



## Nutrition and health risks in smallholder pig value chains in Uganda: Results of an assessment

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### *The Safe Food, Fair Food project in brief*

Since 2008, the International Livestock Research Institute (ILRI) and partners have carried out research on food safety in informal markets in sub-Saharan Africa. Our vision is to improve the livelihoods of the poor by reducing health risks associated with animal-source food and improving nutrition and market access for smallholders.

Conventional food safety approaches focus on banning any product with germs or other hazards in it; bad news for small-scale farmers and other value chain actors. New risk-based approaches seek to find out if there really is a danger to human health and, if so, how significant it is and what can be done about it. Risk analysis is the gold standard for food safety management in developed countries and can be a useful tool for decision-makers in sub-Saharan Africa where resources for addressing all potential hazards are scarce.

The project is carried out with the financial support of the Federal Ministry for Economic Cooperation and Development, Germany and the CGIAR Research Program on Agriculture for Nutrition and Health, led by the International Food Policy Research Institute.

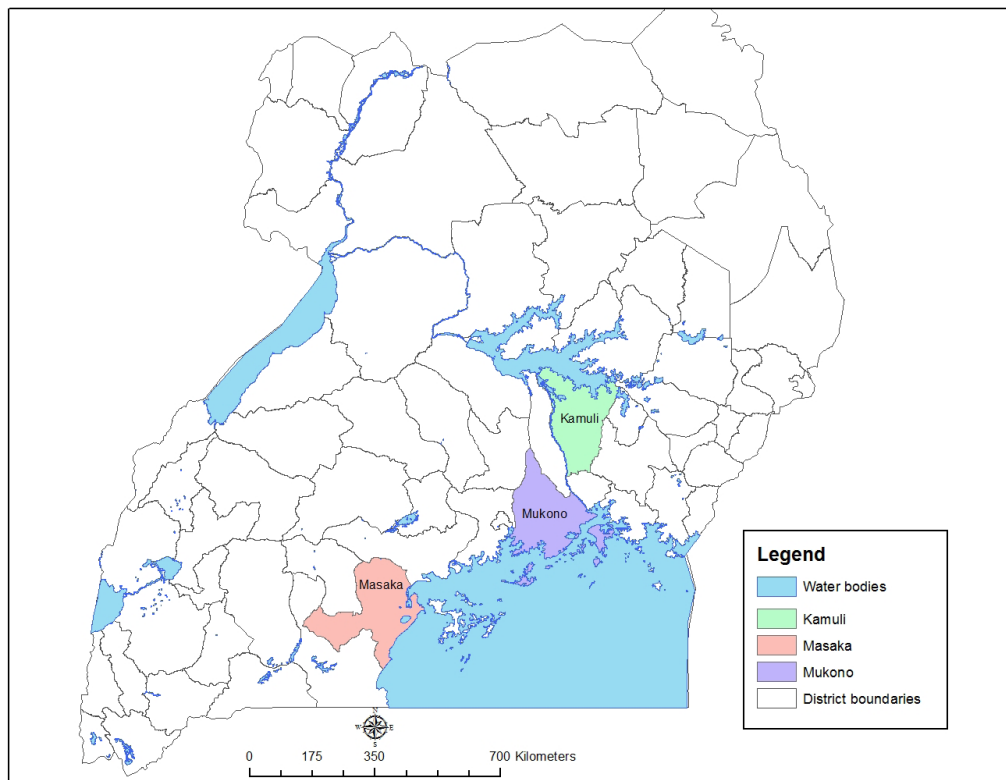
### Introduction

Pork has become one of the most popular animal-source foods in East Africa and annual per capita consumption is highest in Uganda (3.4 kg) of all countries in East Africa. Pig keeping is an emerging livestock activity in Uganda and could provide income to many poor smallholder farmers, especially women, and other actors in the sector. In Uganda, there is little information available on pig diseases that could be transmitted on farm, at slaughter or through consumption. Based on perceptions, but not on scientific evidence, the media scares consumers by telling them they would fall sick from eating pork (referring to epilepsy caused by the tapeworm *Taenia solium*) while regulators threaten to close butcheries and pork restaurants. This could cause thousands of people in the business of raising and selling pigs and pork to lose their livelihoods.

