

One Health and EcoHealth in Southeast Asia

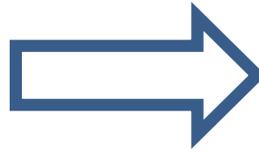
Hung Nguyen, Regional representative for ILRI E&SEA
International Livestock Research Institute

Seminar at Gadjah Mada University
4 August 2019, Yogyakarta, Indonesia



EcoHealth: www.ecohealthinternational.org

ECOHEALTH
INTERNATIONAL ASSOCIATION FOR ECOLOGY & HEALTH



 **ecohealth international**



Environment



Health



Sustainability



Research

**Ecohealth regional chapter
already established in:**

- Europe
- Oceania
- North America
- Africa

How about Asia?

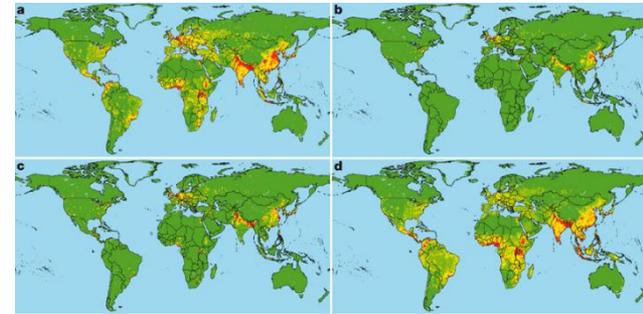
- Whole Asia ?
- SEA +++ ?
- South Asia ?

Outline

1. Context in Southeast Asia
2. Major OH/EH programs in SEA
3. Evaluations and impacts
4. Reflections and conclusions

Challenges in Asia

- Population and economic growth, environmental issues, intensive agriculture and livestock, food security, nutrition, politics...
- Complex health issues (EID, AMR, NCD...) need innovative, integrated approaches.
- Strengthening the capacity of professionals working in the human, animal and environmental health sectors to respond to, control and prevent outbreaks of EID is vital.
- Need to widen scope: Looking beyond HPAI, “Systems” approach vs. focus on specific diseases, animal health / human health



Outline

1. Context in Asia

2. Major OH/EH programs in (SE) Asia

3. Some evaluations and impacts

4. Reflections and conclusions



SCOPING REVIEW

Open Access

Ecohealth research in Southeast Asia: past, present and the way forward

Hung Nguyen-Viet^{1,2,3,4*}, Siobhan Doria¹, Dinh Xuan Tung⁵, Hein Mallee⁶, Bruce A Wilcox^{7,8} and Delia Grace⁹

ECOHEALTH

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Toward Operational Criteria for Ecosystem Approaches to Health

Carsten H. Richter,^{1,2} Jennifer A. Steele,³ Hung Nguyen-Viet,^{4,5} Jianchu Xu,⁶
and Bruce A. Wilcox⁷

