



# Food safety risk communication: A One Health approach to improve knowledge and practices along pork value chains in Vietnam

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SAFEPORK Conference, New Orleans, 15-17 May 2023

# 1. Introduction: Food safety



**The burden of foodborne diseases is substantial**

Every year foodborne diseases cause:

almost **in 10** people to fall ill | **33 million** healthy life years lost

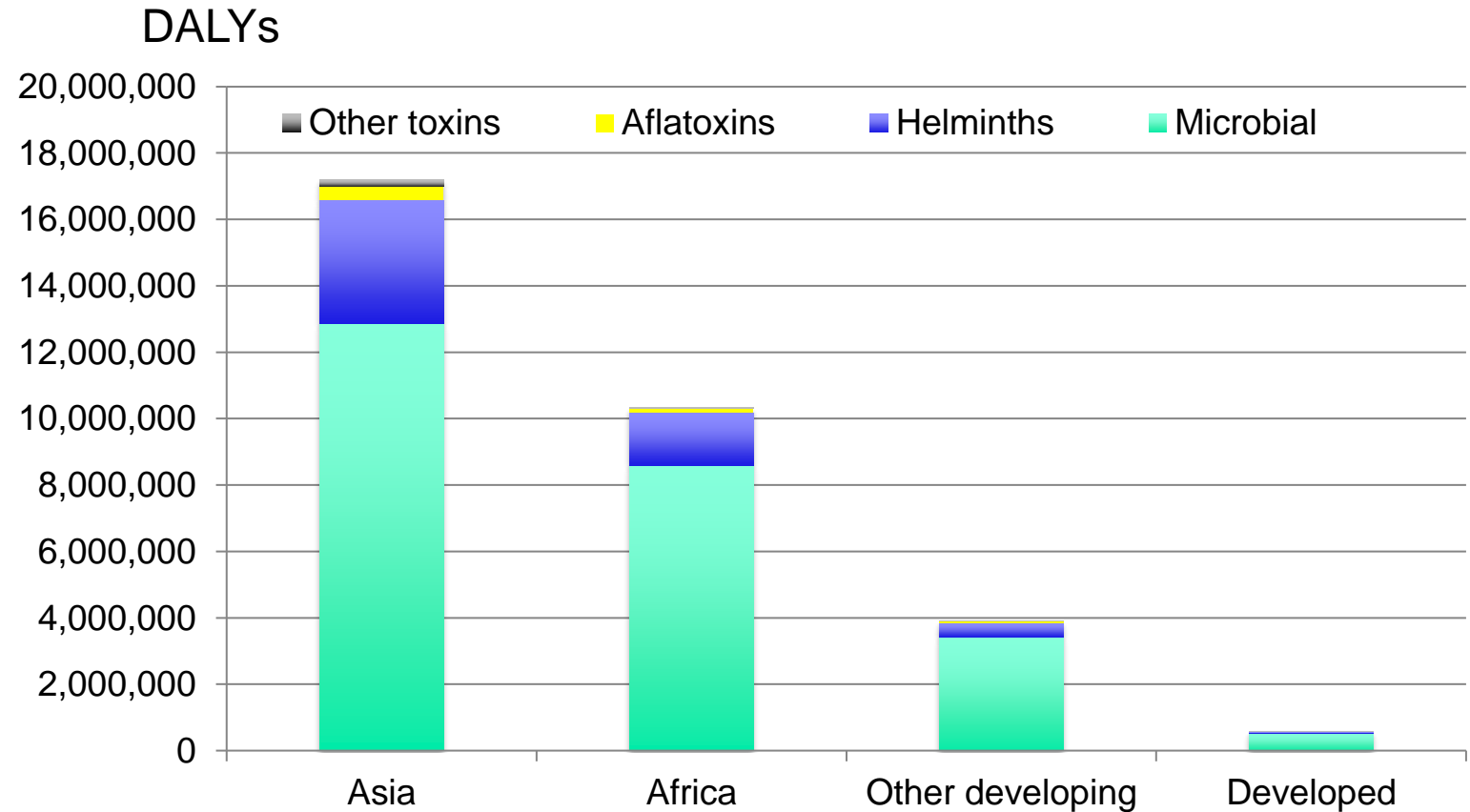
Foodborne diseases can be deadly, especially in children <5

**420 000** deaths | Children account for **1/3** of deaths from foodborne diseases

**FOODBORNE DISEASES ARE PREVENTABLE. EVERYONE HAS A ROLE TO PLAY.**

For more information: [www.who.int/foodsafety](http://www.who.int/foodsafety)  
 #SafeFood  
 Source: WHO Estimates of the Global Burden of Foodborne Diseases, 2015.

