![Feed the Future - The U.S. Government's Global Hunger & Food Security Initiative]

Feed the Future Evidence and Action Towards Safe, Nutritious Food: FTF EatSafe

# Leveraging Consumer Demand to Drive Food Safety Improvements in Traditional Markets: FTF EatSafe's Research & Implementation Results.

July 2024

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*This FTF EatSafe report presents evidence that will help engage and empower consumers and market actors to better obtain safe nutritious food. It will be used to design and test consumer-centered food safety interventions in informal markets through the FTF EatSafe program.*

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# TABLE OF CONTENTS

## ACRONYMS AND ABBREVIATIONS

EatSafe      Evidence and Action Towards Safe, Nutritious Food
FAO          Food and Agriculture Organization of the United Nations
FBD          Foodborne Diseases
FERG         Foodborne Epidemiology Reference Group
FSD          Food Systems Dashboard
FTF          Feed The Future
GAIN         Global Alliance for Improved Nutrition
HACCP        Hazard Analysis and Critical Control Points
LMICs        Low- and middle-income countries
KAP          Knowledge, attitudes, and practices
MII          Market Improvement Initiative
MIP          Market Improvement Plan
WASH         Water, Sanitation, and Hygiene
WHO          World Health Organization

# EXECUTIVE SUMMARY

Improving food safety in low- and middle-income countries (LMICs), particularly in the traditional markets where most consumers shop, is crucial for advancing nutrition, health, and other development goals. Feed the Future's (FTF) Evidence and Action Towards Safe, Nutritious Food (FTF EatSafe) activity aimed to stimulate and leverage consumer demand for safer food to drive improvements in food safety in traditional markets. As an evidence-generating project, the following results were expected:

- **Expected Result 1**: Increased and consolidated knowledge and evidence of food safety risks in informal markets.
- **Expected Result 2**: Development of novel tools and approaches to engage consumers and vendors on food safety risks.
- **Expected Result 3**: Increased evidence of the impact of consumer-facing interventions on food safety-related behaviors.

This results report shares the information collected over the five years of FTF EatSafe. Section 2 (Foundational Research) provides the knowledge and evidence for Expected Result 1. This information was used to design the tools and approaches to accomplish Expected Result 2. Section 3 of this report provides insights generated by implementing these tools and approaches, and shares evidence of the impact of consumer-facing interventions (Expected Result 3).

## THE THREE-LEGGED STOOL FRAMEWORK FOR FOOD SAFETY IN TRADITIONAL MARKETS

FTF EatSafe's work on consumer demand and improved food safety behavior revealed that a broader context is needed if behavior change work is to have a lasting impact on the food safety landscape. Food safety in traditional markets is determined not only by the knowledge, attitudes, and practices of market actors but also by various factors such as market governance; access to clean water, sanitation and hygiene (WASH); establishment of vendor associations; and availability and affordability of appropriate technologies.

To effectively define and address the needs of this complex market ecosystem, FTF EatSafe developed a 'Three-Legged Stool' framework that summarizes three key "pillars" that need to be in place for food safety improvements to be sustained:

1. **Motivation and Incentives for Positive Behavior Change**: Identify and implement strategies to encourage market actors to adopt safer food practices.

2. **Availability of Best Practices and Appropriate Technologies**: Ensure that necessary technologies and best practices are accessible and affordable.

3. **Enabling Environment**: Improve infrastructure, governance, and other contextual factors to support food safety initiatives, including demand creation and behavior change.



This framework guided the design and implementation of FTF EatSafe activities.

*FTF EATSAFE RESULTS*

**EXPECTED RESULT 1.** INCREASED AND CONSOLIDATED KNOWLEDGE AND EVIDENCE OF FOOD SAFETY RISKS IN INFORMAL MARKETS

The FTF EatSafe foundational research (Section 2) generated numerous insights and recommendations, including:

*Understand the market:* using a [rapid market assessment tool](#) focused on food safety can provide key information needed to understand how the market works and identify what activities may be beneficial and feasible.

*Identify the problem:* high levels of pathogenic bacteria were found in food samples from traditional markets, indicating a significant public health risk. Understanding contamination pathways helps identify how to interrupt them.

*Understand consumers:* consumers generally underestimate the risk of foodborne diseases. Price is the dominant factor in consumer purchasing decisions, but other elements such as trust in vendors, food quality, and cleanliness also play significant roles.

*Understand vendors:* vendors often have limited knowledge of food safety practices and rely on traditional methods.

*Understand gender roles and dynamics:* gender roles and dynamics impact food purchase choices, market vending roles, and participation in program activities.

*Understand themes that resonate:* identifying themes that resonate among consumers and vendors helps build immersive and relatable content that fosters motivation.

*Understand the market enabling environment:* traditional markets often lack adequate infrastructure, which is critical for food safety: access to clean water, proper drainage, waste disposal systems, and facilities for safe storage and display of food.

*Understand stakeholders:* strategically engage allies and mobilize resources.

**EXPECTED RESULT 2.** DEVELOPMENT OF NOVEL TOOLS AND APPROACHES TO ENGAGE CONSUMERS AND VENDORS ON FOOD SAFETY RISKS.

Guided by foundational research, FTF EatSafe designed and implemented seven activities, between Nigeria and Ethiopia (figure below). These activities largely focused on the Positive Behavior Change from the 3-legged stool, but in some cases, also addressed the other two legs (i.e., Training and Simple technology, and Enabling Environment). These activities also fell into 5 categories or 'buckets': In-Market

Information Center, Mass Media Communication Campaign, Signaling, Training, and Collaborative Networks.  In Nigeria the interventions ran for 12 months (Sep 2022-Sep 2023), while in Ethiopia they ran for 8 months (May 2023-Dec 2023).
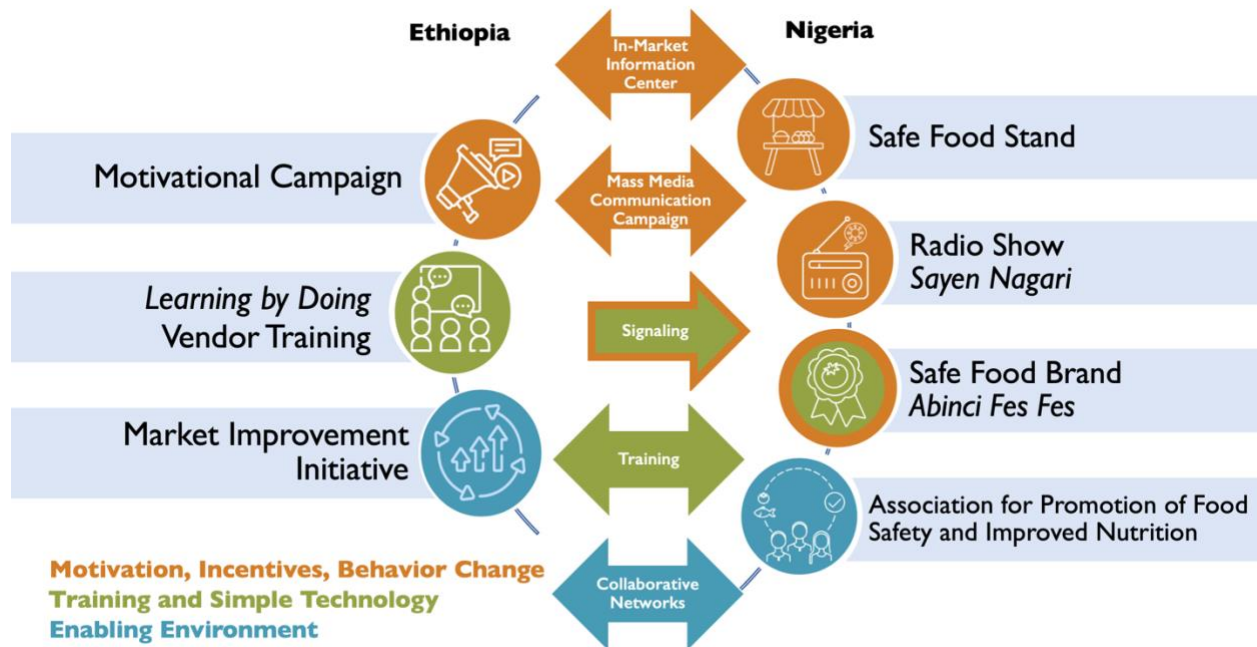


In-line assessment with local stakeholders were utilized during the design and early implementation phases to generate key insights. This information was used to refine and where needed course-correct program activities. Details on how each activity was implemented can be found in the Intervention Implementation Guide, another key FTF EatSafe deliverable that can be used by field workers looking to implement demand generation/behavior change work in traditional markets.

**EXPECTED RESULT 3.** INCREASED EVIDENCE OF THE IMPACT OF CONSUMER-FACING INTERVENTIONS ON FOOD SAFETY-RELATED BEHAVIORS

FTF EatSafe conducted evaluative assessments in both countries to track the impact of consumer-facing and vendor-facing interventions on food safety-relevant behavioral outcomes. Implementation findings and learnings, shared in Section 3, include:

### NIGERIA

- There was strong support for the establishment of a food safety association (APFSAN) both by the public, and by local government. Half the members were women.
- Radio was an effective way of engaging with large numbers in the community, especially when the public were invited to participate.
- Having an in-market information and training center was seen as an important point of contact with the public by both market management and local government.
- Establishment of a brand requires strong social networks between different market actors. When successfully implemented, a brand is a very effective signaling device to connect consumers with program vendors.

### ETHIOPIA

- The public responded differently to the tested food safety messages. Ones with a focus on protecting family health were most impactful.
- In-market training was well received by vendors, although many worried whether they could implement improved practices due to poor infrastructure and lack of clean water.
- Collective action proved to be an effective way to establish a municipal taskforce to tackle food safety in traditional markets.

## *ENHANCING AND SUSTAINING FOOD SAFETY IN TRADITIONAL MARKETS*

FTF EatSafe conducted project activities beyond the confines of markets (Section 4). To support its market-based behavior change work, FTF EatSafe became involved in several activities with broader, more systemic objectives. These activities included:

- Establishing a food safety association in Nigeria.
- Utilizing a collective action methodology to establish a municipal market improvement task force in Ethiopia.
- Providing technical leadership on the development of new Codex guidelines for improved food safety in traditional markets.

- Attracting over 700 entrepreneurs from Nigeria and Ethiopia to participate in an Innovation Challenge, culminating in a grand final in Denmark.
- Advocating for the inclusion of food safety indicators in the Global Food Systems Dashboard.

## *THE FTF EATSAFE IMPLEMENTATION ROADMAP*

FTF EatSafe has developed a clear model for implementing food safety improvements in traditional markets, focusing on positive behavior change through consumer demand. By utilizing this Report, the [Market Assessment Tool](), and the Behavior Change Intervention Implementation Guide, it is hoped that others will continue this work in other countries.

The steps to take can be summarized as follows:

1. **Assess and Understand the Market Ecosystem**: Using the '3-legged stool' framework, assess the market food safety landscape and determine available resources and opportunities for building consumer demand/changing behaviors.

2. **Leverage Findings to Design Behavior Change Interventions**: Using the assessment results, work with local stakeholders to design targeted interventions.

3. **Implement and Learn from Behavior Change Interventions**: Execute and evaluate the effectiveness of the interventions. Adapt as necessary to improve efficacy.

4. **Build Sustainability and Success**: Shape the broader food safety landscape to ensure long-term improvements.

Aroge Gebeya vegetable and grain market in Hawassa, Ethiopia

# I   THE BIG PICTURE

## 1.1   WHY INVEST IN FOOD SAFETY?

**Investment in Food Safety Amplifies Investments in Health and Nutrition**

The concept "unsafe food is not food" highlights that contaminated food cannot provide the nutrients needed for growth, health, and well-being. Food safety ensures that food does not cause harm when prepared or eaten according to its intended use. Although food safety and nutrition have often been addressed separately in international development, they are closely connected. For example, one-third of diarrheal disease cases are food-related, and diarrhea is a major cause of undernutrition. Many nutritious foods, such as animal-sourced foods and fresh vegetables, are also at high risk for foodborne diseases. Concerns about food safety can lead consumers to avoid these nutritious foods, negatively impacting nutrition. Conversely, promoting the consumption of these foods without addressing food safety could increase health burdens.

**The Burden of Foodborne Disease is Significant**

The WHO Foodborne Epidemiology Reference Group (FERG) estimates that 600 million people become sick each year and 420,000 die of foodborne illnesses, resulting in an estimated burden of 33 million Disability Adjusted Life Years (DALYs). Most of these cases occur in low- and middle-income countries, which bear about 75% of deaths from foodborne illness despite comprising only 41% of the global population. Africa faces a per-capita burden of foodborne disease 27 times higher than Europe or North America. Young children are especially vulnerable, accounting for about 40% of the burden despite representing only 9% of the world's population. Pregnant women, fetuses, and newborns are also at increased risk, leading to adverse pregnancy outcomes. The economic costs of foodborne illnesses, including healthcare expenses, productivity losses, and trade impacts, are estimated by the World Bank to be around 110 billion USD per year.

## 1.2   WHY INVEST IN TRADITIONAL MARKETS?

Traditional food markets are crucial for food systems, bringing together vendors and consumers in an environment that supports billions of people worldwide. Recent estimates suggest the informal food sector, including street food vending and traditional "open air" or "wet" markets, serves between 65% and 95% of the domestic market demand for food in low- and middle-income countries (LMICs). Traditional markets are dedicated spaces where food is bought and sold, playing essential economic, cultural, and social roles. As the predominant retail destination for nutrient-rich, locally grown

fresh foods (e.g., animal-source foods, fruits, and vegetables), traditional markets fulfill critical food and nutrition needs. They also contribute to local social networks, economic development, and livelihood support while maintaining competitive pricing across a broad variety of products. Many LMIC customers prefer shopping in traditional markets due to their convenient location, freshness of products, negotiable prices, and relational experiences they provide.

However, while important for nutritious diets, animal-source foods and fresh produce are often the [leading causes of foodborne disease](#) globally, and conditions in traditional markets can exacerbate these risks. It is estimated that between 50% and 60% of the foodborne disease burden in low- and lower-middle-income countries can be attributed to foods sourced from the informal food sector. This reflects inadequate policy and regulation, infrastructure, surveillance, capacity building, and resources and technology compared to the formal food retail sector. Systems to establish food safety standards or initiate product recalls are generally lacking; requirements for vendor licensure, if they exist, may be inconsistent. As a result, vendors, market management authorities, and local government actors often lack the agency or knowledge about both food safety risks and mitigation strategies, as well as the resources to procure necessary equipment.

## 1.3   WHY FOCUS ON CONSUMERS?

While improved systems of government regulation, control, and enforcement – which generally keep food safe in high-income countries – are necessary over the long term, many LMICs have limited food safety management capacities. Where such systems are lacking, as well as the compliance incentive that drives food safety practices in the supply chain, solutions that take a bottom-up approach focusing on consumer demand to motivate suppliers are thus needed.

Harnessing demand to stimulate behavior change and broader food safety improvements in markets can be a practical way to support formal government efforts, which currently are not able to meet food safety needs on their own. Stimulating demand-driven behavior change in market communities can engage a broader set of actors, instill agency, and raise expected standards, which in turn can stimulate public sector efforts. As a result, there emerges a self-reinforcing loop that gains momentum over time, becoming more effective as it progresses and expands. Initial bottom-up efforts can build upon themselves to create increasing returns or continuous improvement and lead to supply-side response.

Currently, efforts to motivate consumers to demand safer food in traditional markets have been limited. FTF EatSafe took on this challenge.

Consumer purchasing legumes in Central Market, Birnin Kebbi, Nigeria

## 1.4   FTF EATSAFE LEARNING AGENDA AND BEHAVIOR CHANGE MODEL

Feed the Future's Evidence and Action Towards Safe, Nutritious Food (FTF EatSafe) aimed to increase consumer demand for safe, nutritious foods in traditional food markets in low- and middle-income countries (LMICs). FTF EatSafe implemented activities in two countries, Nigeria (Kebbi and Sokoto states) and Ethiopia (Sidama region), and had three expected results:

- **Expected Result 1**: Increased and consolidated knowledge and evidence of food safety risks in informal markets.

- **Expected Result 2**: Development of novel tools and approaches to engage consumers and vendors on food safety risks.

- **Expected Result 3**: Increased evidence of the impact of consumer-facing interventions on food safety-related behaviors.

Generating demand requires motivating and incentivizing people to make new and different choices, i.e., to change their behavior. Programming and messaging should aim to motivate and incentivize the consumer and influence choice, not only to improve knowledge. Hence approaches based on emotions and nudging are more effective.

However, while motivation is necessary to change behavior, it may not be enough to sustain consumer desire to buy safer food when there are no safer options available in the market. Creating demand for safer food requires that food vendors are equipped to meet that demand. This consumer-vendor relationship becomes a powerful tool for improving the food safety landscape in the market. Consumer demand for safer foods acts as an essential incentive for vendors and market actors to improve their practices and change their behavior. A supportive enabling environment and food safety culture can further strengthen and sustain the desires and abilities of both consumers and vendors to prioritize food safety, while a deficient enabling environment can undermine these efforts.

FTF EatSafe's behavior change model, aligned with the COM-B behavioral model (Capability, Opportunity, Motivation - Behavior), accounts for three key components, a "three-legged-stool," needed to create and sustain behavior change toward food safety:

**Motivation for Positive Behavior Change**

- Often referred to as attitudes, beliefs or ideals, motivation is the fuel that energizes and directs the process from desire or intent to a concrete goal and then to implementing an action.
- Includes emotional/affective (automatic motivation, e.g., habits, impulses) and cognitive aspects (reflective motivation, e.g., plans) key to forming the desire and intent to act (e.g., buy a specific food, or avoid it).
- Examples include the desire to protect one's family, fear and risk aversion, trust, or willingness to pay for quality safe food.
- Feelings and experiences during and after carrying out the action act as feedback and can reinforce motivation (e.g., the satisfaction of purchasing good quality food can motivate a consumer to buy again from the same vendor).

**Capability - Best Practices and Technologies**

- Attributes of a person that make them able to carry out an action.
- Includes "how to" knowledge and skills necessary to perform the action (e.g., knowing how to handle food safely, or how to identify signs of unsafe food).
- Benchmarked by guidelines on food safety behaviors and practices.
- May include technologies to carry out best practices, ranging from costly cold storage to simple tools like tables, cleanable containers, or gloves.

