CGIAR | INITIATIVE ON One Health

CGIAR Research Initiative on **One Health**

Annual Technical Report 2023

Author: CGIAR Research Initiative on One Health

Title: Annual Technical Report 2023: CGIAR Research Initiative on One Health

Suggested citation: CGIAR Research Initiative on One Health. 2024. Annual Technical Report 2023: CGIAR Research Initiative on One Health. Montpellier, France: CGIAR System Organization. https://hdl.handle.net/10568/141671

Disclaimers

This publication has been prepared as an output of the CGIAR Research Initiative on One Health. Any views and opinions expressed in this publication are those of the author(s) and are not necessarily representative of or endorsed by the CGIAR System Organization.

Acknowledgements

This work is part of the CGIAR Research Initiative on One Health. We would like to thank all funders who supported this research through their contributions to the CGIAR Trust Fund: https://www.cgiar.org/funders.

Table of contents

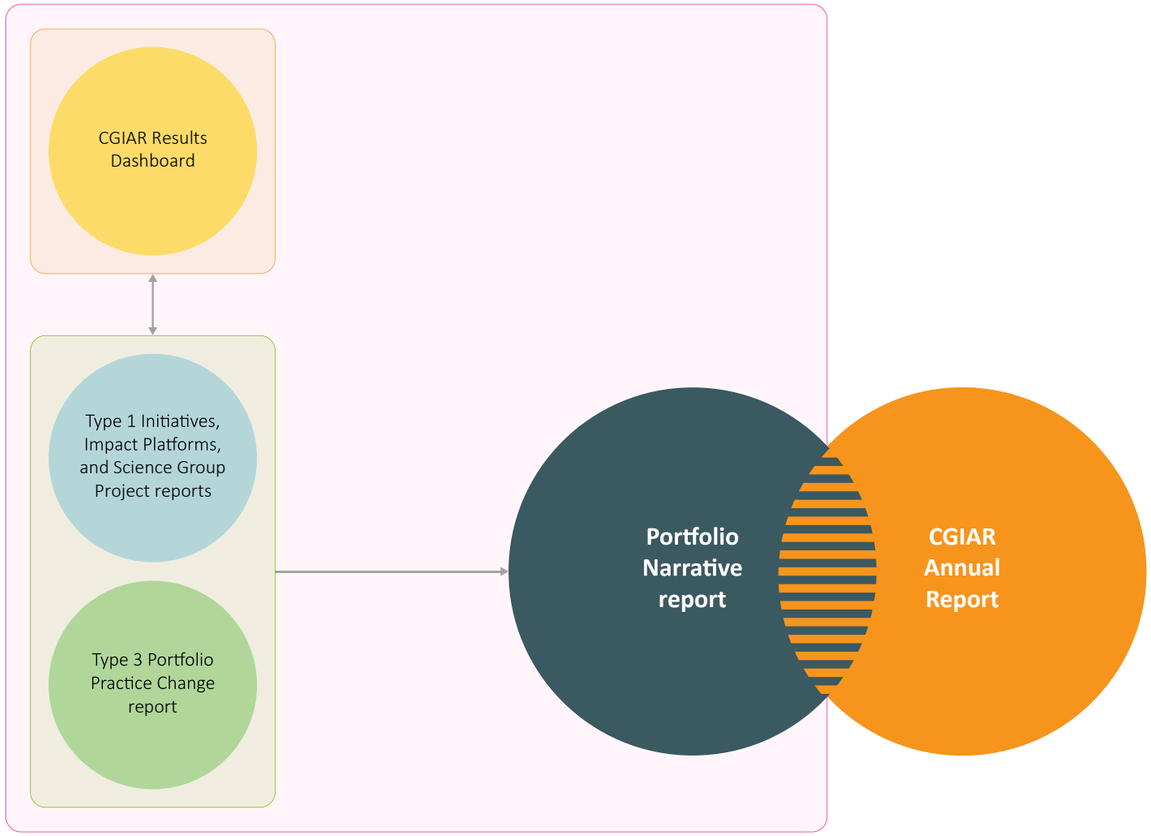
CGIAR Technical Reporting 2023

CGIAR Technical Reporting has been developed in alignment with the CGIAR Technical Reporting Arrangement. This Initiative report ("Type 1" report) constitutes part of the broader CGIAR Technical Report. Each CGIAR Research Initiative submits an annual "Type 1" report, which provides assurance on Initiative-level progress towards End of Initiative outcomes.

The CGIAR Technical Report comprises:

- Type 1 Initiative, Impact Platform, and Science Group Project (SGP) reports, with quality assured results reported by Initiatives, Platforms and SGPs available on the CGIAR Results Dashboard.
- The Type 3 Portfolio Performance and Project Coordination Practice Change report, which focuses on internal practice change.
- The Portfolio Narrative, which draws on the Type 1 and Type 3 reports, and the CGIAR Results Dashboard, to provide a broader view on Portfolio coherence, including results, partnerships, country and regional engagement, and synergies among the Portfolio's constituent parts.

The CGIAR Annual Report is a comprehensive overview of CGIAR's collective achievements, impact and strategic outlook, which draws significantly from the Technical Report products above. For 2023, the Annual Report and Technical Report will be presented online as an integrated product.



Section 1: **Fact sheet 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	01/01/2022 – 31/12/2024
Geographic scope	**Regions** East and Southern Africa · South Asia · Southeast Asia and the Pacific · West and Central Africa **Countries** Bangladesh · Côte d'Ivoire · Ethiopia · India · Kenya · Viet Nam · Uganda
OECD DAC Climate marker adaptation score[1]	**Score 0: Not targeted** 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[1]	**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[2]	**Score 1B: Gender accommodative** 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/

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

[2] 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.

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

EXECUTIVE SUMMARY

In 2023, we published 38 peer-reviewed articles, surpassing the 25 articles published in 2022, with these contributions advancing 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; the identification of promising avenues for intervention to mitigate One Health risks; and how gender and climate change mainstreaming can support One Health research and practice.