**Burden of diseases: Often quantified in terms of disability-adjusted life years (DALYs)**



**Burden comparable to Malaria, HIV, Tuberculosis**

# 1. Introduction: Traditional pork value chains in Vietnam

Pork is an **important component** of the Vietnamese diet:

- The most widely consumed meat: **30Kg/person** (2021)
- About **80%** of marketed pork
  - **comes** from small or medium farms,
  - Is processed in **small slaughterhouses**
  - Is **distributed through traditional retails**
- Consumer preference for **fresh “warm” pork** supplied in traditional markets

**Farm:** No. of pigs/farm: 20 (5-100), Exotic breed: 68%



**Slaughterhouse:** No. of pigs/day: 11 (1-45)  
Operate: **2 am-6 am**

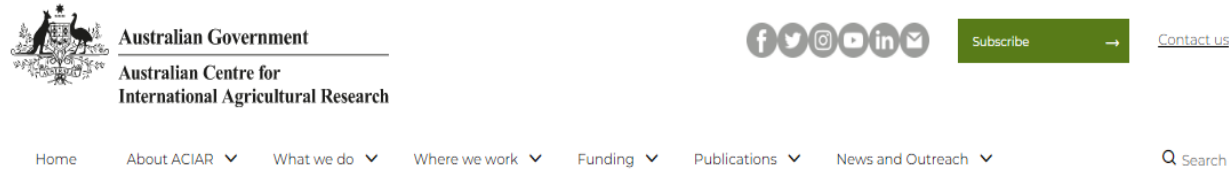


**Traditional market:** Selling pork: 20-300 kg/shop/day  
Open: **5 am-11 am**



# 1. Introduction: Food safety hazards along pork value chain

## PigRISK (2012-17)



Home > Reducing disease risks and improving food safety in smallholder pig value chains in Vietnam - final report

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### PROJECT FINAL REPORT

## Reducing disease risks and improving food safety in smallholder pig value chains in Vietnam - final report

#### DATE RELEASED

27 March 2018

#### ISBN

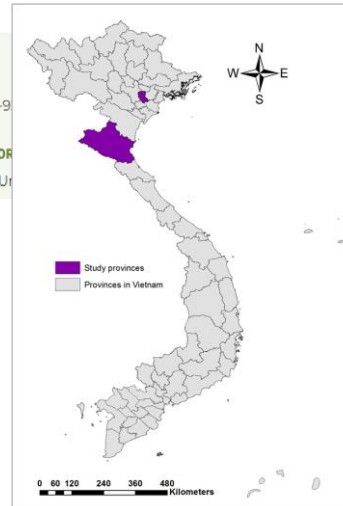
978-1-9

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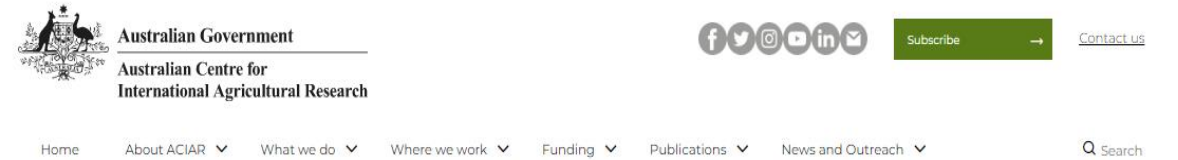
#### AUTHOR

Fred U



To assess impacts of pork-borne diseases on human health and the livestock sector and identify control points for risk management.

