



INITIATIVE ON  
One Health

# ***Protecting human health through a One Health approach***

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**CGIAR One Health Initiative and ICT4Health Kick-off workshop**

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# One CGIAR Overview



**CGIAR  
2030**  
RESEARCH AND  
INNOVATION  
STRATEGY

Transforming food,  
land, and water systems  
in a climate crisis



**Mission:** To deliver science and innovation that advance transformation of food, land and water systems in a climate crisis.

# Three CGIAR Action Areas → Five Impact Areas



# 9 CGIAR Initiatives being implemented in **VIETNAM**

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## RESILIENT AGRI-FOOD SYSTEMS:

- Securing the Food Systems of Asian Mega-Deltas for Climate and Livelihood Resilience
- Nature-Positive Solutions for Shifting Agrifood Systems to More Resilient and Sustainable Pathways
- Sustainable Animal Productivity for Livelihoods, Nutrition and Gender Inclusion
- ***Protecting Human Health Through a One Health Approach***
- Excellence in Agronomy for Sustainable Intensification and Climate Change Adaptation
- Plant Health and Rapid Response to Protect Food Security and Livelihoods

## SYSTEMS TRANSFORMATION:

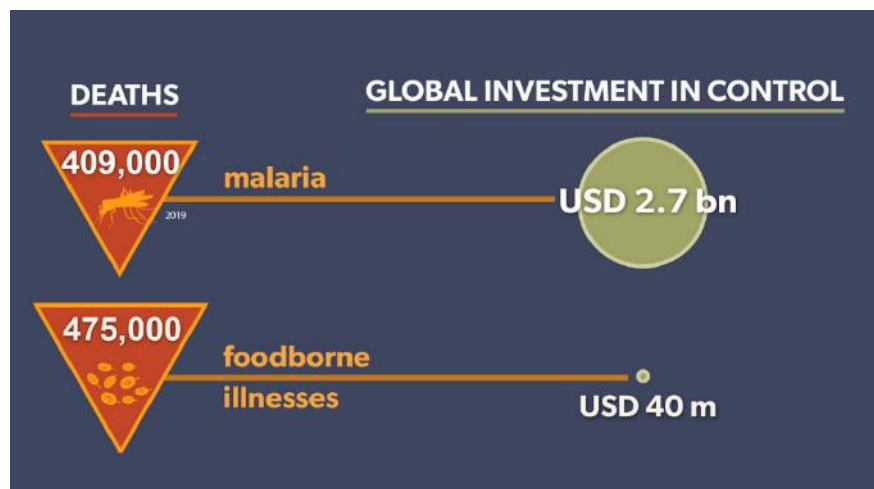
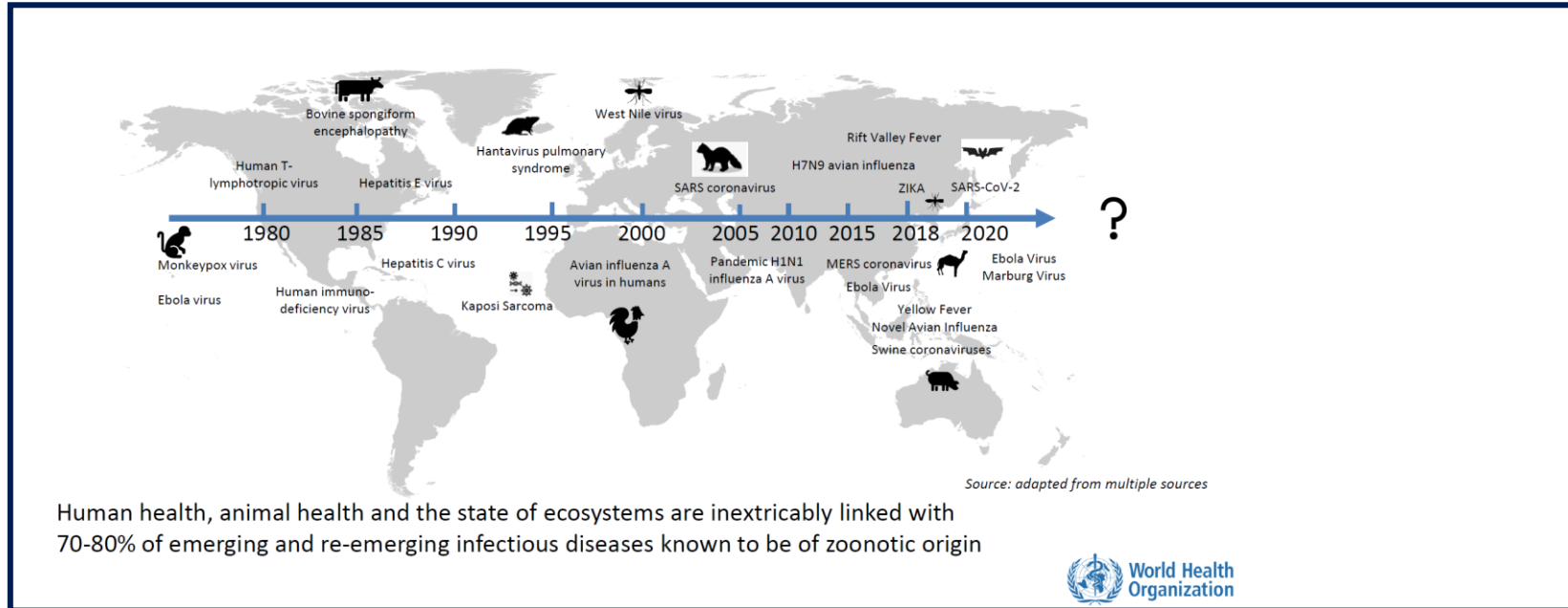
- Mitigate+: Research for Low-Emission Food Systems
- Sustainable Healthy Diets Through Food Systems Transformation