One Health and Ecohealth programs in SEA



- INDOHUN
- THOHUN
- VOHUN
- MYOHUN



Swiss TPH



Emerging Pandemic Threats Program

PREDICT • RESPOND • PREVENT • IDENTIFY

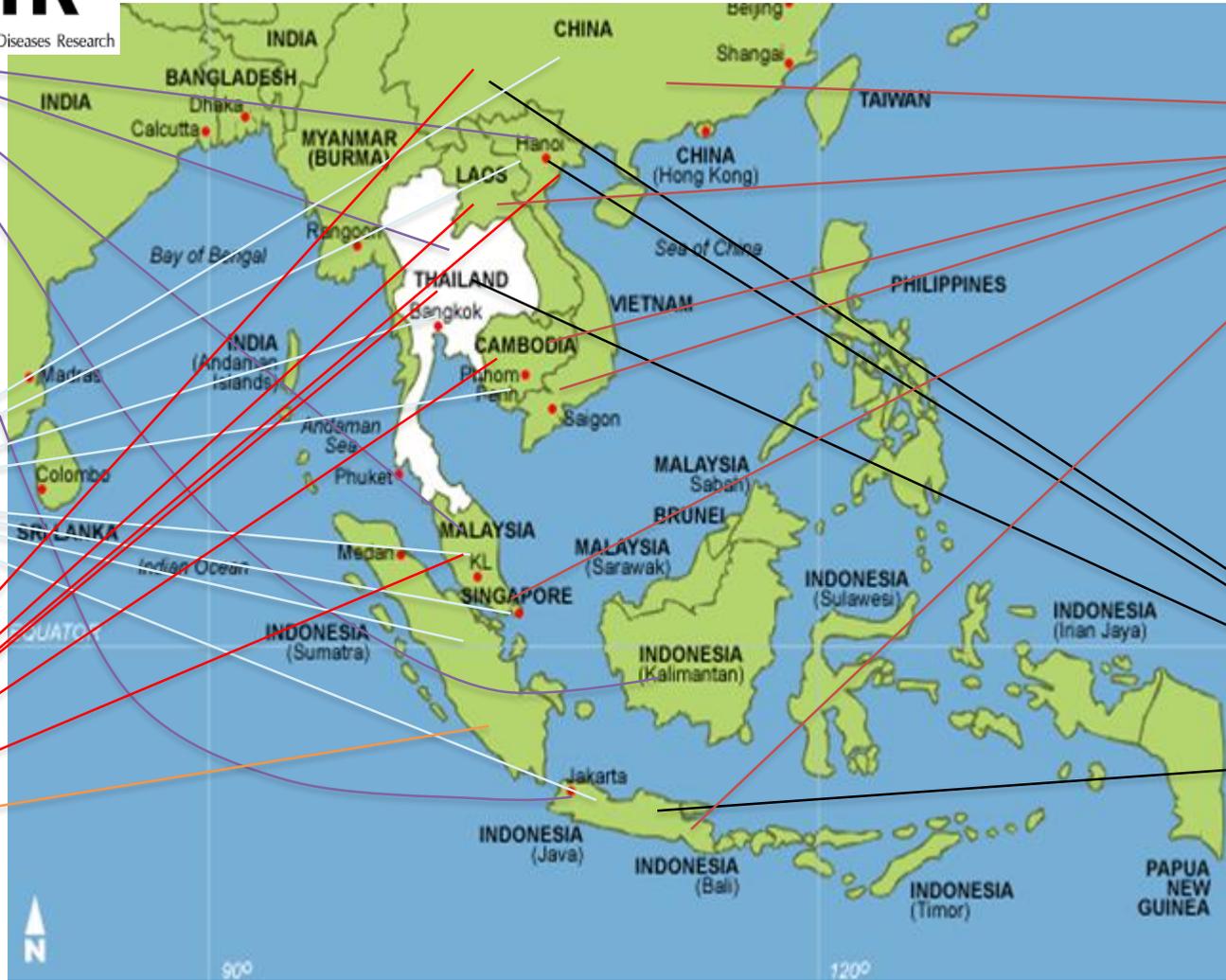




Asia Partnership on Emerging Infectious Diseases Research

BECA
Building Ecohealth Capacity in Asia

EcoEID



AMR
EID surveillance



Main ecohealth projects in South East Asia, December 2017

Major Ecohealth projects in SE Asia

Project name	Countries involved	Field	Donor
Asia Partnership on Emerging Infectious Diseases Research (APEIR)	Thailand, Vietnam, Indonesia, China, Laos, Malaysia	EIDs	IDRC
Ecohealth Emerging Infectious Diseases Research Initiative (EcoEID)	Thailand, Vietnam, Indonesia, China, Laos, Philippines	EIDs	IDRC/DFATD/AUSAID
Ecosystem Approaches to the Better Management of Zoonotic Emerging Infectious Diseases in the Southeast Asia Region (EcoZD)	Vietnam, Laos, Cambodia, Indonesia, China, Thailand	EIDs	IDRC
Eco-Bio-Social dengue control programmes	Thailand, Vietnam, Indonesia, China, Laos, Philippines	Dengue	IDRC/WHO
Lawa Model: Integrated Opisthorchiasis Control in Northeast Thailand	Thailand	O. viverrini	IDRC
The Research Institute for Humanity and Nature (RIHN) project	Lao PDR, Vietnam, Bangladesh, Yunnan China	EIDs	IDRC
Building Ecohealth Capacity in Asia (BECA)	Thailand, Laos, Cambodia, Vietnam, China	EIDs	RIHN
The Field Building Leadership Initiative in Southeast Asia (FBLI)	Thailand, Indonesia, Vietnam, China	Ag & Health	IDRC
Integrated assessment of environmental sanitation and health (NCCR North–south)	Vietnam, Thailand	Ag & Health	SDC
Land Use Change and Human Health in the Eastern Himalayas: An Adaptive Ecosystem Approach	Nepal, Yunnan Province, Tibetan Autonomous Region of China	Ag & Health	IDRC

Types and areas of Ecohealth projects

Types of projects:

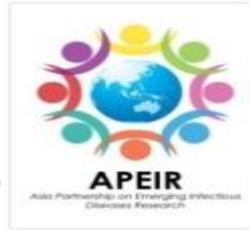
- Research
- Research and capacity building
- Operational research

Areas

- Ecohealth and emerging infectious research and policy
- Ecohealth and agricultural intensification, and environment and climate change
- Network development, capacity building and training

APEIR: Asia Partnership on EIDs Research

- APEIR is a research partnership (>30 institutions in 6 countries...)
- APEIR was initially established in 2007 in response to the spread of HPAI in the region. Since 2009 it has considered a wider range of diseases - EIDs.



Five studies on AI

Multi-country teams for each study

In the past....

- i. Migratory birds & AI network
- ii. Socio-economic impacts of AI
- iii. Backyard poultry systems & AI
- iv. Policy analysis
- v. Effectiveness of AI control measures

In recent years

- i. Poultry Production Clusters
- ii. Small-Scale Poultry Slaughter Houses

Follow-up studies

- i. AMR
- ii. Wildlife

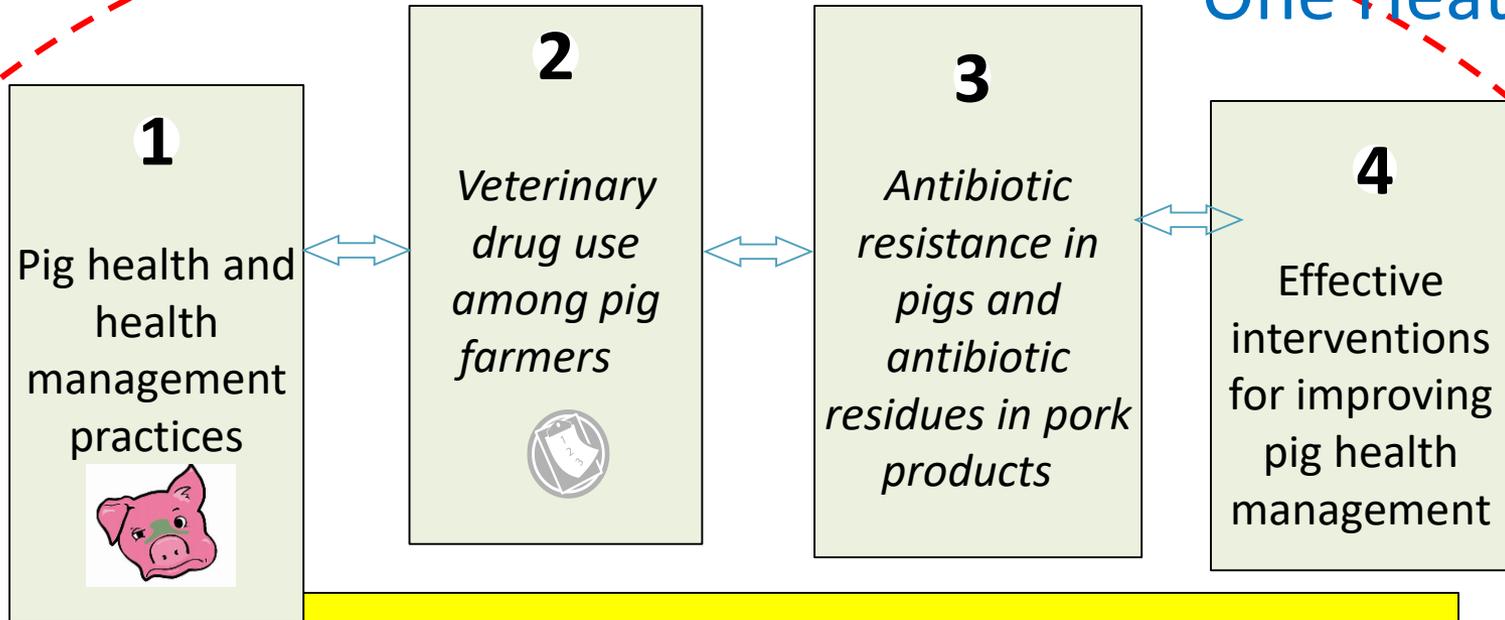
EcoHealth prudent use of antimicrobial in SEA



