



# CGIAR Research Initiative on One Health

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The Artificial Intelligence (AI) software ChatGPT was used to support the editing of parts of this report, specifically to improve clarity, grammar, and style. ChatGPT was not used to generate the content of the report. All edits made with AI assistance were reviewed and validated by the authors to ensure accuracy, coherence, and alignment with the original intent.

### Acknowledgements

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# **CGIAR Technical Reporting 2024**

CGIAR Technical Reporting has been developed in alignment with <u>CGIAR's Technical Reporting Arrangement</u>. This annual report ("Type 1" Report) constitutes part of the broader CGIAR Technical Report. Each CGIAR Research Initiative/Impact Platform/Science Group Project (SGP) submits an annual "Type 1" Report, which provides assurance on progress towards end of Initiative/Impact Platform/SGP outcomes.

As 2024 marks the final year of this CGIAR Portfolio and the 2022-24 business cycle, this Type 1 Report takes a dual approach to its analysis and reporting. Alongside highlighting key achievements for 2024, the report also provides a cumulative overview of the 2022-24 business cycle, where relevant. This perspective captures the evolution of efforts over the three-year period. By presenting both annual and multi-year insights, the report underscores the cumulative impact of CGIAR's work and sets the stage for the transition to the 2025-30 Portfolio.

The 2024 CGIAR Technical Report comprises:

- Type 1 Initiative, Impact Platform, and SGP Reports: These annual reports present progress towards end of Initiative/Impact Platform/SGP outcomes and provide quality-assured results accessible via the CGIAR Results Dashboard.
- Type 3 CGIAR Portfolio Practice Change Report: This report provides insights into CGIAR's progress in Performance Management and Project Coordination.
- **Portfolio Narrative:** Drawing on the Type 1 and Type 3 reports, as well as data from the CGIAR Results Dashboard, the Portfolio Narrative synthesizes insights to provide an overall view of Portfolio coherence. It highlights synergies, partnerships, country and regional engagement, and collective progress.
- Type 2 CGIAR Contributions to Impact in Agrifood Systems: evidence and learnings from 2022 to 2024: This report offers a high-level summary of CGIAR's contributions to its impact targets and Science Group outcomes, aligned with the Sustainable Development Goals (SDGs), for the three-year business cycle.

The Portfolio Narrative informs the 2024 CGIAR Annual Report – a comprehensive summary of the organization's collective achievements, impacts, and strategic outlook.

Elements of the Type 2 report are integrated into the <u>CGIAR Flagship Report</u>, released in April 2025 at <u>CGIAR Science Week</u>. The Flagship Report synthesizes CGIAR research in an accessible format designed specifically to provide policy- and decision-makers at national, regional, and global levels with the evidence they require to formulate, develop, and negotiate evidence-based policies and investments.

The diagram below illustrates these relationships.

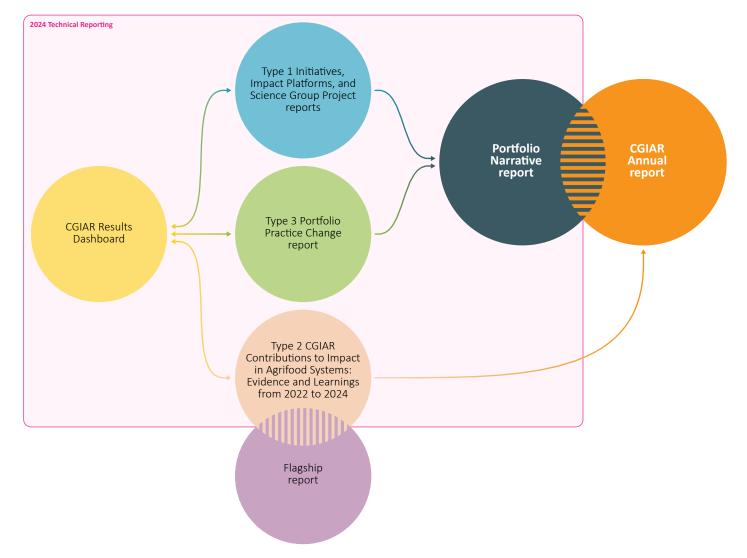


Figure 1. CGIAR's 2024 Technical Reporting components and their integration with other CGIAR reporting products.

# Section 1: Fact sheet, executive summary and budget

Initiative name Protecting Human Health Through a One Health Approach

Initiative short name One Health

Initiative Lead Hung Nguyen Viet (h.nguyen@cgiar.org)

Initiative Co-lead Vivian Hoffmann (v.hoffmann@cgiar.org)

Science Group Resilient Agrifood Systems

Start – end date 01 January 2022 – 31 December 2024

Geographic scope

East and Southern Africa · South Asia · Southeast Asia and the Pacific · West and Central Africa

**Countries** 

Regions

Bangladesh · Côte d'Ivoire · Ethiopia · India · Kenya · The Socialist Republic of Viet Nam · Uganda

OECD DAC Climate marker adaptation score<sup>1</sup>

The activity does not target the climate mitigation, adaptation and climate policy objectives of CGIAR as put forward in its strategy.

OECD DAC Climate marker mitigation score<sup>1</sup> **Score 1: Significant**The activity contributes in a significant way to any of the three CGIAR climate-related strategy objectives – namely, climate mitigation, climate adaptation and climate policy, even though it is not the principal focus of the activity.

OECD DAC Gender equity marker score<sup>2</sup> Score 1B: Gender responsive

Score 0: Not targeted

On the top of the minimum requirements for 1A, the Initiative/project includes at least one explicit gender equality outcome and the Initiative/project team has resident gender expertise or capacity. The Initiative/project includes indicators and monitors participation and differential benefits of diverse men and women.

Website link

https://www.cgiar.org/initiative/07-protecting-human-health-through-a-one-health-approach/

These scores are derived from Initiative proposals, and refer to the score given to the Initiative overall based on their proposal.

# EXECUTIVE SUMMARY

From 2022 through 2024, we published 96 <u>articles</u>, with more on the way in 2025 (109 publications as of March 2025 — see <u>CGSpace</u> for the full list). These contributions advance our understanding of infectious disease risks and foodborne diseases at the interface of humans, animals, and the environment; the impact of climate change on health; factors influencing antimicrobial resistance (AMR) in livestock and aquaculture; promising interventions for mitigating One Health risks; and how gender considerations can be integrated into One Health. In 2024, we published 32 articles, including one that shared <u>lessons learned</u> from our collaborative work.

Notably, we have developed a strong understanding of zoonotic diseases risks as well as sought to address them by developing an integrated zoonotic diseases surveillance system at the interface of animals (livestock and wildlife), humans, and the environment, in the context of wildlife farming in Vietnam, bush meat consumptions in Côte d'Ivoire, and mixed livestock production in Kenya. We conducted action research to test and evaluate food hygiene behavioral change innovations at the slaughter and retail levels, which have potential to improve health and livelihoods.

We have developed 12 innovations over the years. In 2024, we focused on positioning innovations that have high innovation readiness for scaling through co-creation and collaborative testing with local partners.

To build capacity in taking up Initiative innovations, we contributed to 19 training activities across various regions. For example, the Initiative contributed to advancing One Health education by developing curriculum benchmarks for One Health that have been approved by the Inter-University Council for East Africa, building upon previous achievements in establishing benchmarks for food safety in 2022. In 2024, we concentrated on disseminating evidence and increasing capacity for their use.

Researchers also actively engaged in international and national forums, advocating for investments in One Health and promoting the work of CGIAR within global One Health communities. In 2024, we made a number of contributions to the World One Health Congress, including a major report on risks and rewards of wildlife meat trade.

