Report on COHESA-Quadripartite joint training on One Health resources, tools, and trainings to support capacity building in the One Health workforce

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March 2025

Addis Ababa, Ethiopia

Cover photo credit: Participants at the COHESA-Quadripartite joint training on One Health resources, tools, and trainings to support capacity building in the One Health workforce in Addis Ababa, Ethiopia (photo credit: Yusuf Buke/ILRI & Shauna Richards/ILRI)

Citation: Buke Y., Ong-Orn, Prasarnphanich, O., Mutua, F. Knight-Jones, T. and Richards, S. 2025. COHESA-Quadripartite joint training on One Health resources, tools, and trainings to support capacity building in the One Health workforce. Workshop report. Nairobi, Kenya. International Livestock Research Institute.

Introduction

The One Health (OH) approach recognizes the interconnection between human, animal, and environmental health, and calls for collaborative efforts across these sectors to tackle complex and emerging health threats. In Eastern and Southern Africa (ESA), however, significant gaps remain ineffective in the implementation of this approach particularly in the areas of education, workforce development, and coordination between institutions.

The Quadripartite organizations (FAO, WHO, WOAH, and UNEP), in collaboration with the One Health High-Level Expert Panel (OHHLEP), have identified education as a key area for advancing OH. Strengthening competencies and building a well-trained, multidisciplinary workforce is essential for regional and global preparedness and response to health challenges.

Recent findings from Capacitating One Health in Eastern and Southern Africa (COHESA) study (Yussuf et al., 2025) [1]. also highlight these gaps. The study reports limited awareness of existing OH programs, a lack of harmonized competency frameworks, and insufficient institutional collaboration in the region

The COHESA-Quadripartite joint training on OH resources, tools, and training was held in Addis Ababa, Ethiopia, over five days in March 2025.

The Tripartite (FAO, WHO, WOAH) have developed and piloted the "Workforce development for effective management of zoonotic diseases Operational Tool **(WFD OT)**[2] of the Tripartite Zoonoses Guide (TZG) to support countries in planning and strengthening a multisectoral workforce for effective zoonotic disease management. This guide provides practical steps, resources, and tools to enhance the country's workforce's capabilities. Additionally, the COHESA project has developed a Global One Health Search Tool **(GOHST)**[3]**,** an innovative and searchable online catalogue featuring over 100 OH e-learning courses providing easy access to the online training courses on OH, strengthening OH skills in Eastern and Southern Africa. The workshop aimed to introduce Quadripartite WFD OT training modules 1-3, facilitate sustainable workforce development planning, introduction to OH monitoring and evaluation (M&E), and develop action plans for utilizing WFD-OT and GOHST databases to strengthen OH capacity at both governmental and higher education levels. Twenty-five participants (F: 8, M: 17) from 12 COHESA countries attended, representing academia and government. Thirteen facilitators drawn from Quadripartite organizations, COHESA, and ILRI, supported the sessions. The expected

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[1] https://doi.org/10.1079/cabionehealth.2025.0014
[2] Workforce development for effective management of zoonotic diseases
[3] Global One Health Search Tool | Capacitating One Health in Eastern and Southern Africa

outcomes of the workshop included: awareness of the WFD-OT, competent use of WFD-OT and GOHST databases to access trainings, resources, tools to enhance OH education within academia and OH workforce, awareness of the Tripartite Monitoring and evaluation for effective management of zoonotic diseases operational tool (M&E OT)[4], and development of action plans on how each country wishes to utilize the training provided at this workshop.

Chapter 1 - ILRI Addis Ababa site visit and COHESA country meetings

Participants visited ILRI's Addis Ababa campus in two groups. The guided tour included key research facilities such as the ILRI Genebank, nutrition lab, poultry research facility, water harvesting pond, and open habitat area. This study tour was in line with COHESA activity 2.2.6- Organize in-country study tours to model OH research sites. Participants had a unique learning experience highlighting climate adaptation and strengthening food security.

Figure 1. The Zimbabwe team working with WOAH and ILRI to understand how to utilize the WFD OT databases

Parallel COHESA country-level meetings were held between multipliers and the consortium to review country-specific updates, planned activities, implementation challenges, and support needed from the consortium. The meetings were hybrid sessions to enable consortium partners that were not physically present in Addis Ababa to attend the meetings. Hybrid sessions enabled participation from consortium partners unable to

[4] https://www.who.int/initiatives/tripartite-zoonosis-guide/monitoring-and-evaluation

attend in person. Special consultative meetings were held for Malawi, Namibia, and Uganda to discuss extra funding requests for finalizing specific deliverables with the project manager and PI.