VIDA-PIG 4 work packages



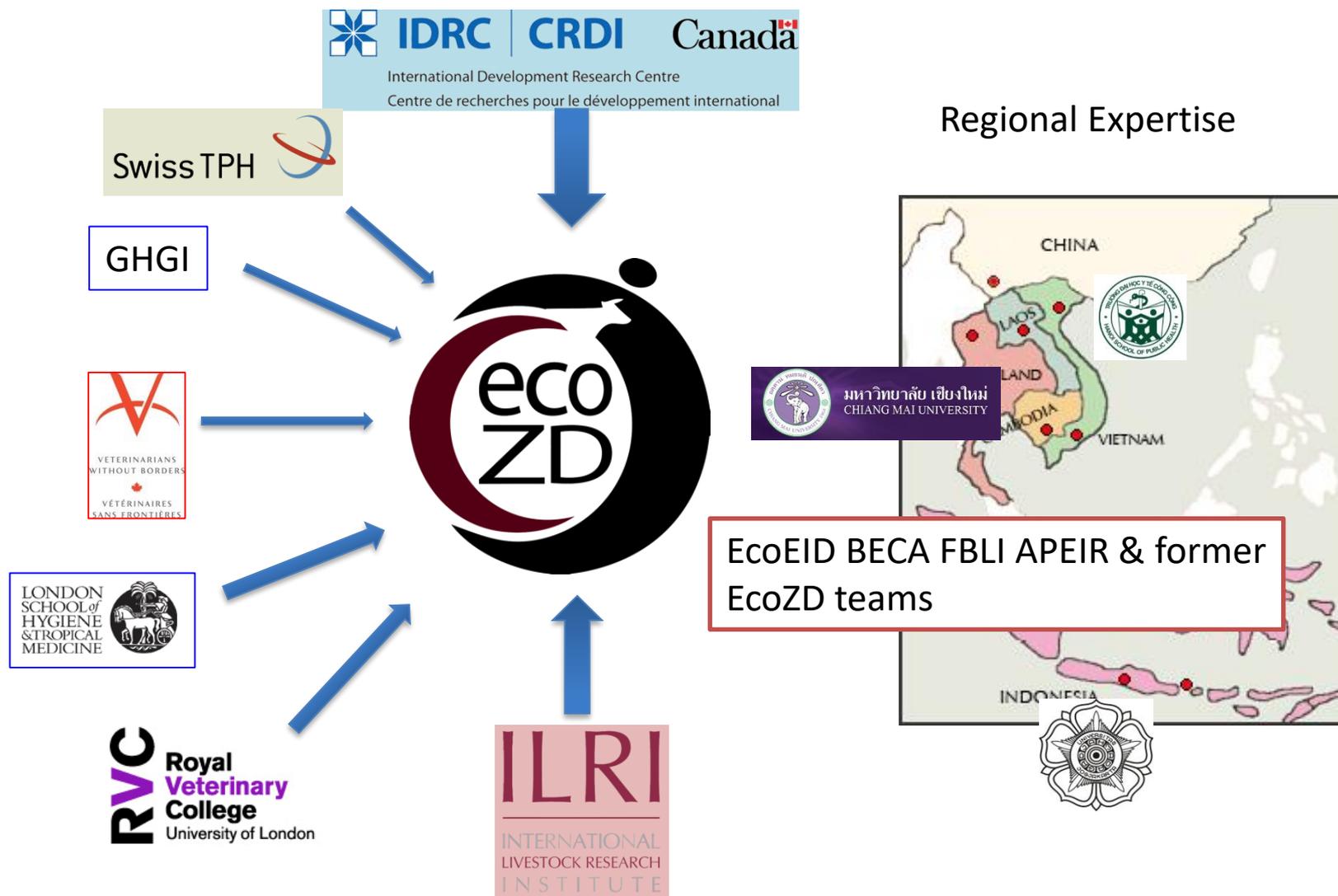
One Health



Rational use of AM, reduced AMR, safer food
Improve understanding of drug use and strengthen capacity in AMR /AMU surveillance

Pig farms, feed mills, abattoirs, veterinarians, etc.

Ecosystem Approaches to the Better Management of Zoonotic Emerging Infectious Diseases in Southeast Asia (EcoZD)



Sustain the control liver-fluke infections in Mekong Region, by packaged strategy (integrated model)