## SafePORK (2017-23)



### LIVESTOCK SYSTEMS

## Safe Pork: Market based approaches to improving the safety of pork in Vietnam



Project code: LS/2016/143

Program: Livestock Systems

Budget: AUD 2,000,000

Research program manager: Dr Anna Okello

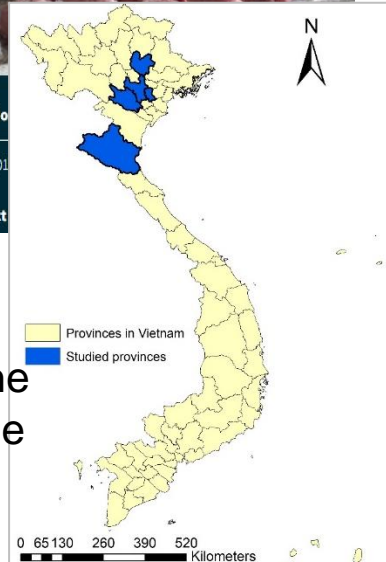
Project leader: Fred Unger

Commissioned organisation: International Livestock Research Institute

Duration

OCT 201

Project



To develop and evaluate market-based approaches (**interventions, e.g., training/risk communication**) to improve food safety, with the overall aim of reducing the burden of foodborne disease in traditional pork value chains.



# 1. Introduction: Food safety hazard along pork value chain

Pork/Food-borne disease	
<b>Parasitic</b>	
• <i>Cysticercus cellulosae</i>	
• <i>Trichinella spiralis</i>	
• <i>Toxoplasma gondii</i>	
• <i>Fasciola spp.</i>	
<b>Bacterial</b>	<b>Virus</b>
• <i>Bacillus cereus</i>	• Hepatitis E
• <i>Brucella suis</i>	• Norovirus
• <i>Campylobacter spp.</i>	
• <i>Salmonella spp.</i>	
• <i>Staphylococcus aureus</i>	
• <i>Streptococcus suis</i>	
• Shiga toxin producing <i>E. coli</i>	
• <i>Yersinia enterocolitica</i>	



## Chemical hazards on pork

- **Heavy metals:** lead (Pb). Cadmium (Cd). Arsenic (As)
- **Antibiotic residues:**  $\beta$  – lactame (penicillin. cephalosporin); aminozid – AG; macrozid; n lincosamid; chloramphenicol. Carcinogens (Sulphamethazine. Oxytetracycline. Furazolidone)
- **Growth promoters:  $\beta$  – agonists** (salbutamol. clenbuterol)
- Dioxins and POPs
- Additives: natri nitrat, natri nitrit, kali nitrat, kali nitrit
- Heterocyclic aromatic amines- HCAs. polycyclic aromatic hydrocarbons – PAHs.

- *Salmonella* contamination in small holder pork value chain from: pig farms (36.1%) to pig slaughterhouse (39.9%) and to pork at retail (44.7%) [2013-2014] and 58% across all retail types (modern & traditional) [2018-2019]
- Low risk from parasitic PPBD: Cysticercosis and Trichinellosis in indigenous pigs
- Low risk from chemical hazards: growth promoters, antimicrobials (AM), heavy metals
- QMRA: **1-2 out of 10 Vietnamese pork** consumers estimated to suffer from salmonellosis annually
- Value chain actors and consumers: (i) **misperception: believe chemical hazards more important than microbiological;** (ii) **lack of knowledge, awareness and hygiene practices on food safety**

## 2. Objective and methods

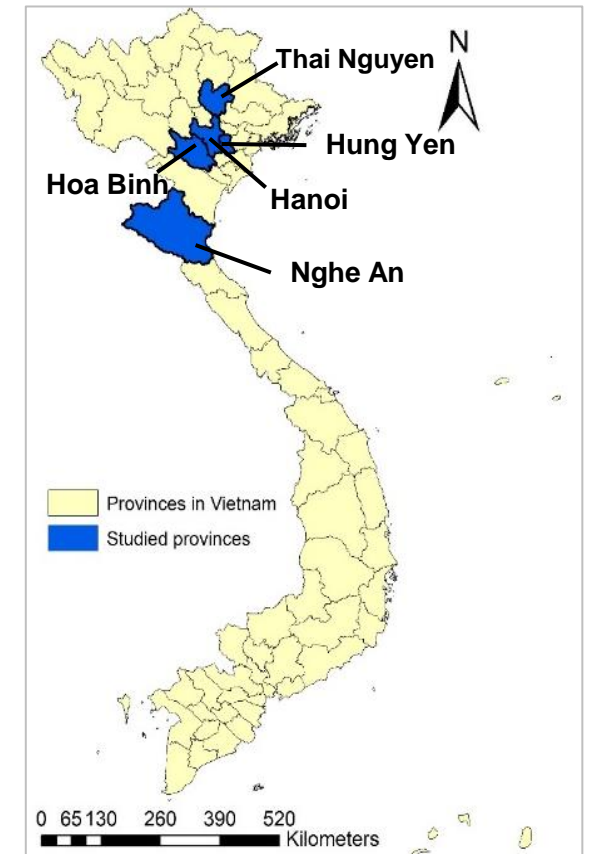
CODEX: WHO/FAO/WOAH  
Food safety risk-based approach