Chapter 2- Country One Health competency gap assessment and Workforce Development Operational Tool (WFD OT) training

Facilitator orientation on the WFD OT was led by Aim Ong-Orn Prasarnphanich (WHO)[5]. This session brought the facilitators together and discussed how best to support the country teams over the following days.

Country teams concurrently worked on identifying their countries' OH competency gaps using references such as their country baseline case studies[6], Pretoria WP3 workshop outcomes (September 2023), IUCEA OH Masters Benchmarks[7], core OH competencies[8] and Higher Education Survey OH by COHESA as well as other available resources/literature. Presentations and discussions were facilitated by Florence Mutua and Theo Knight Jones from ILRI/COHESA, who, ahead of the training, helped participants analyze gaps across academic and governmental sectors[9] . The countries assessed and developed a list of OH competency gaps across sectors of workforce and within academia (training of workforce) as shown in **Annexes 6 and 7 r**espectively.

Opening remarks

The COHESA PI, Theo Knight-Jones gave the opening remarks and an overview of the workshop. Together with Florence Mutua (COHESA WP3 lead), and Ong-Orn Prasarnphanich (WHO), he facilitated a round of introductions of the facilitators and participants.

Alex Caron, CIRAD and COHESA WP4 lead introduced and demonstrated the GOHST tool. The tool offers a centralized, user-friendly directory of over 100 rigorously selected OH e-learning courses, designed for students, professionals, researchers, and decision-makers, with easy filtering options to meet diverse learning needs[10] .

[5] WFD OT_COHESA_Day 1_Facilitator meeting.pptx - Google Slides
[6] Search Result | CABI Digital Library
[7] Benchmarks for the Master in One Health | Capacitating One Health in Eastern and Southern Africa
[8] Advancing One Health: Updated core competencies | CABI One Health
[9] COHESA Tuesday AM Assignment_updated.pptx - Google Slides
[10] COHESA - GOHST- 03.25.pptx - Google Slides

Lilian Wambua (WOAH), representing the Quadripartite technical team, presented on Quadripartite global OH initiatives[11]. She highlighted the Quadripartite OH Joint Plan of Action (OH JPA), which provides a global framework to prevent, predict, detect, and respond to health threats affecting humans, animals, plants, and the environment, thereby supporting sustainable development. The accompanying implementation guide developed to translate the OH JPA into practical national actions, structured around three key pathways of change: policy and legislation, roles and sectoral integration, and data, evidence, and knowledge. She also presented the existing tools supporting OH implementation, including the National Bridging Workshop (NBWs), the Tripartite Zoonoses Guide (TZG) and its operational tools, as well as financing mechanisms like the Pandemic Fund and Nature for Health.

Ong-Orn (WHO) introduced the WFD OT, a structured, stepwise approach to strengthening multisectoral collaboration at the human-animal-environment interface[12] . It is aligned with the TZG and focuses on building the capacity of countries to operationalize OH by assessing and improving coordination among sectors initially human and animal health, now expanded to include environmental health. The process begins with a situational analysis to evaluate collaboration between different sectors in the country, followed by planning and implementation of action plans using various operational tools. Workforce development is a central component, with the WFD OT designed to help countries identify key functions for managing zoonotic diseases, the relevant occupations responsible for those functions, and the competencies needed. It emphasizes building cross-sectoral competencies and supporting enabling environments, while offering flexibility in format (in-person, online, or hybrid) and scope (national or sub-national). Modules 1 (setting up), 2 (workforce analysis), and 3 (workforce planning) were introduced.

In Module 1, countries assess their current situation, engage stakeholders for buy-in, and map out functions and occupations relevant to zoonotic disease management. Module 2 focuses on a detailed workforce analysis using 36 OH functions across eight categories[13], with a particular focus on coordination among sectors. This module explores not only competencies but also systemic challenges in the enabling environment. Module 3 helps countries develop concrete, actionable plans for workforce development, including leveraging existing training resources mainly from FAO, WHO, UNEP, and WOAH.

