out.
- **Market value losses** are the end result of PHL when produce deteriorates in appearance or overall quality (leading to lower offered price per kilogram), or when produce is sorted out and discarded so there is less volume available to sell. Some buyers (e.g. hospitals, health food advocates, tourists) may value nutrient-dense foods more, and high-value horticultural crops are often produced for export, which requires better postharvest handling, documented food safety, and serious investment in the cold chain.

### Challenges and opportunities

SMEs in the horticultural value chain include growers who use direct marketing to sell their crops, small businesses that harvest, pack, transport, cool, store or market fresh produce, and small food processing companies that transform fresh produce into processed food products. The owners and workers in SMEs require **training** in post-harvest handling and food safety practices, and **access** to post-harvest tools, equipment, supplies and finance. When properly trained and equipped, they are a key factor in reducing both post-harvest food loss and reducing food-borne pathogens. One of the challenges of the private-sector approach that BD4FS champions is the perceived high cost of adopting changes in postharvest handling and food safety practices. Unless a buyer is willing to pay for improved packaging, cold storage operation or the documentation of food safety protocol, produce growers and marketers often lack incentives for making investments that improve food quality and safety.

BD4FS analyzes the economic opportunities provided by the shift from subsistence systems to more complex food systems. Options for investors might include:

- Extending shelf life and reducing postharvest losses via the use of cold chain management and improved storage for perishable crops,
- Providing food safety management services for smallholders (e.g. via cooperatives or farmer organizations); or
- Preventing nutritional losses and adding value to fruit and vegetable crops by processing to dried products, snacks, jams, juices, or sauces.

BD4FS works with a variety of SMEs that are developing in response to a wave of investment in reducing postharvest losses. These emerging SMEs include facilities operators (e.g. packinghouses, pre-cooling services, cold storages, composting), service providers (e.g. transporters, food safety consultants, refrigeration system repair and maintenance, retail shops for postharvest tools and supplies), and manufacturers (e.g. producers of plastic crates, bio-degradable films or consumer bags, and bio-safe alternatives to pesticides and chemical treatments). These examples are in addition to the many types of traditional food processor SMEs (e.g. for drying, canning, bottling, freezing, snack baking) and food marketing options (e.g. farmer's markets, community supported agriculture (CSAs), and roadside stands)., New niche markets may also develop in response to demand for higher nutritional value foods and documented safe foods for sale to local hotels, restaurants, and food service businesses that currently rely on expensive imported produce.

### **Focus Area 3: Supply Chain Logistics and Cold Chain Management**

The term “cold chain” or “cool chain” is not always well understood. When referring to perishable foods like milk, meat, fruits, and vegetables, the term denotes the protocols and equipment used within a specified low-temperature range to maintain the optimal temperature from a food's harvest to its consumption.<sup>xii xiii</sup> A cold chain is a temperature-controlled supply chain, which is ideally unbroken with no change in temperature for the food in question. Cold chains preserve and extend and ensure the shelf life (food safety) of not only food products such as fresh agricultural produce,<sup>xiv</sup> seafood, and frozen food, but also photographic film, chemicals, and pharmaceutical products.<sup>xv</sup>

#### **SMEs' Role In Developing Cold Chains In Emerging Economies With Low-Income Consumers**

The first four hours are critical for perishable foods. Providing optimal temperature for freshly harvested perishables can extend their shelf life, help maintain a higher nutrient value, and reduce post-harvest loss. This in and of itself will help ensure that food is safe for consumption. The techniques to accomplish the proper temperature and sustain the cold chain throughout the supply chain is a part of "the business of food safety." Cold chain expertise with the right equipment and infrastructure is a proven solution for extending the shelf-life of food commodities, allowing farmer entrepreneurs to garner a higher price for their commodities. Cold storage facilities can also regulate seasonality of some commodities, which in turns allows the seller to reach markets that will pay higher pricing during the low production season.

Logistics and temperature control are critical if companies are to reach the “sweet spot” of providing both safe and profitable food. Supply chains must be profitable to be sustainable, no matter how large or small the business. SMEs are often under-resourced, and competing as a “food safe” company means changing their current operating practices – which can cause shocks to their pricing model. This process is a function of “change management,”<sup>xvi</sup> which is a specialized area of expertise that SMEs don't normally possess or have the resources to invest in, even though they often know what needs to be done (buying and maintaining proper equipment, establishing a set of standards for safe food handling, etc.).

Food producers around the world have implemented these techniques to extend shelf life, but with the motive of maximizing profits and reducing economic loss. When SMEs face the costs of new or improved equipment and procedures, they have to analyze their potential return on investment.



This cold storage in Rwanda is considered a “premium facility” used for storing produce for export. It is HACCP (Hazard Analysis Critical Control Point) certified and has passed international standards. Yet, inspection by experts found multiple types of produce that require different temperatures, along with debris on the floor and walls which allows bacterial growth and food contamination. . This is in violation of the HACCP certification for safe food storage. Source: Bright House Consultancy & Training Africa based logistics and cold chain consultancy firm.