<sup>&</sup>lt;sup>1</sup> The Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) markers refer to the OECD DAC <u>Rio Markers for Climate</u> and the <u>gender equality policy marker</u>. For climate adaptation and mitigation, scores are: 0 = Not targeted; 1 = Significant; and 2 = Principal.

<sup>&</sup>lt;sup>2</sup> The CGIAR Gender Impact Platform has adapted the OECD gender marker, splitting the 1 score into 1A and 1B. For gender equality, scores are: 0 = Not targeted; 1A = Gender accommodative/aware; 1B = Gender responsive; and 2 = Principal.

We have made substantial progress toward policy change. In Kenya, three counties invested in slaughterhouse hygiene following the adoption of our innovations. In Vietnam, local governments committed resources to One Health field sites. In Ethiopia, the Addis Ababa City Administration Food and Drug Authority showed interest in scaling up the "scores on doors" intervention for meat butchers. Additionally, we contributed to key policy documents, including Kenya's Rift Valley fever contingency plan as well as a global strategy for addressing AMR.

Moving forward, we will continue to work on these important One Health issues, notably through the new CGIAR Science Program on Sustainable Animal and Aquatic Foods. We will draw on <u>historical and ongoing work</u> of applying One Health approaches in international agricultural research for development.

	2022	2023 ▽	2024 ▼
PROPOSAL BUDGET ▷	\$11.50M	\$11.74M	\$11.76M
APPROVED BUDGET 1 >	\$5.92M	\$6.12M ²	\$6.71M <sup>2</sup>

<sup>&</sup>lt;sup>1</sup> The approved budget amounts correspond to the figures available for public access through the <u>Financing Plan dashboard</u>.



<sup>&</sup>lt;sup>2</sup> These am ounts include carry-over and commitments.

# Section 2: Progress towards End of Initiative outcomes

### Initiative-level theory of change diagram

This is a simple, linear, and static representation of a complex, non-linear, and dynamic reality. Feedback loops and connections between this Initiative and other Initiatives' theories of change are excluded for clarity.

### **CHALLENGE STATEMENT**

- Zoonotic diseases such as COVID-19 are becoming more frequent and severe due to human
  encroachment on wildlife habitats and intensifying livestock and fish production. Animal production
  systems harbor 60 percent of communicable diseases among humans, and the increasing trade in
  animals and animal-based foods amplifies health and economic risks. Despite strong evidence that
  zoonoses control and integrated public health—veterinary services are cost-effective, underfunding and
  lack of coordination persist. Collaborative studies with governments are needed to build evidence for
  greater investment.
- Antimicrobial use (AMU) in livestock accounts for two-thirds of global consumption and is rising,
  particularly in developing countries. AMU is a major driver of antimicrobial resistance (AMR), which
  already causes 700,000 deaths annually and could claim 10 million lives per year by 2050. Reducing
  AMU is critical but hindered by data gaps, limited evidence on impacts, and concerns about
  productivity.
- Research to address these issues is key to catalyzing global action. Livestock also produce 85 percent of
  global animal fecal waste, leading to environmental degradation and exposure to antimicrobial residues
  and pathogens, which threaten food systems. Foodborne diseases cause a burden similar to
  tuberculosis or malaria, particularly in low- and middle-income countries (LMICs), yet receive minimal
  funding. Informal markets, which supply most high-risk animal-source foods in LMICs, fall outside
  traditional regulation.
- Research on voluntary food safety upgrades, social marketing, and cost-benefit analyses of
  infrastructure such as safe water for markets and abattoirs could support safer food systems.
  Investment in One Health within food systems is growing, including a World Bank Multi-Donor Trust
  Fund and contributions from major global donors. Collaborative research and action can address these
  interconnected challenges and improve health, food safety, and economic outcomes globally.

### SPHERE OF **CONTROL**

WORK PACKAGES

WORK PACKAGE

Emerging and neglected zoonoses.

**WORK PACKAGE 2** 

Food Safety.

Work Package

Antimicrobial Resistance (AMR).

**WORK PACKAGE 4** 

Water.

Work Package 5

Economics, Governance, and Behavior.



### SPHERE OF **INFLUENCE**

**END-OF-INITIATIVE OUTCOMES** 

Policy makers at the national level allocate

more resources for zoonoses sensitisation,

### RESILIENT AGRIFOOD SYSTEMS

### OD SYSTEMS

ACTION AREA OUTCOMES

1 · Global and regional institutions, such as funding agencies, international organizations, and coordinating bodies use CGIAR research evidence in the development of strategies, policies, and investments to drive sustainable transformation of food, land, and water systems contributing to livelihood, inclusion, nutrition, environmental and climate resilience objectives.

### SPHERE OF **INTEREST**

IMPACT AREAS

### NUTRITION, HEALTH & FOOD SECURITY

 End hunger for all and enable affordable health diets for the 3 billion people who do not currently have access to safe and nutritious food.

 Government and private sector partners support integration of food safety approaches for informal actors into regulatory systems.

### END-OF-INITIATIVE OUTCOME 3

**END-OF-INITIATIVE OUTCOME 1** 

surveillance and response.

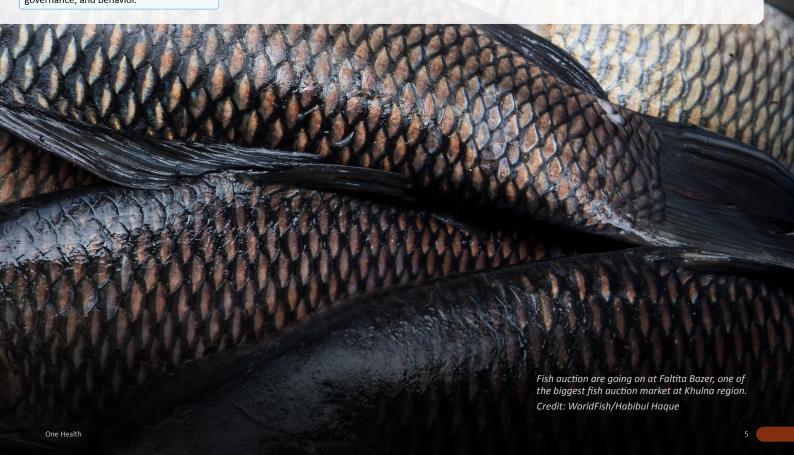
Stakeholders and policymakers are informed of evidence on antimicrobial resistance

### END-OF-INITIATIVE OUTCOME 4

Role of the water in the transmission of pathogens and antimicrobial resistance are recognized in national One Health planning processes.

### END-OF-INITIATIVE OUTCOME 5

5 ► One Health policy planning processes take into account evidence on economics, governance, and behavior.





### Summary of progress against the theory of change

From 2022 to 2024, substantial progress was achieved in knowledge discovery, as evidenced by the publication of <u>96 peer-reviewed articles</u>. These contributions advance our understanding of infectious disease risks at the interface of humans, animals, and the environment; the impact of climate change on health; factors influencing AMR in livestock and aquaculture; and the identification of promising avenues for intervention.

Importantly, we worked to integrate gender and other social identity considerations into relevant studies, including food safety and zoonoses research in Vietnam and Côte d'Ivoire. For instance, in Vietnam, the research delved into various gender-related aspects such as roles, decision-making dynamics, and perceptions of women and men regarding disease risks. Notable outputs include a conceptual framework and a set of research questions to enhance the gender-responsiveness of AMR research in livestock systems, a tool for assessing zoonoses risks in wildlife value chains (including the role of gender) as well as a framework to consider gender considerations in One Health.

At the same time, we explored ways to integrate climate considerations in our research and practice. In an evaluation <u>study</u> of a food safety program, we found that asking about climate change – in a program where climate action was not a specific objective – helped to identify interactions between climate change and other contextual factors influencing the program, providing important insights for informing climate-resilient programming moving forward. Additionally, our recent work has explored the intersection of climate change and antimicrobial use in livestock systems, highlighting the need for integrated approaches to reducing the environmental ecotoxicity of antimicrobial residues in manure subsequently used as fertilizer.