全国寄生虫病综合防治示范区项目

综合防治 四改一驱虫

改变不卫生行为

饭前便后要洗手，瓜果蔬菜要洗净，下地劳动要穿鞋，生熟食品分开切，食用鱼虾要煮熟。



改厕

粪便要无害化处理，通过堆肥发酵和兴建沼气池，杀灭寄生虫卵。



改水

兴建自来水工程和建造压把井，搞好饮水卫生，保障身体健康。



改善农村卫生面貌

改善环境卫生，村容整洁，建设社会主义新农村。



服药驱虫

常用驱虫药物阿苯达唑、噻嘧啶和吡喹酮，安全有效，服用方便。



卫生部疾病预防控制局 中国疾病预防控制中心

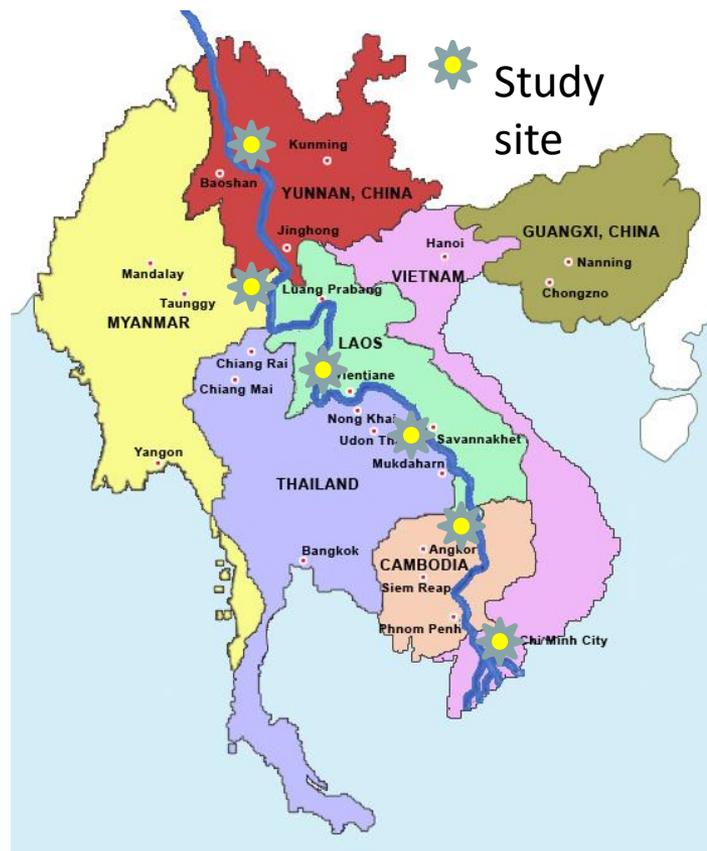


Fig. 1. Map of six study sites along the Mekong River

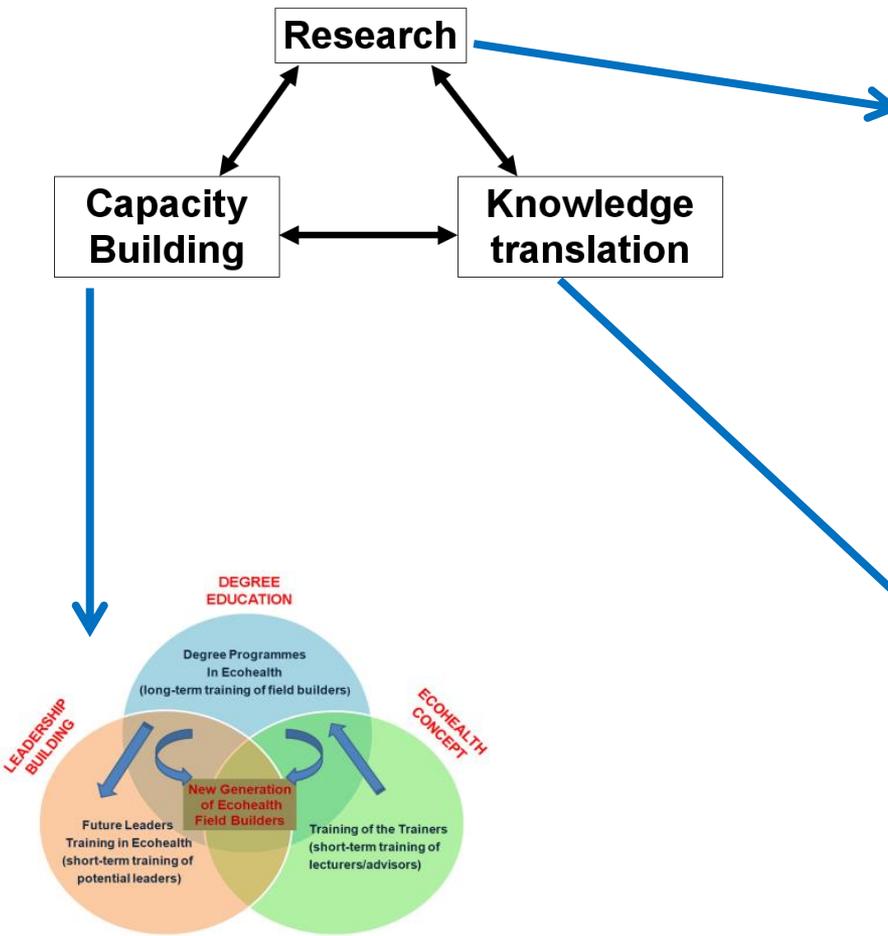
Bioaerosol Sampling to Detect Avian Influenza Virus in Hanoi's Largest Live Poultry Market

Vuong N. Bui,¹ Tham T. Nguyen,² Hung Nguyen-Viet,^{3,4} Anh N. Bui,¹ Katie A. McCallion,⁵ Hu Suk Lee,³ Son T. Than,¹ Kristen K. Coleman,² and Gregory C. Gray^{2,6,7}

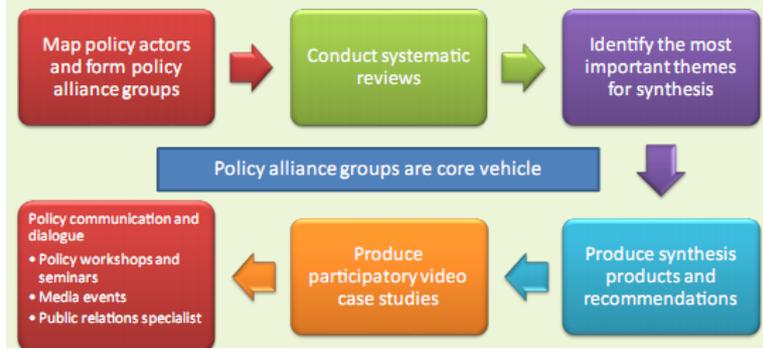
¹Virology Department, National Institute of Veterinary Research, Hanoi, Vietnam; ²Program in Emerging Infectious Diseases, Duke-NUS Medical School, Singapore; ³International Livestock Research Institute, Hanoi, Vietnam, and ⁴Center for Public Health and Ecosystem Research, Hanoi University of Public Health, Vietnam; ⁵College of Veterinary Medicine, North Carolina State University, Raleigh, North Carolina, and ⁶Division of Infectious Diseases, Global Health Institute, and Nicholas School of the Environment, Duke University, Durham, North Carolina; and ⁷Global Health Research Center, Duke-Kunshan University, China



Ecohealth Field Building Leadership Initiative in SEA: FBI – Agriculture Intensification & Health



- ## “Site based- concept”
- Yuanmou (CN)
 - Hanam (VN)
 - Chachoengsao (TH)
 - Pangalengen , West Java (ID)





Mission:

To link and empower leading Universities in Southeast Asia to generate Social and Intellectual Capital on One Health against Infectious and Zoonotic diseases

Viet Nam One Health Partnership for Zoonoses



- Launched in March 2016, built on Partnership on Avian and Human Influenza (PAHI) established in 2006
- 27 members

Overall Goal

- To enhance the health of Viet Nam

Similar structure in other countries: Indonesia, Laos, Thailand, Mongolia... with variable levels of efforts and commitments

in interface

(*including livestock, wildlife and other animal species)



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Evaluation of IDRC's funded ecohealth research in Southeast