**Opportunity - Enabling Environment**

- Features of the food system, physical and social, that make the action possible by providing access to tools and resources (e.g., water to wash hands, money to buy quality food) or via social norms.
- The enabling environment for food safety includes contextual factors, both local and large-scale, that can enable or inhibit improvements. Among others:

  - Physical Infrastructure: Roads, water, sanitation, and waste disposal.
  - Social Networks: Community-based organizations or vendor associations.
  - Culture: The cultural practices, beliefs, and norms that influence food handling, preparation, and consumption within the community.
  - Governance and Institutions across public and private sectors.
  - Policy: Existence of reference food safety regulations and guidelines.
  - Access to Education and Professional Development: Availability of training and educational resources to enhance knowledge and skills in food safety.
  - Financial: e.g., access to capital to invest in shop and market improvements.

Behaviors, in this context, are actions that consumers may take to procure safer food (e.g., compare food and stands at the market, preferentially buy from a clean stall, ask questions to a vendor, or wash produce at home) and that vendors may take to sell safer food (e.g., implement improved food safety practices such as cleaning surfaces, protecting the food from mud or flies, washing their hands, elevating food from the ground, or select safer suppliers).

FTF EatSafe leveraged this behavior change model to define the scope of foundational research and to design and evaluate program activities, guided by its learning objectives, budget, and time horizon.

## LEARN MORE ABOUT FOOD SAFETY AND TRADITIONAL MARKETS

- Food Safety, Traditional Markets, and Consumer Demand in Low- and Middle-Income Countries: A Landscape Synthesis
- VIDEO: Food Safety: The Biggest Development Challenge You've Never Heard Of
- VIDEO: Food Safety in Traditional Markets: The Story of Felicia and Musa
- Integrating Food Safety and Nutrition for Improved Health and Wellbeing: A New Lens on Food System Frameworks
- Literature Review Linking Food Safety and Nutrition
- Literature Review on Foodborne Disease Hazards in Foods and Beverages in Ethiopia
- Where supply and demand meet: how consumer and vendor interactions create a market, a Nigerian example
- Perspectives on food safety across traditional market supply chains in Nigeria

Tomato vendor in Dankure Market, Sokoto, Nigeria

# 2 FOUNDATIONAL RESEARCH

## 2.1 TOOLS FOR ASSESSING THE FOUNDATIONS FOR PROGRAM DESIGN

In the foundational research phase, EatSafe assessed key factors necessary for designing effective demand-driven behavior change activities within the three-legged stool framework. A range of research approaches were employed, including qualitative interviews, quantitative surveys, focus groups, choice experiments, market observations, story sourcing, food testing and risk assessment, and literature reviews.

Below, we summarize foundational research learnings, their implications on EatSafe behavior change intervention design, and recommendations for program designers.

## 2.2 UNDERSTANDING CONSUMERS AND VENDORS

### 2.2.1 CONSUMER MOTIVATIONS, CAPABILITIES, AND PRACTICES

**Risk perception and knowledge: consumers underestimate the risk of foodborne disease.** Consumers are aware of some foodborne risks, but risk perception and knowledge generally do not align with actual risks. For example, in Nigeria there was high concern about pesticides on grains (especially cowpeas), while microbial pathogens were seen as less dangerous although epidemiological estimates place them as top concern. In both countries, consumers generally view food as safe and have a range of understandings of what causes gastrointestinal illness (with a possible association between education levels and food safety knowledge). While consumers and vendors know several aspects of food safety, gaps include mechanisms for causing foodborne illness, distinguishing foodborne disease from other types of illness (especially those such as diarrheal illnesses that have a number of different causes), which foods are highest risk, and risks of cross-contamination.

Risk perception was heightened when knowing someone who got sick or having personal experience with unsafe food. As with most probabilistic events that may or may not happen predictably to an individual, there is a bias towards underestimating the likelihood of the event or its severity and overestimating the individual resistance or immunity. Vendors share a similar view on risks.

While risk may be underestimated, consumers in both countries were very cost-conscious. From a cost/ benefit perspective, intervention messages could highlight the financial burden of foodborne illness, e.g., that it costs more to treat an illness than it does to purchase more hygienic foods, or that illness can impact the ability to work and earn money.

**Consumer purchasing choices: price matters most, but there's more to the story.**

*Purchasing process:* Consumers make food purchase choices based on a  process that applies to both nutrition and food safety programs (Fig. 1). Consumers face multiple decision points; interventions should target the critical ones where food safety can be either compromised or improved. In Ethiopia, consumers choose which market to shop from based on proximity. Once at the market, they compare three vendors on average before deciding which one to patronize. They select a shop based on price, trust in the vendor, and food quality; food safety or cleanliness is often mentioned after these three factors. In Nigeria, food price and quality, followed by variety, are by far the top drivers of food purchase choices (i.e., selection of shop/vendor to buy from), and proximity also plays a key role in the choice of market. Cleanliness was not an important driver of market choice, although it was a secondary factor for shop selection. FTF EatSafe's research showed that around 20% of consumers mentioned vendor attributes and personality as being influential in their decision of where to shop.

Some consumers move through the market rapidly, spending little time to compare, and would likely need a quick way to verify food safety. However, others prefer to take their time while they shop, as they appreciate the vendor-consumer interaction. Box 1 shows a list of common drivers of consumer food purchase choices, including and beyond those that were dominant in EatSafe communities.

**Figure 1**. The Consumer Purchase Choice Cycle
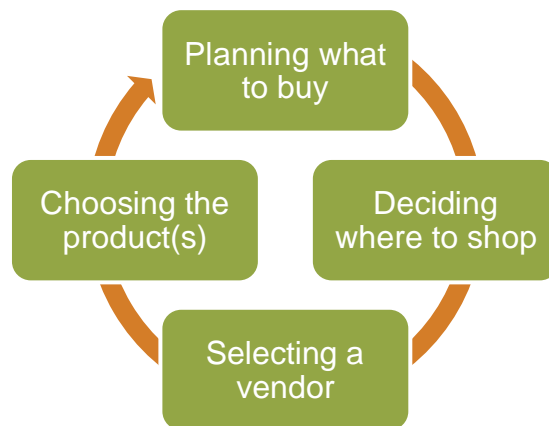


*Trade-offs:* **As is common throughout the world, and more pronounced in LMICs, c**onsumers continually make trade-offs between price and desired food properties. It is important to understand prevailing economic factors and economic factors at a local scale. For example, Ethiopia saw high inflation in 2022, with several consumers

mentioning it as a reason to change purchasing habits such as shopping more from traditional markets. Vendors offering credit to trusted customers can also drive food purchase choices and override other factors. In addition, vendors often lower prices for lower quality products (e.g., with blemishes or spoilage concerns), which could lead to higher risk for lower-income consumers. Inflation and restructuring of the Naira currency also affected financial security in Nigeria. Awareness of food safety risk or its importance alone does not translate to changes in consumer purchases because consumers may make trade-offs between risk, convenience, and price.

*Sensory cues:* Consumers use visual and other sensory cues to decide whether a food is of acceptable quality and safety. In Ethiopia, consumers commonly examine food items visually (e.g., for blemishes, presence of insects, and signs of spoilage) as well as the vendor's personal and stall cleanliness. In Nigeria, common cues were smell/odor as well as visual signs such as blemishes, desiccation, or color, and texture. It is important to remember that sensory cues can detect only some signs that the food may be unsafe, generally when the level of hygiene is low. In many instances food safety is invisible. Nevertheless, sensory cues are rooted in every culture and could be leveraged and expanded upon in behavior change campaigns and capacity building. In Nigeria, consumers expressed low trust in food labels, suggesting the need to develop trust around any proxy for direct food evaluation by shoppers.

**Consumer-vendor relationships impact shopping behaviors.**

*Communication:* Cultural differences determine whether consumers and vendors communicate about food safety and quality, and whether these communications could be leveraged in interventions.

In Ethiopia, FTF EatSafe's research found that consumers rarely ask questions or communicate with vendors about food quality or safety, and this was flagged as something that could be a focus of FTF EatSafe's implementation activities - that more frequent, informed dialogue might improve food safety outcomes. Despite some restrictions in communication, FTF EatSafe's work did find that consumers will stop buying from a vendor they were displeased with.

In Nigeria, it was found that a sizable minority of consumers did talk to vendors about food quality, while almost nobody stopped patronizing a specific vendor due to grievances.

Consumer purchases onions in Aroge Gebeya, Hawassa, Ethiopia

*Trust and assurance:* Established relationships between consumers and specific vendors (trusted or often-patronized vendors) can play a prominent role in consumer purchase choices. These relationships are common but not universal. In Ethiopia, consumers repeatedly purchase from a trusted vendor for their fairness in price, weighing the product correctly, and consistent quality (e.g., not mixing low quality items with higher-quality ones). FTF EatSafe research also showed that vendors favored trusted customers, e.g., by providing them with the best product and with additional instructions on how to handle or prepare it. This was a dynamic that was seen as potentially useful to leverage in future food safety improvement work.

Availability of credit was also an important aspect. The relative importance of "trusted vendor" relationships vs. comparisons across vendors can determine which type of intervention can be most effective. While safety per se did not seem a key factor in originating these trust relationships, existing connections can be reinforced by the (verified) assurance that a trusted vendor is also upholding food safety practices.

**Behaviors are based on emotions and triggers.** Emotions are a powerful source of motivation to act, together with cognitive processes (e.g., planning). In communities where FTF EatSafe was implemented the most promising emotions for communicating food safety are trust (i.e., feeling of safety or peace of mind), fear (i.e., feeling of loss or heightened risk), disgust, and nurturance (e.g., protection of children). Knowing which emotions or emotionally charged values are prominent in the beneficiary group will help select messages and tone that resonate the most (e.g., a focus on cleanliness and disgust over dirty environments, vs. a positive framing on nurturing family health). In test environments, risk information that evokes emotional responses is more strongly associated with intention (motivation) towards food safety behaviors.

Emotional charge and rewards are also associated with several behavioral mechanisms that can be leveraged in program activities. For example, many actions stem from habit (e.g., going to the same market); leveraging existing habits requires less effort than proposing a new alternative. Also, people use heuristics to make choices, i.e., mental shortcuts that simplify factors to be considered (e.g., not buying fish with sunken eyes). Expanding upon existing heuristics or creating new ones can make adopting a new behavior easier. Also, powerful emotional rewards or feedback come from social interactions, e.g., via social norms on personal hygiene. Overall, while behavior pathways are complex (see Section 3 for the model FTF EatSafe adopted), working with emotions is a key component of effective behavior change efforts.

**Accurate translation of terms makes messages clear, relevant, and relatable.**
How people think and talk about food safety matters. In both countries, EatSafe found that the concept of food safety is difficult to describe for consumers and vendors. The concept also overlaps with concepts of freshness, cleanliness, hygiene, spoilage, health of the animal or plant, nutritional value, and others. Safety is often seen as a component of overall food quality. There may be several words indicating food safety features, or none that captures the concept of "not causing illness or other adverse health impacts when consumed". It is key to understand which terms would be recognized, relatable, and emotionally salient in the beneficiary groups when designing messages or conducting surveys. It is better to use a term that partially covers food safety but is useful for behavior change (e.g., "clean food" - cleanliness can be seen) than a term that is too abstract or not used in common parlance.

**Consumers carry out risk reduction practices post-purchase.**
Consumers take some action towards food safety after purchasing food items. For example, in Ethiopia consumers frequently reported washing vegetables with lemon or vinegar. While these practices can only partially improve safety, they signal that

consumers are aware of contamination and are motivated to carry out risk-reduction practices. In Nigeria, hazards were seen as easily manageable at home, e.g., by cooking. Even in programs focused on markets it is important to know how consumers handle food at home, since it affects their demand for safety assurance at the point of purchase. For example, there is less risk aversion for food that is cooked before consumption. However, bringing home contaminated food can cause cross-contamination of food and the home environment.

## BOX 1: SUMMARY OF INCENTIVES AND DRIVERS OF CONSUMER PURCHASE CHOICES

- Food price
- Food quality and freshness
- Relationship with and trust in vendor, how vendor treats customers.
- Assurance of safety / sensory cues that food is not spoiled or damaged.
- Financial: getting credit, discounts
- Proximity and convenience, hassle reduction
- Shop looks clean, tidy, and well kept.
- Shop/vendor are recommended by trusted individuals.
- Family dynamics e.g., spouse approval of purchases
- Risk/loss aversion
- Disgust (e.g., unclean shop, waste, flies, spoiling food)
- Family/children protection
- Cost-benefits of safe food / not getting sick.
- Third party assurance of food safety (e.g., Brand, government inspection, vendor license)
- Heuristics aligned with key drivers.
- Social interactions while shopping

### 2.2.2 VENDOR MOTIVATIONS, CAPABILITIES, AND PRACTICES

**Competition or collaboration? Vendor relationships can enable or hinder activities.** Interaction and social capital dynamics among vendors, especially vendors of the same commodity type, can be a powerful force but should be approached with nuanced cultural knowledge so as not to disrupt existing equilibria (e.g., create injustice or envy). For example, in Nigerian markets competition among vendors exists, but a

value of collective cooperation and consensus towards harmonious relationships dominates. Vendors see themselves as behaving in similar ways to their fellow vendors and are not necessarily seeking to 'stand out' in how they handle food; some competition may instead happen in aspects unrelated to the food itself (e.g., offering credit). While consumers are free to choose where to buy, it is frowned upon for a vendor to actively recruit customers away from other vendors. Hence, a strategy that encourages active competition among vendors, particularly related to price, may encounter challenges. Instead, interventions should align with vendor associations (e.g., seen as benefiting all vendors in the group) and build upon consensus values to foster shared practices and collective stewardship or enforcement of norms. Vendors may also welcome practices that make foods more attractive to consumers without triggering overt competition, e.g., ways to sell perishable goods quickly or extend their shelf life. In the Ethiopian market we found a keen sense of equity and justice among vendors, which also results in a higher likelihood of jealousy and competition.

Butcher cuts beef near Central Market, Birnin Kebbi, Nigeria



For example, social dynamics and possibly competition or friction among vendors over perceived inequities led to suspicion toward EatSafe activities and those who engaged with FTF EatSafe and received financial compensation for the time they took to

24

participate in interviews. While it was unclear how the rumors started (possibly an association between COVID-19 and surveys taking place at that time), it appears that the cash token for survey participation was considered too high. This attention to inequities was also noted when pilot survey participants highlighted that everyone should receive the same compensation, instead of being able to choose among different options (e.g., airtime, cash, small gifts). In this context it is key to take the time to develop trust, allowing prospective participants to become familiar with the scope and voluntary nature of the activities, e.g., using success stories, trusted leaders, and testimonials to build credibility and encourage participation. It may also be unwise to leverage competition among vendors, and better instead to foster collaboration and a sense that everyone is benefiting equally. It may also take more effort and trust-building to adopt peer learning approaches or have spillovers to a larger group of vendors.

**Vendor motivations change based on available resources.** Timing is critical. In periods of relative abundance vendors have more flexible margins and could be encouraged to experiment with new food handling or display practices. At the same time, it is important to ensure that vendors with less resources can participate and benefit from activities. In times of resource scarcity, incentives could be tied to assistance. In general, vendors are busy and unlikely to be receptive to new practices that cannot be easily built into their workflow.

**Food handling practices vary among vendors in the same market.** Food handling and display varies by vendor and commodity in ways that can impact contamination. In Hawassa, some vendors sell food placed on raised structures such as small tables or carts, others in bowls or plastic sheets on the ground. Vendors also vary in their food safety practices, and there is a clear gap between knowledge and action. While vendors frequently wash and wipe produce, they self-report far greater levels of garbage disposal and stall cleaning than observed. In Nigerian markets, several vendors practice some hygiene measures (e.g., half use bags or bins to collect waste), separate foods, and some wipe surfaces. Personal hygiene levels are good. However, many practices are lacking such as use of clean tools, handwashing, and temperature control. Assessing current food handling practices allows identifying which should be reinforced, which demystified, and which new practices can be included in interventions as both effective and feasible.

Fresh perishable foods are generally the riskiest, and their risk can increase rapidly as the food spoils. A key challenge for vendors is how to realize a good price and revenue on goods that are rapidly losing value. They are likely to welcome ways to sell their products quicker or slow down their deterioration. While cold storage would require

substantial investments and maintenance, ways to control shade, temperature, and moisture are likely to catch the attention of these vendors.

**Limited food sourcing options compel vendors to find alternative ways to differentiate themselves from competitors.** Where vendors rely on a small number of suppliers, the quality of the incoming goods is going to be similar across vendors. This makes it difficult for a vendor to distinguish themself based on product alone and elevates the importance of other strategies: pricing, personal service, loyalty, credit. Leveraging the importance of non-product-related attributes (e.g., cleanliness, a visible brand or certification) can help consumers choose between vendors.

**Vendors express the need for better market infrastructure.** Vendors highlighted the need for infrastructure as a basis for carrying out many food safety practices. Nigerian vendors highlighted lack of a good drainage system, insufficient hand washing facilities, lack of cold storage facilities, inadequate water supply, and open defecation. In Ethiopia, in addition to the needs for infrastructure that Nigerian vendors expressed, some vendors purchase water from houses near the market and bring it to their shop for washing vegetables or keeping them fresh (e.g., lettuce). Therefore, it is key to calibrate target practices (and associated training and messaging content) to the infrastructure and tools available. Certain water, sanitation, and hygiene (WASH) facilities may need to be provided or existing ones improved to create an enabling environment for food safety. Otherwise, vendors would not consider the practices achievable and will likely lose interest.

**Markets include both formal and informal food vendors, and activities must be inclusive of all.** Understanding how formal vendors (e.g., registered, paying rent for their stall) vs. informal (unofficial, not fixed) operate within a market is key to inclusive interventions and safeguarding. Informal vendors often do not have fixed structures and may have lower access to resources and tools. They may belong to different gender, ethnic, or socio-economic groups than formal vendors. It is important to tailor target practices to be applicable to both groups, which EatSafe did. Informal vendors may be more reluctant to participate in activities that could "out" them, but programs that encourage their legitimization could be welcome.

It is also to understand how authorities regulate and enforce informal vendor activities. In Aroge Gebeya, informal vendors were often chased away, which influenced how they operated – e.g., not having many belongings; and selling in the evening once police had left. All of these had food safety implications.

