International Livestock Research Institute

Safe Food, Fair Food for Cambodia project

Taskforce for food safety risk assessment and project stakeholder workshop

31 October 2018

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Written by Chi Nguyen

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Abbreviations and acronyms

ASF	Animal source foods
ADB	Asian Development Bank
CDC	Department of Communicable Disease Control, Cambodia
CelAgrid	Centre for Livestock and Agriculture Development, Cambodia
FAO	Food and Agriculture Organization of the United Nations
FBD	Food-borne disease
FGDs	Focus group discussions
GDAHP	General Directorate of Animal Health and Production, Cambodia
HACCP	Hazard Analysis and Critical Control Points
ILCC	Industrial Laboratory Center of Cambodia
ILRI	International Livestock Research Institute
IPC	Institut Pasteur du Cambodge
ITC	Cambodia Institute of Technology
KAP	Knowledge, attitude and practice
MAFF	Ministry of Agriculture, Forestry and Fisheries, Cambodia
MEF	Ministry of Economy and Finance, Cambodia
MIH	Ministry of Industry and Handicraft, Cambodia
MOC	Ministry of Commerce, Cambodia
MOH	Ministry of Health, Cambodia
MOT	Ministry of Tourism, Cambodia
NAHPRI	National Animal Health and Production Research Institute, Cambodia
NHQC	National Health Products Quality Control Centre, Cambodia
UHS	University of Health Sciences, Cambodia
NIPH	National Institute of Public Health, Cambodia
OIE	World Organisation for Animal Health
RUA	Royal University of Agriculture, Cambodia
SFFF	Safe Food, Fair Food
SIDA	Swedish International Development Cooperation Agency
SOP	Standard operating procedure
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WHO	World Health Organization

Acknowledgements

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Introduction

Animal source foods (ASF) are an important part of the cuisine with pork, fish, and poultry products widely consumed in Cambodia. The majority of livestock products are produced by smallholders, many of them women, and sold in traditional, wet markets where women also predominate as retailers. In recent years, Cambodia has seen growing food safety concerns.

The overall aim of the Safe Food, Fair Food (SFFF) for Cambodia project is to reduce the burden of foodborne disease in informal, emerging formal, and niche markets and targeting small and medium scale producers. The project has five objectives with associated activities, outputs, and outcomes. To reach this objective, it is necessary to build capacity to better understand what food safety risks are, how to manage food safety and how to communicate it effectively among stakeholders including the government, private sector, academia, donors, and the media.

Workshop proceedings

The workshop took place 14-15 December 2017 at Himawari Hotel, Phnom Penh, Cambodia. It was co-hosted by the National Animal Health and Production Research Institute (NAHPRI), Department of Animal Health and Production, Cambodia in collaboration with the International Livestock Research Institute (ILRI) and the Centre for Livestock and Agriculture Development (CelAgrid).

The objectives of the meeting were:

- to establish the Taskforce for food safety risk assessment in Cambodia;
- introduce the SFFF Cambodia project, principles of risk assessment, as well as the initial results of food safety profile to the project stakeholders;

43 participants from ILRI, NAHPRI, CelAgrid, University of Health Sciences, Cambodia (UHS), Royal University of Agriculture, Cambodia (RUA), Food and Agriculture Organization of the United Nations (FAO), World Health Organization (WHO), Institut Pasteur du Cambodge (IPC), Department of Communicable Disease Control (CDC), Cambodia, CamControl and other partners in Cambodia attended the meetings.

The first day focused on the discussion how Safe Food, Fair Food research experiences of ILRI took place in Africa. The experience of the Taskforce for food safety risk assessment in Vietnam to develop the capacity of risk assessment research in the country was presented and discussed to explore if this model could be applied in Cambodia. Participants mapped food safety projects, programs and initiatives in Cambodia, which allowed to position the work of SFFF Cambodia project. They also proposed to add food safety research and training (taskforce) into the existing national food safety technical working group to strengthen the existing group, and optimize the synergy of different food safety activities in the countries.