Countries learned to align key zoonotic disease management functions, associated occupations, and required competencies, and how this can be applied in their own

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[11] QPT joint pptx-OH initiatives-WFD workshop-18032025-final.pptx - Google Slides
[12] WFD OT_COHESA_Introduction_Day 1.pptx - Google Slides
[13] https://drive.google.com/file/d/1vircFrV3Fo0zTNXG_3rX7SVRb5S6Gq2j/view?usp=drive_link

countries. While the WFD-OT is designed to assist with public sector occupations focused on zoonotic diseases, the 36 OH functions also can apply to other OH situations beyond zoonotic diseases. Additionally, these functions can also apply within occupations in academia, NGOs, and any OH related work areas. This flexibility means the tool and its associated databases can be applied to a variety of occupations and OH competencies.

Chapter 3- Case studies and application of WFD OT databases

After the introductory sessions on GOHST and the WFD-OT, the focus shifted to deeper engagement with Module 3 of the WFD OT: workforce planning. Ong-orn (WHO) walked participants through the different steps, from initial situational analysis to function mapping, occupational analysis, competency requirements, enabling environment assessments, and identification of supporting tools and resources[14]. Participants were introduced to two databases, one of relevant trainings (M34a) and another of tools and resources (M39a)[15]. Ong-orn (WHO) outlined the inclusion criteria for trainings, emphasizing those developed or endorsed by FAO, WHO, WOAH, and UNEP. She also highlighted the scope of the WFD OT tools and categorized them based on their level of engagement where tools require active participation, typically involving defined steps and a set duration for completion whereas resources typically serve primarily to inform planning, activities, and strategies, and do not have a defined timeline (i.e., no clear start or end point). Live demonstrations of the competency trainings (M34a), and tools and resources (M39a) databases were conducted, showing their features and navigation. Participants were given a chance to explore both databases during a plenary session.

Figure 2. The Mozambique team working together with ILRI and CIRAD to understand use of the WFD OT databases

[14] WFD OT_COHESA_Database training_Day 2.pptx - Google Slides
[15] https://www.who.int/initiatives/tripartite-zoonosis-guide/workforce-development

Working with a facilitator, each country team was assigned a case scenario based on their previously identified competency gaps. The case scenarios used in the workshop are linked in **Annex 4** Working with facilitators from WHO, WOAH, FAO, UNEP, and COHESA, teams used the WFD OT and GOHST to identify solutions. Teams presented their understanding of the tools and demonstrated practical approaches to workforce development. Countries presented their results at the end of the session[16]. The case scenarios presented by participants demonstrated a strong understanding and effective application of the tools.

Workshop evaluation

Participants evaluated the workshop, with feedback collected to inform improvements for future sessions. Feedback from 14 respondents across nine countries representing academia and government in the animal, human, and environmental health sectors, indicated high overall satisfaction with the workshop. Participants appreciated the quality and relevance of the content, the training format, and facilitators competence. The databases introduced were seen as practical, user-friendly, and valuable for curriculum development, competency gap analysis, and CPD training. Tools like GOHST were appreciated for their search functionality, though suggestions were made to improve link reliability and expand coverage of OH competencies.

Participants noted the hands-on learning and cross-sector networking opportunities. Key recommendations included allocating more time for practical exercises, enhancing technical support, ensuring regular updates of databases, and incorporating local datasets. Additional suggestions focused on improving navigation, offering step-by-step user guides, and adding multilingual options. Overall, participants expressed intent to apply the tools in training, curriculum development, training-of-trainers (ToT) workshops, and research.

Chapter 4 – One Health M&E Frameworks

Gunel Ismayilova (FAO) delivered a virtual presentation on the Quadripartite M&E Operational Toolkit (M&E OT)[17]. The tool supports countries in their efforts to establish and strengthen monitoring and evaluation practices for coordinated, multisectoral, OH zoonotic disease-related activities and programmes, following the guidance provided in the TZG. Participants were trained in M&E framework development, which was complemented by a plenary exercise where they identified indicators (outputs, outcomes, and impacts) to monitor and evaluate their proposed action plans. It is noteworthy that the M&E OT can also be applied to other OH activities beyond zoonoses.