## 2.2.3  FINDING THEMES THAT RESONATE TO DELIVER FOOD SAFETY MESSAGES

EatSafe collected stories that provide a rich landscape of life in and around the EatSafe target markets in Nigeria and Ethiopia. These stories informed building immersive, relatable, and culturally relevant EatSafe content.

In Nigeria, several themes emerged when speaking with 61 food vendors which can be leveraged in behavior change programming:

- **Learning from errors.** This theme could be effective for behavior change narratives where characters model safe food behavior. This holds potential particularly in the absence of significant infrastructure improvement throughout the market.
- **Service to others.** Stories about service to others have currency with the vendor community and could be effective in a food safety context where protecting the consumer is a variable.
- **Resilience and motivation.** Vendors shared many stories of resilience and

27

motivation to improve their businesses. In a food safety context, this is particularly relevant since interventions will likely ask vendors to do something different -- something that might add to the challenges associated with running their businesses.

- **Pride and success.** Pride and success seem to be motivating factors for vendors, which suggests that these could be potent elements in food safety messaging and programming. Keeping customers healthy, as another source of pride and success, could potentially have resonance with vendors. Tying food safety with professional development, certification, and business success might be another way to reach vendors as well.

- **Occupational hazards.** Stories featuring occupational hazards (e.g., burned in a fire, cursed by a jealous competitor) have the potential to be very dramatic, which could be highly effective at capturing the audience's attention.

- **Reliance on the government for business help.** Many vendors described their ideas and readiness to expand their business being hindered by various constraints such as lack of infrastructure improvements or unavailability of interest-free capital investments from the government. This tension provides a useful background for narratives, particularly when addressing infrastructure-related food safety concerns.

- **Seizing market advantage.** Vendors are highly adaptable and are looking for ways to strengthen business and increase sales. These traits could be of great value in stories about building a safe food environment.

- **Religious norms and values.** Religious norms and values organize community life. These should be highlighted in key narratives about vendors and around food safety.

- **The hidden influence of vendors' wives.** The wives of food vendors play a significant, behind-the-scenes role in their business decisions and daily routines, a fact that should be woven into media and narratives about food vendors..

Four themes emerged from stories collected in Ethiopia:

- **Adventures with Food.** Stories about the cultural importance of food for consumers and how food plays a key role for food vendors' livelihood will be essential in developing stories for EatSafe media interventions.

- **Family Dramas.** Interviewees shared many stories of seminal moments with close family members. These kinds of stories should be used in media interventions as they elicit an empathetic response that can then be used to deliver food safety messaging.

- **Community Support.** Many of the interviewees highlighted how the community helped them in their time of greatest need. As this kind of support seems to be grounded in cultural expectations, community support can be a key story component in food safety media programs for EatSafe interventions.
- **Dreams and Aspirations.** Interviewees were very motivated by their dreams and aspirations—both as an expression of what they have lost and what they hope for in the future. Several stories focused on the hope that gender roles would change and that men could play a more active part in domestic obligations.

EatSafe used these stories during the activity design phase to transport program staff mentally and emotionally to the target markets in Nigeria and Ethiopia, allowing them to design EatSafe activities with "a real person" in mind. These stories also served as the foundation for compelling entertainment-education components in the radio show in Nigeria and the mass communication campaign messaging in Ethiopia.

In a behavior change program, it is key to create immersive and relatable communications and media programs featuring identifiable characters. These programs should build on the themes and details embedded within the collected community stories. While the themes identified through EatSafe story sourcing may not be universally applicable, they can guide other programs in probing for what resonates with their audiences.



Aroge Gebeya, Hawassa, Ethiopia

## 2.2.4 UNDERSTANDING CONSUMER AND VENDOR DEMOGRAPHICS

**Literacy, Religion, Ethnicity, and Age**

*Literacy and communicating food safety concepts*
Designing the training requires a good understanding of the level of education to ensure that training and communication tools are designed at the appropriate level for market consumers and vendors. For example, if vendors have a grade school education, their background in science may not be sufficient to understand underlying microbiology and chemistry concepts. To effectively communicate why food safety is a risk, it is important to illustrate concepts using actual conditions in the market, such as ambient temperature and access to clean water.

Education levels were similar across genders, in both countries. However, vendors generally had lower education levels than consumers. Hence, when possible, messages for consumers and vendors may need to be different. This is particularly important in activities such as in-market campaigns or demonstrations, that may be attended by both consumers and vendors.

*Leveraging influence of religious leaders and positive religious habits*
Although knowledge of food safety among vendors and consumers may not be scientific, many food safety practices and health values are already embedded in cultural and religious beliefs. Examples are ritual cleansing, fasting, or avoiding certain foods, and animal slaughtering practices. Also, religion-based gender roles may determine who in the family decides which food to buy and who goes to the market, or who is allowed to be a vendor. These norms are a result of lifelong learning by watching relatives at home and during religious gatherings and indoctrination. It is important to build on these habits by partnering with authority figures in religious spaces or by making consumers and vendors see that food safety and hygiene practices help them honor their god(s) and care for the community. To enhance future program designs, it is crucial to engage with community leaders, religious leaders, and local authorities from the outset to build trust and understanding. Conducting informational sessions to clarify program objectives and benefits will help dispel myths and misinformation. Developing culturally appropriate communication strategies that consider local beliefs and practices and utilizing local media and trusted community figures to disseminate accurate information, will further counteract rumors or misunderstandings.

*Navigating linguistic and ethnic diversity of traditional markets*
Working in a traditional market context often means navigating a diverse linguistic and ethnic landscape. For example, in Ethiopia, multiple languages are spoken in the

market, reflecting the area's diverse demographics. Amharic, the/a national language, is the most spoken language in households, with 79% of consumers and 58% of vendors using it. Wolayita is the second most common language, spoken more frequently by vendors (37%) than consumers (11%) due to the high number of Wolayita minority ethnic group vendors. The regional language, Sidama Afoo, also needs to be considered. In the two northwestern cities in Nigeria (Sokoto and Kebbi) where FTF EatSafe worked, there are many ethnic groups, but almost everyone understands either Hausa or English.

To address the linguistic and ethnic diversity in the target market, it is recommended to develop activities in languages commonly spoken by the majority. Visual aids and interactive demonstrations can help transcend language barriers. If the budget permits, developing messages in minority languages would ensure fair inclusion and enhance the understanding and retention of food safety messages across the market.

Different ethnicities may also have varying social norms that impact purchase choices and receptivity to messages and activities. Behavior change activities should acknowledge and incorporate culturally relevant examples and scenarios to make the content more relatable. Targeted outreach should leverage local influencers and community leaders from multiple groups. Establishing feedback mechanisms will allow for the continuous adaptation of communication strategies, promoting more effective behavior change among the diverse market population.

### *Age*
Most vendors in FTF EatSafe markets are adults spanning a broad range of ages (mean age of 30 years for consumers and 34 for vendors in Nigerian markets; 32 for consumers and 30 for vendors in Ethiopian markets). Adults were prioritized as the primary audience, while youth and children were included in messages as family members.

Developing age-appropriate educational programs that use interactive methods effective for adult learning, such as demonstrations, visual aids, experience sharing, and active participation, is important. For example, younger adults can be engaged through age-specific capacity-building workshops relevant to their interests and future aspirations, as well as through peer-to-peer learning.

For adults, it is key to offer flexible participation options to accommodate varying work schedules and responsibilities, and to provide clear, concise, and practical information that

can be immediately applied. Effective group discussions and collaborative activities should leverage their experience and knowledge.



Hawassa University student trains vendors in Aroge Gebeya, Hawassa, Ethiopia

**Gender Dynamics**

While little research has examined the intersection of food safety and gender roles in traditional market spaces, FTF EatSafe prioritized understanding gender dynamics in its impact on program activities. This section highlights key aspects for intervention design.

*Household food budget decision-making roles*

Understanding who decides about family finances and food purchases is crucial for targeting the right audience. In FTF EatSafe countries, married couples often report sharing the decision of what foods to buy, but in many cases, shopping is primarily carried out by one person.

In FTF EatSafe's Nigerian markets, research showed that most households (60%) share shopping duties with their spouse, while half share purchasing decisions. In traditional Hausa households in northern Nigeria, many women do not leave the house alone without permission and often lack independent income. When the husband provides his wife with money to purchase food at the market, her choices are limited by the set budget and his input. If the woman does not shop, her husband will do so with her input.

In Ethiopian markets, women are the primary shoppers in traditional markets (60%) and are expected to acquire food and prepare it for consumption at home, although some men also play a role.

*Gendered shopping practices and behavior*

Gendered perspectives strongly influence food shopping practices. FTF EatSafe research from Nigeria shows that men are often seen as less adept at shopping and more susceptible to exploitation, such as spending the same amount of money for a smaller quantity or worse quality of food. Women shoppers are perceived as more practical and discerning, and better able to negotiate with vendors on quality and price.

In Nigeria, a similar stereotype exists: women are considered better at finding the best deals and negotiating, while men prioritize speed over discernment. The concept of a 'good wife' in traditional Hausa households illustrates these gendered expectations. A 'good wife' is expected to buy everything needed within the given amount and ideally return with some change, motivating her to barter and find the best deals. She may also want to save some of the money to either give change back to her husband or cover some of her own purchases.

A gender-targeted strategy to motivate changes in shopping behaviors could leverage these perceptions. For instance, promoting the idea of women as "good, discerning shoppers" and men as "busy, with no time to waste" could be used to inspire pride in these traits. However, this approach must be careful not to reinforce negative stereotypes or disempower men. In the long run, better food safety and women's empowerment are likely to be supported by more equal gender roles, where men are also recognized as capable of making food-related decisions independently of women.

In both contexts, most men and women value being thrifty and saving money, so messages on "wise shopping" are welcome to both genders. In Nigeria, this could also relate to a wider theme of maintaining family harmony.

*Food vending*

Vendor roles often differ between men and women. In Ethiopia, most vegetable vendors (80%) are women, while men primarily handle meat processing in abattoirs and butcher shops. In Nigeria, men dominate the meat and fish vending sectors, while women make up a sizable minority of vegetable, grain, and legume vendors. Overall, women are underrepresented among vendors in Nigeria and in other upstream roles of the supply chain, such as transport, processing, and storage.

Several social norms and expectations contribute to this underrepresentation, including perceptions of the types of work suitable for women versus men and expectations for women to stay home rather than work outside. Women are more common among vendors of ready-to-eat foods in Nigeria, though these foods were out of scope for FTF EatSafe (not being the selected FTF priority nutritional foods). Women vendors tend to have smaller shops and slightly lower socio-economic status compared to male vendors. They also report less contact and communication with market management.

While these differences were not significant enough to warrant different interventions, it is important to focus on recruiting women into program activities and creating spaces where they feel safe and welcome. When choosing focus commodities, implications for gender equity should be considered. For example, future projects may want to focus more on ready-to-eat foods, given women's significant roles in selling these items.

Additionally, women vendors may have less flexibility in managing their non-work time, so training and other activities need to be designed accordingly.

### Social norms

Gender factors intersect with ethnicity and culture. In northwest Nigeria, several ethnic groups shop at the same market, and the Hausa are the most numerous. It is important to understand the role of women in these groups to ensure that activities and messages are appropriate and relatable to the majority while being inclusive of minorities.

For instance, in some groups, married women are not supposed to work outside the home or go to places where interaction with other men can occur, such as attending mixed-gender training sessions. Unmarried women have more flexibility in this respect. However, traditional norms may also be applied flexibly; for example, married women may still be vendors at the market. Projects must find the right balance between accommodating these norms when necessary and working with local actors to respectfully challenge them where they may be hindering women's empowerment.

In both countries, women play a much larger role in cooking than men, and therefore a key role in home food safety behaviors. These roles also influence which activities resonate most with different genders. For example, cooking demonstrations and cooking-related consumer training in Nigeria were predominantly attended by women.

Overall, FTF EatSafe sought to be a gender-sensitive program: it aimed to understand and acknowledge gender-related differences and adapt its program to take these into account, to better achieve its aim of improving food safety through consumer demand. The first step in doing this was strong formative research that included gender-related

research questions and sex-disaggregated data. This yielded numerous insights about ways in which gender shaped decisions and practices – with implications for food safety. These insights were then used to refine the design of the program activities, including customized messaging content to ensure both genders - as well as other demographic segments - could see themselves reflected in stories or campaign images. These gendered messages were tested with local focus groups to ensure cultural appropriateness. Wherever feasible, sex-disaggregated data were collected in monitoring and evaluation activities, which helped inform our understanding of the program's uptake and reach. While using a strong gender-sensitive approach, FTF EatSafe did not aim to be gender-transformative – i.e., to try to overturn the underlying social norms that hold back women's empowerment in the context of food marketing and food safety. Future food safety programs might seek to integrate such approaches – or work alongside other projects doing so – to further deepen their impact on gender equity.

## 2.3  UNDERSTANDING THE CHALLENGE AND THE CAPACITY TO ADDRESS IT

### 2.3.1  THE NEED: CONTAMINATION AND RISKS IN MARKETS

To better understand the size of the challenge, FTF EatSafe assessed food contamination in the markets using a combination of approaches: first a national-scale evidence review of hazards in food and beverages; then targeted food testing in the target markets to understand the extent of contamination in the specific context. At the same time, consumers and vendors were surveyed to understand their consumption practices and perspective on risk.

Prevalence and levels of pathogenic bacteria in fresh commodities is high. In Nigerian markets, *Salmonella* was detected in 37% of tomato samples, while a prevalence of 11% in fresh fish and 3% in fresh beef was noted in the literature. Ready-to-eat foods from the markets also showed high contamination (10% in awara, a spicy fried soy-derived tofu), indicating that the fact that a food is cooked is not sufficient guarantee of safety, due to possible re-contamination. In Ethiopia, FTF EatSafe's risk assessment study of 328 kale, tomato, and lettuce samples, found that 7% and 35% were found positive for *Salmonella* and/or generic *E. coli,* respectively. Contamination prevalence for both bacteria was highest for kale, followed by lettuce, and lowest for tomatoes. Total Coliforms, an indicator often associated with fecal contamination, which includes *E. coli*, were detected in 89% of samples at high levels. *Salmonella* concentrations were low to medium.

Risk of illness corresponding to observed microbial levels is high, much higher than in the U.S. These findings suggest that reducing foodborne risk at the market (compared to other value chain stages) is needed and may result in significant public health improvements. FTF EatSafe also reviewed food testing technologies that could be appropriate for low-resource contexts. Findings confirm that portable and relatively simple assays exist, including some that do not need full laboratory settings to be processed, and new ones are being developed. However, costs and benefits need to be weighed carefully.

**Figure 2.** Snapshot of FTF EatSafe's analysis of commercial assays currently available in the market

| | Local Ground Partners | Electricity Required | Battery Required | Refrigeration Needed | Low Education level | Durability |
|---|---|---|---|---|---|---|
| Perkin Elmer ELISA | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ |
| Hygiena's Microsnap | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ |
| Hygiena's BAX System X5 | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ |
| bioMerieux GENE-UP | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ |

Dynamics of cross contamination in the market are complex. While it is likely that some foods arrive to the market already carrying high levels of contaminants, food can become (more) contaminated in the market. Some market practices, e.g., washing with clean water, can also reduce contamination levels. Presence of *Salmonella* on vegetables suggest possible animal and environmental contamination routes. Frequent occurrence of *E. coli* indicates contamination by human or animal feces. High prevalence of these bacteria indicates continuous contamination, not isolated incidents. Careful consideration of main contamination pathways (e.g., a simple Hazard Analysis and Critical Control Points, or HACCP – or a qualitative risk assessment exercise based on food safety fundamentals) can help prioritize commodities and identify critical control points in the market-to-consumption continuum. For example, it is key to learn if a

commodity is eaten raw or cooked. Knowing the main routes of contamination helps identify which practices are key to include in behavior change programs (e.g., avoid mud splashes vs. keep live animals and carcasses separate vs. hand washing).

Future efforts or initiatives could rely on existing evidence such as that produced and synthesized by FTF EatSafe and other projects, instead of carrying out new food testing - if all things are equal (i.e., same geography, same cultural practices, same resources or lack of, same food preparation, etc.). Food testing can be resource- and time-intensive, and in the context of behavior change programs it is recommended only if it fills a clear information gap. However, results of food testing may offer a powerful message to make the issue tangible and raise awareness with local consumers and stakeholders. Thus, it is important to think of food safety interventions that apply to whole groups of foods (e.g., produce, grains, dairy, meat).

## 2.3.2  IDENTIFYING TARGET FOOD SAFETY PRACTICES FOR TRADITIONAL MARKETS

To make food safer in traditional markets, vendors need to implement food safety practices (i.e., behaviors) as part of their day-to-day selling activities. The sustained adoption of such food safety practices is the objective of behavior change interventions. At the start of the FTF EatSafe program, there was little guidance on food safety practices customized for traditional markets. Through reviews and expert elicitation, FTF EatSafe identified a set of practices that could be achievable in the medium-term for traditional market vendors (with support from market management and other stakeholders and reinforced by consumer demand). A subset of key practices was then included in FTF EatSafe training and campaigns.

FTF EatSafe reviewed existing normative guidelines used to manage food safety and quality issues for street foods – including the FAO/WHO Codex Alimentarius (Codex)'s Regional Guidelines for the Design of Control Measures for Street-Vended Foods and the Asia, Latin America and Caribbean (LAC), and Near East Regional Codes of Hygienic Practices for the Preparation of Street Food,. Many practices recommended for street vendors (e.g., Food Handling, Vendor Health and Hygiene, and Training and Education) are applicable to market vendors in FTF EatSafe countries, but not all. The HACCP approach outlined in the LAC Code can also be useful. Several supplementary documents provide useful advice and content on food safety training programs for vendors (e.g., WHO 2006 Guide, INFOSAN 2010 Information Note). The WHO 5 keys to food safety were also used as reference.

Four broad content areas were identified during the formative research as essential for training and formed the scaffold of training in Nigeria: (1) **Personal hygiene of food**

**handlers,** (2) **Clean stand, environment, and equipment** (including waste management), (3) **Food handling** (including separating foods to prevent cross contamination, choosing suppliers, appropriate packaging/containers, and temperature control), (4) **Use of clean or portable water**.

In Ethiopia, the set of key target practices to be communicated during training was organized around a simple "**5 Cleans and 4 Safes**" mnemonic, each covered in different modules (Box 3). Tools provided during the training supported the implementation of these practices. Visible aspects of these practices were checked during follow-up assessments to understand which were adopted. While not comprehensive, these subsets of key themes and practices were selected based on a combination of their risk reduction potential and being achievable for vendors in the context of the existing resources and infrastructure.