The second day was the project stakeholder workshop. We provided key principles of risk analysis, with specific experience on food safety risk communication in Vietnam. Risk profiling method and primary results of risk profiling including key informant interview and focus group discussions (FGD) of SFFF Cambodia were presented for comments. Finally, group works were organized to discuss and identify key food safety hazards in Cambodia as well as the gender dimension. *Salmonella*, *E. coli*, *Bacillus*, pesticides are identified hazards in ASF and vegetables. The roles of men and women were discussed in different activities related to food safety value chain.

Key discussion from morning, Day 1 (14 December 2017)

Group photo (Photo credit: ILRI)

Ministry of Health (MOH)

- Six ministries are now managing food safety that leads to overlapping mandates and many problems on communication.
- Fund is not enough for activities like capacity development.
- MOH is promoting good practices at canteens, food retailers.
- CDC is responsible for technical working group, developed SOP for outbreak response.
- Food safety bureau issues food hygiene certificate for imported foods, health certificate for handlers.
- MOH engaged in drafting the new food safety law.

World Health Organization (WHO)

- WHO conducted risk-based meat inspection with all ministries.
- WHO came up with recommendations to improve meat inspection protocol.
- WHO works to develop the framework for food safety, help country to develop food safety policy, regional food safety, capacity building for CDC on outbreak response, inspection.
- WHO supported capacity building for food testing and consumer education.

Ministry of Industry and Handicraft (MIH)

- MIH has 7 departments with three linked to food safety (issue letters, health certificates, permissions for factory; creating food standards, Hazard Analysis Critical Control Point (HACCP) certification, product registration, Industrial Laboratory Center of Cambodia (ILCC – accredited lab food chemicals) reading out the organigram.

Ministry of Tourism (MOT)

- MOT does not have department on food safety yet.
- 10 years ago MOT had a department working on accreditation and management of restaurants (licenses to operate restaurants) - focus on hygiene food handling. Before they get accredited, need to get certificate of health from MOH.
- Ministries do not understand exact way how to get a license but expect the restaurant owners to know it.

Ministry of Agriculture, Forestry and Fisheries (MAFF)

- MAFF has three different departments working on food safety.

- Slaughterhouse inspection, sanitary inspection of animals and ASF (Animal disease control, animal movement). Cambodia has more than 165 regular slaughterhouses under sub-degree 108.
- MAFF conducts annual trainings to stakeholders including vets in the provinces to educate them on meat inspection.
- For pork, Cambodia has small slaughterhouses. They have two modern ones for beef and one for chickens (commercial). No investment is made for pig slaughterhouse.
- Slaughterhouse surveillance for tuberculosis, Trichinella and cysticercosis – sampling and inspection, microbial contamination, *Salmonella* seems to reduce but *E. coli* remains high.
- Fisheries Department looks at hygiene, sanitation, especially in export fish.

Question to MOH from CDC: mentioned has lab capacity for chemicals, which ones?
R: chemicals can be analysed but limited parameters, joint contract with Ministry of Finance, so that they can test >100 parameters.

Food and Agriculture Organization (FAO)

- FAO has supported technical backstopping of the new laws (animal production, slaughter house management, food safety law), part of the technical working group.
- FAO currently is running several food safety projects but mostly vegetables (integrated pest management, moving towards organic farming), not many projects on meat.
- Law submitted for endorsement, not yet accepted because there is supposed to be single-ministry mandate not multi-ministry participation.

Institut Pasteur du Cambodge (IPC)

- IPC has laboratory testing 2000-4000 food samples per year.
- IPC is affiliated with MOH.
- IPC works with the private sector who wants to do quality control of their products.
- Convinced it is cross-contamination (buy pieces of meat from different providers). IPC did testing different providers.
- Tap water in Phnom Penh is good but in many restaurants the ice cubes are contaminated with fecal.
- IPC wished for a network to share lab data.

Question: how does IPC disseminate these findings?
Response: Weekly scientific seminars are held at IPC. IPC has no active communication with ministries, and the different labs (at the ministries, universities, research) do not communicate with each other.