**Objective:** To improve food safety knowledge, perception & practices among pork value chain actors, relevant stakeholders, and consumers to prevent foodborne illness using risk communication

### Risk communication:

- Participatory trainings;  
Group discussions,  
Meetings;  
Posters/Guidelines and  
leaflets; Loudspeaker  
campaigns

November 2019 to June 2022



### Food Safety Risk Analysis

**Risk  
Assessment**

\*Science based

**Risk  
Management**

\*Policy based

**Risk  
Communication**

\*Interactive exchange of  
information and opinions  
concerning risks

### 3. Results

Targeted groups	N#. participants (N#. women)	Topics on risk communication - messages to improve
Pig producers	119 (94)	FS knowledge and hygiene practices relevant to their daily work, targeted to different actors (pig producers, slaughterhouse workers, consumers, canteen staff)
Slaughterhouse workers	43 (11)	
Pork retailers	30 (21)	
Consumers	191 (175)	
Canteen staff	142 (129)	
Local authorities (TOT)	175 (88)	FS knowledge, risks and how to communicate risk
<b>Total</b>	<b>700 (518 women, 74%)</b>	
Media (journalist)	Two workshops with media (2019 and 2022), over 100 participants related to FS risk communication	
Loudspeaker campaigns (broadcasted 64 times)	Reach ~45% district population (120,000 <b>community members</b> , include 70,000 women): received FS information including hygiene practices	



# 3. Results

Targeted groups	N#. participants (N#. women)	Topics in risk communication messages to improve
Pig producers (indigenous pig)	119 (94)	Improve FS knowledge and hygiene practices related to raising pigs (e.g., biosecurity/ vaccination, manure treatment...)



Safer indigenous pork and healthier ethnic minorities in Vietnam through better management of parasitic pig-borne diseases

**Handbook**  
Prevention of parasitic pig-borne diseases and improvement of hygiene practices in the pork value chain  
*(with emphasis on indigenous pigs)*