## GENETIC INNOVATIONS:

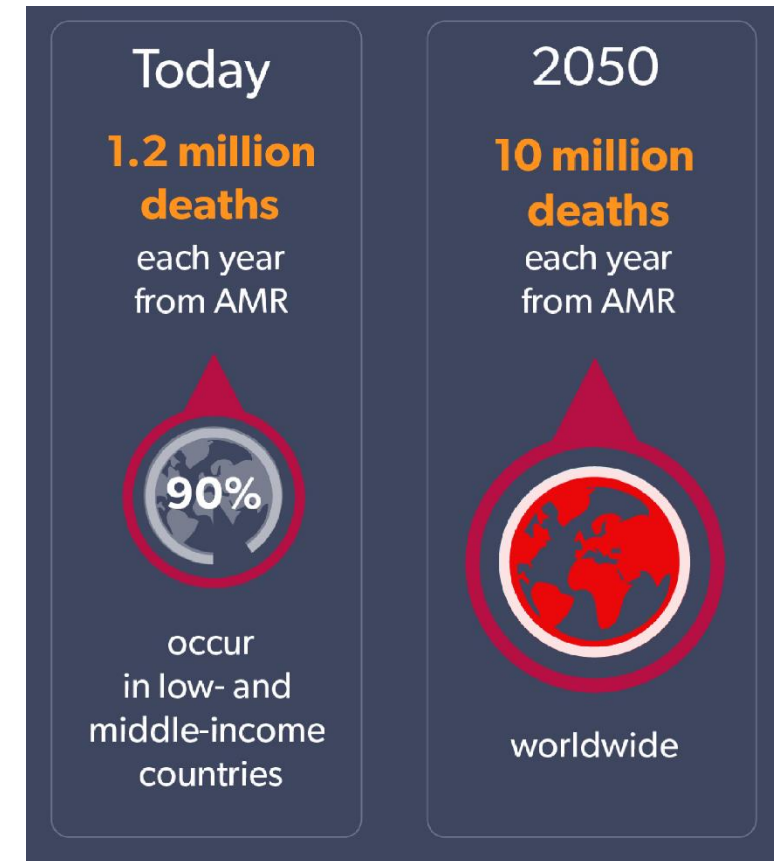
- SeEdQUAL: Delivering Genetic Gains in Farmers' Fields

# Why do we need an initiative for One Health?

## The challenges



**Food safety:** large burden comparable to tuberculosis, malaria, and HIV/AIDS, but small investment



Antimicrobial Resistance (AMR) is a growing problem

# One Health: new OHHLEP definition, 2021

One Health is an **integrated, unifying approach** that aims to sustainably **balance and optimize the health of people, animals and ecosystems.**

It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are **closely linked and inter-dependent.**

The approach mobilizes **multiple sectors, disciplines and communities** at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate changes and contributing to sustainable development.



# CGIAR/ILRI One Health Strategy

A holistic approach to preventing pandemics/epidemics and other microbial threats from animals/environment

## Vision

- To improve the lives, livelihoods and well being of people in the global south by building healthy, sustainable and resilient systems at the intersection of humans, animals and the environment.

## Key thematic areas

- Epidemics and pandemics caused by (re)-emerging viruses
- Endemic zoonoses
- Food safety
- Antimicrobial Resistance



# One CGIAR initiatives on One Health

Objective is to **protect human health** by improving **detection, prevention, and control** of zoonoses, foodborne diseases and AMR in LMICs

How will we achieve this?

