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 regional chapter already established in:

- Europe
- Oceania
- North America
- Africa

How about Asia?

- Whole Asia?
- SEA +++?
- South Asia?
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
1. Context in Asia

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

3. Some evaluations and impacts

4. Reflections and conclusions
Ecohealth research in Southeast Asia: past, present and the way forward

Hung Nguyen-Viet, Siobhan Doria, Dinh Xuan Tung, Hein Mallee, Bruce A Wilcox and Delia Grace

Toward Operational Criteria for Ecosystem Approaches to Health

Carsten H. Richter, Jennifer A. Steele, Hung Nguyen-Viet, Jianchu Xu, and Bruce A. Wilcox
One Health and Ecohealth programs in SEA

- INDOHUN
- THOHUN
- VOHUN
- MYOHUN

EHRCs

GHI

Emerging Pandemic Threats Program

PREDICT • RESPOND • PREVENT • IDENTIFY
Main ecohealth projects in South East Asia, December 2017
## Major Ecohealth projects in SE Asia

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

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

Follow-up studies
i. AMR
ii. Wildlife

In recent years
i. Poultry Production Clusters
ii. Small-Scale Poultry Slaughter Houses

Five studies on AI
Multi-country teams for each study
EcoHealth prudent use of antimicrobial in SEA
VIDA-PIG 4 work packages

One Health

1. Pig health and health management practices
   - Veterinary drug use among pig farmers

2. Antibiotic resistance in pigs and antibiotic residues in pork products

3. Effective interventions for improving pig health management

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.

Hung Nguyen et al. 2018
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)

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

Vuon 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: FBLI – 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

- Overall Goal
  - To enhance the capacity of Vietnam to address zoonotic infectious diseases threats at the human-animal interface (*including livestock, wildlife and other animal species*)

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

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

1. Context in Asia
2. Major OH/EH programs in (SE) Asia
3. Evaluations and impacts
4. Reflections and conclusions
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 imply 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)
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

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 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.

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-setting 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 Nations: English, French, Spanish, Russian, Arabic and Chinese.
New special issue with IDP 2018-2019

INFECTIOUS DISEASES OF POVERTY

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

\textsuperscript{a} International Livestock Research Institute, Hanoi, Vietnam  
\textsuperscript{b} Center for Public Health and Ecosystem Research, Hanoi University of Public Health, Hanoi, Vietnam  
\textsuperscript{c} National Institute of Veterinary Research, Hanoi, Vietnam  
\textsuperscript{d} Faculty of Veterinary Medicine, Vietnam National University of Agriculture, Hanoi, Vietnam  
\textsuperscript{e} Vietnam Food Administration, Ministry of Health, Hanoi, Vietnam  
\textsuperscript{f} Directorates of Fisheries, Ministry of Agriculture and Rural Development, Hanoi, Vietnam  
\textsuperscript{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 active 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
Outline

1. Context in Asia
2. Major OH/EH programs in (SE) Asia
3. Evaluations and impacts
4. Reflections and conclusions
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)
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