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[16] Country case scenarios - Google Drive
[17] Monitoring and evaluation for effective management of zoonotic diseases
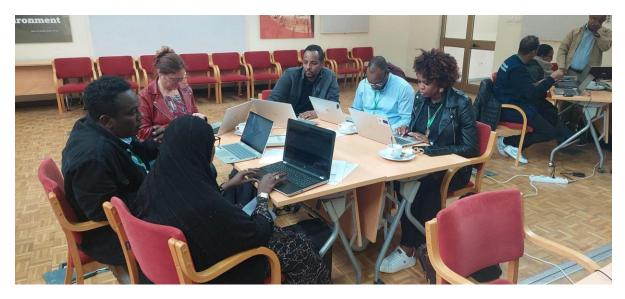
Figure 3. The Somalia and Namibian teams working with ILRI and the FAO to develop M&E metrics using the M&E OT

Shauna Richards (COHESA) presented and led the session on developing action plans by the respective countries, building on the tools (WFDOT and GOHST) and gap assessments developed from earlier in the week[18][19] . Countries were guided through developing context-specific plans to address their workforce needs using the WFD OT and GOHST. Key criteria for the action plan included use of existing resources, including COHESA country multiplier budgets, scope and feasibility within the remaining project timeline (6 months), incorporation of a ToT approach to expand reach, and integration with ongoing OH or COHESA activities. Countries were provided with a concept note template to fill in with their respective plans.

Each country, in consultation with the consortium developed their draft action plans with timelines, potential resource gaps, and strategies for scaling up workforce development activities. These proposed plans will be reviewed in detail by the consortium following the workshop to assess their feasibility and provide further guidance. Proposed actions by COHESA countries included capacity building for multisectoral OH coordination committees, ToTs on OH competencies and tools (such as the WHO WFD-OT and COHESA GOHST), strengthening national coordination mechanisms, engaging underrepresented sectors, scaling OH education in schools, and enhancing zoonotic disease surveillance and antimicrobial resistance monitoring across countries.

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[18] COHESA Thursday Action planning.pptx - Google Slides
[19] COHESA Tuesday AM Assignment_updated.pptx - Google Slides

The workshop officially concluded with closing remarks from Theo, Florence, and Ong-orn, who commended participants for their active engagement and reiterated the importance of sustained collaboration for OH workforce development.

Annexes

Annex 1: Meeting agenda

Time	Item	Facilitator/ Presenter
Monday 17/03/2025		
8:00 AM	Traditional Coffee Ceremony near AGAZE	Yodit Girma
8:30 AM	Arrivals and sign in	Yodit Girma
9 AM	ILRI TOUR/ Country meetings	Hiwot Desta Tour group 1 Ethiopia, Uganda, Kenya, Malawi, Mozambique, Namibia
1 PM	Lunch All	
2 pm	Country meetings	
Tuesday March 18th 2025		
8:30 AM	Sign in at *AGAZE ROOM*	Yodit Girma
9:00 AM	AGAParticipants assignment – assess their respective countries One Health Competency Gaps *JEGOL ROOM* Overview of workshop and training for quadripartite, COHESA, and other facilitators	Florence and Theo Ong-Orn Prasarnphanich
12:30 PM	LUNCH ALL	
1:30 PM	Arrive and sign in for session 2:00 PM Welcome and Introduction to workshop	Theo Knight- Jones, Florence Mutua, and Ong-Orn Prasarnphanich
2:15 PM	GOHST tool introduction and demonstration	– Alex Caron
2:45 PM	Introduction to Quadripartite initiatives –	Lillian Wayua Wambua / Jesse Bonwitt
3:15 PM	Introduction to Work Force Development Operation Tool -	Ong-Orn Prasarnphanich

5 PM	CLOSE for day	
Wednesday March 19th 2025		
8:30 AM	Arrive to workshop & sign-in at ***AGAZE ROOM***	Yodit Girma
9:00 AM	Case Scenario (1 per country group)	*Facilitators: Ong-Orn Prasarnphanich (WHO) + WOAH, FAO, UNEP, COHESA*
10:30 AM	COFFEE	
12PM	present case studies	
1 PM	LUNCH	
2PM	Case Scenario (1 per country group)	
4PM	Present case studies	
5PM	CLOSE for day	
Thursday March 20th 2025		
8:30 AM	Arrivals and Sign in at ***AGAZE ROOM*** –	Yodit Girma
9 AM	Introduction on plan for day	*Facilitators: Ong-Orn Prasarnphanich + WOAH, FAO, UNEP, COHESA*
9:15 AM	Quadripartite Presentation + Q&A	
10:00 AM	Country teams start action planning	
10:30 AM	COFFEE	
11:00 AM	FAO presents on M&E OT VIRTUAL PRESENTATION	
1PM	LUNCH	
2PM	Continue Action planning + M&E plan	
5pm	CLOSE	
Friday March 21st 2025		
8:00 AM	Arrivals and sign in ***AGAZE ROOM*** –	Yodit Girma