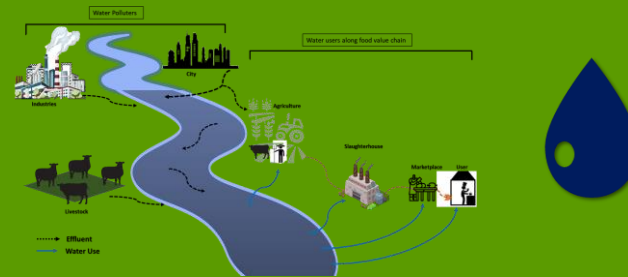
- **Generate evidence** on risks and public and private returns to action
- Evaluate impacts of **technologies, tools, and approaches** on health risks and economic outcomes
- Integrating **innovations into policies and programs**



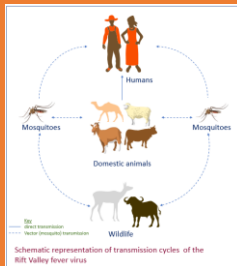


# Initiative Components & Structure

**WP4: Environment (Water)**  
improve water management to reduce infectious disease risks



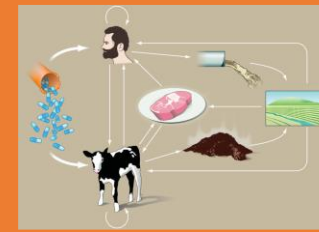
**WP1: Zoonoses**  
reduce disease emergence and transmission at wildlife-livestock-human interfaces



**WP2: Food Safety**  
reduce foodborne disease through capacity building of market actors and incentives for compliance



**WP3: AMR**  
reduce emergence and spread of antimicrobial-resistant zoonotic pathogens



**WP5: Economics, governance, and behavior**  
understand incentives for and constraints to behaviors affecting One Health



# Selected Innovations

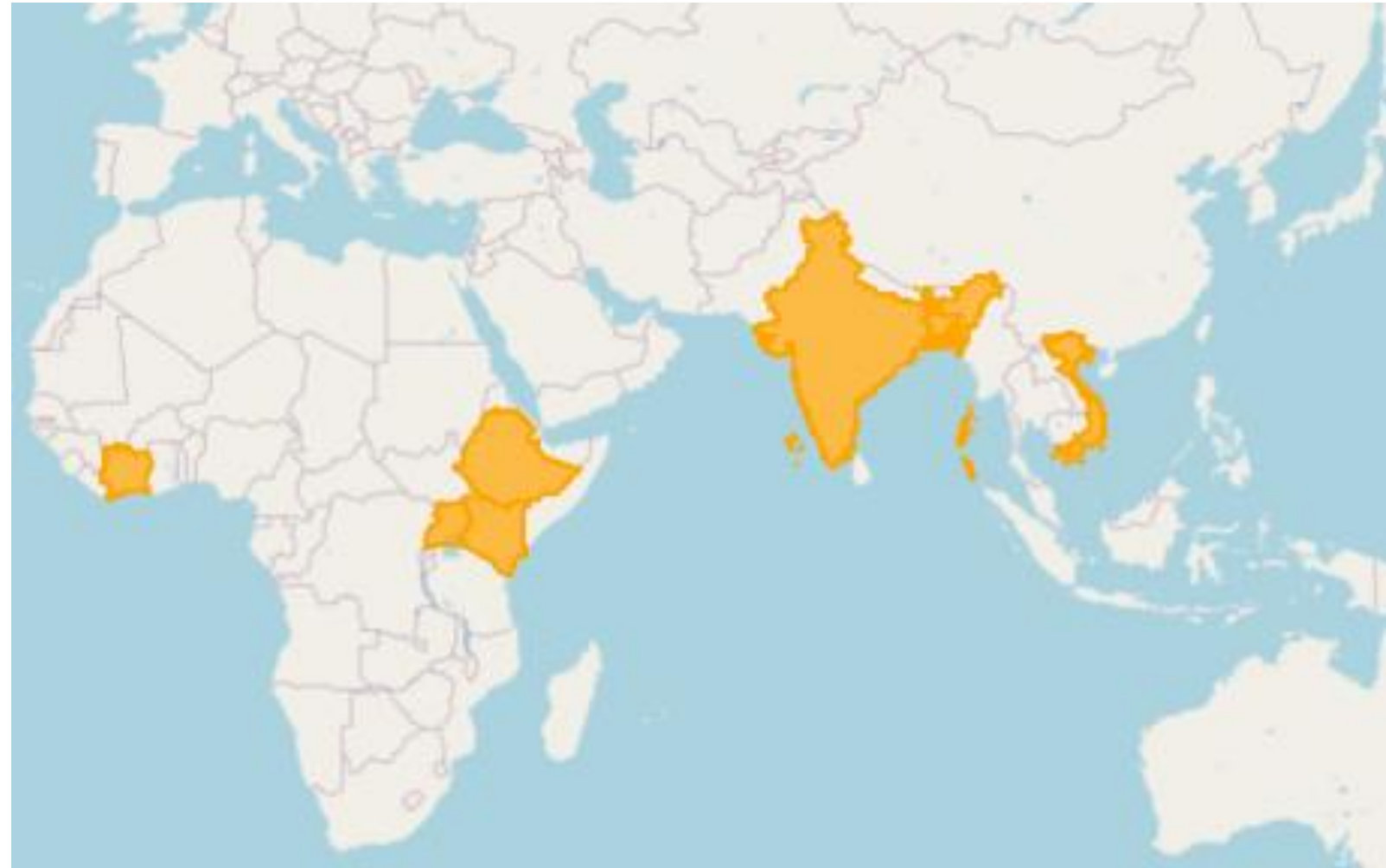


# Where we will work & Prioritization process

## Research contexts:

- Intensifying food systems
- Informal food systems
- Wildlife-livestock-human interfaces