### Methodology

As part of an extensive value chain assessment with more than 1400 pig farmers, more than 300 input and service providers, traders, butchers and 1400 pork consumers, we conducted a rapid participatory assessment of pork safety and nutritional risks in Kampala, Kamuli, Masaka and Mukono districts (Figure 1).

Figure 1. Sites for the assessment of pork safety.



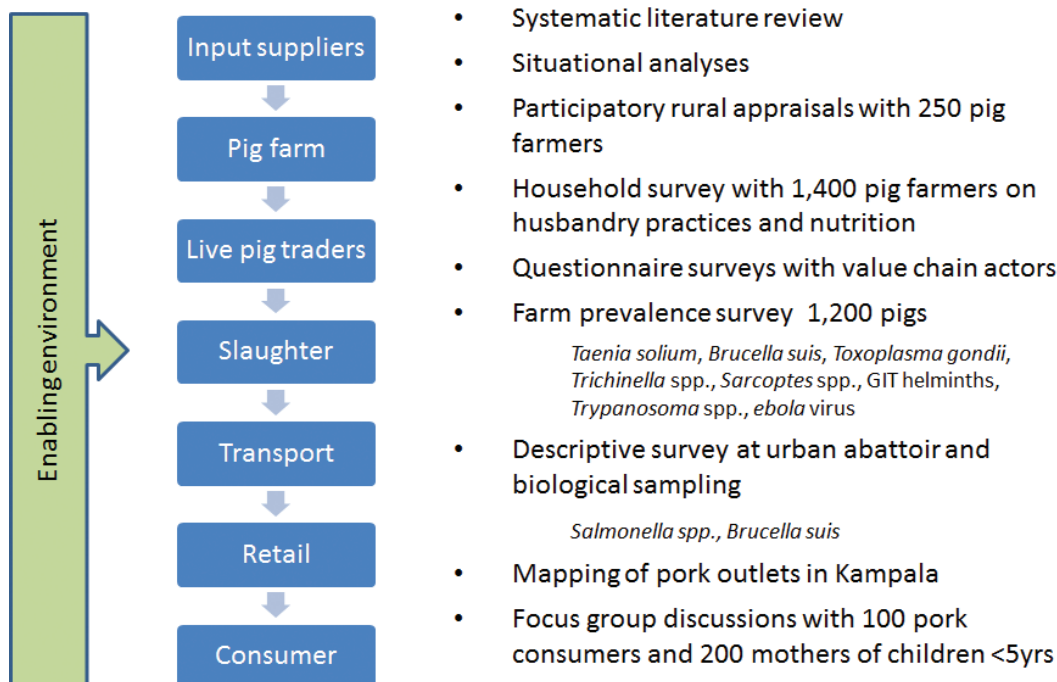
In a cross-sectional study we discussed knowledge, attitudes and practices using a combination of participatory methods, like focus group discussions and questionnaire surveys, and screened samples of live pigs and pork for zoonoses (diseases transmissible from animals to people) (Figure 2).

## Results

*The burden of disease on farms is high but the risk to consumers is low*

At the farm level, animals show high disease burden but the risk to pork consumers is low because of the common practice of eating pork that is well cooked by frying or roasting.

Figure 2. Assessment of pig zoonoses along the value chain.



## *The rural poor bear the health risks*

Brokers select healthy-looking pigs for sale in urban areas while sick-looking pigs are slaughtered in the villages. The coverage of pig meat inspection is very low, exposing rural consumers to a greater health risk.