8:30AM	COHESA Internal Meeting – all countries	
10:30 AM	CLOSE OF WORKSHOP & COFFEE	
1:00 PM	LUNCH	
2:00 PM	**ILRI TOUR** – 2.5 hours -	Facilitator Hiwot Desta Tour group 2 – Zimbabwe, Zambia, Rwanda, Tanzania, Somalia, Botswana (n=13) + quadripartite + Shauna, Buke

Annex 2: List of participants and facilitators

	Name	Country	Government or Academia	Organization
1.	Ms Thato Sengwaketse	Botswana	Government	Ministry of Health, Department of Public Health
2.	Flora Pule-Meulenberg	Botswana	Academia	BUAN
3.	Feyisa Regasa	Ethiopia	Government	Director of One Health and IHR, MoH
4.	Mirkgissa Kaba	Ethiopia	Academia	AAU
5.	Seid Tiku	Ethiopia	Academia	Jimma University
6.	Yordanos Tadesse	Ethiopia	Academia	AAU
7.	Matthew Mutiiria	Kenya	Government	ZDU
8.	Joshua Ononno	Kenya	Academia	UoN
9.	Chiku Mtegha	Malawi	Academia	LUANAR
10.	Osvaldo Inlamea	Mozambique	Government	Institutio Nacional de Saude
11.	Lucinda De Araujo	Mozambique	Academia	UEM
12.	Magrecia Hausiku	Namibia	Government	Ministry of Agriculture, Water, and Land Reform
13.	Simon Angombe	Namibia	Academia	UNAM
14.	Leandre Ishema	Rwanda	Government	Rwanda Biomedical Center
15.	Martin Ntawubizi	Rwanda	Academia	University of Rwanda

16.	Hodan Roble Hassan	Somalia	Government	Ministry of Health, Department of Public Health
17.	Shafii Abdullahi Mohamed	Somalia	Academia	Somali National University
18.	Valentina Sanga	Tanzania	Government	One Health Section in office of Prime Minister
19.	Gabriel Shirima	Tanzania	Academia	NMAIST
20.	Fred Monje	Uganda	Government	OH Platform Coordinator Uganda
21.	Clovice Kankya	Uganda	Academia	Makerere University
22.	Raymond Harmoonga	Zambia	Government	ZNPHI
23.	Bertha Chitambo	Zambia	Academia	UZ
24.	Tinashe Hodobo	Zimbabwe	Government	
25.	Gift Matope	Zimbabwe	Academia	University of Zimbabwe
	Facilitators			
26.	Florence Mutua	Kenya	ILRI/COHESA	
27.	Theo Knight-Jones	Ethiopia	ILRI/COHESA	
28.	Shauna Richards	Kenya	ILRI/COHESA	
29.	Buke Yussuf	Kenya	ILRI/COHESA	
30.	Michel Dione	Mali	ILRI	
31.	Alex Caron	Kenya	CIRAD/COHESA	
32.	Siobhan Mor	Kenya	ILRI/COHESA	
33.	Ong-orn Prasarnphanich	Switzerland	WHO	
34.	Tieble Traore	Senegal	WHO	
35.	Lillian Wambui	Kenya	WOAH	
36.	Mohammed Ibrahim Abdikadir	Ethiopia	WHO	
37.	Jesse Bonwit (Virtual attendance)	Kenya	WHO	
38.	Elias Walelign	Ethiopia	FAO	
39.	Levis Kavagi	Regional	UNEP	

Annex 3: Slide presentation

WFD OT_COHESA_Day 1_Facilitator meeting.pptx - Google Slides
COHESA Tuesday AM Assignment_updated.pptx - Google Slides

COHESA - GOHST- 03.25.pptx - Google Slides

QPT joint pptx-OH initiatives-WFD workshop-18032025-final.pptx - Google Slides
WFD OT_COHESA_Introduction_Day 1.pptx - Google Slides
WFD OT_COHESA_Database training_Day 2.pptx - Google Slides