**BOX 3: 5 CLEANS and 4 SAFES**

- Clean Hands (personal hygiene, clean hands)
- Clean Water (for food washing, stall cleaning, hand washing)
- Clean Tools (e.g., for handling, transferring, and weighing food)
- Clean Surfaces (food contact surfaces)
- Clean Clothes/cloths (protective clothing, cloths/rags for cleaning)

- Safe Storage (right temperature, right moisture, protected from pest)
- Safe Sorting (fresh and clean from wilted and dirty)
- Safe Separating (high-risk foods from low-risk and ready-to-eat foods)
- Safe Sanitizing (of surfaces, tools)

New Codex Alimentarius Guidelines for food safety in traditional markets for food were developed and approved in March 2024, with GAIN support based on FTF EatSafe research. These comprehensive guidelines can now provide a starting point for other programs to select target practices and customize them to specific market contexts.

A tiered market assessment tool that includes specific vendor practices can serve multiple purposes: (1) Assessing the baseline to understand strengths and gaps; (2) Tailoring interventions to address gaps while leveraging strengths, and selecting target

practices that are achievable (e.g., moving from tier one to tier two likely requires different tools and approaches than moving from tier two to tier three); (3) Tracking changes in practices over time.

### 2.3.3 ACCEPTABILITY OF SIMPLE TECHNOLOGIES

FTF EatSafe conducted a preliminary study to assess vendor's reactions to a range of simple food safety technologies including protective clothing (apron, overcoat), hand sanitizer, water disinfectant tablets, a surface cleaning solution (bleach), rags, an insect control device, a waste bin, and plastic film to cover vegetables. The objective was to find those that could be included in the later vendor training, based on their likelihood of adoption. Several technologies were rated positively by vendors in terms of feasibility of use, availability, acceptability, ease of use, and affordability. Technologies considered difficult to use were not adopted, such as the pest control device that required electric connectivity.

Several learnings from this study can help refine interventions that include technologies. For instance, protective clothing needs to fit the wearer, be agreeable in color, and be suitable to the gender, climate and culture. Technologies that need a reliable electrical supply are to be avoided unless a reliable source of electricity is available. In terms of food contact surfaces, cleanable containers and tablecloths were preferable to plastic film to protect vegetable products, as customers like to see or inspect food items before buying them. Hand washing stations are likely more acceptable than hand sanitizer, but frequent washing may still be unlikely due to access and availability of clean water. In this case, the focus should be on handwashing after high-risk events.

Attention to the sturdiness of the items and the ability to procure consumables should be considered, including affordability aspects. Similarly, cleaning and sanitizing solutions that need to be refilled require ongoing expenses that would need to be matched with a clear incentive. A short training was given to instruct vendors on the scope of each technology. The trainers felt that this half day training needed to be extended to properly convey the benefits and incentives for using these technologies.

## 2.4 UNDERSTANDING THE ENABLING ENVIRONMENT

Understanding the physical, sociocultural, and regulatory environments in which people make everyday choices is critical to improving the safety of nutritious foods. FTF EatSafe has considered components of the enabling environment that are most relevant for food safety in traditional markets: i.e., regulations and public policy, governance and social networks, and physical infrastructure.

### 2.4.1  INFRASTRUCTURE

Lack of infrastructure is often a defining feature of traditional markets, although there is a gradient. Key infrastructure that supports food safety in markets is availability of clean water (ideally running water); drainage (preventing water pooling or mud); and food and other waste disposal/recycling. Separation of live animals or abattoirs from food is key and can be accomplished by infrastructure or zoning rules. Proper food storage and display (e.g., keeping food off the floor and on clean surfaces) can be supported by standardized stalls that follow hygienic design, but could also be achieved with simpler movable structures such as tables, crates and carts. Refrigeration, most often not available, should be strongly considered, but with caution and only when sustainable and environmentally friendly (e.g., solar powered); temperature control not requiring electricity or mechanical maintenance (e.g., portable coolers, shade, insulated rooms, or containers) can be an appropriate first step. Infrastructure could not be directly addressed during the FTF EatSafe program, but stakeholder activities discussed this crucial aspect, and it became an important component of the recently commenced Market Improvement Initiative for post-FTF EatSafe sustainability.



Rain floods Central Market, Birnin Kebbi, Nigeria

### 2.4.2  MARKET GOVERNANCE

Understanding governance structures and building relationships with market stakeholders early on is critical for program success. Key information includes which local agencies oversee or are otherwise involved in the markets; how active market authorities are and what types of decisions they control; village/town/city and market regulations and enforcement of those; and which stakeholders influence market operations. In study markets in Ethiopia, no formal vendors association exists for

vendors to engage in collective action. On paper, the market operates under the oversight of the Hawassa city mayor's office, with primary management responsibilities entrusted to the municipal Trade and Market Development sector office. Other local authorities are tasked with tax collection. However, there is little in-market support or oversight for day-to-day operations, and coordination across multiple authorities can be complex. Enforcement can be random or selective, causing informal vendors to display their food on blankets that can be easily snatched up to collect the food and escape local authorities quickly. In this environment, formal approval from authorities to engage in market improvements to increase food safety is a key step, and authorities should consider developing policies for more pragmatic engagement with informal vendors. Interventions should also not only rely on existing governance structures or require the establishment of new ones but recognize that there are other actors in the community who could play a role.

Conversely, study markets in Nigeria have an on-site market management body, sometimes with paid staff, that is involved in day-to day operations, including financial management and conflict resolution. Vendors are associated in commodity trade groups with a clear governing body. A municipal authority has formal jurisdiction but is not involved in any enforcement or day-to-day management. In this context vendor associations and market management can be key allies and stewards of long-term initiatives, provided they have incentives.

In both countries, while a formal authority exists, there are no inspections or other compliance operations that provide regulatory incentives to implement food safety practices. However, where present, vendor associations may be able to set community norms and enforce common agreements (e.g., on waste disposal or water use). Developing incentive programs for market management bodies can foster their active participation and commitment to long-term initiatives.

Enhancing local oversight involves gaining the buy-in of and strengthening the role of the Trade and Market Development sector office or other relevant authority(ies) by providing capacity-building training to improve market management and oversight. Encouraging collaboration between different local authorities can streamline operations and enhance coordination in market management, too. Establishing vendor associations, like those in Nigeria, could help in self-regulating and managing market activities, and create a significant platform that could work with the municipal authorities. Previous efforts to form associations have failed, and vendor collective actions currently do not extend beyond small, informal groups collaborating on specific, localized tasks

such as cleaning specific areas, managing toilets, or forming a sales group. Nevertheless, these can be the foundation of something bigger.

Officials visit Central Market in Birnin Kebbi, Nigeria



### 2.4.3  POLICY

While national or sub-national policies may seem far removed from the day-to-day reality of markets, they represent the formal government guidance and law on how to enact food safety. They should be examined to understand what governance framework is in place regarding food safety in traditional markets. This analysis can identify responsible parties, mechanisms for oversight and intervention, and possible inefficiencies or gaps. Compliance with policy at national or local level, even if usually not a sufficient incentive, could play a role in legitimizing markets or connecting them to resources. For this reason, FTF EatSafe conducted policy assessments in Nigeria and Ethiopia and identified opportunities to support policy advancements.

### 2.4.4  SOCIAL NETWORKS

Community organizations and professional associations, among others, are powerful structures that can enable and amplify programmatic activities. The social and

professional network landscape can vary significantly by region and country. In Ethiopia, vendor/consumer associations are not common or seen favorably. In this context it is more likely that consumer demand is expressed at individual or household level. In Nigeria, associations are rather common. However, only 8% of consumers had heard of any organization working on food or food safety locally. Existing or new associations can bring consumers together to advocate or sustain initiatives, and to disseminate knowledge and motivation. In both countries, faith leaders were highlighted as potential food safety advocates since they are influential and well respected by the citizens. Health professionals are also trusted sources of information.

## 2.4.5  COMMUNICATION CHANNELS

FTF EatSafe utilized formative research (surveys, story sourcing) to determine which channels to use to reach consumers and vendors with food safety messaging and behavior change programming. In Nigeria, we discovered vendors' strong preference for radio. Seventy-four percent of vendors stated that radio is their most preferred way of receiving news and entertainment, with newspapers being the least preferred option. Vendors access radio through their cell phones and often gather in certain vendor stalls when it is time to listen to the news. As one journalist put it, "[Vendors] do not joke with their radios."



Vendor listens to a radio show in Dankure market, Sokoto, Nigeria

We also learned that collaborating with respected vendors, making them "food safety champions" could be an effective channel for reaching market vendors with food safety messaging. In Ethiopia, FTF EatSafe found that a mixed media approach might work best. TV, radio, billboards/posters, and in-person interactions were identified as the most effective channels. There is a preference for short dramas and interviews with known personalities. Additionally, all communication programs and materials should be produced and distributed in two languages: Amharic and Sidamigna.

## 2.5 UNDERSTANDING KEY STAKEHOLDERS

It is critical to identify key stakeholders before designing behavior change interventions. Beside the common need for formal permits to implement activities, stakeholders can be powerful allies and provide inputs, mobilize resources, and influence the outcome of the effort. Ultimately, the momentum for change will need to come from local stakeholders and resources. FTF EatSafe conducted stakeholder mapping exercises to evaluate stakeholders' roles, interest, influence, awareness about food safety and gender issues. As part of a questionnaire based on WHO guidance, the Power/Interest Grid tool was valuable in mapping stakeholders to communication, engagement, and capacity building activities.

In Hawassa, Ethiopia, the mapping revealed key stakeholders (high interest/high influence) including government bodies and Hawassa University, while Influential Stakeholders (low interest/high influence) include the Women Association and farmers. The Agaga Vegetables Vendors Union, Media, and Industry groups represented Interested stakeholders (high interest/low influence). Lastly, low priority stakeholders (low interest/low influence) included development partners and the Youth Association. Similarly, in Nigeria key stakeholders were identified as government agencies and development partners; influential stakeholders were market and consumer associations, the private sector, and women groups. Interested stakeholders were research/ universities, NGOs, and professional associations.

Stakeholder mapping is also useful for identifying key issues and influences around food safety in traditional markets. For example, in Nigeria, the stakeholders voiced concern over pesticide residues in cowpeas due to storage practices. This was both a concern that needed addressing and an entry point to engage with the market community around food safety more generally.

## 2.6 RAPID MARKETS ASSESSMENT TOOL

Based on testing a range of mixed-method tools during the formative phase of the program, FTF EatSafe developed and piloted a rapid market assessment tool that distills key information needed to select and customize program activities to improve food safety in traditional markets. The tool can be deployed over a couple of days where a more extensive formative phase is not possible, or where information is already available. The tool is composed of a market observation module and short interview modules for key informants (e.g., market management staff) and/or focus groups (e.g., vendors or consumers). The tool aligns with other USAID efforts to assess and support food environments, while adding a specific focus on food safety dimensions. The recently approved Codex Alimentarius Guidelines for Food Safety in Traditional Markets (publication forthcoming) were also used as reference while developing the tool, which could be further customized for Codex use. Pilot results confirmed the suitability of the tool (available upon request) for use in a broader range of markets with different infrastructure and governance, as well as the feasibility of completing data collection in 2-3 days.

**FOUNDATIONAL RESEARCH - Key Findings & Recommendations for Demand-Driven Behavior Change Interventions:**

- The three-legged stool model helps organize the information needed to improve food safety in traditional markets and other food system components.

- The FTF EatSafe rapid market assessment tool can provide key information for designing program activities in context, covering relevant aspects of the three-legged stool.

- Assessing contamination levels and pathways, directly or via existing data, sheds light on the size of the problem and which practices to target.

- Risk perception and attitudes, as well as emotions and values around food and health, can be leveraged to craft messages that resonate with different groups. FTF EatSafe found that most people underestimate risks but respond to emotions such as family protection/worry, disgust for bad food, a sense of justice around being sold tainted food, and trust in a vendor. Rooted food safety beliefs and myths may be difficult to challenge, but they can serve as well-known conversation starters.

- Understanding how people make food purchasing choices is crucial. Consumers in FTF EatSafe markets primarily choose food based on price and quality, and markets based on proximity. Other food and vendor factors play a role but are unlikely to surpass price and quality. Emphasizing food safety in relation to quality and the cost-benefits of safe food ("buying safe food is like taking money back home with you" - radio show) can leverage existing drivers while nudging towards higher safety.

- Identifying the weak links in the motivation-to-behavior pathway is important. Consumers in FTF EatSafe markets have some knowledge of food safety and desire safer food but need clear options and ways to make their choices easier and more cost-effective.

**FOUNDATIONAL RESEARCH - Key Findings & Recommendations for Demand-Driven Behavior Change Interventions, cont.:**

- Consumers use sensory cues to select food that meets their demand for quality (e.g., color, smell, texture, blemishes, flies). Messages on how to identify safer food can expand upon these cues. However, food that is visibly lower in quality/safety is still bought for a lower price, possibly placing low-resource consumers at higher risk.

- Vendors are often aware of consumer preferences but lack the incentives, capabilities, and tools to change their practices. Infrastructure, resources, and hassle factors often hinder the adoption of improved practices.

- Leveraging demand is an iterative process requiring both consumers and vendors. Consumers need to make their choices and preferences more visible to vendors, proving a business case, and vendors need to be motivated and able to provide what consumers want.

- Social norms around customer-vendor loyalty (e.g., competition vs. collaboration, existing trust relationships, communicating feedback) can be a positive force but need to be approached with tact and cultural sensitivity.

- Program design choices can impact inclusivity. For example, the choice of commodities or formal vs. informal vendors may mean only some ethnic, gender, or age groups are included.

- Women play a large role as both food shoppers and vendors. Supporting the vital role of women is crucial for creating a safer and more inclusive food safety market environment.

- Market management and vendor associations, where present, can be powerful allies that facilitate improvements and lead to long-term sustainability. Conversely, lack of ownership and responsibility for market operations can weaken momentum but may be difficult to change within short programs. Conversely, lack of ownership and responsibility for market operations can weaken momentum but may be difficult to change within short programs.

# LEARN MORE ABOUT FTF EATSAFE FOUNDATIONAL RESEARCH

### Ethiopia

- FTF EatSafe Learnings from Formative Research in Ethiopia
- Food Safety Perceptions and Practices in Ethiopia: A Focused Ethnographic Study
- Food Safety Attitudes and Practices in Hawassa, Ethiopia: A Quantitative Formative Assessment
- Evaluation of Consumer and Vendor Behaviors in a Traditional Food Market in Hawassa, Ethiopia
- FTF EatSafe in Ethiopia: Food Safety Stakeholder Reports
- Food Safety Policy and Regulation in Ethiopia
- Review of Food Safety Policy in Ethiopia
- Consumer and Vendor Perspectives and Practices Related to Food Safety in Ethiopia: A Review
- Food Safety Hazards and Risk Associated with Fresh Vegetables: Assessment from a Traditional Market in Southern Ethiopia
- FTF EatSafe in Ethiopia Baseline Assessment

### Nigeria

- FTF EatSafe in Nigeria Baseline Assessment
- Food Safety Hazards and Risk Associated with Foods Sold in Traditional Markets in North-Western Nigeria
- Qualitative Behavioral Research on Traditional Food Markets in Kebbi State, Nigeria
- Food Safety Attitudes and Practices in Traditional Markets in Nigeria: A Quantitative Formative Assessment
- Food Safety Policy in Nigeria
- Review of Food Safety Policy in Nigeria
- FTF EatSafe Learnings from Formative Research in Nigeria
- Focused Ethnographic Study on Food Safety Values, Knowledge and Practices in Traditional Markets in Birnin Kebbi, Nigeria
- FTF EatSafe in Nigeria: Food Safety Stakeholder Reports
- Consumer and Vendor Perspectives and Practices Related to Food Safety in Nigeria

### Global

- Perspectives on Food Safety - A Review of Ethnographic Studies
- Global Review of Consumer and Vendor Perspectives on Food Safety

FTF EatSafe Market Activation staff hands out educational materials in Aroge Gebeya market, Hawassa, Ethiopia.

# 3   BEHAVIOR CHANGE INTERVENTION DESIGN AND LEARNINGS FROM IMPLEMENTATION

## 3.1   FRAMING THE BEHAVIOR CHANGE PATHWAYS: THEORY OF CHANGE

FTF EatSafe's theory of change (Fig.3) posits that a combination of consumer-facing and vendor-facing behavior change activities focused on food safety, based on the COM-B model within the three-legged-stool framework, can effectively engage participants. Furthermore, engaging in these activities can lead to positive changes in key drivers of food safety behavior, and eventually to changes in behaviors.