Notably, we have developed a strong understanding of zoonotic diseases risks as well as sought to address them by developing integrated zoonotic diseases surveillance systems at the interface of animals (livestock and wildlife), humans, and the environment, in the context of wildlife farming in Vietnam and bush meat consumptions in Côte d'Ivoire. At the global level, we published a landmark report on the risks and rewards of the wild meat trade, which was launched at the 2024 World One Health Congress.

Additionally, we developed and evaluated behavioral change innovations that have potential to improve health and livelihoods.

For example, we are working to improve food hygiene and safety at the <u>slaughter</u> and <u>retail</u> level, and to empower <u>consumers</u> <u>with information</u> to make safer food choices, using insights from epidemiology, psychology, and behavioral economics. Moving forward, we are expanding action research efforts to establish proof of concept for several One Health innovations on disease surveillance, food safety management, and better targeting of antimicrobial use in livestock production. Environmental (water) and economic studies as part of this Initiative will contribute to strengthening these innovations through multidisciplinary collaboration. In particular, studies in Ethiopia and India are generating evidence on the critical role of water in the transmission of zoonotic pathogens, and surveys in these countries and beyond are identifying feasible business models to reuse livestock waste and prevent water pollution.

We have a total of 12 innovations across seven countries. The average readiness of these innovations stands at three, based on the Innovation Packages and Scaling Readiness (IPSR) framework. Two of these innovations have participated in IPSR packages workshops to facilitate scaling.

To build capacity in taking up Initiative innovations, we contributed to 19 training activities across various regions. These included training sessions for food regulators in Ethiopia and water modelers in India, and on fish sample collection and standard laboratory procedures for antibiotic sensitivity testing for AMR surveillance in Bangladesh. Furthermore, the Initiative played a key role in enhancing the One Health curriculum benchmarks for the Inter-University Council for East Africa, which was approved in 2023. This was built on the momentum of the benchmarks developed for food safety in 2022. These benchmarks are intended to standardize and elevate the quality of training provided to the next generation of One Health researchers in East Africa.

At a higher level, the Initiative played a pivotal role in various coordination endeavors that will shape policy development. For instance, it facilitated the <u>integration</u> of the existing technical working group (TWG) for food safety into the national One Health mechanism of Vietnam. Additionally, the initiative supported the <u>development</u> of a new TWG for food safety under the national One Health mechanism in Ethiopia. These efforts were designed to foster closer collaboration with diverse government departments dedicated to improving food safety.

On the ground, the Initiative also worked with local authorities to operationalize the One Health concept. We supported the development of laboratories and laboratory capacity. Furthermore, we established One Health research sites, particularly in <a href="Vietnam">Vietnam</a> and <a href="Vietnam">Kenya</a>, which serve as One Health practice sites that bring together One Health actors to work on topics prioritized by communities.

Researchers involved in the Initiative actively participated in international and national platforms, meetings with United Nations agencies, and international working groups. Our aim was to advocate for increased investments in One Health and to position the work of CGIAR in global One Health communities.

We have made substantial progress toward policy change. In Kenya, three counties invested in slaughterhouse hygiene following the adoption of our innovations. In Vietnam, local governments committed resources to One Health field sites in both Vietnam and Kenya. In Ethiopia, the Addis Ababa City Administration Food and Drug Authority showed interest in scaling up the "scores on doors" intervention for meat butchers. Additionally, we contributed to key policy documents, including Kenya's Rift Valley fever contingency plan and a global strategy for addressing AMR.

To better understand progress toward end-of-initiative outcomes, we conducted a study to examine whether and how evidence from the initiative will be used. It draws on qualitative surveys with knowledge users following results dissemination workshops held between July and December 2024.

A total of 206 participants took part in the study through nine workshops held across five countries: Kenya, Ethiopia, Bangladesh, Malawi, and Vietnam. Most participants (88%) provided an example of how they will use research evidence from the Initiative.

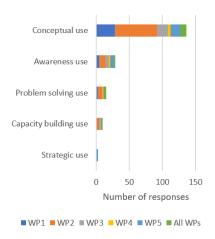
### HOW WILL YOU USE THE RESEARCH EVIDENCE?



\*Or response was provided on the evidence to be used but no elaboration of how

Among these, the most common use was conceptual (70%), followed by awareness (15%), problem-solving (8%), capacity-building (5%), and strategic (2%):

### HOW WILL YOU USE THIS RESEARCH EVIDENCE?



- **Conceptual:** "The research results changed my perspective on how to use antibiotics in livestock farming"
- Awareness: "I will use the evidence of zoonotic disease risks to create communication materials to help livestock farmers to prevent spread"
- **Problem solving:** "Use One Health interventions to inform appropriate measures to improve food safety in national monitoring programs"
- Capacity building: "I will practice and share the information with colleagues"
- **Strategic:** "We were aware of this issue... with this evidence we asked the county to employ more meat inspectors so we can take care of this shortage"

Work packages (WPs) have different activities reflecting different starting conditions. For example, there has been historical work in zoonoses and food safety while AMR work is more recent. Note that this study goes beyond examining what research will be used (e.g., disease risks, solutions) to exploring how it will be used.

Below, we provide an overview of research use by WP.

# #/% OF WORKSHOP PARTICIPANTS THAT SHARED HOW

WORK PACKAGE	RESULTS DISSEMINATION WORKSHOP(S) HELD	RESEARCH WILL BE USED	
WP1	Zoonoses in bats (Malawi); Zoonoses in captive wildlife (Vietnam)	34/42 (88%)	
WP2 (supported by WP5)	Food safety (Ethiopia); Food safety (Vietnam)	73/73 (100%)	
WP3	AMR in aquaculture (Bangladesh); AMR in poultry systems (Vietnam)	29/42 (69%)	
WP4	Water reuse and recovery (Ethiopia)	8/9 (89%)	
WP5	Slaughterhouse hygiene (Kenya)	20/20 (100%)	
Cross-cutting WPs	One Health platform (Vietnam)	17/20 (85%)	

### Progress against End of Initiative Outcomes

This infographic provides a concise summary of the Initiative's progress toward achieving its Theory of Change Endof-Initiative outcomes for the 2022-2024 period. By drawing on reported results, it offers a comprehensive synthesis of progress made against the established outcome targets, highlighting the Initiative's overall impact and key achievements at the conclusion of this three-year cycle.



### **EOIO 1**

Policy makers at the national level allocate more resources (finances, personnel, facilities, etc.) for zoonoses sensitization, surveillance and response.



### EOIO 2

Government and private sector partners support integration of Enabling, Capacitating, and Motivating (ECM) approach for informal food business operators into regulatory system.



### **EOIO 3**

Stakeholders are informed of CGIAR evidence on the extent of antimicrobial use (AMU), and the economic impacts of lower/better targeted AMU in key production systems.



### **EOIO 4**

Role of water in the transmission of pathogens and AMR and proposed solutions are recognized in national One Health planning processes of 2 of 7 project countries.



### **EOIO 5**

One Health policy processes in at least 3 project countries consider CGIAR evidence on gendered constraints and incentives, tradeoffs across policy goals, and the magnitude and distribution of impacts.

By involving local government partners in the analysis of hotspot maps of zoonotic disease, we built capacity among key partners for the effective targeting of resources. By training veterinary officers on advanced laboratory screening techniques, we helped to ensure that the capacity to absorb additional resources will be present. Through stakeholder consultations on the national disease surveillance systems, co-developed a roadmap toward greater investment.