**Themes/Research questions/Innovations** selected based on potential for long-term impact on human infectious disease burden



# Work Packages & Partners by Country

Country	Key Work Package	Partners in countries
<b>Vietnam</b>	<b>WP1, WP2, WP5*</b> WP3, WP4	Ministry of Agriculture and Rural Development, National Institute of Veterinary Research, Hanoi University of Public Health
<b>Bangladesh</b>	<b>WP3</b>	Food Safety Authority, Ministry of Livestock and Fisheries, Bangladesh Livestock Research Institute
<b>India</b>	<b>WP4</b> WP2	ICAR, Food Safety and Standards Authority of India; Office of the Commissioner of Food Safety – Odisha and Assam
<b>Kenya</b>	<b>WP1, WP3, WP5</b> WP2	National and country departments of veterinary services and public health
<b>Ethiopia</b>	<b>WP2, WP4, WP5</b>	One Health National Platform, Ministry of Agriculture (Livestock), Universities of Addis Ababa
<b>Cote d'Ivoire</b>	<b>WP1</b> WP2	One Health National Platform, Centre Suisse de Recherche en Cote d'Ivoire
<b>Uganda</b>	Leverage from other One Health projects in Uganda	Ministry of Agriculture, Animal Industry and Fisheries, Inter-University Council for East Africa (IUCEA)

\*WP in **bold**: focus WP in the country, other: light activities in the country

# Impact Forecast

## Medium to high certainty impacts by 2030

Female food vendors served by innovations



157,000

People with 10-50% of annual income benefit



135,000

Women prevented from entering poverty



322,000

People prevented from entering poverty



645,000

DALYS saved



370,000

Women benefiting from better zoonoses control



5.9 million

# One Health initiative in Vietnam

*Work package 01: Zoonoses*

# WP 1 – Zoonoses

- Zoonoses – major threat to global health security, economy, and food security
- COVID 19 pandemic demonstrates that prevention is better than cure – limit zoonoses spillovers
- Enhance One Health partnerships in Kenya, Cote d'Ivoire and Vietnam
- AIM: develop interventions for zoonoses at wildlife/livestock/human interfaces



# WP 1 – Zoonoses

## Title:

Developing One Health interventions for zoonotic disease risks in wildlife farms and their value chains in Vietnam

## Objective:

To minimize the health risks associated with wildlife farming through applied research and capacity building targeting wildlife farms and their value chains.





# WP 1 – Zoonoses

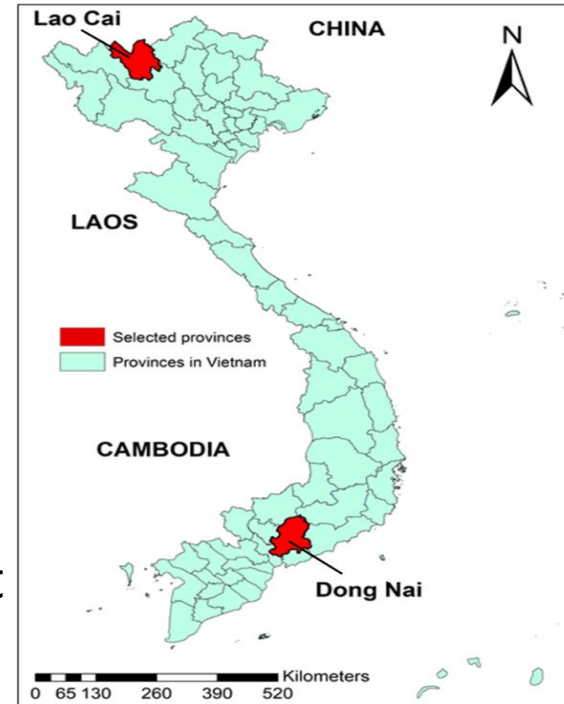
**Project period:** 2022-2024

**Study site:** Lao Cai and Dong Nai provinces

- Commune/Vinh Cuu and/or Tan Phu district
- Commune/District in Lao Cai

**Potential partners:**

- National Institute of Veterinary Research
- National Institute of Animal Science
- Department of Animal Health
- Nong Lam univ. and sub-DAHs, Sub-Department Forestry protection
- TRAFFIC and FAO...