**Figure 3**: FTF EatSafe Theory of Change
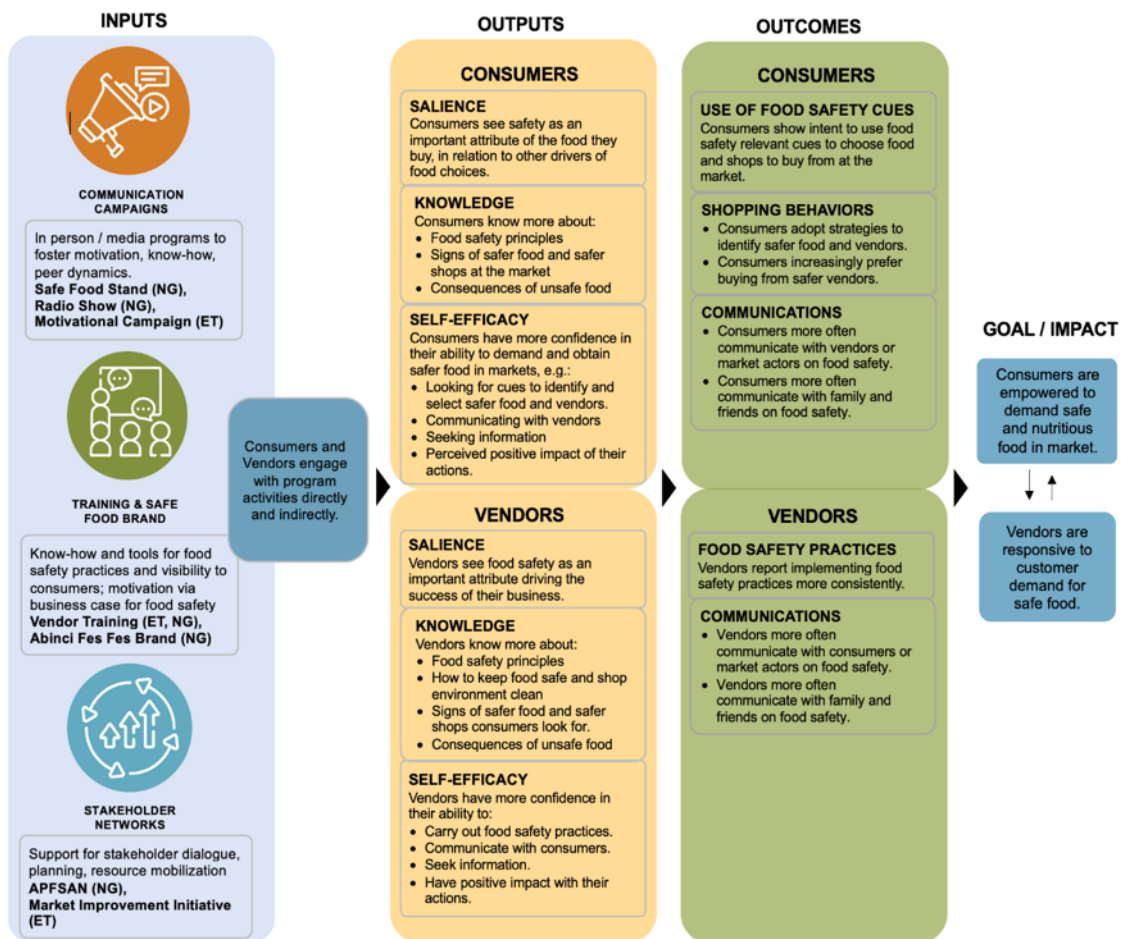
While behavior drivers and mechanisms are complex, FTF EatSafe emphasized three categories (OUTPUTS in the figure): the importance of food safety as a motivating factor in purchase choices and in vending (salience); practical knowledge on how to procure safer food or how to keep food safe, a capability (knowledge); and confidence in one's ability to identify and demand safer food, or handle food safely while selling, as a motivator (self-efficacy). These drivers are supported by emotions, values, and behavioral mechanisms. Consumer demand behavior (OUTCOMES in the figure) may take the form of more frequent use of improved strategies to identify and obtain safe food when shopping at markets, including the use of food safety-relevant cues, as well as increased communication of needs and preferences. For vendors, behaviors that meet consumer demand may include consistently adopting food safety practices while selling, as well as communication with consumers and market actors.

As demand is an iterative dialogue, consumer and vendor pathways are dynamically connected. For instance, increased scrutiny or questions from consumers could make vendors aware of the business incentive of food safety (e.g., a cleaner shop or food without flies or dust). Vendors who improve their practices and advertise the increased safety of their food could attract and retain more customers (expressed demand), as consumers see and reward the improvements. Higher revenue and social rewards could further motivate vendors to uphold good practices. Activities that strengthen the enabling environment (opportunity) can help vendors and markets to meet consumer demand in the long term, e.g., by improving WASH infrastructure, as well as bringing different sectors together to devise coordinated initiatives.

Overall, FTF EatSafe tested approaches focused on motivations and capabilities relevant to food safety and demand dynamics, while fostering long-term improvement in the opportunity domain. Guided by this framework and foundational research results, FTF EatSafe designed and implemented the following activities (Fig.4):

**NIGERIA**
- *Food Safety Radio Show:* A weekly radio show that spread awareness of and education about food safety using dramatic narratives and community dialogue to motivate listeners.

- *Safe Food Stand:* An in-market stand with trained staff members who engage and educate consumers on food safety.

- *Brand:* Named "Abinci Fes Fes" (Clean, Fresh Food), it included in-market visual cues for consumers to identify vendors who implement food safety best practices and vendor training and option to opt-into the brand.

- *APFSAN: Association for Promotion of Food Safety and Improved Nutrition:* A non-profit, non-government registered organization that advocates for improved food safety and nutrition in traditional markets at the state level.

**ETHIOPIA**
- *Food Safety Motivational Campaign:* Multichannel campaign to increase consumer motivation and ability to identify and demand safer foods when shopping in traditional markets. Reached vendors as a secondary audience.

- *'Learning by Doing' Vendor Training*: Practical food safety training for vegetable vendors in the market using short, interactive, and hands-on sessions, covering essential topics like safe food handling and vendor hygiene. Training was based on behavior change approaches that provided a foundation to motivate and enable vendors to offer safer food in response to consumer demand.

- *MII: Market Improvement Initiative:* Aimed to foster engagement and motivation among local stakeholders to create a Market Improvement Plan (MIP). Involved a collaborative approach bringing stakeholders together to identify areas needing improvement and develop actionable plans, and support for sustained work toward improving food safety in local markets.

**Figure 4.** FTF EatSafe activities in Ethiopia and Nigeria

**Ethiopia** — **Nigeria**

In-Market Information Center

Safe Food Stand

Motivational Campaign — Mass Media Communication Campaign — Radio Show *Sayen Nagari*

Learning by Doing Vendor Training — Signaling — Safe Food Brand *Abinci Fes Fes*

Market Improvement Initiative — Training — Association for Promotion of Food Safety and Improved Nutrition

Collaborative Networks

**Motivation, Incentives, Behavior Change**
**Training and Simple Technology**
**Enabling Environment**

A range of mixed-methods evaluative assessments were carried out to understand progress along the Theory of Change in ways that support future program design. Assessments included small-sample short, structured surveys, in-depth qualitative interviews, behavioral observations, and cohort-based pre/post structured surveys. Protocols and tools are available upon request, including in the USAID DDL.

## 3.2   DESIGNING FOR CONTEXT WITHIN FTF EATSAFE MODEL

The design process was rooted in the human centered design (HCD) approach, ensuring solutions were informed by foundational research and tailored to the specific needs and contexts of consumers, vendors, market actors, and the community at large. Activities were designed to be complementary, nudging target audiences from multiple angles, while supporting both demand and response to demand. Stakeholder engagement at all stages was essential to ensure that activities were "fit for purpose," acceptable to the community, context-specific, practical, sustainable, and had the potential for long-term community buy-in (see Box 4 for examples).

The activities were designed using the following iterative process:

1. **Ideation and Design Sprints**: Conducted online with the FTF EatSafe consortium and in-country with stakeholders.
2. **Activity Prototyping and Rapid Testing**: Choice experiments in the market to gather initial feedback.
3. **Activity Refinement and Stakeholder Sign-Off**: Conducted online for Nigeria due to COVID-19 pandemic travel restrictions; in Ethiopia, included in-person workshops with local stakeholders and a session with USAID, in 2023.
4. **Implementation Needs Analysis**: Vetted implementation needs in relation to FTF EatSafe budget and timeline.
5. **Finalization and Approval**: Refined and finalized the activity package and obtained sign-off from USAID.

By maintaining continuous engagement with stakeholders and applying a rigorous rapid testing and refinement process, FTF EatSafe designed interventions that were not only acceptable but also potentially sustainable, fostering long-term improvements in food safety within local markets.

A detailed description of these activities and their implementation, along with implementation recommendations for other programs seeking to leverage consumer demand for food safety, are available in the FTF EatSafe Implementation Guide. In the following section we discuss how activities implemented by FTF EatSafe fostered

progress along the program's theory of change, as well as recommendations for other programs.

**BOX 4: EXAMPLES OF LOCALIZING FTF EATSAFE ACTIVITIES**

Localizing FTF EatSafe activities required adapting to the unique contexts of each target area to ensure effectiveness and relevance.

In Nigeria, the APFSAN association drew a large membership due to the common practice of community members organizing into associations to advocate for their interests. This was less common in Ethiopia, where the community relied more on government action. Therefore, in Ethiopia FTF EatSafe supported a more focused task force comprising key government representatives and local stakeholders.

The Brand in Nigeria relied on vendor networks and supportive, organized market management. In Ethiopia, FTF EatSafe did not implement the brand activity, as the necessary conditions for support were less evident; organized governance structures and strong social networks were missing. However, as a necessary activity to support food safety demand, vendor training was implemented.

While in Nigeria vendors participated in off-market training sessions, in Ethiopia vendors were less willing to leave their market stalls for training, so a small-group in-market training program was designed.

In Nigeria, an initial set of designed activities included a Commodity Festival intended to build on the local tradition of an annual Fish Festival. This was a potent opportunity to spread awareness and motivate the public to consider food safety when shopping and vending. However, the timing of FTF EatSafe's implementation did not align favorably with the local calendar of events. As a result, FTF EatSafe did not implement the Commodity Festival activity.

## 3.3  LESSONS LEARNED ON FTF EATSAFE ACTIVITIES' IMPACT

### 3.3.1  NIGERIA

**Safe Food Radio Show** (*Sayen Nagari*)

The radio show was produced locally in collaboration with FTF EatSafe consortium members and aired on Vision FM, the most popular radio station in the target states, with a total of 52 weekly episodes over two seasons. It reached approximately 790,000 listeners in the two target states. Over 1,000 consumers called into the show while it was running with questions and comments, which made it "highly popular" by local standards. Although consumers were the primary audience, there was significant engagement from vendors, who frequently called in to express their commitment to providing safe food and their frustration with the market's infrastructure shortcomings. Results of listener surveys also showed it was effective in spreading food safety messages and motivating listeners to seek out safer food in the market. By the end of Season 1, 100% of the 28 people surveyed had discussed food safety with other people because of listening to the show; 82% reported "doing something to help improve food safety in the market or community." All agreed that there are steps they can take in the market to buy safer foods; they mentioned "patronize clean vendors," "buy fresh food," and prioritize "safety over cost."

Refining the show's content was crucial. Season 1 built on theoretical concepts drawn from the WHO Five Keys to Safer Food Manual, customized to the market context, to provide knowledge of best food safety practices, while incorporating behavioral mechanisms such as risk aversion and peer pressure to motivate listeners to implement the learnings. FTF EatSafe gathered listener feedback during the first half of Season 1 to understand the audience's response to the show's structure and identify the most resonant topics. This feedback allowed FTF EatSafe to focus Season 2 around themes and actual questions that emerged from and resonated with the callers, improving the effectiveness and reach of the effort (Box 5).

There were several challenges encountered during the show. There was a shortage of food safety expert guests available to appear on the show, and some canceled at short notice. Members of APFSAN as well as FTF EatSafe Staff frequently served as guests, helping to raise the visibility of FTF EatSafe activities. Additionally, network connectivity issues led to frequent dropped calls during the call-in portion, which was the most popular segment of the show. The show also faced scheduling disruptions due to local and national elections in Nigeria, causing it to miss airing a few times as scheduled. However, the radio stations compensated by airing the show during prime time on

another day and allocated additional airtime for the FTF EatSafe public service announcements (PSAs). Another challenge was the significantly lower number of female callers compared to male callers. To encourage more women to participate, efforts were made to invite more female guests to appear on the show.

## BOX 5: RADIO SHOW EPISODE TOPICS – SEASON 2

1. Community response to Sayen Nagari Season 1 – intro to Season 2
2. What is a foodborne disease and what causes it?
3. How does foodborne disease impact our body immediately and long term?
4. Why is food safety important for children's health?
5. Why is it important to bring home safe food from the market if it will be cooked at home anyway?
6. How do I properly clean food when I bring it home from the market?
7. How can I best preserve food to last longer and stay safe?
8. How do I safely preserve cooked leftover food so we can eat it tomorrow?
9. Should I worry about chemicals in the food and what can I do?
10. Food Safety goes beyond the appearance and appeal of the food.
11. How to choose your vendor: What to see, what to ask, what to reject and how to correct?
12. How do we make and keep our water safe to drink?
13. How can personal hygiene protect me from foodborne disease?
14. How individual shopping styles can have an impact on food safety.
15. How do our local customs relate to food safety?
16. What religion says about good hygiene, food preparation and cleanliness?
17. What role do parents have in promoting and teaching proper hygiene and good nutrition in their households?
18. As a vendor, how do I arrange my business to ensure I sell safe food at the market and protect my customers?
19. How can selling safe food help my business?
20. Should customers speak with the vendors about food safety?
21. What if I can't afford to buy the more expensive safe food at the market?
22. What else can we look out for when buying food items in addition to price?
23. How community leaders can advocate for food safety and hygiene in traditional markets.
24. Can vendors be held accountable for not following the practices that help keep food safe?
25. How do the Consumer Protection Agencies work? Associations?
26. We have ideas on how to improve things - whom should we speak with?

Sayen Nagari was very popular not only because it was aired on the most popular local radio stations, hosted by well-known personalities, and promoted by local influencers, but also because of its relevant content. The topic of food safety naturally became a "hot topic" within the community as it connected with health, family stability, wellbeing, and finances, and, for vendors, the viability of their businesses. The call-in component of the show was particularly popular with the audience, demonstrating that producing a show about food safety does not have to be expensive. It can rely on simple jingles, engaging hosts and guests, and resonant topics and guides for the hosts and guests. To ensure sustainability, efforts should include finding sponsors who can benefit from advertising during a food-themed show, as well as partnering with other on-air programs that focus on nutrition and health.

**Safe Food Stand**

The Food Safety Market Stand (henceforth, 'the Stand') was envisioned to educate consumers and vendors about food safety issues and motivate them to act to mitigate them. To operationalize this idea, FTF EatSafe staff worked with market officials to identify and lease a centrally located, sufficiently large space in each market for the planned stand. FTF EatSafe then hired local staff to engage with consumers and vendors and trained them on basic food safety principles and how to communicate with consumers. Consumer-facing communication materials, such as commodity-specific food safety pamphlets, were also developed.

Each stand, staffed by five staff members, was open six days a week for market shoppers to visit. It offered information on food safety to consumers through one-on-one conversational advice, handouts, visual aids, and in-person events. These events included cooking demonstrations on food safety and hygienic practices, simple storage techniques (e.g., storage of leftover meat using ice blocks and coolers, storage of beans using hermetically sealed bags), proper food handling and hand-washing demonstrations, testimonials from community leaders, and visits from influencers (e.g., veterinarians, environmental health officers) and government officials. In-person events were organized approximately weekly.

When an activity was not scheduled, visitors could ask questions to the Stand staff, view or take home 11 pamphlets in English and Hausa with easy to understand, illustrated food safety tips (e.g., purchasing safe meat and vegetables; buying safe prepared foods; and transporting food home safely). The stands were intended to be hubs for consumer education and engagement that provided appealing, locally relevant food safety information and made consumers' voices heard by vendors and other

trusted stakeholders. Hand washing stations were also available for both consumers and vendors in the market, who used them frequently. In total, over 10,000 consumers visited the two Stands and 7,000 participated in market demonstrations between October 2022 and November 2023.



FTF EatSafe Safe Food Stand in Dankure market, Sokoto, Nigeria

Observations and interviews with different stakeholders were used to understand how the Stand was received and potential barriers or facilitators for Stand activities. It confirmed that the intervention was able to recruit and train dedicated staff members who appreciated the work and were motivated by the project's mission. For these Stand staff, engagement with the intervention improved both their technical knowledge and their 'soft skills' for interacting with the community. The Stand was also highly acceptable for the community members targeted: visitors found the Stand staff to be welcoming, well-informed, and engaging. Events such as food demonstrations were particularly popular. Many visitors reported these engagements had positive impacts on

their own food safety knowledge and practices, increasing the care with which they selected vendors and foods in the market. Sessions were well-attended by women as well as men, and cooking demonstrations were particularly popular with women. Most visitors and staff noted they prefer to engage with someone of their own gender to obtain food safety information, and this need was well met by the Stand's careful recruitment of both male and female staff.

Among those who had not visited the Stand, the main reason cited for not doing so was not knowing about it, flagging a potential need for greater advertising of the Stand in the future, or locating it in a more central area. The Stand was resource-intensive (to build and to staff), so it will be important to find ways to increase the efficiency of its engagement operations to support its sustainability. As both Stands have now been taken up by local governments to own and manage, these lessons should prove useful for their process of maintaining and improving the Stands in the future.

**The Vendor Brand** (*Abinci Fes-Fes*)

This activity had two components: vendor training and an option to adopt the Brand for those vendors who completed the training.

Through a *Safe Food Vendor Training*, vendors received an initial training from FTF EatSafe trainers ([Box 6](#)), followed by a refresher training a few months later. Completing the training made a vendor eligible to voluntarily participate in the Safe Food Brand. A total of 458 vendors were trained in the two markets over two rounds. The training was highly sought after and vendors requested additional training, as they said it benefited their businesses. A majority found the training to be interactive and engaging (88% and 98%, respectively for the two rounds), noting that their questions were answered, trainers were supportive and engaging, and content was personalized to the commodities they sold. Most agreed the training would help address issues related to food contamination and prevent ill health. Notably, 94-99% thought that implementing what was learned in the training would attract more customers or increase sales. Most vendors thought the training would be valuable for their peers and would recommend it to them, suggesting that peer dynamics could work favorably towards engagement and role-modeling. Female vendors were less willing to participate in the training than male vendors, for logistical and cultural reasons, since it took place away from the market in a classroom setting.

FTF EatSafe adapted food safety training materials to the market environment, using photos from the market to illustrate concepts. The training manual, which was for

participants to keep, was found clear, informative, and easy to comprehend by almost all. A few vendors noted they would prefer the manual to be in Hausa language. Some wanted the content to include customer relationship tips and ways to clean food. An early iteration of the training materials was found too theoretical and including practices that were not achievable for market vendors. Based on this feedback, both materials and delivery approaches were modified to be simpler to understand for low-literacy audiences, include pictures from the markets, include short case studies that could happen to vendors, and highlight the business case for safety practices throughout.



FTF EatSafe Training Manual used to train vendors in Kebbi and Sokoto, Nigeria

In terms of logistics, hosting the training in a hotel (but close to the market) and providing a per diem for vendors to attend helped vendors focus on the training without distractions. However, there were limited opportunities for hands-on demonstrations, also due to the large number of attendees; this could hinder the habit-forming component of the training and make the content feel too abstract and not relatable to business operations. This concern was mitigated by the fact that training was not a stand-alone-intervention, but a prerequisite for the Brand, which supported practices introduced in the training. Also, vendors could also attend practical demonstrations held

at the Safe Food Stand. Most vendors noted they had to forgo a moderate to significant amount of daily revenue to attend the training, even if they received an allowance to compensate for lost business. Many participants thought the timing should be improved by holding shorter sessions, scheduled at times where vendors can leave their shops. This feedback led to changes in Round 2 of training.