Annex 4: Case scenarios

Case scenario 1 (Academia):

https://docs.google.com/presentation/d/1gZzMi_NzPe9v0qr9lwZok77NKnhlpAtf/edit?usp=drive_link&ouid=108088195955948974758&rtpof=true&sd=true

Case scenario 2 (Academia):

https://docs.google.com/presentation/d/1qfN4vBKHDOuIB7KgFWLA2yT1f8RNjAD7/edit?usp=drive_link&ouid=108088195955948974758&rtpof=true&sd=true

Case scenario 3 (Central government):

https://docs.google.com/presentation/d/1lIfvpmJdDH09CMiOjUfISh24ULCFySGS/edit?usp=drive_link&ouid=108088195955948974758&rtpof=true&sd=true

Case scenario 4 (One health platforms):

https://docs.google.com/presentation/d/1oMR6YL1tNAsZEx062qbkLHZ6xrdmWcjj/edit?usp=drive_link&ouid=108088195955948974758&rtpof=true&sd=true

Case scenario 5 (Academia/Government):

https://docs.google.com/presentation/d/1jGRuoUuxbGDy090zykVwN8Keb5VQB8lQ/edit?usp=drive_link&ouid=108088195955948974758&rtpof=true&sd=true

Case scenario 6 (Academia/Government):

https://docs.google.com/presentation/d/1dRS8oiKW0AnrZatlTwd3TWxcLvvW5N9i/edit?usp=drive_link&ouid=108088195955948974758&rtpof=true&sd=true

Annex 5: Countries' case scenario presentations

https://drive.google.com/drive/folders/16pRn7y6s6eO9TF6thhxlXLl7Ruliqd6D?usp=drive_link

Annex 6: Workforce gap analysis in One Health competencies identified by participants in each COHESA countries

Country	Workforce Type/Group	Competency Gap Technical or Cross Cutting (and list specific competency)	Supportive evidence of gaps
Botswana	Academia	One Health curriculum developers	Academia
	Community health nurses	community based one health practitioner	Community health nurses
	Public Health Specialists	strengthening of preventative medicine	Public Health Specialists
	Lab diagnostics	-surveillance of AMR -surveillance of maximum residue levels for food safety	Lab diagnostics
	Linkage of one health practitioners	zoonotic disease management and surveillance	Linkage of one health practitioners
	Food safety inspectors	inspection of food commodities and products	Food safety inspectors
	Chemicals safety inspectors	regulation, surveillance and management of industrial and pesticides	Chemicals safety inspectors
	Pollution control experts	management systems, enforcement and regulation of protection environmental integrity	Pollution control experts
	Community based one health practitioners	-supervision of the use of antibiotics, pesticides in the farms by extension -community health risk assessments for water, soil, air, food products, working environments	Community based one health practitioners
Ethiopia	**Preservice**	Interdisciplinarity approach	Assessment report from the integration of OH into higher education and Netmapping
		Socio-cultural and gender inclusiveness	Validation workshop feedback
		engagement of non-academic actors including community	OH summer report

		Theoretical and Methodological pluralism	Baseline finding
		Effective communication and advocacy	
		value and ethics	
		Collaboration and partnership	
		One health approach and principles	
		Leadership and management	
		System thinking	
		Indigenous knowledge	
		Teamwork and conflict resolution	
		Collective learning and reflective practice	
		Harnessing uncertainties and paradox in the context	
	In service	Collaboration and partnership	OHCEA synthesis report
		One health approach and principles	
		Leadership and management	
		Effective communication and advocacy	
		Value and ethics	
		engagement of non-academic actors including community	
		System thinking	
Kenya	Human health workforce, animal health workforce, environment and environmental workforce, Ministry of Culture and Gender -social	National One Health Policy; Weak collaboration and coordination among OH sectors/actors; Integration of EEH to OH platform; COHU Trainings	10.1079/onehealthcases.2024.0019 10.1016/j.onehlt.2022.100460