Notably, we have developed a strong understanding of zoonotic disease risks and sought to address them by developing an integrated zoonotic disease surveillance system at the interface of animals (livestock and wildlife), humans, and the environment, in the context of wildlife farming in Viet Nam, bush meat consumption 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.

Six innovations were developed this year, and five earlier innovations are currently undergoing quality assurance, bringing the total to 11. We are 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 13 training activities across various regions. Further, 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.

At a higher level, the Initiative played a key role in informing policy by supporting the integration of the existing technical working group (TWG) for food safety into the national One Health mechanism in Viet Nam, as well as supporting the establishment of a new TWG for food safety in Ethiopia. These platforms bring together national stakeholders and partners in discussions to collaborate, coordinate, and communicate toward addressing national food safety priorities. We launched a globally important report with the World Bank on new directions for tackling food safety risks in the informal sector of developing countries. In Kenya, we have led the national effort to integrate across sectors in the context of AMR. On the ground, we are collaborating with local authorities to implement the One Health concept, supporting the development of laboratories and establishing One Health research sites, particularly in Viet Nam and Kenya.

Finally, researchers are actively engaging in international and national forums, advocating for investments in One Health and promoting the work of CGIAR within global One Health communities.

	2022	**2023**	2024
PROPOSAL BUDGET	$11.50M	**$11.74M**	$11.76M
APPROVED BUDGET [1]	$5.92M	**$6.12M [2]**	$4.41M [3]

[1] The approved budget amounts correspond to the figures available for public access through the Financing dashboard.
[2] This amount includes carry-over and commitments.
[3] This amount is an estimation of the 2024 annual budget allocation, as of the end of March 2024.

Goats in their boma in a livestock-keeping household in Oloitoktok, southern Kenya. Credit: ILRI/Eric Fèvre

Section 2: **Progress on science and 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.

EOI	End of Initiative outcome
AA	Action Area
IA	Impact Area
SDG	Sustainable Development Goal

Note: A summary of Work Package progress ratings is provided in Section 3.

A food market in Son La Province, Vietnam.
Credit: ILRI/Hung Nguyen-Viet

Summary of progress against the theory of change

In 2023, substantial progress was achieved in knowledge discovery, as evidenced by the publication of 38 peer-reviewed articles, a notable increase from the 25 articles published in 2022. 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 considerations into relevant studies, including food safety and zoonoses research in Viet Nam and Côte d'Ivoire. For instance, in Viet Nam the research delved into various gender-related aspects such as roles, decision-making dynamics, and perceptions of women and men regarding disease risks. A notable output is the publication of a research brief on gender and AMR, which highlighted opportunities to support women in managing livestock disease while addressing AMR.

At the same time, we are exploring ways to integrate climate considerations in our research and practice. In an evaluation study 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.

Notably, we have developed a strong understanding of zoonotic disease risks and sought to address them by developing an integrated zoonotic disease surveillance systems at the interface of animals (livestock and wildlife), humans, and the environment, in the context of wildlife farming in Viet Nam and bush meat consumption in Côte d'Ivoire.

Additionally, we are testing and evaluating behavioral change innovations that have potential to improve health and livelihoods. For example, we are working to improve food hygiene and safety at the slaughter and retail levels, and to empower consumers with information 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 (AMU) 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.

In total, six new innovations were developed this year, with five earlier innovations currently undergoing quality assurance, bringing the total to 11 innovations across seven countries. The average readiness of these innovations stands at 3, based on the Innovation Packages and Scaling Readiness (IPSR) framework. Two of these innovations are being prepared for the IPSR packages workshop for scaling after quality assurance.

To build capacity in taking up Initiative innovations, we contributed to 13 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 on 27 June, 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. Next, our focus is on training stakeholders involved in food systems, aiming to strengthen their capacity to adopt innovations effectively, supporting scaling-up and scaling-out efforts.

At a higher level, the Initiative played a pivotal role in various coordination endeavors that will shape policy development. For instance, on 28 September, 2023, it facilitated the integration of the existing TWG for food safety into the national One Health mechanism of Viet Nam. This strategic move was designed to foster closer collaboration with diverse government departments dedicated to ensuring food safety. We launched a globally important report with the World Bank on new directions for tackling food safety risks in the informal sector of developing countries. Additionally, on 27 October, 2023, the Initiative supported the development of a new TWG for food safety under the national One Health mechanism in Ethiopia, providing a platform for collaboration among stakeholders.

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 Viet Nam and Kenya, which serve as One Health practice sites that bring together One Health actors to work on topics prioritized by communities.

Finally, researchers involved in the Initiative actively participated in international and national platforms, including the G20 Leaders' Summit (9–10 September, 2023), COP28 (30 November–13 December, 2023), meetings with United Nations agencies, and international working groups. Our aim is to advocate for increased investments in One Health and to position the work of CGIAR in global One Health communities.

Livestock-keeping household in Oloitoktok, Kenya recruited for sampling animals, humans and for mosquito vector collection.
Credit: ILRI/Eric Fèvre

Progress by End of Initiative Outcome

EOIO 1: Policymakers at the national level allocate more resources (finances, personnel, facilities, etc.) for zoonoses sensitization, surveillance, and response.

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

EOIO 2: Government and private sector partners support integration of enabling, capacitating, and motivating (ECM) approach for informal food business operators into regulatory system.

Baseline data collection and an intervention for a randomized controlled trial (RCT) were implemented in Viet Nam. 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 are building public sector support and capacity for scaling. Detailed protocols have been registered for a similar study in Ethiopia, and ethical and administrative approvals were obtained to conduct the study in 2024. We are supporting national food safety working groups in Viet Nam and Ethiopia to foster closer collaboration with diverse government departments dedicated to ensuring food safety. Chicken risk assessment in India is ongoing.

EOIO 3: Stakeholders are informed of CGIAR evidence on the extent of AMU, and the economic impacts of lower/better targeted AMU in key production systems.