## BOX 6: RECOMMENDED APPROACH FOR TRAINING THE TRAINERS

Train the Trainer (ToT) activities were held in both countries to enable local professionals to lead training and outreach efforts.

To maximize the effectiveness of food safety training programs in traditional markets, partnerships with local academic institutions are recommended, as demonstrated by FTF EatSafe in Ethiopia. Engaging students as trainers provides the dual benefit of imparting practical food safety knowledge to market vendors while equipping students with real-world training experience. Involving local institutions can also help sustain activities beyond the program period.

The ToT training sessions should maintain a balanced approach that includes theoretical lectures, practical demonstrations, and on-field training, focusing on both content and pedagogy. It is important for trainers in behavior change programs to be adept at motivating and empowering participants, not just explaining how a practice should be done. For market vendors, it is crucial to convey the business case for food safety practices, as well as other motivators. In Nigeria, stand staff were selected based on their existing skills in engaging communication and outreach, with ToT training adding food safety information and an understanding of market actor concerns. Trainer selection should prioritize both teaching and communication skills as well as domain expertise.

Addressing challenges such as market conditions and vendor skepticism is crucial. The ability to build trust with vendors is essential to foster cooperation and receptiveness to learning; respectful interactions, patience, and awareness of market constraints should be prioritized and discussed during ToT sessions.

To support long-term adoption of practices, most vendors highlighted the need for additional training or refreshers. Some vendors also mentioned financial resources (e.g., capital, incentives), physical resources (e.g., sanitation equipment, protective clothing, hermetic bags, apron, gloves, waste bin), reading the training manual and reminders by trainers, and awareness creation for other actors (e.g., government).

The *Vendor Brand* in Nigeria provided consumers with easy cues to identify vendors trained in food safety. This visibility could offer a competitive advantage if consumers trust and value the brand, ultimately shifting vending social norms to include food safety practices as a default. A total of 270 vendors out of 458 trained (58%) opted in the Brand. Participating vendors were given branded aprons, hats, waste bins, bunting, and other simple tools to enable and reinforce food safety training while making trained vendors easy to see in the markets. Monthly compliance checks assessed whether practices were sustained and served as coaching and feedback tools, which vendors appreciated. Vendors were awarded gold, silver, or bronze ribbons based on their sustained ability to implement practices over time. Of 270 vendors, 80% reported that the Brand positively impacted their business by increasing sales and improving customer retention and referrals.

In terms of behavior change, vendor surveys showed that the Abinci Fes-Fes Brand yielded favorable results, enabling vendors to apply the skills and knowledge gained during the training. Nearly all vendors who enrolled in the Brand (95% of 270) maintained 8 out of 10 key food safety best practices over six months, from May to October 2023 (Fig.5). Brand compliance varied by gender and commodity: women vendors maintained the highest "gold" performance (98%), compared to 65% of men. However, women represented only 17% of Brand vendors in the Nigerian markets. There was a positive spillover effect in the market, with untrained vendors emulating Brand vendors' practices, and over 50% of Brand vendors engaging in discussions with consumers about the Brand.

While vendors adopted most practices during the intervention year, some practices presented challenges. Based on small-sample targeted assessments conducted in January 2023 (n=24), for instance, handwashing and securing access to water were not widely adopted, partly due to water sources being far from their stalls. Nonetheless, 56% of vendors were seen using clean water at their stalls to wash hands, vegetables, or fish. One meat vendor even had consumers wash their hands in a basin before touching the meat, receiving positive reactions from consumers. However, vendors not washing their hands believed that consumers would not penalize them for it. Touching money without washing hands afterward is ubiquitous and difficult to change, as there is

63

usually only one vendor at the shop. Covering food was also not favored (54% did not cover food), as customers want to visually inspect the food, and transparent covers are not available. However, protection from insects was of interest. Wearing aprons or working clothes in the market was favored, but hats were less popular as they might conflict with traditional attire (e.g., men often wear traditional hats). The biggest barriers cited by vendors to continued compliance were maintenance costs of cleaning items and inadequate market infrastructure.

**Figure 5.** Percent of vendors participating in the Brand who implemented food safety practices (Nigeria, summary of monthly checks May-Oct 2023)
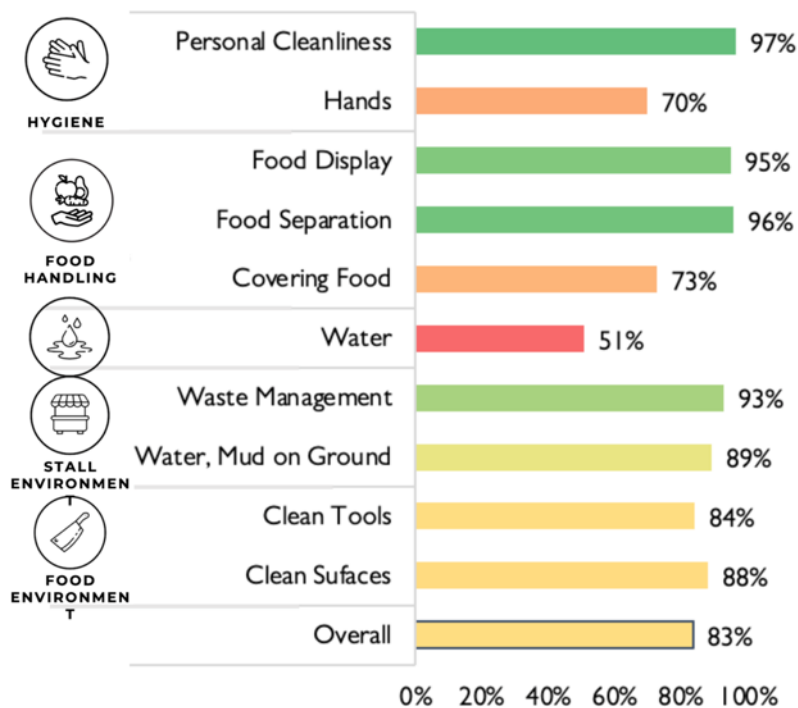


Other practices also rely on a combination of individual behavior and infrastructure/enabling environment. Based on the same targeted assessment in January 2023, 58% of vendors placed commodities elevated from the ground and on clean surfaces. The majority (68%) sell only one commodity, making food separation less relevant. Nonetheless, vendors who separate high-quality from lower-quality items or different commodities do so to appeal to consumers, facilitate choices, or avoid spoilage (e.g., wet and dry foods). Waste bins were used by 54% of vendors, but many found them too small and used larger plastic bags or buckets or piled waste in a corner. All vendors were observed sweeping, and 72% had consistently clean stalls. While vendors are willing to collect waste at their shops, the lack of centralized waste handling

means they need to pay for waste pickup and disposal away from the market. Overall, while a gap between reported and observed behaviors was noted, vendors displayed a sincere willingness to keep their shops and food clean. However, they are hindered by infrastructure challenges, mainly related to water, waste, and shop structures. The biggest barriers cited by vendors were maintenance costs of cleaning items and inadequate market infrastructure.



Vendor displaying the Abinci Fes Fes brand assets in Dankure market, Sokoto, Nigeria

Vendors used most of the *Abinci Fes-Fes* "assets" they were given. Approximately 75% used branded assets daily and did not experience difficulties in displaying them (n=21 of 27), with higher levels in Kebbi than Sokoto. More than half of the vendors were seen wearing the apron and the hat and displaying the sticker. Toward the end of the implementation period, 40% of vendors in Kebbi were seen using the plastic table sheet, and 17% in Sokoto. Vendors noted several barriers to displaying branded assets: hats did not fit or were too hot to wear; items were forgotten at home or used at home; the waste bin was too small to contain trash generated at the stall; aprons were worn or

washed and left at home, too small, or inappropriate for some Muslim women vendors. Vendors shared other recommendations for making the Brand even more effective (Box 7).

**BOX 7: VENDOR RECOMMENDATIONS FOR IMPROVING THE BRAND**

- Frequent Distribution of Brand Assets: Ensure regular distribution of branded assets to individual vendors to enhance visibility and vendor pride.
- Provision of Cleaning Tools: Offer free or low-cost cleaning tools to vendors to help reduce maintenance costs and encourage cleanliness.
- Placement of Branded Waste Bins: Install large, branded waste bins throughout the market for communal use to promote proper waste disposal.
- Consistent Monitoring and Follow-Up: Implement consistent monitoring and follow-up activities to ensure compliance with hygiene practices and provide ongoing support.
- Leverage High-Performing Vendors: Utilize high-performing vendors to mentor and engage untrained vendors, fostering a culture of shared responsibility and best practices.
- Expanded Training Programs: Provide comprehensive training programs for all vendors in the market to improve their knowledge and skills in food safety and hygiene.
- Infrastructure Improvements: Collaborate with government and market authorities to improve market infrastructure, including water supply, drainage systems, and solid waste collection.

**The Association for Promotion of Food Safety and Applied Nutrition (APFSAN)**

APFSAN was chartered in Nigeria to support FTF EatSafe's work. FTF EatSafe helped register and create the governance structures for this association, launched the first two chapters in Sokoto and Kebbi States, and provided APFSAN Leadership with management training. It was set up as a national association, with state chapters to advocate for food safety, and to provide state-level support. APFSAN held events to

engage local community members, including food safety training for public health officials, trade fairs, walks to commemorate World Food Safety Day, and trainings in schools, for health workers, and for local abattoirs.

As of 2023, APFSAN had 2448 members in Kebbi and 2385 members in Sokoto. Over 13 months that FTF EatSafe operated, 1,700 people attended the APFSAN quarterly and annual meetings. Compared to the Training and Brand activities, participation was more gender-balanced, as approximately half of APFSAN members in both Kebbi and Sokoto were women and women participated in many of the activities.



APFSAN Members celebrating the World Food Safety Day in Sokoto, Nigeria

With the release of the National Policy on Food Safety and Quality and Its Implementation Plan in 2024, APFSAN is well-positioned to lead various activities going forward. This was supported by sustainability efforts, which included linking APFSAN with other funders and developing a toolkit to guide expansion into other states. FTF EatSafe also connected APFSAN with national food safety initiatives.

Through this process, FTF EatSafe learned that food safety efforts in the informal sector require coordinated efforts at the local level, and an association that operates at the community level can be very important in this regard. An association with broad community membership can access various opportunities for outreach and dissemination, including radio stations, local government, and businesses. APFSAN's establishment was facilitated by a well-developed ecosystem of professional bodies and a culture of volunteering for community activities. However, sustainability efforts need to be built in from the beginning.

### 3.3.2  ETHIOPIA

**The Consumer Motivational Campaign**
FTF EatSafe conducted a consumer campaign from July to December 2023, seeking to enable and motivate consumers to identify and prioritize the purchase of food from "safe vendors", i.e., vendors that adopt safer food handling practices in the market. Over 100 radio spots and PSAs aired on two local radio stations, SouthFM and SidamaFM, which reach about 15-20 million and 5-7.5 million people, respectively, including in different local languages. Radio spots and posters were identified as the most effective distribution channels by the campaign participants.

Thirteen live events took place in the intervention market, featuring two "ambassadors" disseminating messages through on-ground activation, flier distribution, and amplified messaging. Posters showing the FTF EatSafe key messages were put up at various market locations. The campaign directly engaged about 35,500 individuals (estimated via monitoring data) through the in-person activation events in the study market and at local churches. Many others (not counted) were able to hear the messages while shopping. Consumers actively engaged with the ambassadors, showing them how they had changed their purchasing habits to prioritize safer and cleaner food options.

A targeted small-sample structured survey (n=40) during intervention implementation suggested that the campaign significantly increased consumers' knowledge and awareness of food safety. A high percentage of consumers agreed with campaign messages and expressed motivation to purchase safe food (90%). A majority reported changes in their food purchasing habits and increased vigilance in selecting safe food options. After exposure to campaign messages, 76% of consumers stated that they prioritize safe, clean, and quality food. Additionally, 55% agreed that the campaign increased their awareness of food safety. However, these trends are not confirmed by the more high-level pre-post assessment, leaving several questions open. A modest but significant increase in knowledge (3% in the intervention vs. 1% in the control market) as well as a small but not significant increase in salience (4% vs. 0%) and self-efficacy

(3% vs. 1%) were observed in the consumer cohort. For consumer behaviors (use of cues, shopping behaviors, and communications), both intervention and control markets showed modest increases, with the control market increasing more.



Consumer Motivational Campaign Market Activation, Aroge Gebeya, Hawassa, Ethiopia

Radio and posters emerged as consumers' most noticed media, and the campaign's message of caring for one's family's health resonated most with consumers (100% agreed with content and reported being motivated to buy clean food), emphasizing the direct impact on family food consumption and the potential consequences of foodborne diseases. While messages focusing on aesthetics and financial implications received less attention, they were also persuasive for most consumers (95% and 71% motivated to buy clean food, respectively). Consumers recognized the importance of purchasing safe foods, noting that informed communities are less likely to consider unsafe or unclean foods. Additionally, the campaign successfully engaged youth, who expressed intention to share the lessons about food safety and hygiene with others.

**Vendor Training**

In Ethiopia, FTF EatSafe paired hands-on food safety training for fresh vegetable vendors with simple food safety tools that could easily be used in market settings. Each vendor training segment (of a total of 15-16 segments, about 45 minutes each) delivered a food safety concept and its rationale, coupled with a demonstration or exercise. One trainer, typically a trained Hawassa University student, would work through each segment with small groups of 3-4 vendors near their stalls. Exercises were enhanced with tools gifted to vendors to support food safety practices: soap, colored crates and bowls, water purification solutions, disinfectant, multi-colored cloths, and a cleaning bucket. After assuaging initial suspicions on the motives of the study (see Section 2.2.2), vendors were increasingly comfortable and developed an amicable rapport with trainers. Engagement was high: 85% of vendors approached decided to enroll (188 of 221; all reachable vendors of the target commodities were approached); 92% attended more than three-quarters of the segments, and 67% attended all.

A targeted survey assessment of participating vendors (n=37) demonstrated that the training effectively engaged vendors, provided valuable insights, and facilitated positive changes in food safety knowledge and practices, which could ultimately add up to safer food in traditional markets. The training positively influenced vendors' perceptions and behaviors regarding food safety, with the majority (80%) expressing appreciation for the knowledge and skills gained. 97% reported changes in food safety practices.

Shortly after the training (in September 2023, after the first training round conducted August-September 2023), vendors implemented an average of 75% of the "5 CLEANS and 4 SAFEs" food safety best practices they were taught (Fig.6). Preliminary results of the pre/post cohort assessment showed a modest but significant increase in knowledge (5% for trained vendors vs. 1% for control vendors) and behaviors (6% vs. 1%), and a positive and marginally significant increase in communications with consumers about food safety-relevant topics (9% vs. 5%). Salience and self-efficacy indices did not show a significant increase.

The tools and materials provided during the training sessions were generally well-received by vendors, despite challenges such as limited access to clean water in the market. Innovative methods, such as using Glo Germ™[1] for hands-on demonstrations of proper handwashing techniques, successfully engaged participants. Vendors brought water from home for cleaning purposes, showing a willingness to utilize these tools to

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[1] Glo Germ™ (https://www.glogerm.com) is a powder that becomes visible when illuminated with a black light. It is widely used as teaching aid in food safety and hygiene.

enhance food safety practices. However, vendors without stalls or permanent locations faced difficulties in using the provided items as they sold their goods on the streets.

**Figure 6.** Percent of trained vendors who implemented food safety practices in Ethiopia.

| | Practice | Percent |
|---|---|---|
| **HYGIENE** | Personal Cleanliness | 77% |
| | Hands | 57% |
| **FOOD HANDLING** | Food Display | 64% |
| | Food Separation | 100% |
| | Covering Food | 89% |
| **STALL ENVIRONMENT** | Water | 54% |
| | Waste Management | 69% |
| | Water/Mud | 74% |
| **FOOD ENVIRONMENT** | Clean Tools | 94% |
| | Clean Surfaces | 69% |
| | Overall | 75% |
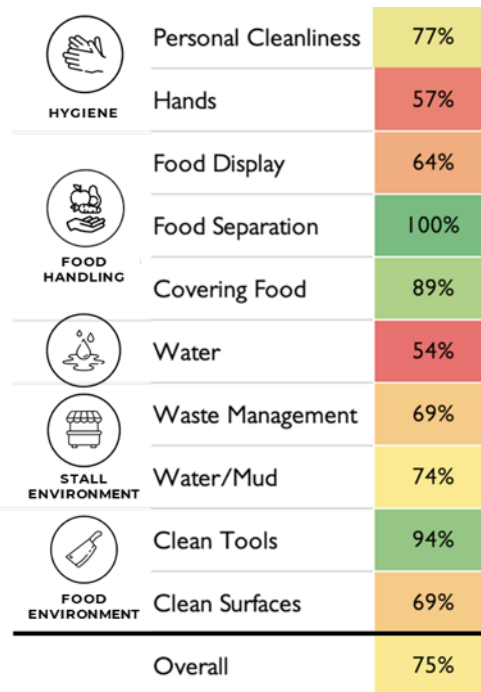
Among the specific practices covered, vendors found practical sessions on safe food handling and hygiene to be most useful. These topics were easier to understand and implement, directly impacting daily operations and ensuring product safety and consumer trust. Vendors identified topics related to safe food handling practices and personal hygiene as most beneficial to their business. These topics directly enhanced their ability to maintain food safety standards and build consumer trust, impacting daily operations. Challenges arose with practices like wearing gloves due to concerns about customers perceiving gloves as a sign of illness, injury, or hiding a wound. Additionally, the use of chlorine solutions to clean stall surfaces was deemed unacceptable by vendors due to fears of harming consumers' health and the solution's off-putting smell. Vendors preferred using chlorine at home to clean items and bring them to the market the following day. Similarly, a laminated lanyard card with key food safety messages intended to be worn around the neck was not convenient for vendors and was modified to be displayed on their stalls or vending site instead.