	scientist workforce		
Malawi	Healthcare Workers	Limited training in diagnosing zoonotic diseases (e.g., rabies, anthrax).	Zoonotic outbreaks with delayed responses? Poor infrastructure. Lack of resources.
	Veterinarians	Minimal collaboration with environmental agencies	Malawi Veterinary Association reports highlight siloed operations and lack of joint initiatives with environmental sectors.
	Environmental Specialists	Poor integration with public health planning	Environmental policies lack health impact assessments - Ministry of Environment annual report.
	Public Health Professionals	Inadequate One Health surveillance system skills	Fragmented human-animal-environment data systems.
	Community Health Workers	Limited awareness of One Health principles.	Rural health programs rarely address animal/environmental health linkages.
	Ministers & directors.	OH concepts. Interdisciplinary collaboration. Collective learning & practice.	Absence of government policies and strategies.
	Across all disciplines	Interdisciplinary collaboration. Systems thinking. Participatory approaches with rural communities. Advocacy skills (for integrated health policies). Data integration & informatics. Public engagement skills.	
Mozambique	Government Decision makers	-Knowledge on OH approach Leadership	Lack of commitment on the OH routine activities
	OH Platform	-Advocacy -Engagement	Mozambique JEE Advancing One Health Capacities

		Coordination	in Mozambique: A Case Study of COHESA
	Professionals (Medical, public health, Vets, environmental, social sciences, plants.....)	Knowledge Engagement	Lack of communication between different sectors OHZDPW
Namibia	Animal health	Effective communication Lack of collaborative and resilient working between state and private veterinarians Awareness of One Health concept	Lack of communication, collaboration and disease surveillance data sharing between private and state veterinarian
	Forest and environment	-One Health Concepts, -Transdisciplinarity, -System understanding, -social, cultural, and gender equity and inclusiveness	Lack of integration for OH concepts and collaboration with other relevant sectors
	Wildlife	-Lack of wildlife surveillance, -Lack of technical experts	Lack of surveillance data, Lack of Human resource,
	Extension officers	-System understanding, -Collaborative and resilient working, -One Health Concepts, Effective Communication	No OH collaboration
	Plant health	One Health Concepts, Transdisciplinarity of OH, System understanding, social, cultural, and gender equity and inclusiveness	Working in Silos
	Water Resource management	One Health Concepts, Transdisciplinarity of OH, System understanding,	No collaboration with different entities
	Fisheries	One Health Concepts, Transdisciplinarity, System understanding,	No collaboration with different entities,

		social, cultural, and gender equity and inclusiveness, Monitoring and early warning, Risk and impact assessment, Risk mitigation, preparedness and response.	
	Laboratory diagnostics	Inadequate diagnostic tests capacity and capability, Lack of proper equipment and technology,	Cross cutting - -Inadequate human and animal diagnostic technical experts
	Public Health Specialist	Early warning rapid notification systems	Substandard Implementation of Multi-hazard national public health emergency preparedness and response plan
	Environmental and Community Health Practitioners	Collective learning and reflective practice,	Cross-cutting, lack of interdisciplinary integration to OH approach
	Medical Practitioners	Inadequate OH awareness	Inadequate coordination and collaboration with relevant sectors inefficient communication with
Rwanda	In-service personnel (Government, CSOs, NGOs, private sector, academia)	Multisectoral coordination and policy implementation (One Health Partnership, advocacy, Consortia & Collaboration)	• The standardized legal framework enforcing One Health collaboration not fully implemented • Weak intersectoral engagement at decentralized levels (district and community) • Insufficient funding allocation for integrated One Health programs
	In-service personnel (Government, CSOs, NGOs,	Research Methods & Biostatistics (Health surveillance, outbreak	• Limited trained at district and sector levels • Inadequate real-time data sharing between human,

	private sector, academia)	investigation, and data analysis)	• animal, and environmental health sectors • Insufficient integration of digital disease surveillance tools at the community level
	In-service personnel (Government, CSOs, NGOs, private sector, academia)	One Health Community Engagement (Effective public health messaging and community mobilization)	• Weak coordination in risk communication across human, animal, and environmental health sectors • Low public awareness of health threats at the human, animal and environmental interfaces
	In-service personnel (Government, CSOs, NGOs, private sector, academia)	Capacity building for interdisciplinary One Health professionals	-Few formalized One Health training programs in higher education institutions -Limited interdisciplinary training opportunities for professionals in human, animal, and environmental health -Gaps in continuous professional development and refresher training
	In-service personnel (Government, CSOs, NGOs, private sector, academia)	Monitoring and Evaluation in One Health	-Weak Integrated M&E framework for One Health programs (Cross-Cutting) -Limited workforce with M&E skills in One Health (Technical) -Lack of feedback mechanisms and utilization of M&E findings (Cross-Cutting)
Uganda	Government, Ministries, Department and Agencies (MDA) MAAIF, MOH, MWE, UWA	The current One Health governance structure focuses broadly on zoonotic diseases, AMR, Food Safety Biosafety and Biosecurity. Min of Health,	OHSP