**Specific objectives**

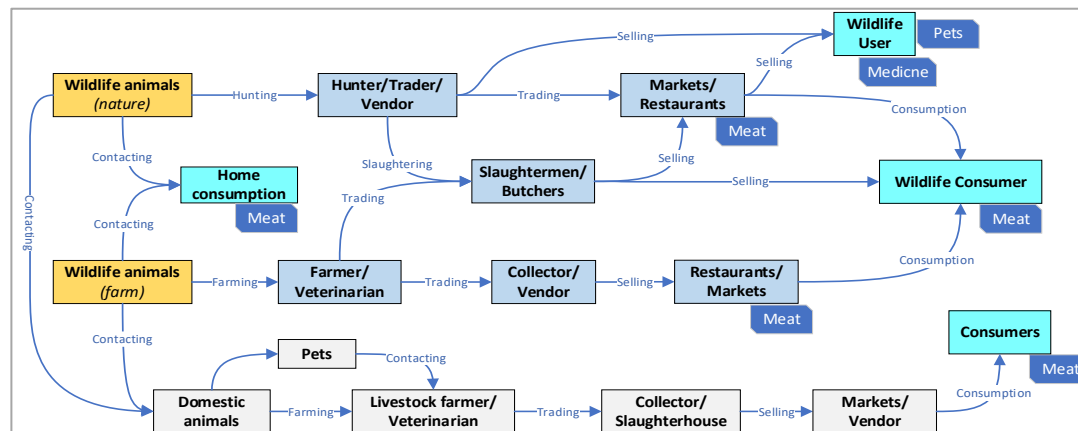
1. To improve knowledge, attitude and practices on zoonotic risks associated with wildlife farming/trade
2. To improve surveillance and response to disease outbreaks in wildlife VC using a risk assessment framework and strengthened One Health partnerships
3. Risk assessments data will be used to implement potential interventions

# WP 1 – Zoonoses

## Methodology

- Systematic literature review – zoonoses in wildlife
  - To identify key wildlife farm value chain and related pathogens
  - To develop a risk assessment framework
    - ✓ Mapping and characterization of wildlife value chain
    - ✓ Quantifying potential risks of interspecies transmission
  - Survey and sampling (wildlife value chains and humans)
  - Capacity building (PhD, MSc, and undergraduate students)
  - Community-based interventions (2023 onward)
- => Coordination with other initiatives to ensure synergies and joint impact

Data collection for mapping/assessment	Lao Cai	Dong Nai
FGDs	10 groups	10 groups
Questionnaire/Semi-structured interview	50-100	50-100
Wildlife samples	500	500
Human samples	50	50







# One Health initiative in Vietnam

*Work package 02: Food safety*

# WP2 - Food safety component

## Background:

Foodborne disease (FBD) is a major public health problem and presents a barrier to smallholder farmers who wish to sell in high value domestic and export markets

## Title:

Food safety interventions in traditional pig slaughterhouses and pork shops in Vietnam

## Objective:

Reduce the burden of FBD focusing on high-risk livestock derived foods (pork), including traditional food systems, through enabling, capacitating and motivating food value chain actors (farm to fork)

## Research questions:

1. What technologies, training and information do VC actors need to improve food safety?
2. What are the incentives and nudges that will motivate behavior change?
3. How can the public sector provide an enabling regulatory environment and infrastructure?