Thoughtful logistics made the training more accessible and popular. For instance, having short segments and flexible schedules allowed busy vendors to attend without interrupting their workday or losing customers. Being near their stall allowed them to customize activities to their resources and discuss specific challenges. It also allowed vendors not to worry about their wares being stolen. Working in small peer groups helped vendors share practical strategies, reinforce their motivation, foster a collaborative spirit (as opposed to competition), and possibly increase peer accountability. Collaboration and showing that food safety can benefit everyone is particularly important in cultural contexts that value equity. It is also important to show how practices can become habits and be included easily in daily operations; during training sessions vendors should be active "designers" of their workflow and brainstorm as peers how to make practices easier to follow.

Hawassa University student training market vendors in Aroge Gebeya, Hawassa, Ethiopia

In cases in which behavior change is gradual, ongoing support and reinforcement of incentives are vital to ensure the sustained use of food safety practices. Sustainability

recommendations include regular post-training follow-up (e.g., by public health authorities or university extension), ongoing community-based educational programs involving university students, and expanding training to wholesalers and consumers. These measures aim to institutionalize food safety practices beyond initial training sessions, fostering long-term adoption and improvement across the market. While the training interventions enhanced food safety practices among vendors in the intervention market, ongoing support and infrastructural investments would be essential to effectively address persistent challenges and solidify improvements.

**The Market Improvement Initiative**

The formative research highlighted that the enabling environment in Aroge Gebeya market in Hawassa was weak. There were no formal vendor associations and limited engagement with market management. The infrastructure was poor, with no proper drainage nor access to clean water and latrines, a plethora of flies, and congested walkways. With such a weak enabling environment, behavior change options were limited. Market conditions also contributed to vendors expressing little agency in adopting positive behavior changes. Therefore, it was deemed important to strengthen the enabling environment to facilitate and sustain behavior change efforts.

Initially, there was interest in developing a 'We Love Our Market' campaign to foster a sense of ownership and community around the market. While this value was included in additional activities (e.g., World Food Safety Day events, project close-out), it was not as amenable to enhancing consumer demand within one market. Upon discussion with stakeholders, this concept evolved into an effort to facilitate the formation of a group of municipal stakeholders, the Market Improvement Initiative (MII) taskforce, to develop a Market Improvement Plan (MIP). This idea was supported by recent [research](#) that found municipal platforms effective in improving food safety in the informal sector.

The MII, created using a Collective Action approach, aimed to enhance food safety in local markets and the enabling environment through increased stakeholder engagement and coordination, organized around developing a MIP for the Aroge market. Led by the Mayor's Office and co-chaired with Hawassa University, it included 25 members representing government agencies, civil society organizations, academia, religious groups, and the hospitality industry. Stakeholders gained experience on different market structures and conducted market assessments with technical support from experts to produce a MIP with clear priority areas.

While FTF EatSafe could only test MII activities for a limited time, some recommendations can be made towards continued support for the implementation of the

MIP and sustainability of the MII. This may include increasing the frequency or depth of interactions between MII members and vendors and other local market stakeholders to build stronger relationships and trust. Establishing a dedicated communication platform, such as a mobile app, for MII members to share updates, resources, and information quickly could be beneficial for both motivation and access to resources, although it could not be tested within the program period. Implementing a structured feedback mechanism, such as a collective action platform survey, was helpful in gathering insights from MII stakeholders and incorporate their suggestions for subsequent sessions and is recommended for future activities beyond the program period. Regular workshops and training sessions should be (self)facilitated for the stakeholders, to ease their administrative burden and maintain a focus on identified priority areas most relevant to food safety. Helpful skills supporting independent action include grant proposal writing and resource mobilization training. Developing a Terms of Reference to clarify the roles and responsibilities of each stakeholder member can provide clear guidance and prevent conflict.

While a MII focus on a limited number of markets was a successful and manageable start, scaling up to expand participation from additional sectors and the scope to additional markets may create economies of scale, while a larger MII group may more easily sustain momentum. Based on FTF EatSafe's experience, involving community leaders and market users in the planning phases of a MII will ensure that the MIP aligns with their needs and priorities. The Trade and Market Development sector office could be instrumental in improving the enabling environment; its role could be strengthened by capacity-building training to improve market management and oversight.

Securing long-term support and funding is also essential. Identifying and pursuing funding opportunities from both governmental and non-governmental sources will ensure the initiative's sustainability. Advocating for support from local government bodies to institutionalize the taskforce and link with existing platforms is also recommended and is currently in progress at FTF EatSafe's close. Doing so may not require additional funding if staff time of government employees can be leveraged.

Organizing knowledge-sharing events, such as meetings and workshops, to share the MII's work with local sector leaders and funding agencies may garner broader support for the implementation of the MIP and serve as a model for similar initiatives in other markets. This can also be supported by creating detailed case studies and reports on the MII's activities, challenges, and successes.

Market Improvement Initiative Members visiting the Aroge Gebeya market, Hawassa, Ethiopia

### 3.3.3 TRACKING BEHAVIOR CHANGE: PILOTING IMPACT ASSESSMENT TOOLS

As part of its scope to provide evidence and tools for programs working on food safety, FTF EatSafe developed protocols to assess progress along the theory of change for demand-driven behavior change interventions aimed at improving food safety. USAID and GAIN conceived this effort to fill a gap in food safety-focused measurement approaches in low-resource market settings and other informal sector segments. These FTF EatSafe tools include structured surveys for pre-post evaluative assessments involving vendors and consumers, qualitative interview scripts, short quantitative surveys focused on each activity, vendor observation checklists, and monitoring protocols to document beneficiary engagement. The pre-post tools measure indicators relevant to demand-driven behavior change in food safety, namely: the salience or importance of food safety as purchasing factor; self-efficacy and locus of control for food safety actions; knowledge on food safety principles and practices; and enacting food safety practices and communications. These tools have been piloted in two sub-Saharan African countries and are now available for customization to other programs (available upon request, knowledge product in progress). Although tailored to consumers and vendors in traditional markets, their themes and indicators are applicable to other settings, such as small businesses.

FTF EatSafe recommends a mixed-methods approach to evaluate intervention activities. Structured questions allow for relatively fast data collection on multiple topics and possibly a larger sample size, while open-ended and qualitative probing is better suited to understand why people think and act as they do. The latter is key to interpreting results, both positive and negative. It is also essential to align assessment tools to intervention activities, which may require a trade-off with adaptive management.

While FTF EatSafe leveraged visual cues that could be associated with contamination, most contamination cannot be seen unless the food is tested. FTF EatSafe assessed contamination levels during formative research for multiple reasons: assessing baseline levels and identify priority actions; develop relationships and capacity with local institutions (e.g., Hawassa University); and to use test results as evidence to spur action by local stakeholders (not in consumer messaging, to avoid scares that could impact market livelihoods). However, the program did not use food testing to assess interventions. While food testing can be useful in many cases, as evidenced in its use in high-income countries, food testing at one point in time may not adequately represent trends. Additionally, behavior change can be a slow process, and FTF EatSafe deemed it unlikely that actions taken by some vendors during the time interventions were deployed (one year in Nigeria, 8 months in Ethiopia), without enabling environment improvements, could significantly change contamination levels. Logistically, food testing needs to be implemented strategically as it can be time consuming and resource-intensive to procure in-country laboratory reagents and equipment.

Instead, FTF EatSafe recommends assessments should focus on visible behaviors (e.g., wearing an apron, displaying foods elevated from the ground) and evidence of behaviors (e.g., clean hands, clean water), as well as select drivers of behavior change (e.g., salience, motivations, self-efficacy, intent, etc.). Also, food safety concepts may be difficult to distinguish from related food attributes such as freshness or overall quality. A trade-off is often necessary between assessing food safety specifically versus a more relatable concept or term. Using visuals where familiar attributes can be seen and named (e.g., blemishes, signs of spoilage, dirt, proximity of waste) has proved effective in engaging respondents.

**IMPLEMENTATION RECOMMENDATIONS FOR FUTURE INVESTMENTS:**

- In designing activities, consider motivation and incentives; best practices and technology; and key components of the enabling environment.

- Not all markets are the same. Learn key aspects of the markets and differences across markets before selecting interventions.

- Identify resources necessary to implement this work early on (e.g., key media platforms available and popular, local champions, existing cultural events).

- Food safety is often invisible, so consumer communications need to rely on simple, visible, and trustworthy signals that make consumer choices easier (e.g., brand, labels, simple visual heuristics).

- Price is generally a top purchase factor: safe food should be affordable; otherwise, customers may choose to purchase unsafe food that is more affordable.

- Training focused on behavior change is often needed for vendors to be able to respond to consumer demand. However, demand for training and willingness to change practices also require incentives for the vendors.

- Large-scale public initiatives such as associations can amplify salience and demand and build professional capacity.

- Identify points of entry and behavioral mechanisms that can facilitate behavior change or demand generation work, such as daily hassles, peer and family dynamics.

- Use indicators that are commensurate with the level of change achievable, such as assessing practices via surveys or observations instead of using microbial tests or disease surveillance.

- Build in simple assessments (e.g., observations of key practices).

## LEARN MORE ABOUT BEHAVIOR CHANGE INTERVENTION DESIGN AND IMPLEMENTATION

- FTF EatSafe Interventions in Nigeria
- FTF EatSafe Interventions in Ethiopia
- Increasing Food Safety in Traditional Markets
- GAIN Working Paper Series 30 - Innovating for safer foods
- FTF EatSafe Innovation Inspiration Tool
- Report on Normative Guidelines for Governments to Promote Safer Traditional Markets
- Training with Media for Social and Behavior Change - A Review
- Assessing Food Safety Interventions Relevant to Foodborne Zoonoses in Low- and Middle-Income Countries
- Food Safety Education, Training, and Technology Interventions in Africa and Asia: A Review
- Consumer-Facing Interventions to Improve Food Safety Perceptions and Practices in LMICs - A Review
- GAIN Working Paper Series 40: Bringing Food Safety to the Shoppers

Dried fish vendor in Gosa Market near Abuja, Nigeria

# 4 BUILDING ON CONSUMER DEMAND FOR SAFER FOOD IN TRADITIONAL MARKETS

The previous sections shared the information and insights needed to design and implement demand-driven behavior change interventions for improving food safety in traditional markets (Section 2); and shared results on implementing these interventions and recommendations on how others might do it (Section 3). This work cannot be done in a vacuum however, and it needs to be supported by broader national and international food safety efforts, through the strengthening of the other two legs of the 3-legged stool (i.e., the enabling environment and embedding of best practices & appropriate technologies across value chains). Below are the recommended actions, experiences, and research findings from FTF EatSafe's efforts to strengthen the food safety ecosystem around traditional markets.

## 4.1 BUILD BETTER MARKETS, TOGETHER

Positive behavior change is facilitated by the three legs of the stool being sturdy and strong - including a well-functioning/well-resourced enabling environment, and accessible best practices and appropriate technologies. Without this, market actors are limited in their ability to change their behaviors and practices, and so will find it difficult to sustain any improvements.



Like most initiatives associated with food systems, comprehensive, multi-stakeholder efforts are most likely to bring about sustained change. Since the publication of the Foodborne Disease Burden Epidemiology Reference Group (FERG) report, and realization that formal food safety efforts are not reaching the informal sectors of LMICs, the food safety/food systems community has realized that this work cannot be left to a small group in government or private sector - a culture of food safety needs to be developed, and many more actors, from the national, to municipal level need to be

involved. This is especially true of community efforts where municipal stakeholders have a good local understanding of the challenges and opportunities, are personally incentivized, and can control and coordinate the multiple levers needed to bring holistic change to their communities.

### 4.1.1 NIGERIA: APFSAN (ASSOCIATION FOR PROMOTION OF FOOD SAFETY AND IMPROVED NUTRITION)

As mentioned previously, FTF EatSafe helped establish APFSAN in Nigeria. This was not a direct intervention designed to unlock demand-driven positive behavior change. The association was established to support, contribute and sustain the other interventions (the stand, brand, and radio show) beyond the life of the project. It was a mechanism to bring on a wide/broad array of local stakeholders, to build technical skills, knowledge, and ownership within the community.

Being a national association with state chapters, it has the structure, and flexibility to act as a conduit to bring national initiatives to the local level - such as the planned food safety work coming out of the recently released 'National Policy on Food Safety and Quality and its Implementation Plan 2023' in Nigeria. It also can provide local information and feedback to national bodies as required.

### 4.1.2 ETHIOPIA: MARKET IMPROVEMENT INITIATIVE (MII) TASKFORCE

This taskforce was established as an FTF EatSafe intervention in Hawassa, Sidama Region. The formative research showed that Aroge Gebeya market struggled with an inadequate enabling environment, which would inhibit any attempts to improve food safety behaviors in the market due to lack of WASH facilities and other critical infrastructure & governance. Hawassa city grew from around 258,808 in 2007 to an estimated 577,075 in 2023, and it boasts one of the largest industrial parks in the country. The market has not kept up with this development and growth of the city.

FTF EatSafe and local partners felt it important to elevate the status of the market and remind people of its importance to the city (as one of two formal fresh produce markets in the city). Thus, the group went beyond the initial idea of a 'We Love Our Market' campaign, to one that was more purposeful, and which involved key stakeholders from local government, academia, and private sector who would work on something more tangible – a market improvement plan, and the establishment of a taskforce to see it implemented.

FTF EatSafe used a collective action approach to develop the Market Improvement Initiative taskforce, which was important to ensure commitment and buy-in. It was also important to help the group understand the broad approach needed to improve food safety in the market, and to avoid only focusing on one area such as infrastructural improvements. There are a diverse range of activities needed, from fundraising to technical management and oversight and the taskforce possesses most of the skills required. Coordination of the plan's implementation is also enhanced because of the regular group meetings, and the institutional knowledge that the taskforce now possesses.

## 4.2 STRENGTHEN TRADITIONAL MARKET FOOD SAFETY POLICIES

FTF EatSafe's research on national policies around food safety in traditional markets highlighted deficiencies. These markets are usually considered a local matter, which means that a robust national policy framework, with cascading, coordinated national policies and procedures, is generally lacking. Without strong national oversight, there is the risk of patchy local governance and a general disconnect that inhibits coordinated efforts to manage foodborne risks.

Before embarking on food safety work in traditional markets, it is important to understand the policy environment, to determine who the accountable parties are, and what their mandate is. Key incentives for leveraging behavior change can be found within management and oversight policies, and these should be understood.

FTF EatSafe conducted a review of food safety policies as they relate to traditional markets in Nigeria and Ethiopia, before designing behavior change interventions.

### 4.2.1 FOOD SAFETY GOVERNANCE IN NIGERIA

- **Regulatory Responsibilities:** In Nigeria, responsibility for food safety regulations is spread across the three tiers of government: Federal, State, and Local Government Area Councils (LGACs). At the federal level, over a dozen Ministries, Departments, and Agencies (MDAs) oversee the 16 existing food safety policies, some of which are outdated. Traditional markets usually fall under the authority of State and LGACs, with no current federal oversight.

- **Upcoming Changes:** Since the end of FTF EatSafe's Nigeria work in September 2023, new developments, some which FTF EatSafe contributed to, have occurred. The development of a draft Food Safety and Quality Bill, which is awaiting formal

approval by the Nigerian President, and the launch of the revised 'National Policy on Food Safety and Quality and its Implementation Plan 2023' (NPFSIS) in June 2024 now include specific language regarding the governance of food safety in traditional markets: "Develop national guidelines for the display, sale, transport, and marketing of food for traditional market and street vended foods that ensure safe food practices." The timeline for completion is 2026.



Kale vendor in Aroge Gebeya market, Hawassa, Ethiopia

### 4.2.2   FOOD SAFETY GOVERNANCE IN ETHIOPIA

- **Constitutional and Policy Framework**: The country's constitution recognizes the importance of food safety, placing the responsibility on the state and considering it a fundamental human right. Key instruments utilized by the government include the National Food and Nutrition Policy (2018), the National Nutrition Sensitive Agriculture (NSA) Strategy (2017), and the Food and Nutrition Strategy (2021), all of which prioritize enhancing food safety measures.

- **Fragmented Responsibility**: Responsibility for food safety regulations, compliance, and inspection in Ethiopia is fragmented across different ministries and executive governing bodies. Food safety authorities are distributed among several Ministries,

most notably the Ethiopian Food and Drug Authority within the Ministry of Health, the Ministry of Trade and Industry, and the Ministry of Agriculture.

- **Regulation of Traditional Markets**: The FTF EatSafe review found that traditional food markets are almost entirely unregulated and classified as "illegal trade" in Ethiopia. However, some markets have official status and land allocation, with some vendors paying taxes to local authorities. Given this categorization, traditional market vendors and other food handlers are not required to have official training in food safety best practices prior to obtaining a vending license. Informal vendors operating outside of markets with official status and/or do not pay taxes may face additional barriers to implementing improved food safety practices due to their legal status.

- **New Strategic Initiatives**: The launch of the Ethiopian National Food Safety and Quality Strategy for Primary Agricultural Produce (2024–2030) in January 2024 was driven by previous policies' insufficient focus on traditional markets, among other issues. This strategic document targets five key objectives:

    1. Developing legal and institutional frameworks;
    2. Strengthening management and control systems;
    3. Promoting food safety awareness;
    4. Advancing research and technology innovation;
    5. Enhancing coordination and resource mobilization.

- **Collaborative Efforts and Partnerships**: The strategy emphasizes collaborative efforts as crucial for achieving these objectives, highlighting the need for efficient multi-sectoral, regional, continental, and global partnerships to ensure food safety and quality assurance goals are met. GAIN participated in the strategy development from initiation to launch through its policy and advocacy work, incorporating insights from the FTF EatSafe learnings, including the initial assessment findings, and serving as a technical working group member.

### 4.2.3  INFLUENCE POLICY

FTF EatSafe was fortunate to play an active role in policy work and provided significant input into national policies in Nigeria. Notably, FTF EatSafe contributed to the 2022 review of the 'National Policy on Food Safety and Quality and its Implementation Plan 2023' (NPFSIS), bringing more focus to the informal sector. Key contributions included:

- **Review of Food Safety Policy 2014:** FTF EatSafe published a review of the Food Safety Policy 2014 document and shared the findings with the Federal Ministry of

Health, specifically advocating for the need to revise the National Policy on Food Safety and its Implementation Policy Document. This led to an invitation to join the National Food Safety Management Committee (NFSMC), with the publication serving as key reference material for the committee's work.