Asia and China from 2005 to 2017

- Principle investigators and research implementers are the “next-user” group of the IDRC's funding
- Over the last 12 years (2005 – 2017), the IDRC's funding has increased the capacity of the group of principle investigators and research implementers.
- This would ensure the sustainability of the integrated approach projects in the region.
- The challenges implies a more local and flexible adaptation of holistic approach

Change of PI and researchers

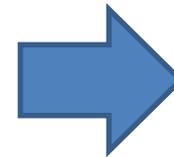
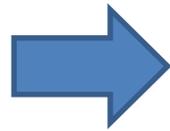
In-depth interviews with 22 PI and others

Interviews *i) past experiences of participant with ecohealth research and ii) participant's current projects/programs and how ecohealth research have influenced participant's career pathway.*

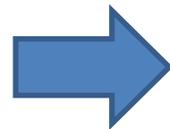


Researchers' social capital and networking activities

“I have submitted two proposals on anti-microbial resistances with partners from Vietnam and China to two different sources of funding. I knew them from the time we collaborated with each other in the ecohealth programs. Although, I got only one funded, I found this way of work effective because international donors, now, look for solutions for issues at regional scale.” (Participants from Laos)



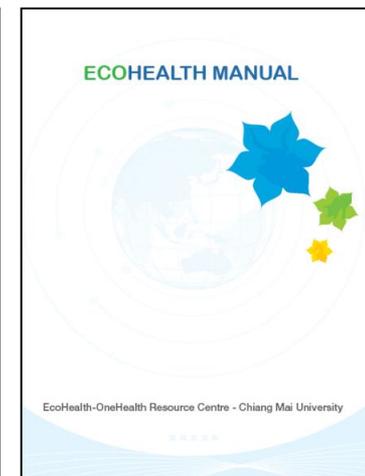
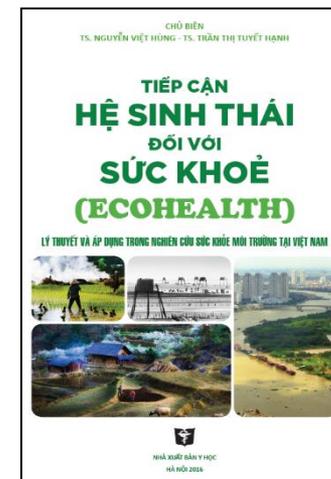
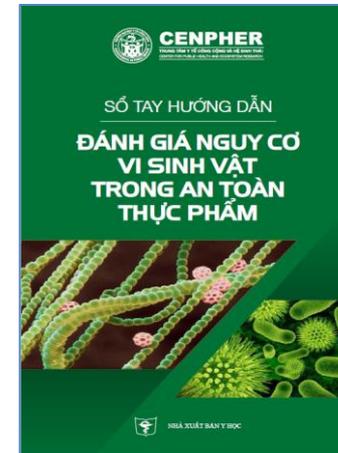
One Health, AMR



AMR, Food Safety

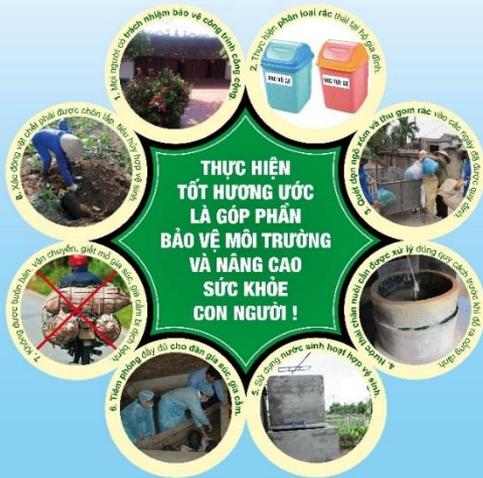
Capacity building, training, university 'changes'

- Ecohealth Resource Centres (EHRCs) in CMU and UGM
- Short courses
- Degree training
- Future leaders training
- Curricula development at university



FBLI Vietnam: Operational research on animal waste management

HƯƠNG ƯỚC XÃ HOÀNG TÂY VỀ ĐẢM BẢO VỆ SINH MÔI TRƯỜNG



Dự án nghiên cứu
"SÁNG KIẾN XÂY DỰNG VÀ PHÁT TRIỂN SỨC KHỎE SINH THÁI KHU VỰC ĐỒNG NAM Á"
 Trung tâm nghiên cứu Y tế công cộng và hệ sinh thái (CENPHET) - Trường Đại học Y tế công cộng
 Địa chỉ: 138 Giảng Võ, Ba Đình - Hà Nội | Điện thoại: 04 6273 3192 | Fax: 04 6273 3172 | Email: cenphet@hvc.edu.vn | Website: www.ecohealth.edu.vn



FBLI IDRC CRDI
 International Development Research Center
 Center for Sustainable and Developmental Innovations

SÁNG KIẾN XÂY DỰNG VÀ PHÁT TRIỂN SỨC KHỎE SINH THÁI Ở ĐỒNG NAM Á



SỬ DỤNG VÀ BẢO QUẢN THIẾT BỊ KHÍ SINH HỌC (BIOGAS) ĐÚNG CÁCH LÀ BẢO VỆ MÔI TRƯỜNG VÀ SỨC KHỎE CỦA BẠN!

- ### Good practice pig-farm
- Saving time, water, electricity, money
 - More gas for cooking
 - Less smell, flies
 - Improving personal hygiene practice
 - More friendly
 - Increasing productivity



ecohealth
FBLI

Sổ tay theo dõi

SỨC KHỎE GIA ĐÌNH VÀ VẬT NUÔI

Hà Nội, 2015



Thematic Series

EcoHealth and EIDs

- Dynamics between environmental change, development, and EIDs in Asia

Edited by: Dr. Delia Grace, Dr. Fred Unger, Prof. Xiao-Nong Zhou
Collection published: 7 May 2014

Emerging infectious diseases (EIDs), such as avian influenza (H7N9), severe acute respiratory syndrome (SARS), and dengue have potential to cause epidemics and pandemics. Southeast Asia and China, where some of these diseases were first recognized, are considered as global



“hot spots” for disease emergence. Increases in the rate of emergence of diseases in this region imply conventional approaches to disease emergence are not working. New approaches, such as EcoHealth, that shift from silo thinking to transdisciplinarity, aim for more effective prevention and control of EIDs. The last decade has seen major initiatives to implement EcoHealth in the region.