During results dissemination workshops held in Malawi and Vietnam, a total of 34 out of 42 participants (81%) provided an example of research use. The evidence will support wildlife biosecurity, zoonotic disease prevention, and policy development. Key future applications include developing biosecurity standards, shaping legal regulations, educating stakeholders, enhancing surveillance, building capacity in wildlife handling areas, and informing future research and training initiatives.

Baseline data collection and an intervention for a randomized controlled trial (RCT) were implemented in Vietnam. This study will provide rigorous evidence on the impact of a voluntary food safety rating program on meat vendors in traditional market settings. By piloting this approach, in partnership with local government authorities, we helped to build public sector support and capacity for scaling. A similar study was implemented in Ethiopia. Furthermore, we supported national food safety working groups in Vietnam and Ethiopia to foster closer collaboration with diverse government departments dedicated to ensuring food safety. Chicken risk assessment in India has started.

During results dissemination workshops held in Ethiopia and Vietnam, a total of 73 out of 73 participants (100%) provided an example of research use. Key future actions include integrating findings into training programs and teaching materials, developing monitoring tools and case studies, promoting behavior change, strengthening collaboration with policymakers and institutions, scaling up successful interventions, and promoting compliance through inspection and rating tools.

Results from studies on the use of antimicrobials in poultry (Kenya) and fish (Bangladesh) production have been obtained and will be communicated to stakeholders, such as AMR scientific communities, donors, United Nations agencies with AMR agendas, ministries of agriculture, and national AMR committees. This work will inform the design of an RCT to assess the economic impacts of lower and better-targeted antimicrobial use in these production systems.

During results dissemination workshops held in Bangladesh and Vietnam, a total of 29 out of 42 participants (69 percent) provided an example of research use, primarily focused on promoting awareness and responsible antibiotic use in livestock and aquaculture systems. This included advocating for alternatives, applying a One Health approach to reduce AMR, informing policy, guiding management strategies, supporting training and awareness campaigns, and integrating findings into practices.

Studies in Ethiopia and India characterizing the load of zoonotic pathogens and modeling their transmission through water will provide critical missing evidence on the role of water in transmitting pathogens and AMR. We have reviewed 131 livestock waste reuse cases from low- and middle-income countries and fully characterized 22 for selection and adoption of waste reuse business models in selected sites. Stakeholder engagements informed communication strategies and integration of findings into national One Health policy processes. The developed water quality modelling framework will serve as a foundation for analyzing AMR in aquaculture contexts.

During a results dissemination workshop held in Ethiopia, a total of 8 out of 9 participants (89 percent) provided an example of research use. The evidence will contribute to policy decisions, increase awareness of environmental and health risks, and support advocacy efforts. Key applications include guiding pollution monitoring, biodiversity conservation, and AMR strategies, developing policy briefs, advancing academic research, and promoting climate resilience and antimicrobial stewardship programs.

Experimental results showed low-income consumers choose safer food when informed of relative food safety risks, supporting the assumption that providing visible food safety ratings would motivate vendors to adopt better practices. Indeed, (mostly female) pork vendors in Vietnamese markets where food safety ratings were posted reported higher sales volumes. Local authority in Hue (Vietnam) showed interest in continuing this intervention approach to improve food safety. Improvements in hygiene practices and outcomes were also demonstrated through a randomized training and food safety rating intervention in Addis Ababa, Ethiopia, where the national Food and Drug Authority has indicated an interest in continuing approach of publicizing food safety ratings. An RCT testing the effect of training, equipment, and worker incentive payments to improve hygiene at slaughterhouses in Kenya showed benefits to both slaughterhouse owners (through increased business) and public health (through improved hygiene practices) of such investments.

After a results dissemination workshop held in Kenya, a total of 20 out of 20 participants (100 percent) provided an example of research use. This included policy enforcement, advocacy, and education through measures such as personal protective equipment requirements, increased inspections and training, funding advocacy, water quality monitoring, integrating hygiene into licensing, and providing equipment. Findings will also serve as a baseline for assessing future improvements.

# Section 3: Work Package progress

### WP1: Emerging and neglected zoonoses

### RESEARCH QUESTIONS **END-OF-INITIATIVE OUTCOME 1** What are the drivers of Policy makers at the national level allocate emerging zoonotic diseases, and in what ecologies are these diseases likely to more resources for zoonoses surveillance and response. 1 · Improved knowledge on emerging infectious diseases and zoonoses. 1 · Hotspot maps generated. emerge? How can integrated surveillance systems designed and used sustainably to detect 2 · Capacity built on using molecular screening techniques 2 · Private sector engaged. **3** • Technical reports and case studies on integrated surveillance. **3** • Existing contingency plans and decision support tools updated. 4 emerging zoonotic diseases? 4 · Improved surveillance approaches at What strategies can be used to improve the delivery of integrated (veterinary and 4 · Reduced zoonoses burden. public) health services in marginalized areas to better manage neglected zoonoses?

### Work Package 1 progress against the theory of change

- 1. Hotspot maps. Addressed in 2022.
- 2. Molecular screening. Addressed in 2022.
- 3. Integrated surveillance. In Vietnam, the Initiative conducted a wildlife project to map farmed wildlife meat value chains and determine risks of zoonotic spillover. In the reporting period, the project was able to (i) convene a consultation workshop to prioritize research work; (ii) initiate a systematic review on zoonotic pathogens in wildlife in Southeast Asia (2012–2022); (iii) implement questionnaire surveys that included farmers, consumers, and key informants along the value chains; and (iv) collect biological samples from farmed animals (oral swab and fecal samples) and humans (nasal swab and blood samples). In Côte d'Ivoire, the Initiative conducted a project to design a surveillance system for wildlife diseases, completing three key activities. These included a review of literature on wildlife studies that were conducted in the country between 2012 and 2022, a questionnaire survey that investigated zoonotic risks associated with wildlife and the challenges of institutionalizing wildlife surveillance, and a stakeholder workshop which was held on 1 December 2023. In Kenya, the Initiative has engaged with Government partnership to establish integrated surveillance activities in domestic animals, humans, the environment and wildlife for the bacterial zoonotic pathogen brucellosis, and for E. coli, as a marker of multi-host transmission of pathogens.

Community surveillance is underway, engaging the community itself to sample the environment and wildlife. The work has capitalized strongly on the establishment (in 2022) of the Oloitoktok Zoonoses Research Laboratory, a partnership between the Initiative and the regional government. This site has also been used to extend our pathogen detection work to community pit latrines and wastewater, drawing on these as key indicator sites for emerging infections. Additionally, the Initiative contributed to the refinement of Rift Valley fever contingency plan in Kenya. At a global level, the Initiative contributed to a new report on "Eating Wild Animals: Rewards, Risks and Recommendations" which was launched at the 2024 World One Health Congress in Cape Town.

4. Slaughterhouse. Further piloting of a mobile phone-based surveillance system that aims to collect, analyze and store data on livestock diseases was done in selected abattoirs in western Kenya and Gulu, Uganda. An additional digital module for training meat inspectors was also designed. The data collection tools were digitized, meat inspectors trained, and the system was embedded in a government surveillance platform. The pilot demonstrated some challenges that need attention. These include insufficient meat inspectors, lack of laboratory services, lack of traceability, fatigue from multiple digital tools, lack of incentives for reporting and high costs of maintain servers.