- **Assessment of Food Safety Legislation**: FTF EatSafe assessed food safety legislation and efforts in Nigeria and published the findings. GAIN Nigeria staff served as resource persons during discussions on food safety policy and legislation at national and international nutrition and food safety convenings.
- **Stakeholder Review Meetings**: FTF EatSafe participated in the stakeholder review meetings of both documents, strongly advocating for the inclusion of traditional food markets and the informal sector in the policy document and Quality Bill. This advocacy was successful, and the revised policy document now clearly includes the informal sector, encompassing traditional food markets. FTF EatSafe also contributed to the validation workshop of the revised food safety policy documents.

The new NPFSIS 2023 includes several recommendations influenced by FTF EatSafe's contributions:

- **Restoring Hygiene and Sanitary Inspection Systems:** "Restoring hygiene and sanitary inspection systems to strengthen the existing inspection of street food vending establishments, traditional food markets, primary food production centers, household hygiene and sanitation, and other related establishments in the LGAs."
- **Strengthening Food Safety Knowledge and Skills:** "Greater attention by governments to developing/strengthening the food safety knowledge and skill capacity of smallholder farmers, street food vendors, traditional food market operators, slaughter slab operators, butchers, etc., to enable them to adopt and maintain global best practices and standards."

## 4.3 DEVELOP PRACTICAL GUIDELINES & STANDARDS TO GUIDE FOOD SAFETY WORK IN TRADITIONAL MARKETS

Guidelines and standards are needed to be able to implement policies. Standards usually have greater authority but are more limited in scope than guidelines. Guidelines are general statements, recommendations, or administrative instructions designed to provide a framework to meet the objectives of a policy.

Access to guidelines helps strengthen the enabling environment of a market and makes it clear what practices and technologies might be important to a particular market.

Having formal guidelines (or standards) also helps in behavior change work, both by creating incentives and by providing practical guidance to market actors.

*Codex Food Safety Guidelines for Traditional Markets for Food*

As part of FTF EatSafe's formative research, and to properly ground the project, FTF EatSafe researched international guidelines for food safety in traditional food markets. Little was found – the closest were regional guidelines developed by Codex Alimentarius (a joint FAO-WHO commission) to improve the safety of street vended food, which FTF EatSafe assessed. From this work, FTF EatSafe published the [Report on Normative Guidelines for Governments to Promote Safer Traditional Markets](#) in 2021. From this realization, FTF EatSafe, utilizing GAIN's status as an observer organization for the Codex Alimentarius, submitted a request to the Codex Committee for Food Hygiene outlining the need for Global guidance for food markets.

When GAIN/FTF EatSafe first presented the proposal for discussion at the Codex Committee on Food Hygiene (CCFH) in March 2022, five countries indicated their interest in the new work and willingness to help develop a Discussion Draft in collaboration with GAIN/FTF EatSafe.  Those countries were Indonesia, Peru, Bolivia, Kenya and Nigeria.

GAIN/FTF EatSafe worked with the five countries to develop a Discussion Draft for consideration at the CCFH meeting held in person in November 2022. The Discussion Draft is the first step to developing a new Codex guideline or standard.  At this meeting, the proposal was supported by 13 countries (Bolivia, India, Nigeria, Indonesia, Kenya, Ghana, Mauritania, Argentina, Jamaica, Dominican Republic, Trinidad and Tobago, Philippines, Cameroon, and Morocco) and three observers (Consumer Goods Forum, International Frozen Foods Association and GAIN). With wide support, the government of Kenya agreed to lead the work with support from Bolivia and Nigeria as co-chairs. Based on these commitments and the Discussion Paper, the CCFH formally agreed to support the advancement of work to develop Guidelines for Food Hygiene Control Measures in Traditional Markets for Food at the November 2022 meeting.

GAIN/FTF EatSafe was then active in the electronic work group to review and comment on the developing guidelines. The draft guidelines were prepared for the CCFH's in-person meeting in Kenya, in March 2024. GAIN sent a group of delegates, headed by Caroline DeWaal, FTF EatSafe's Deputy Chief of Party, to this meeting to participate in the review and provide technical support. The CCFH meeting concluded with the committee progressing the Codex Guidelines for Traditional Markets to Step 5/8, which means that the guidelines are now recommended for approval by the Codex

Alimentarius Commission during their November 2024 meeting. Contributions made by GAIN/FTF EatSafe to the guidelines:

- Recognition of the role of different stakeholders in managing hygiene controls in the market, including market authorities and consumers. This included recognition of the formation of a stakeholder committee for the markets to advise on cleaning, repairs and critical services.

- Inclusion of the need to train extension and community health workers to help promote food safety in the markets.

- The addition of a Monitoring and Evaluation section.

- Reference to zoonotic risks and utilization of traditional markets for surveillance of foodborne illnesses.

Normative guidelines, such as these, assist governments in developing standards that are consistent with international norms, both to ensure consumer protection and to harmonize standards for international trade. Governments are encouraged to take these new guidelines and build them into national legislation, to provide consolidated guidance, and set clear expectations for local authorities, who assume responsibilities for the day-to-day running of these markets.

## 4.4  PROMOTION OF NEW TECHNOLOGIES AND APPROACHES TO IMPROVING FOOD SAFETY IN TRADITIONAL MARKETS

Traditional markets are complex spaces with different needs, resources, and governance structures. The right technologies and approaches need to be developed to unlock improved food safety practices. With these in place, demand creation and behavior changes activities have more resources, and options for stakeholders to adopt.
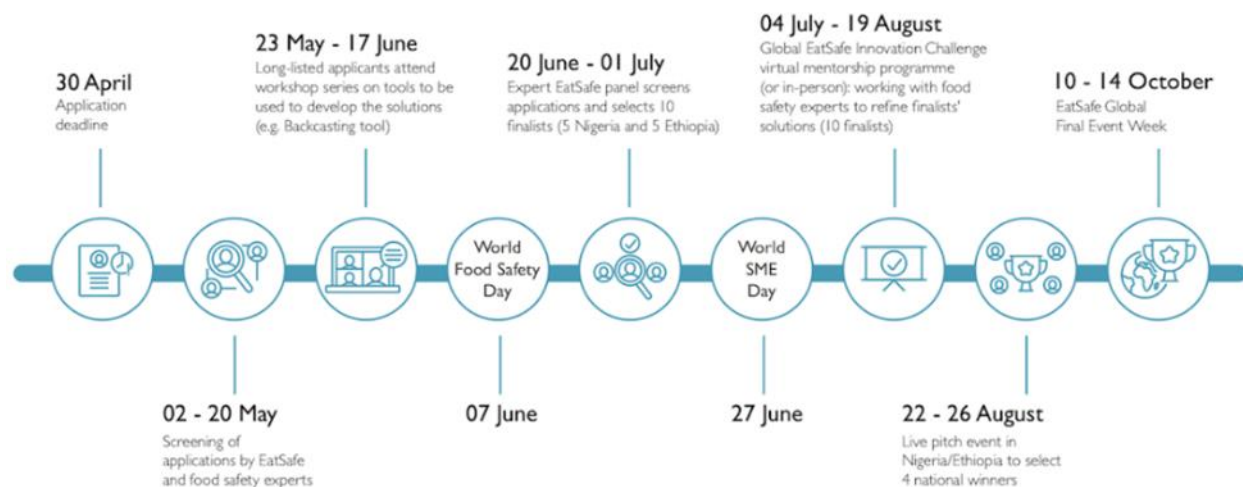
### *FTF EatSafe Innovation Challenge*
FTF EatSafe launched an Innovation Challenge in Nigeria and Ethiopia in 2022 (Fig.7). The challenge aimed to solicit ideas from students, researchers, entrepreneurs, and innovators on how existing food safety innovations along the food value chain can be adapted to increase the amount of safer food reaching traditional food markets. The Challenge, supported by several partners, awarded the first, second, and third place winners each USD $10,000, $5,000, and $3,000 respectively.

Applicants were invited to submit concepts across seven categories:

- **Peer Learning Platforms**: Channels for consumers to receive and share food safety information and/or provide feedback to businesses and with peers.

- **Processing**: Cost-effective innovations that enhance food safety during processing or making a raw or unrefined food into a product that meets a demand in the market.

- **Food waste technology**: Innovations that enhance food safety or detect risks in traditional markets (e.g., Upcycled foods, discarded/spoiled food products, or the inedible/unsellable parts of raw foods) in traditional markets.

- **Sensors for food safety assessment**: Sensor innovations that can detect chemical or microbial hazard(s) or the symptoms of contamination (e.g., turgor, color, density).

- **Retailing and packaging**: Innovations that enhance food safety in retail or packaging of nutritious foods (e.g., Labeling, vending machines, handling instructions).

- **Urban rural linkages and food logistics**: Innovations that improve efficiency in communication between urban demand and rural supply (e.g., Considering incentive structures related to transport or storage).

- **Platforms for supply chain management**: Innovations that increase operational efficiency and food safety of food production/processing (e.g., Automatic cleaning schedules; reminders for processing parameters like temperature, time).

**Figure 7.** FTF EatSafe Innovation Challenge Journey

The challenge received over 750 applications from Nigeria and Ethiopia, which were narrowed down to 10 finalists, five from each country. These finalists presented their concepts at their FTF EatSafe National Innovation Challenge Pitch Events in Addis Ababa, and Abuja. From these events, the top three winners from Ethiopia and Nigeria were selected to participate in the Global Finale hosted by the Technical University of Denmark Food Skylab in October 2022. Of the six finalists from Ethiopia and Nigeria who presented at the Global Finale, three were awarded prizes from sponsors. Throughout the challenge, technical guidance was provided to applicants to help them refine their solutions.

Helen Weldemichael, Associate Professor at the Wolkite University was chosen by the judges in Copenhagen as the winner. Her innovation improved the processing of enset, or false banana into the traditional Ethiopian dish, Kocho, with the development of a new processing machine, and the use of standardized fermentation starter cultures. More information on the Innovation Challenge can be found in its final report.



Helen Weldemichael, Innovation Challenge winner, speaks in Copenhagen, Denmark.

## 4.5  BUILDING A FOOD SAFETY CULTURE AND COMMUNITY

Improving food safety requires a concerted, coordinated effort by many. Especially in LMICs, where the traditional approaches of 'official food control' are not considered effective and well adapted for the management of food safety risks.

### 4.5.1  DEVELOP A FOOD SAFETY STRATEGY

Strategies are an important milestone for an organization, as they clearly publicize current thinking and direction on a subject. Being explicit about how an organization intends to tackle food safety helps draw others to its efforts. Several key strategies have been developed in recent years.

World Health Organization (WHO) Global Strategy for Food Safety 2022-2030

The WHO released the 'WHO Global Strategy for Food Safety 2022-2030,' which takes a One Health approach and outlines five strategic objectives:

- **Strengthening National Food Control Systems**: Enhancing the capacity and effectiveness of national food control systems.
- **Identifying and Responding to Food Safety Challenges**: Addressing challenges resulting from global changes and food systems transformation.
- **Improving the Use of Food Chain Information**: Utilizing scientific evidence and risk assessment in making risk management decisions.
- **Strengthening Stakeholder Engagement and Risk Communication**: Enhancing communication and engagement with stakeholders.
- **Promoting Food Safety in Trade**: Emphasizing food safety as an essential component in domestic, regional, and international food trade.

African Union (AU) Food Safety Strategy for Africa 2022-2036

The African Union (AU), in their Food Safety Strategy for Africa (FSSA) 2022-2036, stated that the traditional "command and control" model is not well-suited to informal food markets, where most of the population sources their food in Africa. Therefore, a transformative strategy is needed. The AU strategy includes the following objectives:

- **Strengthening Food Policy, Legal, and Institutional Frameworks**: Enhancing the frameworks that support food safety.
- **Building Human and Infrastructure Capacity**: Improving the capacity of food control systems.

- **Promoting Food Safety Culture and Advocacy**: Raising consumer empowerment through evidence-based advocacy, communication, and information sharing.
- **Improving Trade and Market Access**: Enhancing market access at national, regional, continental, and global levels.
- **Strengthening Research and Innovation**: Promoting technology development and transfer.
- **Enhancing Coordination and Cooperation**: Establishing and strengthening coordination mechanisms and enhancing cooperation at all levels.

Much of the AU strategy supports strengthening food safety in the informal sector and building a culture and community around food safety.

### 4.5.2 EXPLORE COLLABORATIONS IN THE FOOD SYSTEMS SPACE

The embrace of a food systems approach, especially since the UN's Food Systems Summit of 2021, has helped bring other voices to the food safety table. When members of FTF EatSafe were developing GAIN's draft Food Safety Strategy in 2023, they spoke to several established food safety experts, who mentioned their excitement in having many non-food safety specialists take up the fight to improve food safety. One of the factors mentioned in bringing these people to the table was the work FTF EatSafe did in highlighting the interdependencies between food safety and nutrition.

Similar connections and recruitment to the cause can be facilitated through exploring the interdependencies between food safety and other food system elements and drivers. Of interest is the growing work around urban food systems, and the role of traditional markets. Recent publications by the World Bank and FAO, and by International Panel of Experts on Sustainable Food Systems are highlighting the importance of a broad array of actors coming together to improve urban food systems.

## 4.6 MOBILIZE KNOWLEDGE PRODUCTS AND MEDIA ASSETS TO ATTRACT ATTENTION & SECURE SUPPORT

FTF EatSafe proved the power of a good communications and media campaign. Food safety has traditionally been neglected by the broader development community, often seen as a domain best left to specialists. Traditional markets are also not well understood and are often overlooked in national policy and regulation. Even though the majority of people in LMICs source their food from these markets, little is done to alleviate the risks of foodborne diseases.

FTF EatSafe implemented an effective knowledge management and mobilization program to educate and disseminate key messages to an international audience. This contributed significantly to a growing interest in and engagement with food safety in traditional markets.

**Key FTF EatSafe Knowledge Management Strategies:**

- **Close Collaboration with Key Partners**: Regular coordination with USAID on content development for AgriLinks, including developing content for monthly themes on the platform. This resulted in the FTF EatSafe AgriLinks site being one of the top 10 visited sites and highlighted in USG's GMPTA Annual Report 2023.

- **Utilizing Formal Partnerships**: Leveraging GAIN's formal partnerships with organizations like WHO and national governments to keep key stakeholders informed.

- **Building a Network of Supporters**: Accumulating contacts and establishing a distribution list. Event participants (e.g., webinars) were encouraged to stay updated with FTF EatSafe's progress and sign up for the quarterly newsletter. A QR code was developed and placed on the last slide of every PowerPoint presentation to facilitate connection.

- **Regular Outward-Facing Events**: Hosting webinars, podcasts, speaking engagements, presentations, and interviews to maintain engagement.

- **Consistent New Content**: Ensuring regular updates to keep visitors returning to the main platforms. This led to high traffic on both FTF EatSafe's AgriLinks site and the GAIN FTF EatSafe website.

- **Developing Diverse Communication and Media Assets**: Creating a range of assets, including scientific publications, impactful photos, blog posts, and professional films. Notable films include 'Felicia & Musa' and 'Food Safety: The Biggest Development Challenge You've Never Heard Of' produced by Pierce Mill.

- **Leveraging Key Global Events**: Utilizing events like WHO/FAO's World Food Safety Day (WFSD) every 7th of June to amplify key messages. WFSD provided a focal point for national and international activities to boost visibility.

Through these strategies and a dedicated team, FTF EatSafe, originally designed as a focused, evidence-generating project, gained significant name recognition and involvement in many exciting initiatives. It is recognized for its contribution to bringing informed attention to the important topic of food safety in traditional markets.

## 4.7 MEASURING PROGRESS ON FOOD SAFETY WITHIN FOOD SYSTEMS

Tracking progress is key to being able to prioritize program activities in the right place and at the right time. Harmonized indicators that represent strengths and gaps in key food safety functions are needed for consistent monitoring. At present, there is active discussion but not yet consensus on what components of national or regional food safety systems are necessary at different stages of development, and how to measure their performance.

FTF EatSafe identified areas of convergence on food safety indicators relevant to two GAIN's flagship programs – FTF EatSafe and the Food Systems Dashboard (FSD). The FSD is an online, interactive hub for open-access food systems data managed by a consortium led by GAIN and Johns Hopkins University. The FSD captures country-level indicators to track trends across time and geography in four key areas: food supply chains, food environments, consumer behavior, and external drivers. The FSD provides high-quality and action-oriented information to multiple audiences including country governments and international organizations investing in or managing food systems programs. Sub-national dashboards are also being developed. However, at the start of this work the FSD did not contain indicators related to food safety, nor were food safety indicators well represented in other food and nutrition dashboards (e.g., the Global Nutrition Report or the World Bank's Health, Nutrition and Population Dashboard).

To address these gaps, FTF EatSafe sought to: (1) Identify and classify indicators relevant to national food safety system functioning; (2) Assess the availability and quality of data sources that could populate the identified indicators; (3) Recommend inclusion of select food safety indicators in the FSD; and (4) Develop a quantitative scheme to evaluate indicators and associated data, expanding upon FSD inclusion criteria. As a result of reviewing indicators and data sources, FTF EatSafe identified food safety indicators for potential inclusion into the FSD, such as:

- Existence of a recall or early warning system.
- Existence of a system to collect epidemiological data on foodborne disease.
- Foodborne disease burden estimates (FERG data).
- Existence of food safety standards (e.g., adoption of Codex guidelines).
- Existence of food testing laboratories.
- Existence of certified businesses according to established food safety schemas.
- Existence of active consumer associations; and
- Consumer perspectives (World Risk Poll data).

Capillary data exist for some countries (primarily high-income countries) but lack in many others, limiting the possibility to assess not only the presence/absence of a function (e.g., legislation, inspections, surveillance) on paper, but its level of development and performance. Upon discussion, three indicators that met data coverage and quality criteria were approved for inclusion in the FSD: **Foodborne disease burden estimates** (FERG data); **Food safety capacity** (IHR data - International Health Regulations); and **Percent of the population who thinks the government is doing a good job ensuring food safety** (World Risk Poll data). The Food Safety Capacity index was also included in the [Food System Countdown to 2030 Initiative](#) dashboard.

Overall, these results represent a key stage within a larger effort to develop a set of key national-scale indicators to measure food safety progress and to establish data pipelines to bring such indicators to life and able to inform programmatic decisions.

**LEARN MORE ABOUT BUILDING ON CONSUMER DEMAND**

- Report on Normative Guidelines for Governments to Promote Safer Traditional Markets
- Food System Countdown to 2030 Initiative
- Food Systems Dashboard (FSD).
- FTF EatSafe Blog Posts on AgriLinks

Felicia, a mother of four, shops at a traditional market near Abuja, Nigeria.