# WP2 – Food safety component

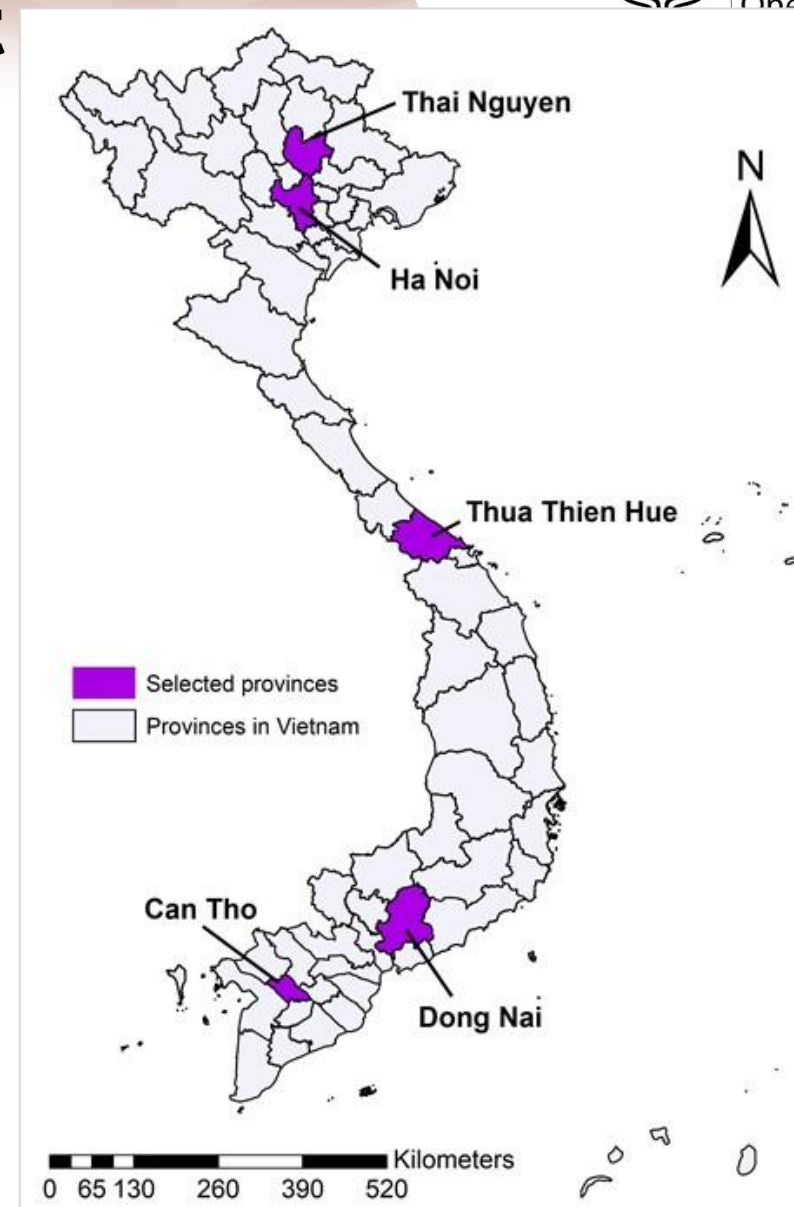
Project period: 2022-2024

## Study site:

- North: Thai Nguyen, Hanoi
- Center: Thua Thien Hue
- South: Dong Nai and Can Tho

## Potential partners:

- National partners such as: OHP, DAH/Sub-DAH, NIVR, NIAS,...
- Universities such as: HUPH, VNUA, Hue NLU, HCMC NLU, TUA,...
- Other international organizations: WB, WHO, FAO, CIRAD or NGOs or group: Rikolto, FSWG..
- Other CGIAR initiatives (SHiFT, SAPLING, Plant Health...), and projects: SafeGRO, ASSET



# WP2 - Food safety component - Study design and activities

**Study design** (similar across 5 provinces):

1. Intervention & training (Enabling and Capacitating)

- Traditional slaughterhouse (Baseline and Endline evaluation)
- Traditional retail/pork shops (RCT)

2. Behavior/practice change monitoring & social marketing campaigns for retail and consumers (Motivating)

## **Selection criteria for markets**

- Number traditional markets/province and number of pork retailers/market
- Meeting certain criteria: accessibility, local support...

Will be done through rapid assessment of existing markets

## **Slaughterhouse** (traditional)

- Number and location of slaughterhouse/province, pigs slaughtered/day
- Certain criteria: Involved in other intervention, local support...

# WP 2 Study - design and activities cont.

## Intervention at traditional pig slaughterhouses

- Intervention package: Provide equipment (grid), slaughterhouse re-arrangement + Training
- 6 slaughterhouse/province (e.g. 10 - 50 pigs slaughtered/day)
- Linkages to and support from Sub-DAH are crucial for direction/policy influence

### ***Base line/endline (30 slaughterhouses)***

- Observational checklist
- Food safety indicator: *Salmonella* and/or coliforms





# WP 2 Study - design and activities cont.

## Intervention in markets and social marketing campaign

### 1. Traditional retail intervention

Aim: Test intervention package

- ✓ Randomized control trial in > 300 traditional retailers
  - About 12 markets (at least 6 control and 6 intervention markets) per province
  - Each market 5-10 retailers (plus 10 – 20 spill over retailers)

### 2. Social marketing campaign (retailers and consumers)

Aim: Assess behavior/practice change monitoring & potential spillover

- ✓ Four repeated rounds (quarterly)
  - To monitor assess change and spillover (retailers)\*
  - Social marketing campaign (in consumers buying pork)

\*in treatment and control group to assess potential spillover from treatment to control



# WP 2 Building up on evidence from Safe PORK (Vietnam) and SFFF (Cambodia)

## Food Safety Interventions at slaughter (300-1000 USD)



Inox grid, separate clean/dirty zones, cleaning & disinfection, and training, certification (as incentive)

## Food Safety Interventions at retail (40 USD)



Hygienic cutting board, separate meat/intestines/cooked products, cleaning & disinfection, scoring system for best retailers



# WP 2-Food safety

## Economic Analysis: Theory of Change

*The social marketing component underlying the economic analysis tests a simple theory of change:*

- ✓ Providing information to consumers via marketing materials & visible vendor ratings, to increase consumer understanding
- ✓ As the salience of food safety as a product attribute increases, consumers are more likely to seek out vendors following good practices (for treated vendors this information is now public)
- ✓ Increased consumer demand for safe pork should improve sales for food safe vendors, incentivizing other vendors to adopt safe practices



# WP 2-Food safety

## Key Expected Outcomes

### Consumer outcomes

- Importance assigned to 'food safety' or 'cleanliness' in vendor selection (measured through consumer surveys)
- Share purchasing pork from accredited vendors (tracked using coloured packaging material provided to participating vendors)