Results from studies on the use of antimicrobials in poultry (Kenya) and fish (Bangladesh) production 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 AMU in these 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 two of seven project countries.

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 (LMICs) and fully characterized 22 for selection and adoption of waste reuse business models in selected sites. Stakeholder engagements are informing communication strategies and integration of findings into national One Health policy processes. The developed water quality modeling framework will serve as a foundation for analyzing AMR in aquaculture contexts.

EOIO 5: One Health policy processes in at least three project countries consider CGIAR evidence on gendered constraints and incentives, tradeoffs across policy goals, and the magnitude and distribution of impacts.

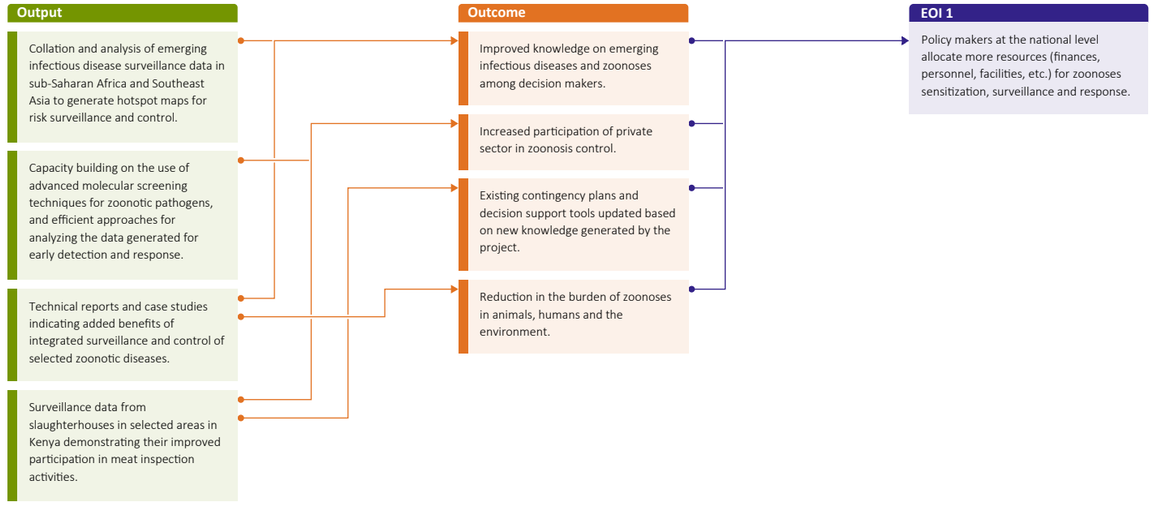
Experimental results showed low-income consumers choose safer food when informed of relative food safety risks, supporting the assumption that providing visible food safety ratings will motivate vendors to adopt better practices. Data on the gender and roles of food business operators and employees have been collected. An RCT testing the effect of training, equipment, and worker incentive payments to improve hygiene at slaughterhouses is in the final stages of data collection and will generate evidence on benefits to slaughterhouse owners (as profits) and consumers (as health benefits) of such investments.

Walking cattle on a rainy day in Hung Yen Province, Vietnam. Credit: ILRI/Nguyen Ngoc Huyen

Section 3: **Work Package progress**

WP1: Emerging and neglected zoonoses

On track



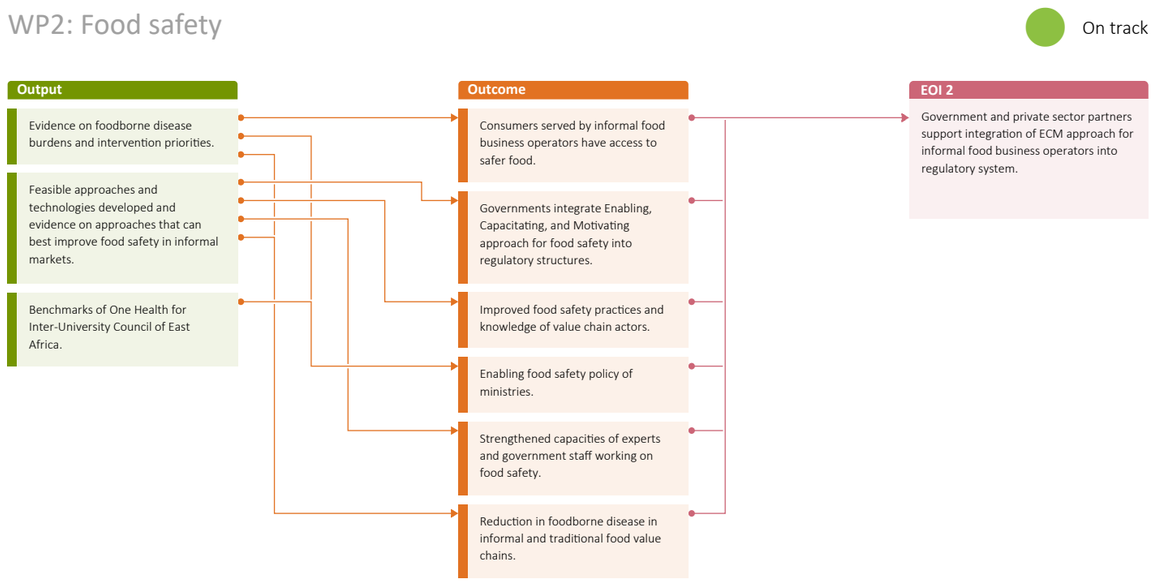
Work Package 1 progress against the theory of change

1.1 Hotspot maps. Addressed in 2022.

1.2 Molecular screening. In collaboration with the county government of Kajiado in Kenya, Work Package (WP) 1 implemented a cohort study to determine the risk of Rift Valley fever (RVF) virus exposure in humans, understand drivers for endemic transmission, and determine RVF exposure status in animals for slaughter. The Initiative and linked bilateral projects recruited 238 human subjects for the human cohort study and collected mosquitoes and infection data in livestock to develop a transmission model. Of the 620 animals presented for slaughter, 13 percent were found to have RVF virus exposure based on serological screening. The team also capitalized on a vaccination campaign by the government to study immunological responses to the vaccine being used. These findings will be shared with relevant government authorities once all the laboratory analyses are completed.