Participants mapped food safety projects in Cambodia and discussed on SFFF Cambodia project (See Annex 3)

Key discussion from afternoon, Day 1 (14 December 2017)

Two questions for group discussion include:

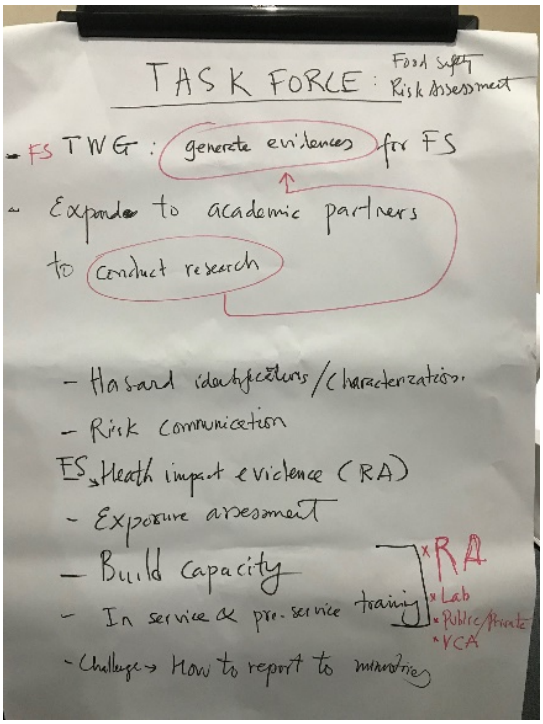
1. What are the objectives and activities of the Taskforce for food safety risk assessment in Cambodia?
2. Who will be the members of the Cambodia Taskforce?

Key discussion points are:

- Taskforce can start with the technical working group (high-level and endorsed by ministries) and expand. The working group was set up 4 months ago.
- Some participants found this too high level.
- The group meets 2 days every 2 months.
- Proposed objective of Cambodia Taskforce is to generate evidence on food-borne diseases and convene policy makers with evidence-based guidance.
- No sub-groups on different topics (i.e. chemical hazards, biological hazards), try and keep structures simple otherwise we will have the problem of miscommunication.
- Need for innovators or people from food technology or other engineers.

Existing members of the technical working group (from flipchart notes) include:

- MAFF – GDA, Agro-Industry, GDAHP
- MOH – Food safety bureau (Dep of Food and Drugs), CDC, NHQC (lab)
- MOC – CAM-Control
- MIH – ILCC, ISC
- MOT
- MEF – GDEC
- NIPH
- IPC
- FAO
- WHO
- UNIDO



Group discussion on the Taskforce on food safety in Cambodia (photo credit: ILRI/Hung Nguyen)