Hanoi, December 2020

## Guide to prevent PPBDs for indigenous pig producers

**Always keep pigs inside the pen or a fenced area, this also reduces the risk of other pig diseases**

**Properly treat pig faeces, for example make compost or collect and store, with no access by other livestock**

**Good practices**

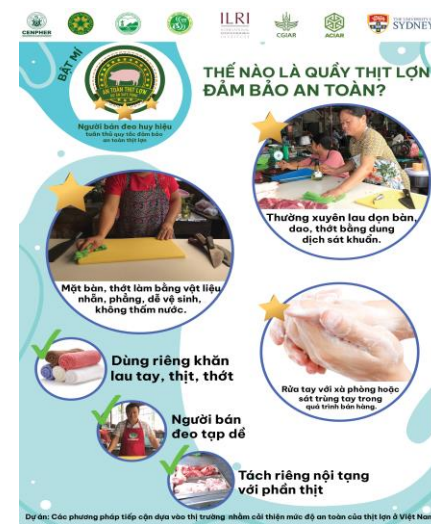
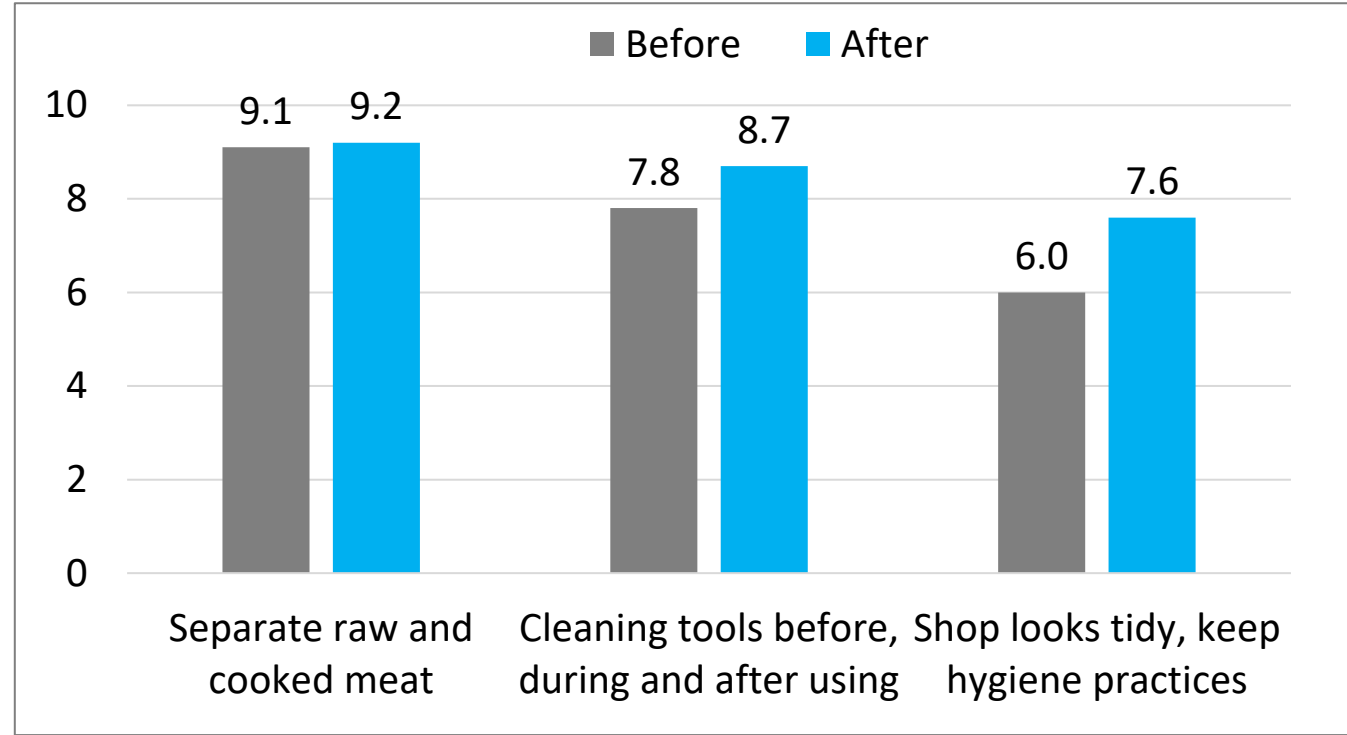
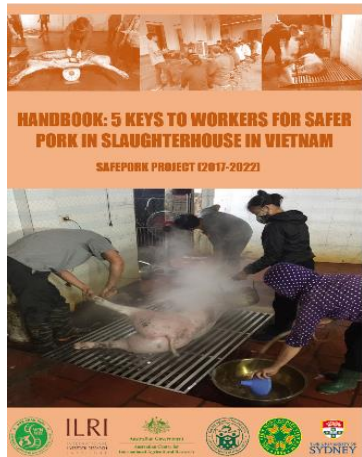
**Do not allow pigs to roam outside the pen or a fenced area, this also increases the risk of other pig diseases, for example African swine fever.**