1.3 Integrated surveillance. In Viet Nam, 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 (1) convene a consultation workshop to prioritize research work, (2) initiate a systematic review on zoonotic pathogens in wildlife in Southeast Asia (2012–2022), (3) implement questionnaire surveys that included farmers, consumers, and key informants along the value chains, and (4) 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 literature review on wildlife studies conducted in the country between 2012 and 2022, a questionnaire survey investigating zoonotic risks associated with wildlife and the challenges of institutionalizing wildlife surveillance, and a stakeholder workshop held on 1 December, 2023. In Kenya, the Initiative engaged with government 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 2022 establishment 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, capitalizing on these as key indicator sites for emerging infections.

1.4 Slaughterhouse. Addressed in 2022.



Work Package 2 progress against the theory of change

2.1 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, we launched a report on food safety in LMICs, a milestone in our efforts to address global food safety challenges. We also published research on bushmeat consumption during the COVID-19 pandemic in East Africa and contributed to a special edition on food safety in LMICs gathering evidence on health impacts of foodborne disease. We demonstrated our commitment to advancing food safety communication through participation in conferences such as the International Association for Food Protection, as well as engagements at the G20 meeting in India and discussions at the United Kingdom Parliament.

2.2 Food safety in informal markets. WP2 implemented baseline data collection and an intervention for an RCT in Viet Nam in 68 markets across five provinces. Collected samples were tested for Salmonella and total bacteria count. The ECM intervention package included a training on food safety principles for 359 vendors and provided essential equipment to 159 stalls. In a voluntary training session for 314 vendors, we integrated and introduced a voluntary rating program to monitor and rate stall equipment and food hygiene practices. Campaigns and consumer surveys of more than 1,000 consumers explored purchasing behavior, selection of food items and rationale, and food safety awareness. This study will provide rigorous evidence on the impact of training and access to a voluntary food safety rating program for meat vendors in traditional market settings. Detailed protocols have been developed and registered for a similar study in Ethiopia, and approvals obtained to conduct that study in 2024. We are developing a slaughterhouse intervention in western Kenya, and similar activities are being conducted in a beef safety intervention in Ethiopia.

2.3 Benchmarking. In April 2023, we presented food safety research to a global audience at the One Planet Food System Summit in Viet Nam. In September 2023, we incorporated the Viet Nam Food Safety Technical Working Group (FSTWG) into the Viet Nam One Health Partnership, enhancing government and food sector involvement in food safety discussions. In October 2023, we established the Ethiopia FSTWG under the national One Health Steering Committee, providing a platform for government and partners to collaborate, coordinate, and communicate to address national food safety priorities.

Work Package 3 progress against the theory of change

3.1 Feed quality. We analyzed 124 poultry finisher feed collected from semi-intensive broiler farms in Kenya by mass spectrometry for the presence of mycotoxins and antibiotic residues. Preliminary data shows that 90 percent of poultry feed samples exceed the European Union's maximum limits for at least one mycotoxin.

3.2 Antibiotic quality. Lab protocols to investigate drug quality in different matrixes have been developed and piloted and will be used in drug quality studies to be conducted in 2024.

3.3 AMU. In Bangladesh, in 116 eligible tilapia dominating farms, approximately 14 percent used antibiotics in the last production cycle. From 41 farms, 153 samples were analyzed and showed a high level of resistance to several antibiotics. In Kenya, from 130 poultry farms, 50 percent used antibiotics at least once during the production cycle for both prophylaxis and therapy. Data on 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 Viet Nam to quantify AMU and drivers of AMU in poultry farms. In the baseline, we collected data from 400 small and medium scale farms, and have longitudinal information including quantitative AMU data from 97 farms.

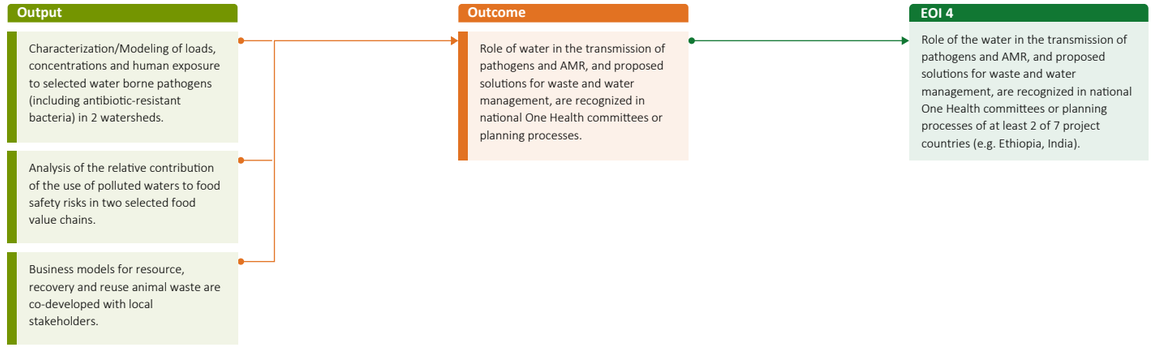
3.4 AMR governance. In June 2023, we mapped stakeholders involved in mitigating AMR in Malawi. In addition, we held key informant interviews to understand their level of interaction and to understand challenges, such as resource limitations or coordination between stakeholders.

3.5 Veterinary antibiotic supply chain. We mapped the flow of veterinary antibiotics in Malawi, assessed knowledge, attitudes, and practices of 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.

3.6 AMR in wildlife. In December 2023, fecal sample collection began as part of WP1 activities. To date, we have collected 462 samples from bats, wild boars, bamboo rats, and civets. In 2024, we will analyze these samples using the same non-culture–based approach used in the poultry study to measure AMR gene diversity and relative abundance.