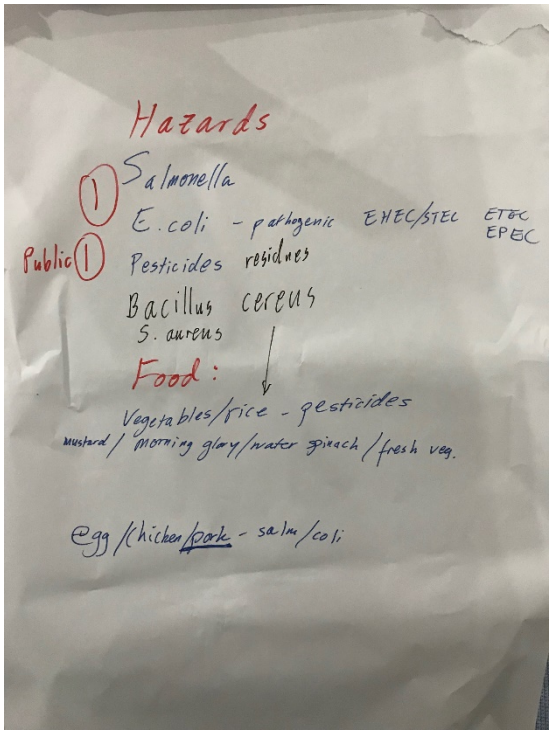
To be discussed for membership

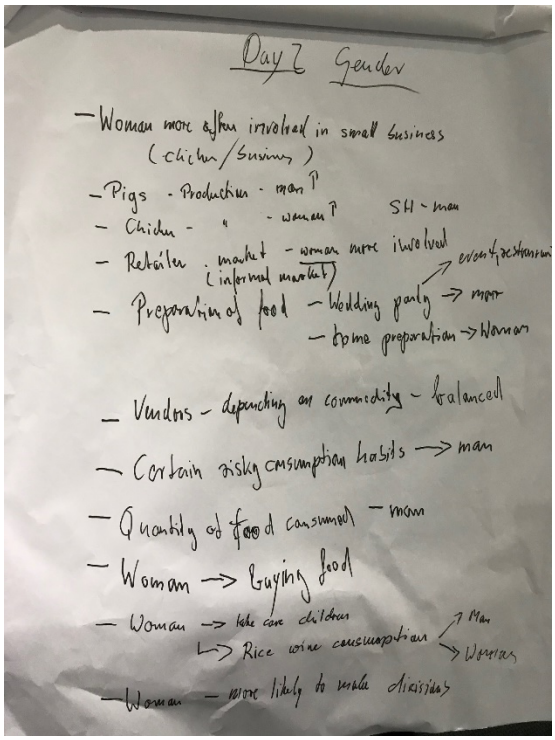
- University of Health Science
- Royal University of Agriculture
- Cambodia Institute of Technology
- ILRI (note that CelAgrid was not mentioned despite being a national research partner in the project)

Outcome: Notes to be shared with Sothyra and Huk Sun (Food safety bureau at MOH) and propose idea of taskforce to food safety technical working group.

Key discussion from afternoon, Day 2 (15 December 2017)

Group discussion in the morning focused on what are the key hazards causing unsafe food in Cambodia (focusing on ASF), and how gender issue is addressed in food safety. *Salmonella*, *E. coli*, *Bacillus*, pesticides were identified the key hazards in ASF and vegetables in Cambodia. Gender was also discussed (see photos)





Key hazards and gender in food safety in Cambodia (photo credit: ILRI/Hung Nguyen).

Workshop program

Time	*Activity*	*Person in charge*
Day 1 (14 December 2017) – Taskforce for Food Safety Risk Assessment meeting		
08.30 – 09.00	Registration	
09.00 – 09.15	Opening ILRI CDC GDAHP Introduction of participants	 *Dr. Hung Nguyen* *Dr. Teng Srey* *H.E. Dr. Sen Sovann*
09.15 – 09.30	Food Safety situation in Cambodia	*Tum Sothyra (NAHPRI)/WHO/FAO*
09.30 – 10.00	Introduction on the project Safe Food Fair Food (SFFF) in Cambodia	*Fred Unger (ILRI)*
10.00 – 10.30	Group photo & Coffee break	
10.30– 11.00	Food safety in sub-Sahara Africa and Vietnam	*Kristina Roesel and Fred Unger (ILRI)*
11:00 – 12:00	Food safety activities in different ministries (5-10 min/each)	*Members of Food Safety WG*
12.00 – 12.30	Mapping food safety projects in Cambodia and discussion on SFFF Cambodia project	*WHO, FAO, CelAgrid, CDC, FSWG*
12.30 – 13.30	Lunch	
13.30 – 14.00	Introduction TASKFORCE for Food Safety Risk Assessment in Vietnam	*Hung Nguyen (ILRI)*
14.00 – 15.00	Discussion on activities of Taskforce Cambodia What are the objectives? Who are the member? What are the activities?	*Facilitated by Hung Nguyen (ILRI)*
15:00 -15:30	Coffee break	
15.30 – 16.30	Discussion on activities of Taskforce Cambodia (continued) What are the objectives? Who are the member? What are the activities?	*Facilitated by Johanna Lindahl (ILRI)*
16:30	Conclusion and close	*Tum Sothyra (NAHPRI)*
18:30	Dinner	*All*
Day 2 (15 December 2017) - Project Stakeholder Workshop (introduction to risk analysis concept and first project result reporting)		
8:30 – 9:15	Opening Setting the scene: Concepts of hazard-based and risk-based approaches	*Tum Sothyra (NAHPRI)* *Kristina Roesel (ILRI)*
9:15 – 9:45	What is risk analysis? Risk communication example from Vietnam	*Johanna Lindahl (ILRI)* *Hung Nguyen (ILRI)*
9:45 – 10:15	Update on preliminary findings from literature review	*Kristina Roesel (ILRI) and Sophal Cheat (Royal University of Agriculture)*
10:15 – 10:45	Coffee break	
10:45 – 11:15	Preliminary findings from consumer group discussions on impact of unsafe food and barriers to safe food	*Kristina Roesel (ILRI) and Chhay Ty (CelAgrid)*
11:15 – 11:45	Risk profiling exercise	*Fred Unger (ILRI)*
11:45 – 12:00	Closing	*Tum Sothyra (NAHPRI)*
12:00	Lunch	*All*
13:30 – 16:30	Meetings with project partners on specific activities	*SFFF Cambodia (NAHPRI, CelAgrid, CDC, ILRI, UHS) team only*