### Vendor outcomes

- Observation of vendor practices (both to assess food safety risk & as an intermediate outcome in economic analysis)
- Sales volume among study vendors in a given market (market share of safe food)
- Comparison of profits across control/treated/spillover vendors (using observed sales and vendors survey reports of costs)







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# One Health initiative in Vietnam

*Work package 03: AMR*

# WP3 - AMR component Vietnam

## Background:

- AMR is now threatening healthcare systems globally
- Humans and animals are all connected- similar antibiotics, shared environments and common AMR bacteria
- Drivers of antibiotic use are exacerbating AMR

## Dilemma of antimicrobials:

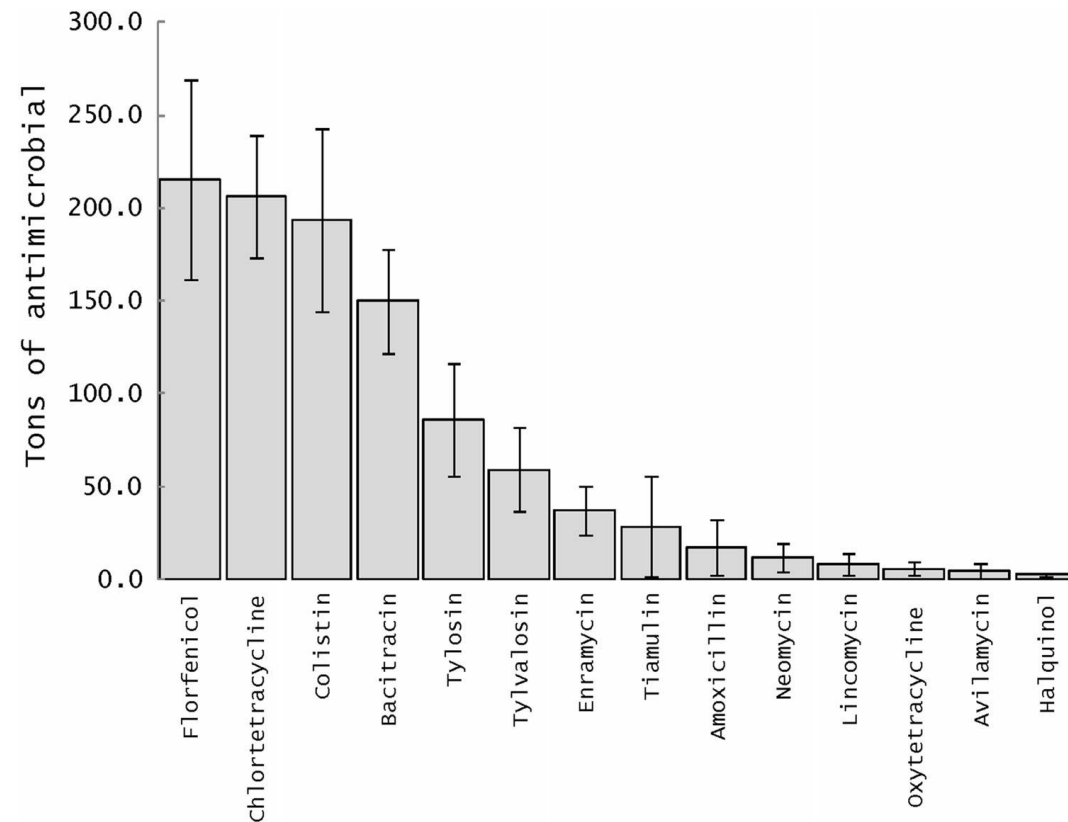
- **Essential** to animals, humans and plants
- Any **use promotes** selection of **AMR** microorganisms contributing to reducing their therapeutic efficacy over time
- Excess vs access



*AMR cannot be eradicated but only managed*

# AMU consumption for chicken and pig medicated feeds

- **77.4 mg and 286.6 mg** of in-feed antimicrobials were used to raise 1 kg of live chicken and pig, respectively.
- **42.2 and 981.3 tons** for Vietnamese chicken and pig production, respectively.



*Nguyen Van Cuong et al. 2016. EcoHealth*



# WP3 - AMR component Vietnam

**Title:** On farm interventions to reduce antibiotic use in poultry and pig systems

## Objectives

- To develop and test approaches to reduce AMU and AMR which have to potential for scaling
- To conduct a cost effectiveness analysis of tested interventions
- To assess pathways for sustainable behavior and practice change



# Activity 1: Probiotic trial at chicken (broiler) farms



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## Objective:

To evaluate the effectiveness of probiotic added into chicken feed in terms of **fattening productivity and reducing antibiotic usage and resistance.**