WP4: Water

On track



Work Package 4 progress against the theory of change

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

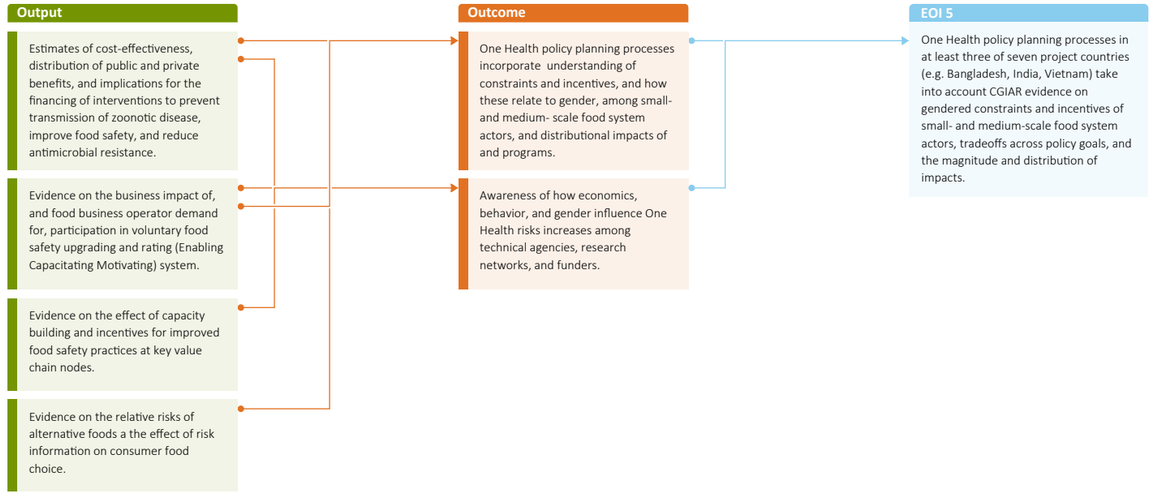
4.1 Characterization and modeling in the Song (India) and Akaki (Ethiopia) watersheds. WP4 conducted three water quality monitoring campaigns in 20 sites along the Akaki watershed and two campaigns in six sites along the Song watershed. We monitored for selected physico-chemical parameters, microbiological parameters (including selected zoonotic pathogens and antimicrobial drug-resistant bacteria), and heavy metals, and conducted DNA extractions for quantitative polymerase chain reaction (qPCR) and high-throughput qPCR. Monitoring will continue in 2024 and results will be used to analyze pollution dynamics and model water quality 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 being built up. We published a review of the current knowledge of fate and transport modeling for evaluating antibiotic resistance in aquatic environments, which seeks to guide the development of a module to model waterborne AMR.

4.2 Water safety risks. We worked with WP2 to propose input questions on water sources, availability, quality, and use for 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 on (1) access to water, sanitation, and hygiene services in Ethiopia in Health Science Reports, and (2) the association of such access with diarrheal disease in BMJ Open.

4.3 Business models. Based on an online survey and literature review we identified and pre-characterized 131 livestock waste reuse cases currently implemented at scale in LMICs. 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 comprehensively characterized based on a predefined template. Results are being used to populate an International Water Management Institute (IWMI) research report that was started in 2023 and will be used as a catalog for selection and adoption of waste reuse business models in selected sites.

WP5: Economics, governance, and behavior

On track



Work Package 5 progress against the theory of change

5.1 Cost-effectiveness and public/private benefits. Baseline data and one round of follow-up data were collected for an RCT evaluating the impacts of a slaughterhouse hygiene intervention in western Kenya on public health and business (private) outcomes.

5.2 Food safety rating business impact. An RCT to measure food safety and business impacts of a food safety rating program for butchers in traditional markets was initiated in Viet Nam, in collaboration with WP2. Piloting for a similar study in Ethiopia was conducted, in collaboration with the Ethiopia Public Health Institute and the Addis Ababa City Government Food, Medicine and Health Care Administration and Control Authority. Both studies, which are conducted jointly with WP2 and WP5, contribute expertise in experimental and survey design as well as economic analysis.

5.3 Capacity and incentives for food safety. The RCT mentioned above tests the impact of providing equipment, hygiene training, and worker incentives for better hygiene practices at animal slaughter in Kenya. This study has been conducted in close coordination with county authorities, which employ the trainers and meat inspectors involved. This project is a collaboration with WP1. As in the joint work with WP2, WP5 contributes expertise in experimental and survey design, and economic analysis.

5.4 Relative food risk and consumer behavior. 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 demonstrates 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 study's finding 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	**Progress rating** Most of the activities have commenced although more time was used initially to develop the required tools and research compliance certificates.
2	**Progress rating** We are on track to deliver outputs that will contribute to WP and Initiative outcomes by the end of 2024.
3	**Progress rating** We are on track to deliver outputs that will contribute to WP and Initiative outcomes by the end of 2024.
4	**Progress rating** We are on track to deliver outputs that will contribute to WP and Initiative outcomes by the end of 2024.
5	**Progress rating** We are on track to deliver outputs that will contribute to WP and Initiative outcomes by the end of 2024.

Definitions

On track

- Annual 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.

Delayed

- Annual 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.

Off track

- Annual 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.

A Bangladeshi fish farmer displays sunfish (mola) from her pond.
Credit: WorldFish/Habibul Haque

Section 4: **Key results**

This section provides an overview of results reported by the CGIAR Research Initiative on One Health in 2023. These results align with the CGIAR Results Framework and One Health's theory of change. Source: *Data extracted from the* CGIAR Results Dashboard *on 29 March 2024*.