List of participants

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Abstracts of presentations

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

Fred Unger[1], Hung Nguyen[1], Delia Grace[1] and PigRisk team[23]

[1] International Livestock Research Institute (ILRI)

[2] Vietnam National University of Agriculture (VNUA)

[3] Hanoi University of Public Health (HUPH)

Pork represents a majority of meat consumption in Vietnam and production delivers significant benefits to smallholders who supply 83% of the market. Vietnamese consumers prefer fresh, un-chilled pork distributed almost exclusively through traditional markets. Consumers have increasingly concerns about pig diseases and food safety, the latter is among the most pressing issues for people in Vietnam, more important than education or health care. The PigRISK project (2012-2017), led by the International Livestock Research Institute (ILRI) and implemented through the Vietnam National University of Agriculture and the Hanoi University of Public Health, sought to improve the livelihoods of smallholder pig farmers in Vietnam by helping ensure continuing market access through addressing food safety in the pork value chain. The project built on a 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? Key project components included capacity building on and use of risk-based approaches to assess food safety risks for selected chemical and biological hazards (e.g. *Salmonella*) along the pork value chain. Selected achievements are:

- First ever Quantitative Microbial Risk Assessment (*Salmonella* in pork) – moving from hazard-based assessments to risk-based assessments that focus on the information needed by policy makers
- First ever cost of illness study for food borne diseases (FBD) in Vietnam – providing evidence that helps policymakers and public understand the impacts of FBD
- Assessment of Good Agriculture Practice adoption (VietGAHP) – understanding which practices are most important to reduce pig disease and barriers to behaviour change in farmers

Scientific impact of the project has been demonstrated through publications in international (6), national (16) journals with more than 60 presentations/posters at international conferences/symposia. Policy impact was achieved through substantially contribution to the 'Vietnam food safety risk management: challenges and opportunities' report, led by the World Bank and participation of project researchers in the National Taskforce on Food Safety Risk Assessment and the Vietnam Food Safety Working Group.

Two PhD, 16 MSc and 77 undergraduate students were involved and trained in PigRISK. The project was funded by the Australian Centre for International Agricultural Research

Introduction on the Safe Food Fair Food for Cambodia project

Delia Grace[1], Tum Sothyra[2], Chhay Ty[3]

[1] *International Livestock Research Institute (ILRI).*

[2] *National Animal Health and Production Research Institute (NAHPRI)*

[3] *Centre for Livestock and Agriculture Development (CelAgrid).*

Cambodia has a rich tradition of tasty and nutritious foods. Animal-source foods (ASF) are an important part of the cuisine with pork, fish, and poultry products widely consumed. The great majority of livestock products are produced by smallholders, many of them women, and sold in traditional, wet markets where women also predominate as retailers. In recent years, Cambodia has seen growing food safety concerns. Development is accompanied by urbanization, rapid increases in demand for livestock products and, consequently, rapid changes in supply chains, which become longer, more complex, and less transparent. Trust in food goes down, often with good reason as the food system develops in a way that provides little rewards for those with good practices, but high rewards for those who carry out bad and unsafe practices.

Under the SFFF Cambodia project, we propose two major research areas to tackle the above-mentioned issues: i) to generate evidence on the health and economic burden of foodborne diseases (FBD) in ASF value chains important to the poor and women, and ii) to pilot a market-based approach to improving food safety that builds on successfully implemented projects in Africa and India. Our central idea is market-based, light-touch interventions that are sustainable and scalable, changing practice through capacity building and incentives, and provision of an enabling policy environment.