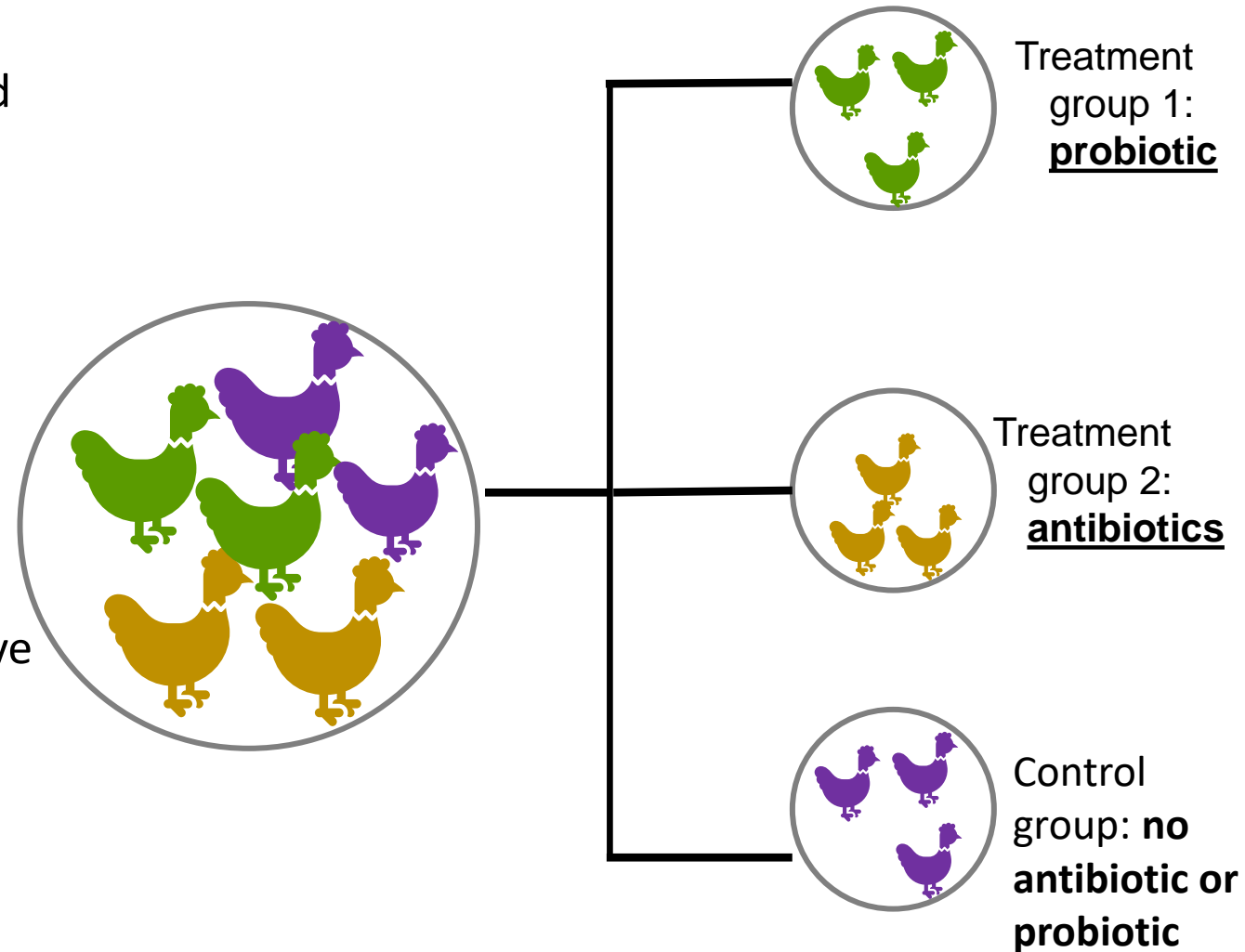
## Partners:

TUAF, DAH, NIVR, Sub DAH  
Linked to One Health field side

## Trial design

Three chicken (broiler) groups allocated across five different flocks will be fed by **three types of feed**

**Timeline:** Start of trial Quarter 4 2022



# WP3 – Activities under discussion



## ***In collaboration with ICARS demonstration project in pigs***

- a. Intervention 1: Vaccination in sows. This is a commercial *E.coli* vaccine they want to use to immunize sows. It will be imported.
- b. Intervention 2: Replacement of colistin with a narrow spectrum antibiotic (provide data to the government that you don't need colistin to help with the colistin ban)

## ***Link to Vidapig2 project***

- a. Focus is on diagnostics, ASTs, moving towards developing treatment guidelines for pigs.

## ***Additional ideas could be discussed***

- Probiotics (extension of previous trial in pigs or in poultry)
- Giving pigs additional colostrum
- Research around reducing co-housing and stress factors
- Effects of removing colistin in poultry production (cost benefit analyses)
- Something around drug vendors
- Quantification of antimicrobial consumption could be an RCT currently piloted in Kenya

# Thank you



**More information on the One Health initiative:**

[Protecting Human Health Through a One Health Approach](#)

[How to Stop Food Systems from Feeding Pandemics: Embrace One Health](#)



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