Zhou *Infectious Diseases of Poverty* 2012, 1:1
<http://www.idpjournal.com/content/1/1/1>



INFECTIOUS DISEASES
OF POVERTY

EDITORIAL

Open Access

Prioritizing research for “One health - One world”

Xiao-Nong Zhou

Abstract

Infectious diseases of poverty, a collective term coined for infections known to be particularly prevalent amongst poor populations, is increasingly used for neglected tropical diseases (NTDs) with special transmission routes, such as depending on vectors and/or intermediate hosts. The journal *Infectious Diseases of Poverty* (IDP) is launched to explore new avenues in research to better understand the relationship between infectious diseases and poverty, and to contribute to priority settings for plans to control them. Introducing the “One health - One world” concept, IDP will publish original and empirical work based on analyses of disease burdens, their distribution and research needs in this area. The new journal will not only bring out research articles but also scoping reviews and highlights of trans-disciplinary work undertaken to combat the infectious diseases of poverty, wherever in the world they exist.

Multilingual abstracts
Please see Additional file 1 for translations of the abstract into the six official working languages of the United

States [3]. This situation contributes strongly to the widening gap with respect to life expectancy between the LDCs and the industrialized world.

New special issue with IDP 2018-2019



INFECTIOUS DISEASES
OF POVERTY

IMPACT
FACTOR
4.11

One Health/EcoHealth approaches to understand zoonotic and foodborne diseases in Southeast Asia

Guest edited by Delia Grace, Hung Nguyen, Jakob Zinsstag, Ian Doohoo, John McDermott, Fang Jing and Cao Bao Van

An article collection in [*Infectious Diseases of Poverty*](#).



During the last three decades, a “Livestock Revolution” has been occurring in Southeast Asia (SEA) countries. With increasing income and demand for meat, dairy and egg products, livestock has become the fastest growing component of the agricultural sector. Livestock intensification is characterized by high-input practices, including the use of industrial feeds and antimicrobial



Research and training partnership to assist policy and capacity building in improving food safety in Vietnam



Hung Nguyen-Viet^{a,b,*}, Delia Grace^g, Phuc Pham-Duc^b, Sinh Dang-Xuan^b, Toan Luu-Quoc^b, Fred Unger^{a,g}, Seth de Vlieger^{a,g}, Ngoc Pham-Thi^c, Nhiem Duong-Van^d, Long Nguyen-Hung^e, Luan Tran-Dinh^f, Tran Thi Tuyet-Hanh^b

^a *International Livestock Research Institute, Hanoi, Vietnam*

^b *Center for Public Health and Ecosystem Research, Hanoi University of Public Health, Hanoi, Vietnam*

^c *National Institute of Veterinary Research, Hanoi, Vietnam*

^d *Faculty of Veterinary Medicine, Vietnam National University of Agriculture, Hanoi, Vietnam*

^e *Vietnam Food Administration, Ministry of Health, Hanoi, Vietnam*

^f *Directorates of Fisheries, Ministry of Agriculture and Rural Development, Hanoi, Vietnam*

^g *International Livestock Research Institute, Nairobi, Kenya*

ARTICLE INFO

Keywords:

Food safety
Risk-based approach
Risk assessment
Informal market
Vietnam

ABSTRACT

This paper evaluated the implementation of an initiative for promoting risk-based approaches to improve food safety management in Vietnam. A Taskforce of Risk Assessment for Food Safety (Taskforce) was formed and consisted of researchers working on risk assessment and food safety, and representatives of the related ministries of Health and of Agriculture. We used the OECD Development Assistance Committee Evaluation Criteria as a framework for assessing the impact of the Taskforce with five evaluation areas – relevance, effectiveness, efficiency, impact and sustainability. They analysed current food safety policies, identified key constraints and opportunities, and conducted action research and capacity building to address these challenges in food safety