Overview of reported results

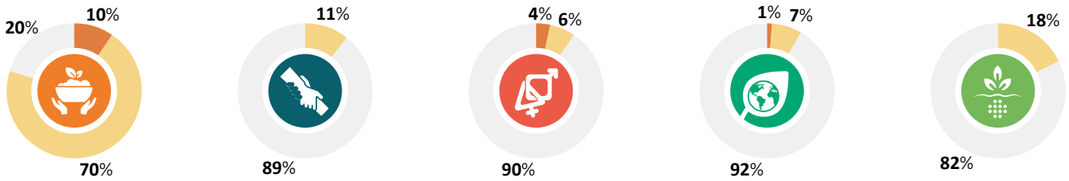
Outputs

- Knowledge products: 52
- Innovation development: 16
- Capacity sharing for development: 15

Outcomes

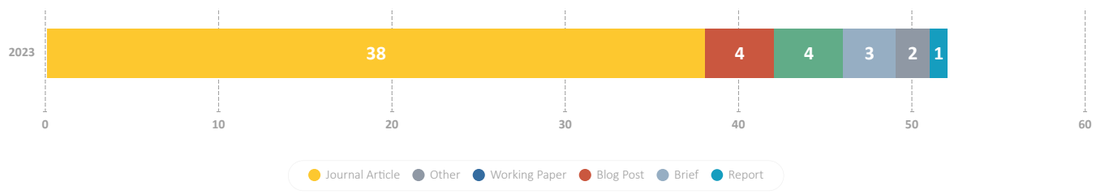
- Policy change: 1

Percentage of reported results tagged to CGIAR Impact Areas

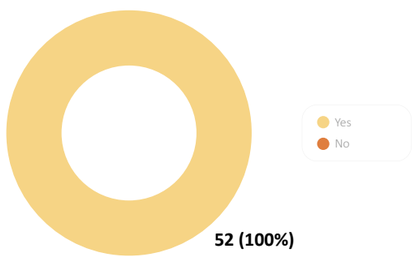


Principal: The result is principally about meeting any of the Impact Area objectives, and this is fundamental in its design and expected results. The result would not have been undertaken without this objective.
Significant: The result has made a significant contribution to any of the Impact Area objectives, even though the objective(s) is not the principal focus of the result.
Not targeted: The result did not target any of the Impact Area objectives.

Knowledge products by type

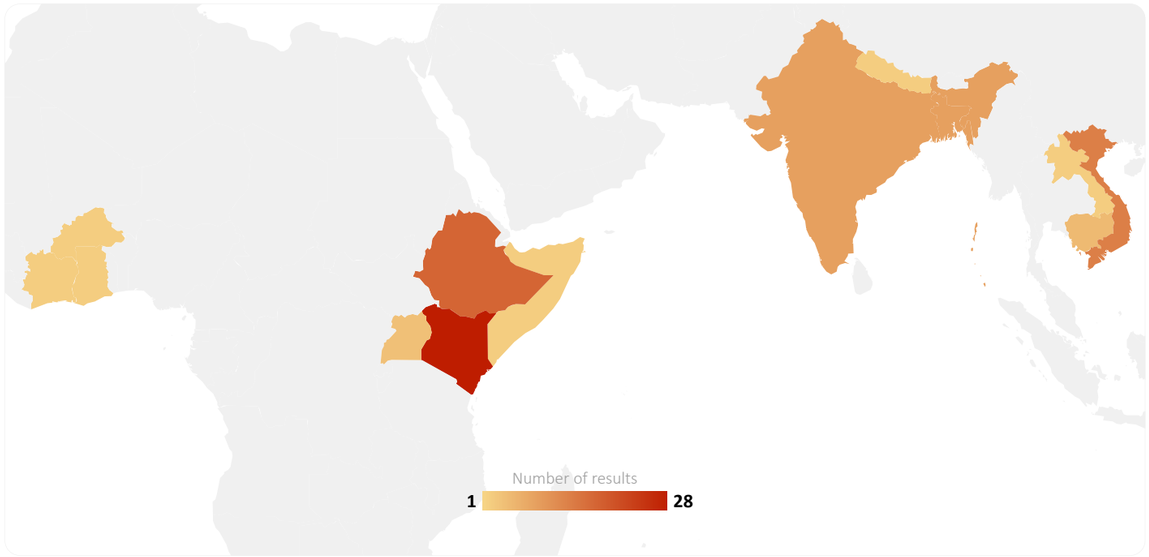


Open access knowledge products

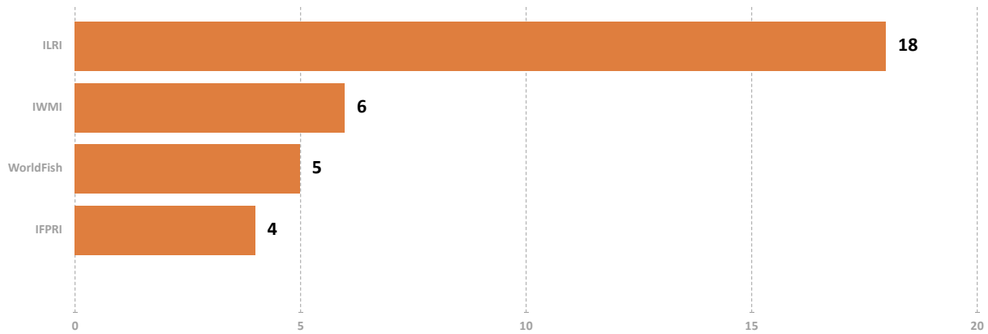


Results by country

Data here represents an overview of reported results in 2023. One result can impact multiple countries and can therefore be represented multiple times.