Creating an unbroken cold chain is expensive. Larger companies invest in this because they have the resources and the ROI is higher product quality and quantity, which garners higher prices in the marketplace. SMEs, especially in the informal sector (roadside kiosks, wet market stands, etc.), cannot compete at this level even though they know it will make their product safer.

BD4FS works to improve private sector responses by using a “temperature zone” approach which allows for large quantities of food to be aggregated and distributed from point A to Z, which makes the economic returns higher for the services provided and lowers the cost of the commodity.

BD4FS provides access to training in the temperature, humidity, and cross-contamination requirements for perishables paramount to providing safe foods. This temperature zone approach provides training and market connections based upon market demand, including

“bottom of the pyramid” consumers. Working to transform SMEs into robust, viable business enterprises is a prerequisite for a robust, viable “food safety culture.”

#### Focus Area 4: Financing and Investment

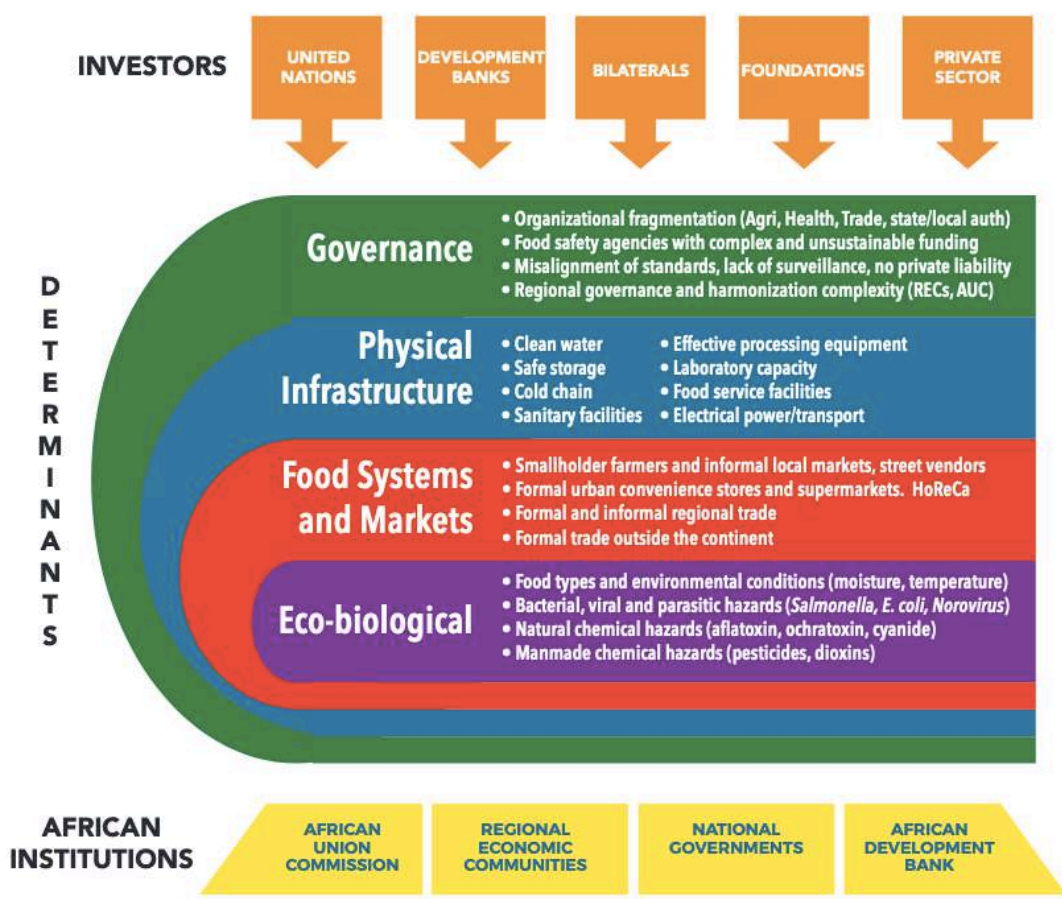
Food safe companies, from livelihood and small-size enterprises to small and mid-size companies, have a variety of financing needs. The investment opportunities in food safe enterprises, including cold chain investment opportunities, represent well over \$100 billion in developing countries. However, agricultural finance – the seemingly simple act of bringing agriculture and investment together – remains challenging, despite that organized farming has existed for some 10,000 years and money systems and coinage have existed for some 2,000 years. Investment in “food safe” companies, in particular logistics, temperature control or cold chain-focused companies, has the potential to change this long history of disconnect. Financing needs range anywhere from \$25,000 - \$100,000 for smaller companies providing food safety products, services and technologies working closer to local markets throughout Asia, Africa and the Americas. The access to capital for these smaller enterprises is especially challenging.

These companies, having outgrown their early stage financing typically secured from microfinance institutions or business grant programs offered through development finance organizations and are most vulnerable to financing gaps. Banks and formal lenders often do not move downstream, especially in agriculture lending, which creates this vulnerability for “food safe” businesses. Moreover, the lack of more systemized short-term financing often creates financing gaps which might result in business interruption and lost yields due to food spoilage and contamination. For larger “food safe” businesses working in cold chain and other parts of the food system, the financing needs are considerably different. Some enterprises,

whether aggregators, agri-processors, cold chain companies, and technology companies offering food safety services, require financing more typical of mature companies, including debt, equity, convertible currency, and working capital.

