

# Reducing disease risks and improving food safety in smallholder pig value chains in Vietnam (PigRISK)



## Overview

Food safety is a key concern of people in Vietnam. Pork is the most popular meat and essential both for consumer nutrition and farmer livelihoods. But is it safe? Pork is produced mainly by smallholders and sold fresh in traditional (wet) markets. In a country where one in four children are stunted, animal-source foods can be an important part of tackling under-nutrition. And, as demand for pork grows, supporting the smallholder value chain can provide pathways out of poverty for farmers and others.

The PigRISK project was funded by the Australian Centre for International Agricultural Research and was co-implemented by the Hanoi University of Public Health (HUPH), the Vietnam National University of Agriculture (VNUA) and the International Livestock Research Institute (ILRI). The project was implemented from June 2012 to September 2017 in Hung Yen and Nghe An provinces, nationally and with global links. The project sought to improve the livelihoods of smallholder pig farmers in Vietnam by helping continuing market access through addressing food safety in the pork value chain. It built on strong national and international partnerships to address questions of consequence: Is pork in Vietnam safe? Are the risks serious? How best can these risks be managed?

Ongoing research suggests that, on the whole, pork in Vietnam cannot be considered safe. However, while people worry most about food contamination by chemicals, biological pathogens have most impact. Moreover, smallholders can produce safe pork. These insights have major food safety management implications.

In 2017, project scientists will focus on leveraging the evidence and achievements of the project in order to improve assessment, management and communication of pork safety in Vietnam.

## Key research findings

- *Salmonella*—a bacterial pathogen hosted by pigs—is one of the most common causes of food-borne illness. We found *Salmonella* in 44% of pork sold at the markets in the study area (Hung Yen and Nghe An).
- For the first time, a quantitative microbial risk assessment (QMRA) model estimated the health impacts of food-borne disease in Vietnam. It indicated that 10–20% of pork consumers are at risk of *Salmonella* poisoning every year.
- Prevalence surveys found smallholder pork is as safe as, or safer than, that from the formal sector.
- Using scenarios, scientists modelled the effectiveness of interventions at market and household levels in reducing annual salmonellosis incidence among consumers. A reduction of 25% of *Salmonella* in pork at market would lead to a 50% annual reduction of salmonellosis incidence in humans.
- Other research found that much of the human health risk comes not from eating pork (which is often well-cooked and relatively safe), but from cross-contamination at household level.
- An economic assessment put the costs per treatment and per day of hospitalization due to food-borne diarrhoea at USD107 and USD34, respectively. The

annual costs of hospitalization in Vietnam amounted to USD2.5–7.6 million.

- Associated studies on the adoption of good agricultural practices (GAP) demonstrated the long-term impact of participatory extension initiatives, and identified ways of increasing adoption and effectiveness of national GAP initiatives. Adoption was evaluated from a gender perspective.

## Achievements

Evidence developed on the burden of pork-borne disease in Vietnam has been shared with the scientific community, academia, communities and policymakers.

- Various papers on the subject matters have been published in international (6) and national (16) journals.
- Additional outputs include synthesis or discussion papers, fact sheets and research briefs.
- PigRISK findings and outputs have been presented at more than 61 international and national conferences and symposia.
- Feedback workshops (April and May 2017) in Hung Yen and Nghe An provinces included advocacy for better management of food safety and more effective communication to raise public awareness.
- The capacity of stakeholders in assessing and managing food-borne disease has been developed. For instance, project researchers contributed to capacity development related to food safety for partners and networks (national and regional). This includes training courses at the Global Health Institute (GHI) Thailand, the South East Asian One-Health University Network, Da Nang and Faculty of Food Technology, VNUA.
- One VNUA PhD student successfully defended her thesis, one from HUPH is expected to do so early 2018. Sixteen more MSc students and 84 undergraduate students were trained.

### Policy outcomes have been documented:

- Scientists contributed substantially to the report: ‘Vietnam food safety risk management: challenges and opportunities’ led by the World Bank at the request of the government of Vietnam, launched in 2017: <https://hdl.handle.net/10568/80653>.
- Project researchers participated in the National Taskforce on Food Safety Risk Assessment and the Vietnam Food Safety Working Group. They used the extensive experience gained from the project to conduct policy analyses and training on food safety, develop risk assessment guidelines, and communicate and disseminate information on food safety.

## Impact story

Dang Xuan Sinh works as a researcher with Centre for Public Health and Ecosystem Research at HUPH—a key PigRISK project partner. Sinh has participated in and led a number of studies on pig value chains analysis and pork-borne diseases in Vietnam. In 2016, together with other PigRISK scientists, Sinh finalized a QMRA of *Salmonella* in pork value chain in Hung Yen province, Vietnam. This study was published in the *International Journal of Public Health*. Notably, this is the first QMRA study conducted in Vietnam.

Working with project researchers and other international research networks of the project, Sinh has improved his expertise on food safety risk analysis. In February 2017, he was invited to give a training workshop on food safety risk analysis at GHI Thailand and a talk to MSc students on food technology at VNUA.

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