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ILRI project brief May 2021

Urban food markets in Africa: Incentivizing food safety using a pull–push approach
Update on project activities, 2019–21

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Background

The *Urban food markets in Africa: Incentivizing food safety using a pull–push approach* project aims to improve food safety in urban informal markets in Burkina Faso and Ethiopia, specifically in poultry and vegetable value chains in the study sites of Ouagadougou (Burkina Faso) and Harar and Dire Dawa (Ethiopia). While previous efforts have often focused on training producers or regulators with little attention to incentives for behaviour change, the project investigates if consumer demand can provide the same incentive ('pull') for food safety in low- and middle-income countries as it has in high-income countries. It also builds capacity of market-level value chain actors to respond to demand (for example, by improving practices or adapting technologies) and of regulators to provide an enabling environment ('push'). We hypothesize that both 'pull' and 'push' approaches need to be co-implemented in urban food markets in Africa to lead to sustainably improved food safety. This brief presents an update on project activities from inception to date, as well as ongoing and upcoming activities.

Research activities, 2019 to date

Literature reviews

Literature reviews have been performed, identifying a dramatic increase in the number of publications in this area since 2014. Overall, very little has been done to assess the burden of foodborne disease in Burkina Faso and Ethiopia.

However, the literature identifies fundamental gaps in food safety for the major food value chains and finds high levels of contamination with both bacterial and parasitic pathogens. Pathogens that are hard to assess have been overlooked. More systematic and ongoing evaluation of contamination should be implemented together with initiatives to improve food safety. In the long term, improving infrastructure, such as facilities, and provision of clean water are required. A review of food safety interventions is ongoing.

Food safety value chain assessments

Through focus group discussions and in-depth interviews, vegetable and chicken value chains from production to consumption were described and potential risky practices identified. Producer, retailer, consumer and regulator views on food safety were collected.

In Ethiopia, we found that consumers were concerned about food safety but despite most foodborne disease being caused by bacteria, consumers were most concerned about chemical contamination, for example, from pesticides or veterinary treatments. However, inappropriate use of chemicals was reported. Consumption of raw vegetables in salads was identified as a common high-risk practice for exposure to pathogens, with tomatoes and lettuce thought to be particularly high risk.

High-income consumers had good knowledge of the nutritional value of foods, made good food choices and reported weekly chicken consumption. However, low-income households reported that they could only afford low-quality foods and only ate chicken every three months. Chicken was typically slaughtered and prepared at home.

The common food safety problems reported included lack of awareness, shortage of water, limited washing and low food safety standards and facilities along the value chain.

Quantitative knowledge, attitudes and practices survey

A survey of 151 tomato retailers was conducted in Harar and Dire Dawa to quantify product flows, practices and views on food safety. About 40% of retailers reported insufficient quantity of water for cleaning and washing, and 15% poor water quality. About 40% lacked access to adequate toilets, with 30% not having soap for handwashing. About 15% of traders regularly washed tomatoes with dirty water, with 13% unaware of the importance of water quality and cleanliness for food safety.

A quarter of retailers reported that damaged produce and food waste was a problem. About 10% of tomatoes for sale were slightly damaged, with 5% being moderately to severely damaged. Microbial growth greatly increases if tomatoes are damaged.

Whilst most retailers (62%) changed their washing and hygiene practices in response to coronavirus disease (COVID-19), among vendors selling on the street, the proportion was much lower (37%).

When asked, retailers showed variable interest in implementing simple retailer-level food safety interventions, but most were interested in receiving training on hygiene with the provision of basic equipment. A survey to assess food safety at the household level is planned for 2021.

Ongoing and upcoming activities

Foodborne disease burden, attribution and cost of illness

Working with a project on assessment and management of risk from non-typhoidal *Salmonella*, diarrhoeagenic *Escherichia coli* and *Campylobacter* in raw beef and dairy in Ethiopia, national data from the World Health Organization Foodborne Disease Burden Epidemiology Reference Group has been updated and used to estimate the burden of foodborne disease for Ethiopia (results out soon), with estimates for specific pathogens (*Campylobacter* spp., non-typhoidal *Salmonella* and enterotoxigenic *E.coli*) with the source of infection attributed to different foods. Early results suggest that many different foods are responsible for non-typhoidal *Salmonella* infections, with chicken and eggs accounting for much of the burden. Hospital-based data have been collected to assess the

cost of a case of disease. With other data, these are being used to derive data on the cost of illness from the disease.