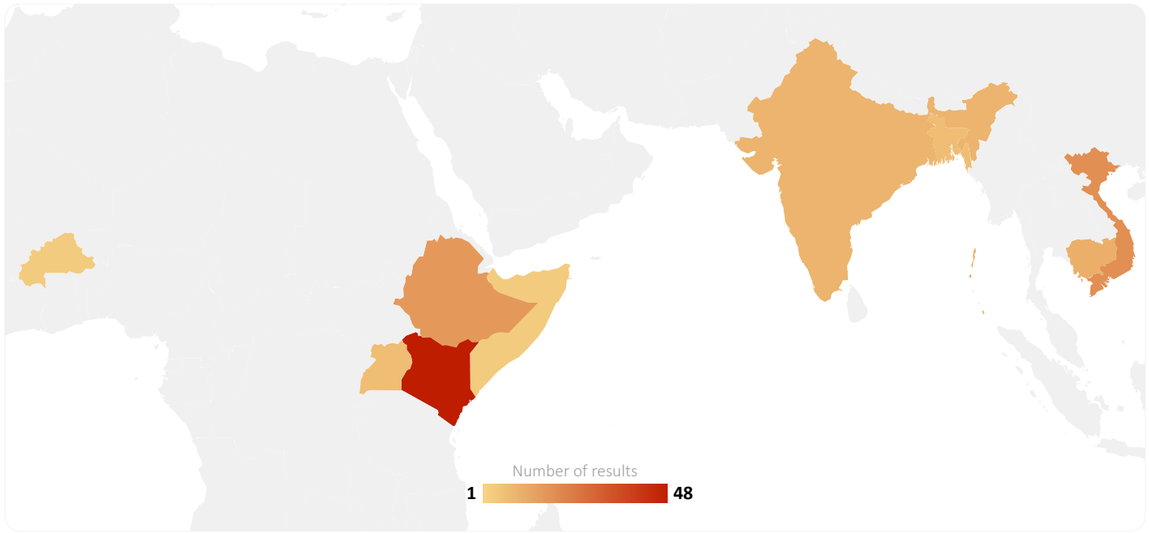


Contributing Centers



Section 5: **Partnerships**

Partner map



Colors represent the number of different partners which collaborated on results achieved in a specific country. One result can impact different countries and therefore the same partner can be associated with more than one country. Source: Data extracted from the Results Dashboard on 29 March 2024.

Partnerships and One Health's impact pathways

One Health 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, government 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 TWG on food safety. 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 five county governments to discuss 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 type of engagement with government entities throughout the research process is expected to generate ownership of the evidence we produce and to increase the likelihood of its application to policy.

In Viet Nam, 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. In particular, we work 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 Viet Nam One Health Partnership to engage more government partners in food safety discussion.

As in Viet Nam, a contract was developed between the International Livestock Research Institute (ILRI) and Centre Suisse de Recherches Scientifique in Côte d'Ivoire to work on wildlife projects.

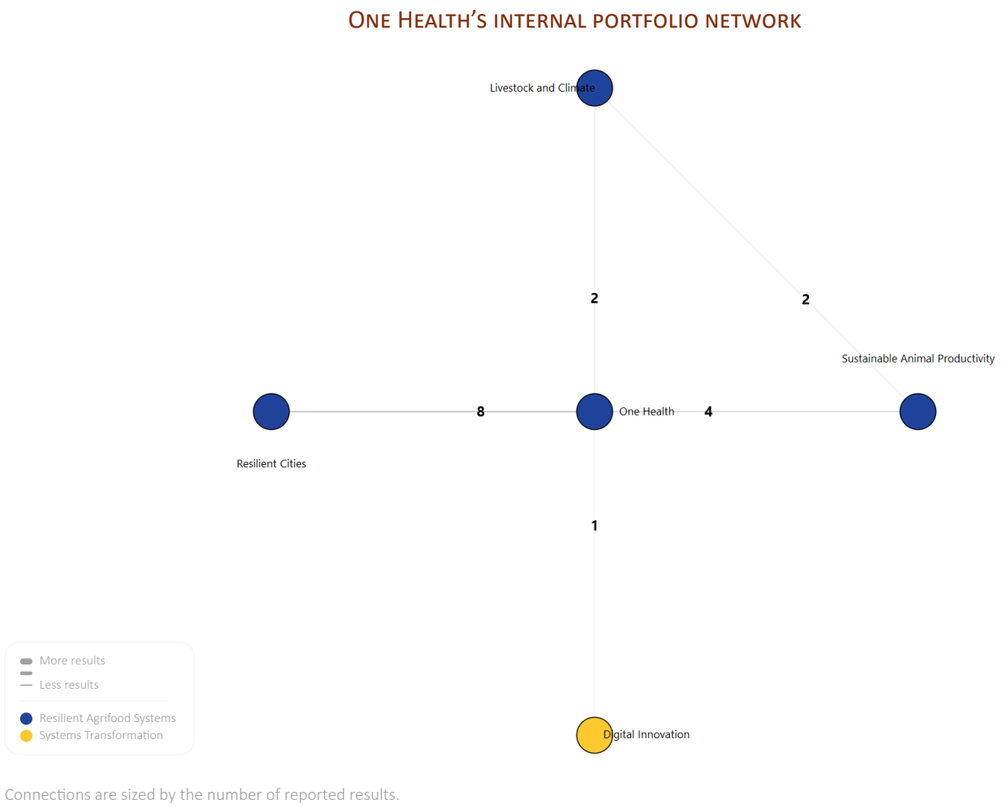
In India, the project is partnering with ICAR Indian Veterinary Research Institute, Institutes of Technology in Roorkee and Delhi, and BAIF Development Research Foundation, which have strong networks with researchers, policymakers, and local communities in the country.

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.

Chickens on a poultry farm in Kiambu, Kenya. Credit: ILRI/Hung Nguyen-Viet

Section 6: **CGIAR Portfolio linkages**



Connections are sized by the number of reported 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 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 Agroecology and Safe Food Systems Transitions project is developing interventions in markets and slaughterhouses to reduce these risks by engaging consumers and government stakeholders.

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 (such as 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 is testing the impact 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 similar to the food safety upgrading approach being tested among traditional meat vendors in Viet Nam and Ethiopia.

We also collaborated with other CGIAR Research 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 (output forthcoming in 2024). 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."