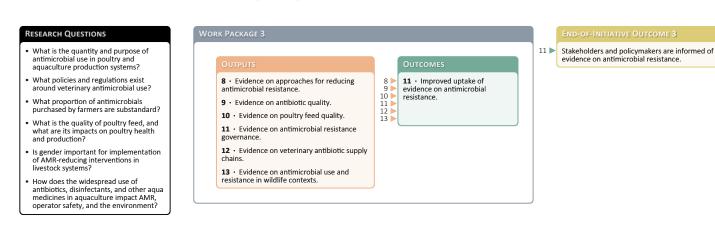
### WP2: Food Safety

### RESEARCH QUESTIONS Government and private sector partners support integration of food safety approaches for informal actors into regulatory systems. · What are the burdens of foodborne disease? What are the incentives and nudges that will 8 9 10 motivate behavior change? 5 · Evidence on food safety risks generated. **5** • Food safety approaches are integrated into regulatory systems. How can we support universities in capacity building and government staff, food safety working groups, and One Health platforms in 6 · Interventions targeting food safety in informal markets. 5 6 · Increased access to safer food for ng/benchmarking food safety consumers. curriculum? 7 · Curriculum benchmarks for 7 · Improved food safety knowledge and What are the critical control points? What technologies, training, and information do value chain actors need to improve food **8** • Food safety policies are informed by evidence. 9 · Increased capacity among experts and What are the priorities for interventions? How can the public sector provide an enabling regulatory environment and 10 · Reduction in foodborne diseases. infrastructure?

### Work Package 2 progress against the theory of change

- 1. Food safety risks. In March 2023, we initiated a food safety study in Uttar Pradesh, India, commencing with a scoping visit and involving stakeholders in the design of training and risk assessment studies. On World Food Safety Day, 7 June, 2023, we launched a significant report focusing on food safety in low- and middle-income countries, marking a milestone in our efforts to address global food safety challenges. Furthermore, we published research on bushmeat consumption during the COVID-19 pandemic in East Africa. A special edition of food safety in LMICs gathering evidence on health impact of foodborne disease was published with substantial contributions of CGIAR One Health initiative team. Finally, our commitment to advancing food safety communication was evident through our participation in conferences such as the International Association for Food Protection, as well as engagements at the G20 meeting in India and discussions held at the United Kingdom Parliament.
- 2. Food safety in informal markets. Enabling, capacitating and motivating (ECM) interventions to improve food safety in traditional markets were implemented through two RCTs, one in 68 meat markets across five provinces of Vietnam and one among 300 meat vendors in Addis Ababa, Ethiopia. In both settings, interventions included a training on food safety principles and provision of low-cost equipment to enable meat vendors to implement these principles. In addition, vendors were offered an opportunity to participate in a food safety
- rating "scores on doors" program through which government or independent monitors assessed their practices at unannounced visits. Awareness was raised among consumers through the display of promotional material. In Ethiopia, preliminary results show a significant reduction in microbial contamination, along with impacts on vendor knowledge and adoption of promoted food safety practices, while in Vietnam, butcher sales at treatment markets increased and knowledge and practices improved modestly, but contamination was not significantly affected. These studies show that providing training and access to a voluntary food safety rating program to meat vendors in traditional market settings has the potential to improve food safety, but that more effective technologies that decontaminate meats and are tailored to these settings are needed.
- 3. Benchmarking. The benchmarking of food safety was done in collaboration with IUCEA in 2022. In April 2023, we presented food safety research to a global audience at the One Planet Food System Summit held in Vietnam. Furthermore, in September 2023, we effectively incorporated the Vietnam Food Safety TWG into the Vietnam One Health Partnership, enhancing government and food sector involvement in food safety discussions. Following this, in October 2023, we established the Ethiopia Food Safety TWG under the national One Health Steering Committee, providing a platform for government and partners to coordinate to address national food safety priorities.

### WP3: Antimicrobial Resistance (AMR)



### Work Package 3 progress against the theory of change

- Feed quality. In a <u>study</u> in Kenya, we analyzed 122 poultry finisher feed collected from semi-intensive broiler farms by mass spectrometry for the presence of mycotoxins. All feed samples contained at least one mycotoxin and 93% had more than 3 mycotoxins.
- Antibiotic quality. Lab protocols to investigate drug quality in different matrices have been <u>developed and piloted</u>.
- 3. Antimicrobial use. In Bangladesh, 15.5% of commercial tilapia farms studied reported use of antibiotics at least once during the most recent completed production cycle. Notably, disinfectants with antimicrobial properties were more commonly used in commercial tilapia farms (39.7%) for therapeutic disease management. Analysis of 153 fish and water samples from 41 farms revealed a low prevalence of E. coli (20.3%). About 39% of those were resistant to multiple drugs. High-performance liquid chromatography (HPLC) testing found that about 60.0% (9/15) of muscle samples had sulfamethoxazole residues, and 8.9% (8/90) had amoxicillin residues above the maximum residue limits (MRLs). In Kenya, from 130 poultry farms, 50% used antibiotics at least once during the production cycle, for both prophylaxis and therapy. Data on antimicrobial use (AMU) was gathered through the examination of drug packages deposited in designated waste bins. We found that 15 different antibiotics, totaling 87.05 kg and spanning eight classes, were used, with sulfonamides being the most consumed class. Using a non-culture-based approach, we measured AMR gene diversity and relative abundance in poultry droppings. Over 250 AMR genes were detected but the
- abundance was low. A similar study was performed in Vietnam to quantify AMU and drivers of AMU in poultry farms. In the baseline, we collected data from 400 small and medium scale farms, have longitudinal information including quantitative AMU data from 97 farms.
- 4. AMR governance. In June 2023, we mapped stakeholders involved in mitigating AMR in Malawi. In addition, we held key informant interviews to understand their level of interaction and to understand challenges, for example resource limitations or coordination between stakeholders.
- 5. **Veterinary antibiotic supply chain.** We mapped the <u>flow</u> of veterinary antibiotics in <u>Malawi</u>, assessed knowledge, attitudes, and practices of the stakeholders and reviewed the governance of the value chain. We interviewed regulators, local pharmaceutical manufacturers, wholesalers, drug retailers, animal health practitioners, and farmers. Preliminary results show the antibiotic value chain is complex and characterized by poor practices, little knowledge on prudent practices, and gaps in regulation.
- 6. AMR in Wildlife. In December 2023, fecal sample collection began as part of WP 1 activities. To date we have collected, 462 samples from bats, wild boars, bamboo rats and civets. In 2024, we analysed these samples using the same non-culture-based approach used in the poultry study to measure AMR gene diversity and relative abundance.

### WP4: Water

# RESEARCH QUESTIONS How does using microbiologically contaminated water in slaughterhouse: contribute to food safety risks? What are the sources, loads, transport,

What are the sources, loads, transport, fate, and pathways to human exposure of pollutants such as zoonotic pathogens, antimicrobial residues, and antimicrobial-resistant bacteria and resistance genes in selected watersheds?
 What solutions for resource recovery and reuse of animal waste have greatest potential? What are the value propositions, customer segments, cost structures, and revenue streams for the proposed solutions?



### Work Package 4 progress against the theory of change

In India and Ethiopia, we have conducted stakeholder and policy analysis to prepare a stakeholder engagement plan to deliver our expected outcomes.