Interactions with policy makers: Policy translation: food safety



2011 Meeting with VFA
Photo: CENPHER



2012 Meeting with DAH
Photo: CENPHER



2016

Meeting with DPM Vietnam, 2 Dec 2016
Photo: Tuyet Hanh



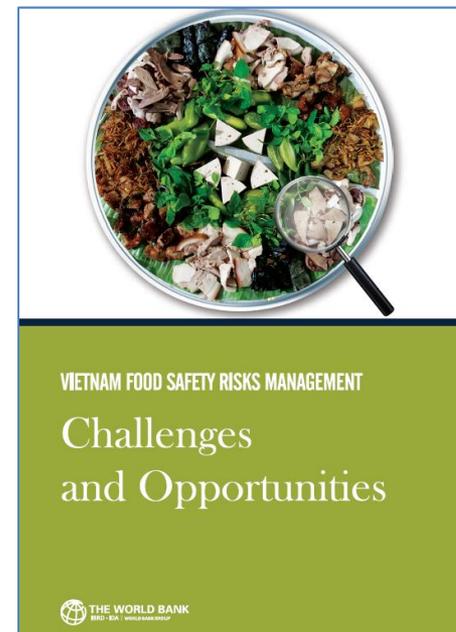
2018

Meeting with DPM Vietnam, 18 April 2018
Photo: World Bank

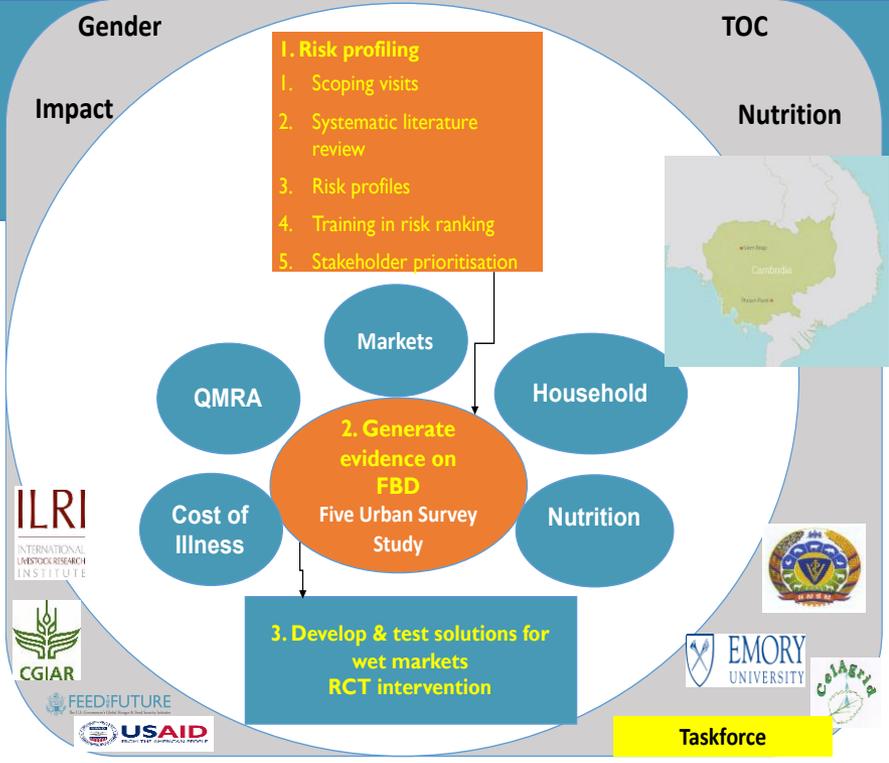
Nguyen-Viet et al, 2018

Policy impact: translational research for interventions in modernizing food system

- CGIAR/ILRI niche - risk assessment and policy / regulatory analysis for fresh foods in domestic markets
- World Bank convenes overall support to government: ILRI led technical works
- Upcoming projects based on WB report we led will improve food safety for 20 million people in 3 major cities of Vietnam



Safe Food Fair Food for Cambodia Taskforce – December 2017

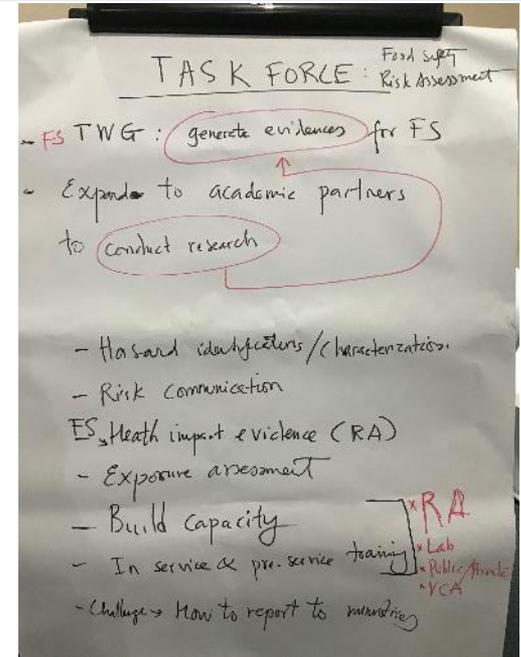


- Support existing food safety technical working group of Cambodia
- Risk assessment expertise and case studies
- Linking to other projects of food safety
- Training
- Avoid duplication effort



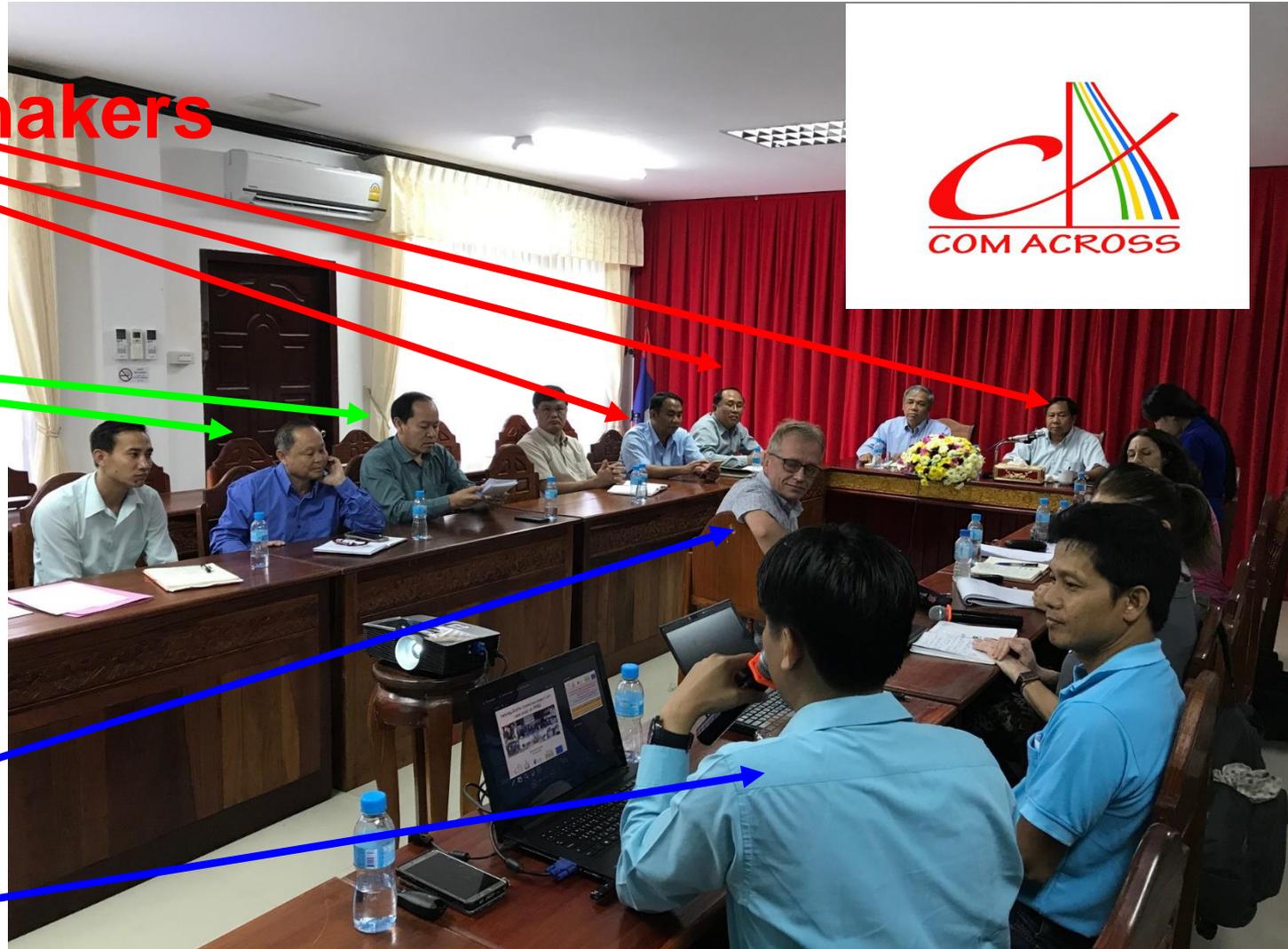
Taskforce: translational research

- Support existing food safety technical working group of Cambodia
- Risk assessment expertise and case studies
- Linking to other projects of food safety
- Training
- Avoid duplication effort