This project is a three and half year sub-award under the Feed the Future Innovation Lab for Livestock Systems. The sub-award project is led by ILRI in partnership with the National Animal Health and Production Research Institute (NAPPRI), the Centre for Livestock and Agriculture Development (CelAgrid), and Emory University, USA. Other project partners include research institutions and relevant government organisations working on food safety in Cambodia.

Because so little is known about the distribution or burden of FBD, the approach will be at multiple levels with the initial risk profiling and the situational analysis of food safety. The project will then focus on one or more high risk livestock value chains in order to estimate burdens of FBD and finally on one value chain to pilot an intervention. Risk profiles will be at the sector level and cover all ASF produced in Cambodia in the formal and informal sectors as well as ASF imports. The more in-depth studies on hazards present as well as their health, economic, and nutrition impacts will be on urban and peri-urban consumption around Phnom Penh and the adjacent provinces which have the highest density of pork and poultry and located in a Feed the Future Zone of Influence site (Siem Reap).

Introduction about Taskforce for food safety risk assessment in Vietnam

Hung Nguyen-Viet[1,2] and the RISK Taskforce[2]
[1]International Livestock Research Institute (ILRI), Vietnam and Kenya
[2]Center for Public Health and Ecosystem Research, Hanoi University of Public Health, Vietnam

In Vietnam, food safety is an important issue to the public. Food scares, regardless of their level of seriousness, can alarm the public, harm trade, and detract government attention and resources from major health and development issues. In 2016, the government of Viet Nam requested assistance from the World Bank and partners to assess food safety risks and provide policy recommendations on how to improve food safety risk management. ILRI was the lead technical partner for this assessment. ILRI and partners mobilized a series of activities including a thorough literature review on food safety evidence, targeted field visits, roundtable discussions, interviews with experts, and data analyses. The study took stock of the food safety situation in Viet Nam, analysed the food safety risks for selected key food value chains, and provided recommendations to improve food safety.

This partnership with the World Bank follows years of collaborative work ILRI has conducted in Viet Nam to build awareness and capacity for using risk assessment in food safety management. Risk assessment, a scientific process for identifying the known or potential adverse health effects from being exposed to hazards that may come from food production, preparation, or consumption, is widely accepted as the gold standard for assessing, managing, and communicating risks. However, in Viet Nam, there was limited capacity for using risk assessment approaches in food safety. In 2013, ILRI helped establish the National Task Force of Food Safety Risk Assessment. This task force was institutionalized by the Hanoi University of Public Health in 2016. Its purpose is to strengthen the capacity of national researchers to apply risk assessment. In turn, the researchers can provide this expertise to the two ministries responsible for food safety in Viet Nam—the Ministry of Health and the Ministry of Agriculture and Rural Development. Some examples of the type of support ILRI has provided more recently include the production of Viet Nam–specific guidelines for chemical and microbial risk assessment, as well as the first published quantitative microbial risk assessment for pork in Viet Nam and a complementary chemical risk assessment. Experiences and lessons learned will be summarized in a report, Food Safety Risk Management in Vietnam: Challenges and Opportunities, slated for 2017 release.

Concepts of hazard-based and risk-based approaches

Kristina Roesel and Johanna Lindahl, *International Livestock Research Institute (ILRI)*

The food we are eating may contain different hazards. Microbial hazards include parasites and bacteria, and chemical hazards include heavy metals, pesticides or mycotoxins, amongst others. However, the presence of hazards does not necessarily mean there is a risk from food consumption.