**Bad practices**



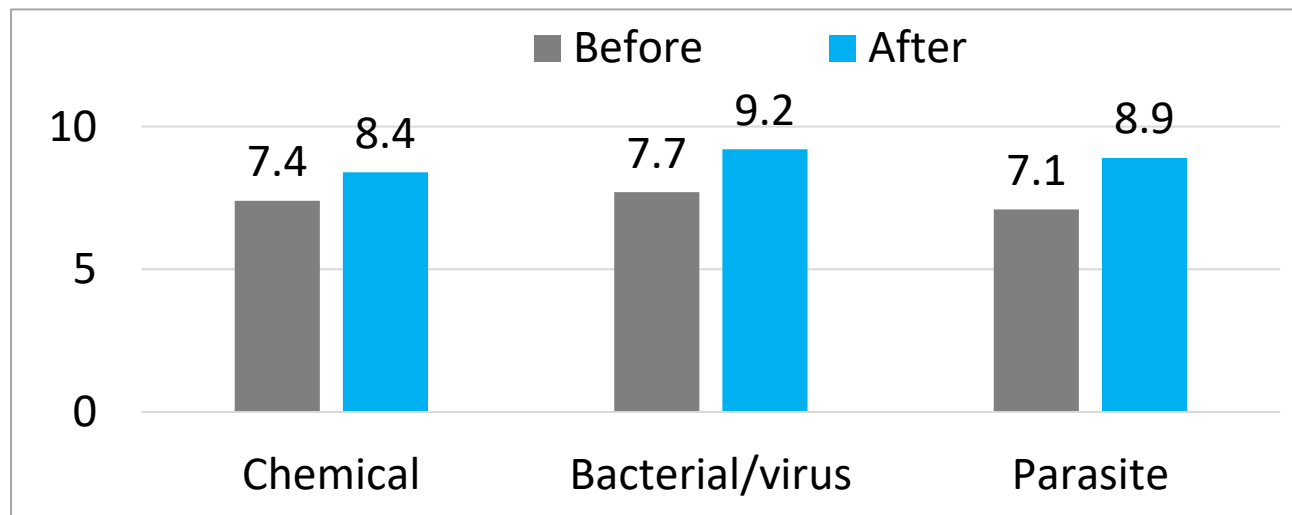
# 3. Results

FS knowledge and practices of **SH workers and pork vendors** after training compared to before



### 3. Results

Targeted groups	N#. participants (N#. women)	Topics of risk communication messages to improve
Pig producers	119 (94)	True perception of risk of food borne hazards
Slaughterhouse workers	43 (11)	
Pork retailers	30 (21)	
Consumers	191 (175)	
Canteen staff	142 (129)	



More accurate perception of risk of food borne hazards before and after training



### 3. Results

Trained local **veterinary and health workers**, and **local authority** staff [TOT, 175 participants (88 females)]

- Basic concept of FS RC, RC planning/skills: improved management & dissemination of FS information, integrated in their routine work.
- Different trainings conducted by the trained staff to the consumers were rolled out at district and commune level.





### 3. Results

- Two workshops with journalists/media (2019 and 2022) related to food safety risk communication: over 100 participants
- Loud-speaker campaigns: messages broadcasted 64 times (~10 min length): estimated to reach approximate 45% of the district population (120,000 community members, including 70,000 women).



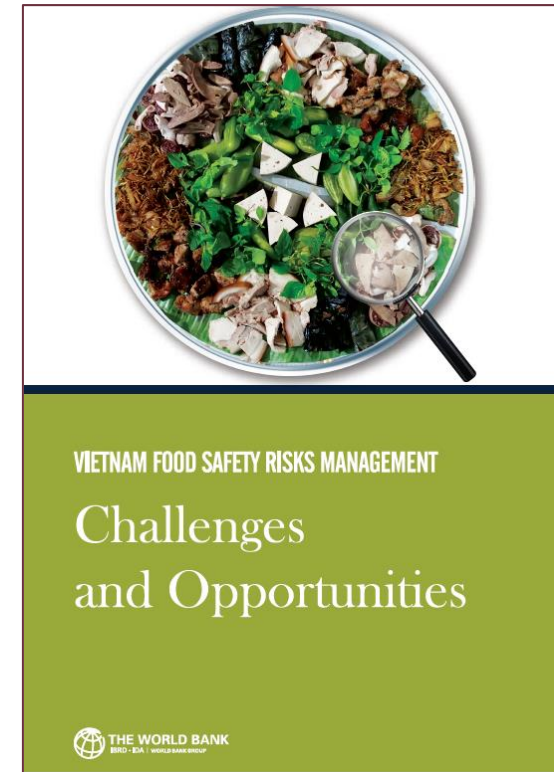
## 4. Discussion

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- Traditional pork value chain actors: few opportunities to continuously update/be trained on FS. FS knowledge acquired by experience (*“learning by doing”*)[Sinh et al, 2016].
- Through participating in the trainings/RC activities: beneficiaries received FS information; improved relations between VC actors & authorities; misunderstandings were clarified [Nguyen-Viet et al, 2019].
- Principles of risk-based approach, e.g., RC: disseminating FS information and prevention measures [Attrey et al, 2017].
- Interaction, training and discussion: between Journalists and FS researchers, experts, managers : updated journalist skills and understanding in the process of communicating FS messages

# Conclusions

- This study showed the feasibility and effectiveness of a multi-disciplinary and whole value chain approach to FS.
- Messages were **targeted to actors from the farm to the fork** and **relevant stakeholders**: involved human health, animal health, agriculture and social science disciplines (inter-disciplinary approach) as well as scientists, communities and authorities (trans-disciplinary approach).
  - ✓ *Supports hypothesis that a risk-based, One Health approach, can effectively convey FS knowledge and practices*
  - ✓ *With the potential of reducing risk of foodborne illnesses for consumers.*





# Acknowledgement


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