Savanakhet, Laos

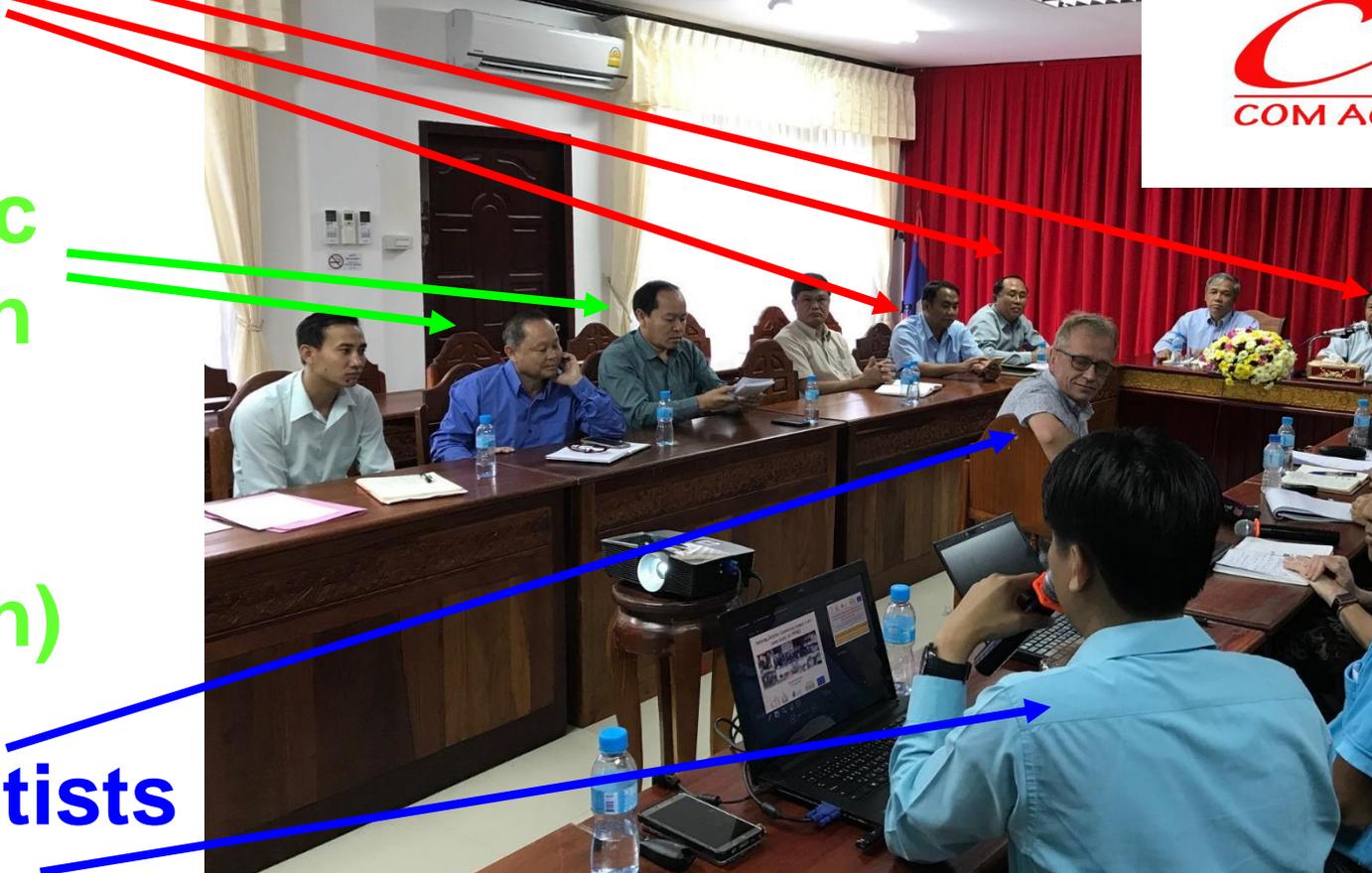
Foodborne parasitic disease research 10. 2017



Decision makers

**Public health
(MD,
army
health)**

**Scientists
Vets**



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Paradigm shift: from proactive support of donors to competitive process for funding

- Ecohealth projects in SEA: financially supported by IDRC, and AusAID, the WHO and the SDC.
- The sustainability is questionable
- A pragmatic response by partners has been to brand themselves as both Ecohealth and One Health.
- Making grant modes from donors: non competitive vs. competitive
- Funding mobilization from other donors including national fundings is needed

Reflections on Ecohealth/ One Health implementation in SE Asia

- **“Competitive”** networks of **Ecohealth** and **One Health** in SEA and **donor driven** and **weak sustainability**
- Complementarity : **EIDs** vs. **non EIDs**
- **How much OH/ecohealth** in OH/EH projects: integrative research → operating criteria of Ecohealth/OH
- Improving the translation of evidence and research into policy, more cases to show **added values of One Health/Ecohealth**
- How best to **share credit** among OH/EH team members
- **Deeper coordination** between sectors on human and animal (and wildlife) health and the environmental agencies (also plant health)

Group discussion

- **Question 1: please discuss the food safety situation in Jogjakarta and propose 3 top concerns and identify 3 top hazards in food safety.**
- **Question 2: You are asked to conduct a risk assessment of foodborne diseases linked to the consumption of salads that are contaminated with *E. coli*, produced by farmers in Jogjakarta, and served for school meals. Please use an One Health / Ecohealth approach to develop a research group to assess the risks and outline the main activities of the risk assessment.**

better lives through livestock

ilri.org

ILRI thanks all donors and organizations which globally support its work through their contributions to the [CGIAR Trust Fund](#)

Patron: Professor Peter C Doherty AC, FAA, FRS

Animal scientist, Nobel Prize Laureate for Physiology or Medicine–1996

Box 30709, Nairobi 00100 Kenya
Phone +254 20 422 3000
Fax +254 20 422 3001
Email ilri-kenya@cgiar.org

ilri.org
better lives through livestock
ILRI is a CGIAR research centre

Box 5689, Addis Ababa, Ethiopia
Phone +251 11 617 2000
Fax +251 11 667 6923
Email ilri-ethiopia@cgiar.org

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