In this session we will discuss the difference between hazards and risks, and discuss principles in risk assessments

Food safety risk communications and risk misperception in Vietnam

Nguyen Viet Hung[1], Tran Thi Tuyet Hanh[2], Pham Duc Phuc[2], Dang Xuan Sinh[2], Fred Unger[1], Delia Grace[1]

[1] *International Livestock Research Institute (ILRI)*
[2] *Center for Public Health and Ecosystem Research, Hanoi University of Public Health, Vietnam*

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Mapping of food safety projects in Cambodia

Areas of activity	Project information
KAP	***KAP study among street food vendors at Sangkat Srah Chork, Phnom Penh*** This project is still in proposal writing phase. Objective: to identify KAP Type of food: street food, beverage Funder: self-support This project is to be conducted by students.
Food safety management	***Food Borne Diseases Response Team*** 6 ministries Initiated by WHO Funder: USAID
	EU-PGA-Livestock/GDAHP Some activities related to food safety include: Meat inspector training (whole provinces) Meat analysis, *Salmonella* and tuberculosis
	Institute of Standards of Cambodia have activities related to food safety Department of Certification issues certificates of: • Product focus on safety • System on ISO 9001, 14000, 22000, GMP & GHP Regulatory Department: • Product registration focus on food hygiene and food safety Industrial Laboratory Center of Cambodia (ILCC) • Test on bacteria • Test on chemical
	Immediate technical assistance to strengthen emerging preparedness for highly pathogenic avian influenza This project also provides support to the legal framework under the animal health and production law, for example the sub-decree 108 on slaughter house management. Implemented by FAO and GDAHP Funder: USAID
Animal source foods	***Evidence based risk management along the livestock production and market chain*** Objective: to support biosecurity and biosafety improvement of the Taheo Live Bird Market and its poultry value chain Pilot interventions Focusing on microbial contamination in poultry meat Funder: USAID and Australian Agency for International Development (AUSAID) Implemented by FAO in collaboration with GDAHP
	RUA student thesis Biological hazards Phnom Penh Meat and animal sourced products
	Other research and activities related to food safety Training on SOP food borne disease outbreak response to all relevant ministries at national and sub national (WHO) Assessment on lab testing capacity on food (WHO) Risk based food inspection system (WHO) Developed and broadcasted on methanol poisoning prevention (WHO) Developed IEC's material on food safety (poster) (WHO) Risk communication training to 6 ministries related to food safety Simulation exercise on risk communication within 6 ministries (MAFF, MOH, MEF, MOT, MIH, MOC)

Vegetables / fruits	***Farmer field school on using biochar for growing vegetable, rice and animal*** Objective: Introduce biochar to farmers, reduce chemical application and build capacity Type of food: Vegetable, rice, cattle Funder: Swedish International Development Cooperation Agency (SIDA) Location: Pursat, Takeo, Svay Rieng, Battambang
	Using land feed resources for growing animal Objective: Use local resources that are available and not use any promoter or antibiotics and increase income Location: Takeo, Pursat, Sihanouk, Koh Kong Type of food: local resources Funder: SIDA, CARE International, International Foundation for Science (IFS)
	Production and Market leaking from IVY Goal/ Objective: Improving local livelihood – Safe food Location: Svay Rieng Microbial / Chemical = Organic Type of food: Vegetables, Pigs, Chickens (Poultry) Funder: Japanese Government
	SPS Phase project – Food safety component To strengthen the hygiene practice in place 2 pilot provinces: Sihanoukville and Siem Reap, Cambodia Ready to eat food Focus: vegetable Funder: Asian Development Bank (ADB)
	Participatory Guarantee System project Covers Cambodia, Laos and Myanmar Assist with ongoing development of local organic markets and where smallholders would benefit from these high value markets Also support national authorities to regulate and enforce food safety Focus: vegetables Funder: FAO
	Safety of organic food from harvest to market Goal: improve quality and safety of organic food from harvest to market Location: Takeo province Microbial: *Salmonella* and *Listeria* Type of food: Vegetables Funder Plant and Food Research
	Integrated pest management project The focus is on developing pesticide free and organic production, particularly for vegetables. Funder: Cambodia General Directorate of Agriculture, MAFF and FAO
	Isolation and characterization of virulence factor of pathogenic E. coli and Salmonella* spp. *from fresh vegetable in Phnom Penh markets Goal and objective: To isolate and characterize virulence factor of pathogenic *E. coli* and *Salmonella* spp. Location: markets in Phnom Penh Microbial: pathogenic *E. coli* and *Salmonella* spp. Types of food: vegetable (salad, cucumber and cilantro) Budget: University budget Implementer: Department of Bioengineering, Royal University of Phnom Penh