While the business sizes and markets vary considerably between smaller enterprises and larger concerns, the foundation to agriculture finance, as in any investment space, is driven by risk mitigation and risk management. This is achieved in several ways, whether through technical assistance, initiatives to ensure market access and value chain linkages, and efforts to address post-harvest, pre-consumer food loss.

Increasingly blended finance structures play critical de-risking roles to attract capital into agriculture investments. The combination of development assistance, venture philanthropy (primarily program-related investments), guarantees, concessionary capital or subordinated debt and first-loss or catalytic capital all work together to de-risk investing. Increasingly, blended finance structures are developed with greater efficiency to attract capital into the different enterprise levels.



In addition to the risks themselves, the costs associated with risk assessment and due diligence efforts, too, affect the flow of financing into enterprises working in agriculture and rural enterprises. Recognizing the role of food safe companies in addressing food-borne illness, reducing loss, and significantly increasing nutritional fresh produce in markets, the World Bank Safe Food Imperative calls for a subset of investments and institutions that should be dedicated to food safety.<sup>xvii</sup>

### The BD4FS Approach to Financial Services

Evidence for the return on investment in food safe companies is beginning to emerge. Sarah Ockman, International Finance Corporation (IFC) Global Food Safety Lead, commented, "Over the last 10 years, IFC's food safety programs have helped our (IFC) clients increase sales by over \$480 million." BD4FS provides technical assistance to SMEs to reduce the risk of investment in their enterprise, which supports market-driven, private sector solutions to achieving broader-scale food safety. With teams on the ground working closely with food-safe businesses, BD4FS experts can identify companies

with the greatest potential for market success. They can address due diligence concerns and identify appropriate capital needs. BD4FS addresses both livelihood-based enterprises and larger small and growing businesses. This allows BD4FS to support business growth in rural markets far away from mature supply chains, and drive more efficient and food-safe logistical approaches in expanding value chains. With its focus on business growth and linking the cold chain and value chain, BD4FS is well-positioned to play a significant role in leveraging financing for SMEs.

## Conclusion

There are no “silver bullets” for ending hunger and improving food safety in an increasingly global food system overnight. It takes a multidisciplinary approach with steady support. Understanding key elements like protecting food nutrition, PHFM, and logistics and temperature zone approaches can drive knowledge and enhance access to the financial services that empower businesses to innovate and drive the “**business of food safety**” across supply chains. This will support the larger objective of promoting a “**culture of food safety**,” to provide safer, healthier and more sustainable diets. In addition to improving food handling and providing better-quality foods for the marketplace, the BD4FS business-centered approach to food safety can also create other positive changes in the food system and even the overall economy in several ways:

1. **Advocating for policy that enables greater productivity:** SMEs are powerful stakeholders that can help promote, build and catalyze better public policies and regulations that impact their businesses. Joint co-creation between the private and public sectors can provide better understanding of how weak regulatory frameworks pose serious risks and costs to businesses, and the high burden of losing profits that could otherwise be re-invested to grow and strengthen the businesses (and policy incentives) that connect producers with consumers.
2. **Driving demand for research and technological innovation:** because SMEs are at the forefront of buying, trading, transporting and processing food, they are a good “laboratory” for investigating pathways to better food handling and identifying solutions that fit into their business model. Co-creating food supply innovations with these businesses fosters relevant, demand-based solutions that are more likely to be adapted and brought to scale.
3. **Building market demand for better food choices:** global demand for safer, more nutritious foods is not restricted to developed countries. The “Bottom of the Pyramid” consumer base is large and not often thought of as powerful, but it exerts significant pressure on informal as well as formal food systems, particularly the youth, who are aware – helped by increased access to global information through cell phones and internet – that a healthy diet based on local foods is not only good for their well-being, but also good for the economy. Local businesses who understand this demand are therefore in a good position to respond positively through innovating and distributing locally-sourced food products that meet this growing demand.
4. **Creating jobs and generating wealth:** according to the World Bank, SMEs represent 90 percent of businesses and 50 percent of all employment globally.<sup>4</sup> In emerging economies, formal SMEs contribute about 40 percent to GDP – a figure that would increase significantly with the inclusion of informal SMEs. With an estimated 600 million new jobs needed by 2030 to absorb the growing workforce, SME development is a high priority, and a natural companion focus in achieving zero hunger.
5. **COVID-19** is a respiratory illness, not a food-borne illness, but many of the precautions used in promoting food safety are the same for reducing the spread of respiratory illnesses like COVID-19, such as hand washing, hair nets, face masks, disinfection of surfaces. This protects workers and consumers. Investing in SMEs to make improvements in food safety has the dual benefit of improving food safety *and* reducing the risk of COVID-19. If countries can invest in and implement appropriate food safety standards, this will help reduce the spread of foodborne diseases and increase community awareness.



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