### *Risk increases due to poor harvest and post-harvest practices, mainly caused by lack of basic infrastructure and good practices*

- Stressful transport of live animals in crowded conditions in the heat of the day causes increased shedding of pathogens such as *Salmonella*. Animal cruelty during loading in the lairage causes loss of meat and reduced shelf life of pork.
- Meat inspectors are rarely trained, are understaffed and do not have the necessary support to condemn meat they consider unfit for human consumption.
- Pork is transported in sacks or uncovered on motorcycles; metal transport boxes commonly used for beef are not widely used for transporting pork.
- Butchers using the same equipment to prepare raw and cooked meat may contribute to cross-contamination.
- Insufficient heating of pork, especially in urban centres where consumers are in a hurry, may result in undercooking of pork.
- Other factors that are more likely to affect public health are the risks from cross-contamination of food accompanying the pork, such as raw fruit and vegetables (avocados, tomatoes, onions and cabbage).

### *Salt and alcohol are dangerous relishes*

Pork is eaten with lot of table salt and often consumed with alcohol like beer or local gin which can contribute to a higher risk of heart disease.

### *Policy on pork safety is inconsistent*

The local authorities responsible for pork safety have overlapping mandates. Laws and regulations are outdated, often not covering pigs, and not based on evidence regarding the local disease status as well as preparation and consumption practices.

### *Formal products, too, are often not traceable to source*

Formal processors complain about the lack of transparency on where their meat originates from. For companies processing raw products, this is even more crucial as cured meat or cold cuts may carry parasites.

### *No critical mass demanding food safety*

Consumers are not educated on food safety risks; if they were, they could help enforce good hygiene practices at butcheries and pork joints.

## **Evidence gaps**

### *Antibiotic resistance*

Smallholder farmers do not commonly use antibiotics in pigs. At slaughter we found evidence of *Salmonella* spp. resistant to one or more antibiotics. There is need to investigate the origin of the antibiotic resistance and how pigs get exposed to it.

### *Causes of diarrhoeal diseases in humans*

Little is known about the causes of diarrhoeal diseases in humans because there is lack of differentiation of parasite species in stool samples and hospital records of the causes of diarrhoea show many gaps.

### *Pork tapeworm is believed to be the cause of epilepsy in Uganda*

There is little knowledge on the proportion of epilepsy cases caused by the pork tapeworm (*Taenia solium*). It is widely perceived that epilepsy can be caused by eating undercooked pork containing tapeworm cysts. The truth is that cysts in the brain cannot be caused by eating tapeworm cysts. The problem is related to personal hygiene. This misperception results in wrong management practices.

### *The role of water in pork safety*

The role of contaminated water in pork safety is unknown.

### *Poor slaughter waste management and its contribution to disease spread*

Slaughter waste is not systematically managed. Blood from slaughtered animals is led into streams and may contribute to the spread of African swine fever and zoonotic diseases. By-products that are not used are eaten by dogs, cats, rodents, marabou storks or vultures, and this can contribute to maintaining life cycles of pathogens.

## **Opportunities to improve public health and hygiene along value chains**

### *Create designated slaughter areas*

At the moment, informal butcheries are scattered. If the informal butchers were able to slaughter pigs in designated areas, it would be easier for the local government authorities to supervise and inspect the slaughter facilities. This could be achieved through public-private partnerships.

### *Train meat inspectors, butchers and restaurant owners*

In a collaborative effort involving the government, universities and regional and international partners, training modules could be developed to help build capacity of meat inspectors, meat graders, butchers and retailers, following the Kenyan example of the Meat Training Institute in Athi River.

### Link smallholder farmers with formal markets

- The growing niche market for value-added pork products should be exploited; formal processors could contract smallholder farmer groups.
- Formal processors make use of the meat only while by-products like heads, feet and red offal are sold in the informal market. If the entire carcass is inspected, all consumers can have access to safe meat products, whether sold in the formal or the informal market.

Kristina Roesel and Delia Grace work for ILRI. Francis Ejobi works for Makerere University.

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### Invest in slaughter waste management

Slaughter waste can be used to generate energy. The electricity can be used to run the slaughter facilities and surplus can be fed to the communal grid.

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