- 1. Characterization and modeling in the Song (India) and Akaki (Ethiopia) watersheds. Six water quality monitoring campaigns have been conducted in twenty sites along the Akaki watershed and five campaigns were conducted in six sites along the Song watershed, based on a robust monitoring plan. We monitored for selected physico-chemical parameters, microbiological parameters (including selected zoonotic pathogens and antimicrobial drug-resistant bacteria), heavy metals and conducted DNA extractions for quantitative polymerase chain reaction (qPCR) and High-Throughput qPCR. Results are being used to analyse pollution dynamics and for water quality modelling using the Soil and Water Assessment Tool. Different workshops were conducted with implementing and uptake partners to build capacities and ownership of the watershed models that are being built up. We also published a review of the current knowledge of fate and transport modelling for evaluating antibiotic resistance in aquatic environments, which seek to guide the development of a module to model waterborne AMR. module to model waterborne AMR.
- 2. Water safety risks. We worked with the food safety work package to propose input questions about water sources, availability, quality and use for food safety surveys in Ethiopia and India which would help to develop food safety interventions that address water-related risks. We collected evidence on the roles of water in food safety risks along the livestock value chain and submitted a review titled "Contribution of the use

- of microbiologically contaminated water in slaughterhouses to food safety risks". We published two papers with collaborators at the Ethiopia Public Health Institute: one on access to water, sanitation, and hygiene services in Ethiopia in Health Science Reports, and the other on the association of such access with diarrheal disease in BMJ Open.
- 3. Business models. Based on an online survey and a literature review we have identified and pre-characterized 131 livestock waste reuse cases that are currently implemented at scale in low- and middle-income countries. We have selected 22 cases from diverse geographies that use different livestock wastes to recover different resources (such as organic matter, nutrients or biogas), which we have comprehensively characterized based on a predefined template. Results are being used to populate an International Water Management Institute (IWMI) research report with the tentative title "Livestock waste to resource: a review and characterization of business cases in developing countries" which will be used as a catalog for selection and adoption of waste reuse business models in selected sites. Two workshops were conducted in India and Ethiopia to co-select with local stakeholder the business models that are more suitable for their local context and to define a roadmap for their implementation.
- 4. Water champions. In Ethiopia, until recently, water was notably absent from the country's One Health planning and committees. The Initiative facilitated the nomination of "Water Champions" within One Health committees and equipped them with knowledge and skills through training workshops and knowledge briefs to ensure that water takes its rightful place at the centre of One Health.

### WP5: Economics, Governance, and Behavior

### RESEARCH QUESTIONS Can enhanced regulatory oversight improve hygiene practices by slaughter facility workers? One Health policy planning processes take into account evidence on economics, governance, and behavior. **17** • Evidence on cost-effectiveness and public-private benefits of interventions. 13 · One Health policies are informed by How does a voluntary food safety rating program affect business outcomes? 20 18 · Evidence of impact of food safety rating 14 · Increased uptake of evidence on In countries where the economics, behavior, and gende 19 · Capacity and incentives for food safety. Initiative is active, are members of One Health platforms and technical **20** • Evidence of relative food risks and consumer behavior. orking groups aware of the Initiative's research outputs? Do they make use of them? What is the impact of providing consumers with comprehensive risk information on their food

### Work Package 5 progress against the theory of change

choices?

- 1. Cost-effectiveness and public/private benefits. A slaughterhouse hygiene intervention in Western Kenya, which combined worker training, provision of equipment, and regulatory oversight, was shown through an RCT to improve hygiene practices and reduce contamination of water and tools. Slaughterhouse owners also benefited through increased volume of business, indicating the potential for private incentives to reinforce regulatory hygiene requirements. Based on this evidence, as well as stakeholder engagement from study inception through to dissemination, county officials have pledged resources to continue training meat handlers using CGIAR-developed material, and to strengthen oversight of hygiene practices in slaughter facilities. WP5 contributed expertise in experimental and survey design, and economic analysis to this joint project with WP1.
- 2. **Food safety rating business impact.** An <u>RCT</u> to measure impacts of a food safety rating program for butchers in traditional markets, conducted in Vietnam in collaboration with WP2, showed positive impacts on meat sales and prices. A similar study in Ethiopia was conducted in collaboration with the Ethiopia Public Health Institute and the Addis Ababa City Administration Food and Drug Authority as well as WP2. While detection of business impacts was hampered by vendor reluctance to share financial information, 92% of vendors reported that displaying the meat shop's food safety rating

- improved business outcomes. In both studies, WP 5, contributed expertise in experimental and survey design as well as economic analysis.
- 3. Capacity and incentives for food safety. The slaughterhouse RCT mentioned above tested the additional impact of providing workers with monetary incentives to adhere to hygiene recommendations, compared to providing training, equipment, and monitoring alone. Results were generally similar across the two treatment arms, indicating minimal additional value of worker incentives when regulatory oversight and business incentives are present.
- 4. Relative food risk and consumer behaviour. Results from a multi-round, multi-city surveillance study of the relative levels of aflatoxin contamination of alternative, maize flour products were published with contributions from senior staff in Kenya's Ministry of Health. This study demonstrated how robust data can be collected at reasonable cost. Results from a related experimental study in which surveillance data were used to inform consumers about relative food safety risk were also made available online. The finding of that study that relative risk information increased consumption of the safer option supports the assumption that consumer demand can drive adoption of better practices among food business operators.

### Work Package progress rating summary

### WORK PACKAGE

### **PROGRESS RATING & RATIONALE**

1



In Vietnam and Côte d'Ivoire, studies were conducted on zoonotic risks. In Kenya, integrated community-based surveillance was launched for pathogens like brucellosis and E. coli, leveraging the Oloitoktok Zoonoses Research Lab and expanding to environmental sampling. The Initiative also contributed to refining Kenya's Rift Valley fever plan and co-authored a global report on wild meat risks. A mobile phone-based abattoir surveillance system was piloted in Kenya and Uganda.

2



Research was published on bushmeat consumption in East Africa and foodborne disease in LMICs, and findings were shared at international forums including the G20 and UK Parliament. ECM interventions were piloted through RCTs in Vietnam and Ethiopia, showing improvements in vendor practices and knowledge, though microbial contamination results were mixed. Food safety benchmarking was advanced through regional collaboration, with the establishment of Food Safety Technical Working Groups in Vietnam and Ethiopia, strengthening national coordination under One Health platforms.

3



In Kenya, a feed quality study found all poultry finisher feed samples contaminated with mycotoxins, with 93 percent containing more than three. Protocols for testing antibiotic quality have been developed and piloted for use in 2024 studies. AMU was documented in tilapia farms in Bangladesh, poultry farms in Kenya, and poultry farms in Vietnam. AMR governance was assessed in Malawi through stakeholder mapping and interviews, revealing coordination and resource challenges. The veterinary antibiotic supply chain in Malawi was also mapped, identifying poor practices and regulatory gaps.

4



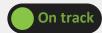
In the Akaki and Song watersheds, multiple water quality monitoring campaigns were completed. Contributions were made to food safety surveys and reviews on water-related risks in slaughterhouses, with related publications on WASH access and diarrheal disease. Business models for livestock waste reuse were identified, characterized, and prioritized through stakeholder workshops. In Ethiopia, "Water Champions" were appointed and trained to embed water more centrally in One Health governance.

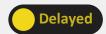
5



An RCT in Western Kenya showed that a hygiene intervention in slaughterhouses improved practices, reduced contamination, and increased business. Furthermore, a multi-city study on aflatoxin contamination in Kenya demonstrated low-cost surveillance methods, and related consumer experiments showed that providing risk information can shift demand toward safer food products. In Vietnam and Ethiopia, food safety rating programs for butchers showed positive business impacts.

### **Definitions**





Off track

- Progress largely aligns with Plan of Results and Budget and Work Package theory of change.
- Can include small deviations/issues/ delays/risks that do not jeopardize success of Work Package.
- Progress slightly falls behind Plan of Results and Budget and Work Package theory of change in key areas.
- Deviations/issues/delays/risks could jeopardize success of Work Package if not managed appropriately.
- Progress clearly falls behind Plan of Results and Budget and Work Package theory of change in most/all areas.
- Deviations/issues/delays/risks do jeopardize success of Work Package.

# Section 4: Quantitative overview of key results

This section provides an overview of results reported and contributed to, by the CGIAR Initiative on One Health from 2022 to 2024. These results align with the <u>CGIAR Results Framework</u> and One Health's theory of change. Further information on these results is available through the <u>CGIAR Results Dashboard</u>.