Section 7: **Adaptive management**

RECOMMENDATION	SUPPORTING RATIONALE
1. Continue to track progress against planned deliverables by WP	Last year we reviewed resource allocations for our deliverables, which we will continue to do. We will also continue to evaluate and improve the process taken to achieve our deliverables.
2. Continue advocacy work	We will continue efforts to promote the use of research findings to achieve intended impacts.
3. Continue external communication efforts	In the past year, we developed a microsite. This year we will continue to enhance the visibility of our work to further our impact, for example, by publishing key result stories throughout the year. Furthermore, we will continue to present at high-level conferences and events.
4. Synthesize work conducted in different countries and WPs	In the past year we have made efforts to integrate work across WPs for enhanced collective impact. This year, we will focus on dissemination by synthesizing work by countries and WPs.
5. Expand relationships with scaling partners	We are identifying and securing partnerships with private sector partners to enhance the spread of our interventions.
6. Expand relationships with demand partners	We are engaging with United Nations agencies (such as UNEP, FAO), CGIAR Research Initiatives (such as Sustainable Animal Productivity, Livestock and Climate, Resilient Cities), other international and national organizations (such as CABI), and governments of project countries at all levels to promote continuity of this work.
7. Address cross-cutting themes (gender, climate change)	We will continue to integrate key cross-cutting themes across our workstreams.

Section 8: **Key result story**

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

Food safety working groups are improving collaboration between researchers and policymakers in Viet Nam and Ethiopia.

Selling pork in a wet market in Hanoi, Vietnam.
Credit: ILRI/Vu Ngoc Dung

The CGIAR Research Initiatives on One Health and Resilient Cities have led food safety groups in Viet Nam and Ethiopia, improving health and livelihoods. Since 2015, collaborations with scientists and development partners in Viet Nam have influenced national policies and benefited food business operators and communities. Efforts in Viet Nam - and Ethiopia to follow - drive policy development, tackle food safety issues, and set examples for impactful research-for-development, promoting global health and economic progress.

CGIAR Research Initiatives play a significant role in coordinating stakeholder engagement that could lead to enhanced uptake of research that influences policies in different communities. The One Health and Resilient Cities Initiatives have been instrumental in convening key stakeholders to address food safety challenges in Viet Nam and Ethiopia.

Since 2015, researchers from ILRI have upheld a dedicated commitment to supporting the FSTWG in Viet Nam, showcasing a sustained effort to improve food safety and public health in the region. Its integration into the One Health Partnership Viet Nam was a pivotal moment, with the launch celebrated on 28 September, 2023.

Sinh Dang, an ILRI postdoctoral scientist in Viet Nam, reflects on the impact, “FSTWG provides not only a technical platform for researchers to share updates, but also to recommend innovations for policymakers and donors to address and implement initiatives toward better food safety and security for Viet Nam.”

Ethiopia’s story, while unique, shares the same thread of collaborative spirit. Without an existing FSTWG, researchers, led by ILRI, filled the void by establishing a working group under the National One Health Steering Committee, officially launched on 30 October, 2023.

Kebede Amenu, an ILRI postdoctoral scientist in Ethiopia, remarks, “The inherent complexity of food safety management in LMICs demands comprehensive, multisectoral strategies, ideally within the framework of One Health. Food safety management in LMICs, including Ethiopia, requires thorough, multisectoral approaches within the One Health framework. Despite various initiatives by government and nongovernment organizations, there’s often a lack of coordination. The formation of the FSTWG by Ethiopia’s National One Health Steering Committee could greatly enhance coordinated national efforts in food safety, offering advisory support to the government.”

The working groups have worked tirelessly, not only paving the way for policy development but also significantly impacting the livelihoods of individuals and communities at the core of the food system. Their efforts have been instrumental in driving progress that goes beyond regulatory change to enhance the daily life and well-being of communities.

Feyesa Regassa, chair of the Ethiopia Nation One Health Steering Committee, shared the impact on livelihoods, saying, “We are empowering communities through enhanced food safety.”

“The FSTWG is dedicated to addressing local food safety challenges, reducing foodborne illnesses, and enhancing the quality of food production. This multisectoral approach aims to boost family incomes, improve market opportunities, and strengthen food safety infrastructure, as evidenced by significant advancements in International Health Regulation core capacities,” he added.

The Vietnamese FSTWG’s influence on the National Action Plan showcases the power of persistent advocacy, embedding food safety into national priorities. In Ethiopia, the establishment of the FSTWG marks the beginning of a robust, demand-driven initiative aimed at enhancing food safety standards in response to current needs while also ensuring long-term sustainability.

“Since 2016, the One Health Partnership in Viet Nam has been advancing Viet Nam’s response to zoonotic diseases through a collaborative human-animal-ecosystem approach. This initiative, led by the Ministry of Agriculture and Rural Development (MARD), the Ministry of Health, and the Ministry of Natural Resources and Environment , has launched various technical working groups, notably the FSTWG. Co-chaired by ILRI, the FSTWG has been instrumental in providing strategic insights and recommendations to enhance food safety and reduce foodborne disease impacts. The leading ministries are dedicated to fostering effective communication and policy impact through enhanced coordination,” shared Ms. Vu Thi Phuong, senior officer of Viet Nam’s International Cooperation Department, MARD.

This is not just research—it’s research-for-development in action. The multisectoral makeup of the FSTWGs, with representatives from various fields, exemplifies a holistic approach to tackling complex issues. They stand not just as groups but as a unified front for change, reflecting the growing need for such models in LMICs that seek to turn the tide on food safety and health.

Primary Impact Area

Contributing Center

International Livestock Research Institute

Geographic scope

Regions: Africa · Asia

Countries: Viet Nam · Ethiopia

Front cover photo

Typical mixed crop-livestock farming homestead in western Kenya.
Credit: ILRI/Charlie Pye-Smith

Back cover photo

Livestock market in Kimana, near Oloitoktok in southern Kenya. Surveillance activities in animals and humans at markets and linked slaughterhouses is an efficient means by which we can capture certain elements of the community.
Credit: ILRI/Eric Fèvre

CGIAR INITIATIVE ON One Health