Modelling the risk of foodborne disease

Quantitative microbial risk assessment is being used to estimate risks and burden of foodborne disease for key pathogens in chicken and tomatoes. The cost-effectiveness of different control measures is being estimated to produce a list of feasible and affordable interventions to reduce food safety risks.

Food survey of pathogen and pesticide prevalence

Tomatoes and other vegetables have been sampled from markets and farms and assessed for pesticide contamination (results forthcoming). Surveys will be performed on tomatoes and chicken sampled at markets and households to measure levels of bacterial contamination in tomatoes (enterotoxigenic *E.coli* and *Campylobacter* spp.) and chicken (*Campylobacter* spp. and non-typhoidal *Salmonella*).

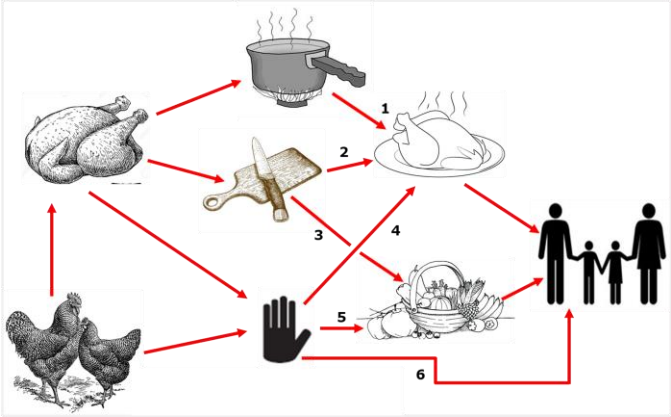

Figure 1: Transmission pathway for pathogens via poultry supply chain to humans. Source: James Noah Ssemanda.

Food safety consumer communications campaign

A communications campaign will be carried out to generate consumer awareness on the importance of buying safe foods, focusing on specific qualities related to food safety that consumers should look for when purchasing chicken and tomatoes. We will then evaluate whether this approach was successful in generating greater consumer demand for safer food and if so, whether the consumer demand was able to drive an increased supply of safe food through upstream improvements in food production, transport or retail.

The consumer campaign has been designed in light of project findings and local and national stakeholder consultation. In Ethiopia, the campaign will promote the purchase of high-quality vegetables, specifically, clean, undamaged, intact tomatoes, especially if used in salads. It will also promote household-level hygiene particularly for home slaughter and preparation of chicken. The effect of the campaign on consumer behaviour and food safety standards will be measured, with the resulting health impact estimated.

Food safety training and support

An online food safety and risk assessment training course for regulators and postgraduate students is being developed together with the Royal Veterinary College, London. The course will run later in 2021. In-person training in food safety will also be provided for local regulators and retailers at the study sites. Capacity development for retailers will also support them to improve food safety.

Collaborating institutions

Addis Ababa University
Centre d'Analyse des Politiques Economiques et Sociales
Institut de l'Environnement et de Recherches Agricoles du Burkina Faso
Institut de Recherche en Sciences Appliquées et Technologies
Haramaya University
University of Florida
Wageningen University and Research Centre
World Vegetable Center

Theo Knight-Jones works for the International Livestock Research Institute (ILRI).

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Pages 1 and 3:
ILRI/Geraldine Klarenberg

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The project is supported by the Bill & Melinda Gates Foundation and UK Aid from United Kingdom government, with additional support from the German Federal Ministry for Economic Cooperation and Development through the One Health Research, Education and Outreach Centre in Africa. The project also receives support from the CGIAR Research Program on Agriculture for Nutrition and Health and the CGIAR Research Program on Livestock. We acknowledge the donors to the CGIAR Trust Fund (https://www.cgiar.org/funders).

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