The data used to create the graphics in this section were sourced from the CGIAR Results Dashboard on 7 April 2025. These results are accurate as of this date and may differ from information in previous Technical Reports. Such differences may be due to data updates throughout the reporting year, revisions to previously reported results, or updates to the theory of change.

### **OVERVIEW OF RESULTS BY CATEGORY**



OHI achieved a number of outputs, notably knowledge products, followed by innovation development and capacity sharing for development.

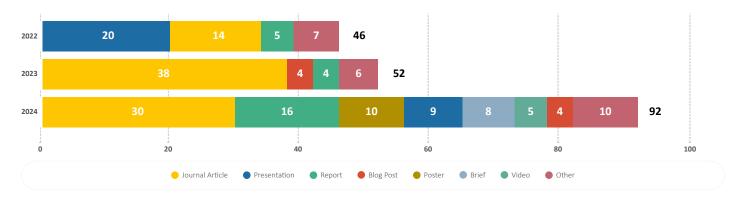
### ONE HEALTH'S RESULTS AND THEIR CONTRIBUTION TO CGIAR IMPACT AREAS



- 2 = Principal: Contributing to one or more aspects of the Impact Area is the principal objective of the result. The Impact Area is fundamental to the design of the activity leading to the result; the activity would not have been undertaken without this objective.
- 1 = Significant: The result directly contributes to one or more aspects of the Impact Area. However, contributing to the Impact Area is not the principal
- 0 = Not targeted: The result has been screened against the Impact Area, but it has not been found to directly contribute to any aspect of the Impact Area as it is outlined in the CGIAR 2030 Research and Innovation strategy.
- Not applicable: Pertains to 2022 reported results when only information on Gender and Climate impact area tagging was available.

OHI contributed to all five impact areas – primarily food security and nutrition – given its focus on reducing zoonotic risks and antimicrobial resistance in food systems as well as addressing food and water concerns.

### **KNOWLEDGE PRODUCTS BY TYPE**



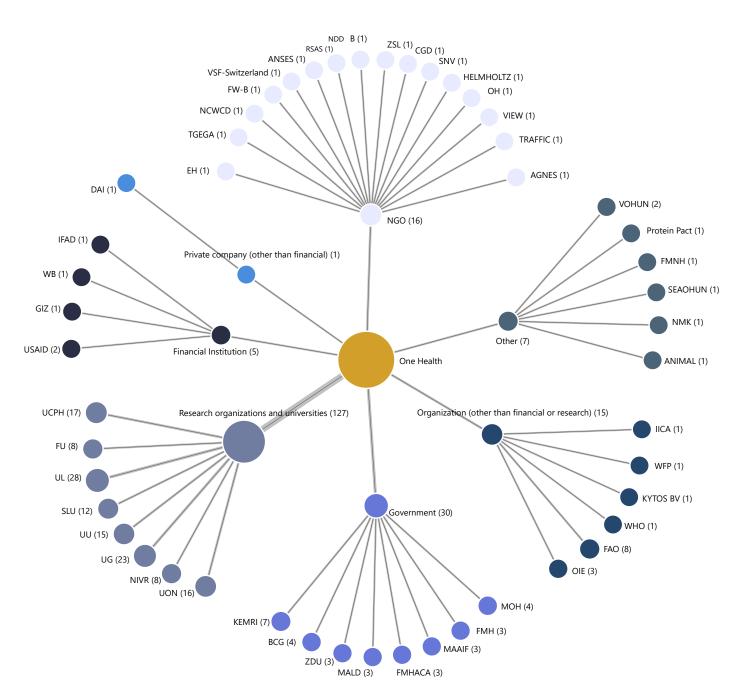
OHI contributed to science excellence by publishing 82 peer-reviewed articles between 2022-24, with more coming out in 2025. Furthermore, OHI focused efforts on knowledge translation by presenting work through different formats in order to move research into policy and practice.

### **TOPICS COVERED**



This word cloud illustrates the topics covered by the initiative, including systems (e.g. livestock, aquaculture), focus (e.g. human health, animal health, environmental factors), and strategies (e.g. disease control, capacity development, modelling).

### **NETWORK OF EXTERNAL PARTNERS BY TYPE**



The diagram maps the external partners of One Health, organized by partner type. The numbers in brackets represent the number of results each partner has contributed to, reflecting the scale and diversity of collaborations. To allow for a clearer view, a maximum threshold of eight partners was applied for each typology.

The list of partner acronyms is <u>available here</u>.

### Partnerships and One Health's impact pathways

The One Health Initiative engaged with partners, including local research and government institutions, to validate study objectives and develop and implement research designs. Our academic collaborators have strong networks in national policy circles and can act as champions to promote the evidence generated through the initiative, moving it toward policy impact. Conversely, governmental partners are potential adopters of the innovations we develop and scale.

In Ethiopia, we partnered with the Ethiopian National One Health Steering Committee to develop a new technical working group on food safety, and with the Ethiopian Public Health Institute and the Food and Drug Authority to co-design and implement a food safety rating intervention among meat shops. Our Initiative continues to partner with Addis Ababa University and the Addis Ababa Water and Sewerage Authority and to increase capacities in the monitoring of waterborne pathogens to better understand pollution sources and microbial hazards in the watershed for more targeted remedial actions.

In Western Kenya, we have engaged officials in six county governments to identify the gaps between the regulations governing slaughterhouse hygiene and practice. We also engaged meat inspectors in the delivery of an intervention to close this gap. This engagement with government entities throughout the research process generated ownership of the evidence produced through this study, which is now being used to inform policy and resource allocation.

In Vietnam, we have developed strong partnerships with the National Institute for Veterinary Research and Hanoi University of Public Health to conduct risk-based prioritization, implementation and evaluation of interventions and integration of research outputs into government policies and programs. We worked closely with five provincial departments of animal health to implement food safety intervention, AMR and wildlife risk projects. We worked with Vietnamese One Health institutions to integrate the national food safety working group into the Vietnam One Health Partnership to engage more government partners in food safety discussion.

Similarly to Vietnam, a comparable contract was drawn between ILRI and Centre Suisse de Recherches Scientifiques in Côte d'Ivoire to work on wildlife projects.

In India, the project is partnering with ICAR Indian Veterinary Research Institute, Institutes of Technology in Roorkee and Delhi and BAIF Development Research Foundation, which have strong networks with researchers, policy makers and local communities in the country.

We are also working closely with private sector partners. In Kenya, a mobile phone surveillance system is being developed in partnership with a private information and community technology company called Badili Innovations. The University of Liverpool is also a key partner involved in the implementation of the integrated One Health surveillance and control measures for zoonotic diseases in Kajiado County in Kenya.

Finally, we are continuing high-level engagements and partnerships, for example, though co-chairing of the Quadripartite Technical Group on Antimicrobial Resistance and Use Integrated Surveillance and membership in the WHO Scientific Advisory Group for the Origins of Novel Pathogens (SAGO). SAGO contributes to a global framework that is investigating the origins of potentially epidemic and pandemic pathogens (see paper in Nature Communications). We are also a member of One Health High Level Expert Panel (OHHLEP) of the Quadripartite.



# Correlation in Earl Signification in Earl Si

### ONE HEALTH'S INTERNAL PORTFOLIO NETWORK

The diagram presents the internal collaborations of One Health with other CGIAR Initiatives, Impact Area Platforms, and Science Group Projects. Connections are sized according to the number of shared reported results, highlighting the depth of collaboration across the CGIAR Portfolio. Thicker lines represent stronger collaborative links based on a higher number of shared results.

### Portfolio linkages and One Health's impact pathways

**WP1.** Several bilateral projects implemented at ILRI support One Health capacity development in the same countries selected for WP1. Projects such as the One Health Centre in Africa and Boosting Uganda's Investment in Livestock Development, and Capacitating One Health in Eastern and Southern Africa are also supporting One Health interventions to address multiple different zoonoses risks.

**WP2.** Several bilateral food safety projects across Asia and Africa focus on the assessment of health and economic risks of foodborne diseases in traditional markets. For example, the <u>Agroecology and Safe Food Systems Transitions</u> project is developing interventions in markets and slaughterhouses to reduce these risks by engaging consumers and government stakeholders. The <u>MoreMilk</u> project is generating research evidence on how informal milk markets can be leveraged to improve nutrition and health.

**WP3.** AMR partnerships formed from the CGIAR AMR Hub continues with the same four CGIAR centers in this Initiative. We are leveraging knowledge and networks from ongoing bilateral projects to inform Initiative activities. Similarly, we are using approaches of the Initiative for other bilateral projects (e.g. drug bin survey tool in Malawi and Uganda).

**WP4.** The work on business models on resource recovery and reuse (RRR) of animal waste builds on a larger program from IWMI on RRR from fecal sludge and municipal wastewater. The work on modeling zoonotic pathogens and AMR in watersheds builds upon work of the CGIAR AMR hub.

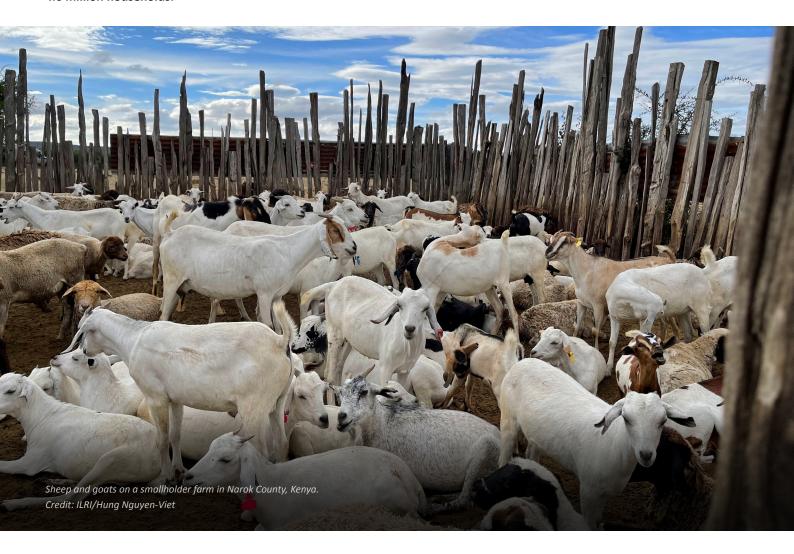
**WP5.** The International Food Policy Research Institute tested the <u>impact</u> of a voluntary food safety surveillance with informal groundnut processors in Ghana, through a project funded by the United States Agency for International Development Feed the Future Peanut Innovation Lab. This model is like the food safety upgrading approach being tested among traditional meat vendors in Vietnam and Ethiopia.

We also collaborated with other CGIAR Initiatives. We contributed a piece on microbial contamination and AMR in marketed food with Resilient Cities. We worked with Sustainable Animal Productivity for Livelihoods, Nutrition and Gender Inclusion (SAPLING) on a gender-One Health framework. Together with the Livestock and Climate Initiative and SAPLING, we are developing an innovation titled 'Community-designed One Health Units as a model for integrated human, animal and environmental health service delivery to pastoralists in the Horn of Africa'.



### Kenya improves response to Rift Valley fever outbreaks

Kenya's revised contingency plan improves Rift Valley fever outbreak detection and risk mapping, protecting livestock health in 4.6 million households.



**Primary Impact Area** 



**Contributing Initiative** 

One Health

**Contributing Centers** 

International Livestock Research Institute

**Contributing external partners** 

Directorate of Veterinary Services, Kenya; Ministry of Health, Kenya; Ministry of Environment, Kenya; Kenya Meteorological Department; Kenya Medical Research Institute, Food and Agriculture Organization of the United Nations; United States Centers for Disease Control and Prevention; Washington State University

Geographic scope



**Regions:** Eastern Africa **Countries:** Kenya

Rift Valley fever is a zoonotic disease that causes abortion and death in cattle, sheep, and goats and febrile illness in humans. Working with national ministries, county authorities and nongovernmental partners, the CGIAR Initiative on One Health revised Kenya's Rift Valley fever contingency plan by expanding outbreak definitions and improving risk mapping and resource allocation. The revision has improved outbreak response, safeguarding livestock and human health for millions of livestock-keeping households in Kenya.

Rift Valley fever (RVF) is a viral zoonotic disease that causes a significant threat to livestock production and public health. Transmitted primarily through mosquito bites or contact with infected animals, RVF outbreaks are often triggered by heavy rainfall, which increases mosquito populations. In livestock, RVF can cause high mortality rates in young animals and mass abortions, while in humans, symptoms can range from mild illness to severe complications such as hemorrhagic fever, encephalitis, or blindness.

Kenya launched its first RVF Contingency Plan in 2014, following the devastating 2006-2007 RVF outbreak which resulted in extensive socio-economic losses due to fragmented emergency response. The plan provided technical information and decision-support tools, including a risk map and a decision-making matrix to guide outbreak responses. However, practical challenges during subsequent outbreaks highlighted gaps that required urgent refinement.

In 2024, through the CGIAR Initiative on One Health, Kenya's contingency plan was revised to improve its effectiveness and better align with ecological changes in the region. The plan's revision was done through extensive stakeholder consultations involving national government ministries, departments and agencies including the Directorate of Veterinary Services, the Ministry of Health, the Ministry of Environment, the Kenya Meteorological Department and the Kenya Medical Research Institute, county government representatives, and non-governmental organizations including the International Livestock Research Institute (ILRI), Food and Agriculture Organization of the United Nations, the United States Centers for Disease Control and Prevention, and Washington State University. Stakeholder engagement addressed two critical technical issues to improve the effectiveness and efficiency of the plan.

Key improvements:

- Updated case definition for outbreaks: The original plan relied on the detection of anti-RVF virus Immunoglobulin M (IgM) antibodies in livestock sera as the primary indicator of an outbreak. However, recent studies show that RVF virus transmission occurs endemically in Kenya and that IgM antibody detection alone is not indicative of an active outbreak. The revised plan now incorporates clinical and ecological indicators in addition to a lab criterion to declare an outbreak.
- Enhanced risk mapping: The previous risk map was based solely on the 2006-2007 outbreak data, which overlooked regions where RVF virus circulation occurs endemically. The updated risk map now reflects both endemic and epidemic risks, allowing the national and county government authorities to allocate resources more effectively and improve targeted surveillance.

Additionally, stakeholders recommended improving risk assessment methods to better predict and manage outbreak risks.

Bernard Bett, ILRI scientist and leader of the zoonoses work package of the One Health Initiative, emphasized the importance of these revisions: 'The revised contingency plan is an important step forward in protecting Kenya's livestock sector and public health. By expanding outbreak definitions and improving risk mapping, we can reduce false alarms while ensuring that real threats are identified and controlled swiftly.'

With the updated contingency plan, the country is better equipped to respond to future outbreaks, protect livestock livelihoods, and safeguard public health. The strengthened plan sets a model for other countries in East Africa to refine their policies and improve RVF preparedness through science-driven decision making. The revised plan will be launched in Nairobi in June 2025.



This improved plan will help prevent the devastating economic losses witnessed during the 2006-2007 outbreak by ensuring better coordination, clearer early warning alert triggers, and enhanced public awareness.

Mathew Muturi, Head of Epidemiology, Kenya Directorate of Veterinary Services



2022 key result story

Curriculum benchmarking deployed to boost food safety for the East African Community's 300 million inhabitants



2023 key result story

One Health coordination in food safety in Viet Nam and Ethiopia toward enhanced health and livelihoods