		Agriculture, water and Environment and Trade and Tourism and antiquities (UWA) OH governance coordination of OH strengthening. mentation of the NOHSP must involve all the stakeholders with proper coordination.	
	MDAs	Weak linkages between key ministries	
	Government system	**The limited engagement of institutional Entities gaps** Limited engagement of environmental and other ministerial entities, Ministries local government, Finance planning and economic development.	
	MDAs	Bureaucratic obstacles and resource competition	
	Academia, govt programs,	Gaps among professionals in human health, animal health, and environmental health sectors	CABI publication
	Ministry of Education and Sports	Insufficient tutors and qualified clinical instructors, inadequate equipment, space, and laboratory skills training	
	Ministry of Local Government (Decentralisation)	Less visibility of the OH concept at the grassroots level	
	NOHSP	Hardships in OH team-building and inappropriate OH team constitutions have greatly been experienced, and this	

		ultimately limits the implementation of OH initiatives.	
	MFPED	**Funding gaps:** Impact of piecemeal financing, Long-term sustainability is impacted by piecemeal financing from externally funded projects, and national funding is needed for long-term sustainability of OH in Uganda.	
	MDAs	Limited Multi-sectoral Collaboration- There is a need for the institutional arrangement of OH to be effectively addressed in each sector to encourage common vision and joint planning.	
	MAAIF, MOH, Security, Local Govts, OPM, Finance, UWA, MWE, ETC	Surveillance Systems, Emergency Preparedness and Response gaps Lack of interoperability among human, environment and animal health surveillance systems	
		Working in silos and redundancy	
Zambia	Veterinary Officers	Limited capacity in disease surveillance and response	Technical - Epidemiology and outbreak investigation
	Medical Officers	Inadequate knowledge of zoonotic diseases and environmental health	Technical - One Health disease management
	Environmental Health Officers	Weak integration of environmental health into One Health approaches	Cross-Cutting - Interdisciplinary collaboration
	Public Health Officials	Lack of multisectoral coordination skills in outbreak response	Cross-Cutting - One Health governance and coordination

	Laboratory Scientists	Limited capacity for molecular diagnostics in zoonotic diseases	Technical - Laboratory diagnostics and biosecurity
	Policymakers & Government Officials	Limited understanding of One Health policy and advocacy	Cross-Cutting - Policy development and implementation
	Field Officers & Animal Health Assistants	Inadequate training in One Health field data collection and reporting	Technical - Data management and surveillance
Zimbabwe	**OH Governance**	- Coordination mechanisms -Transdisciplinary governance -Effective communication	1. Zimbabwe OH Stakeholder Net mapping Report 2. Zimbabwe CABI OH Case study Publication 3. Zimbabwe OH AMR Situational analysis
	Research and Innovation	-Setting the agenda for OH research -Problem solving -OH awareness approaches	Zimbabwe CABI OH Case study Publication
	OH Implementation	OH implementation mechanisms	Zimbabwe CABI OH Case study Publication
	Data Management and Communication	Interoperability of data management systems	Zimbabwe CABI OH Case study Publication

*Ethiopia- Core: the same across all disciplines

Annex 7: Academia/Education Gap Analysis in One Health competencies identified by participants in COHESA countries

Country	Academic Group (for example vet, medical, public health, environment,	Competency Gap Technical or Cross Cutting (and list	Supportive evidence of gaps

	social sciences, etc.)	specific competency)	
Ethiopia	Cross-Cutting	Surveillance	Assessment report from the integration of OH into higher education and Netmapping
		Scientific and ethical integrity	Validation workshop feedback
		OH risk analysis	OH summer report
		Applied informatics	
		Ecosystem health	
Kenya	MSc Horticulture; MSc Food safety and quality; MSc Wildlife health & management; MSc Vet Public Health; MSc Medical microbiology; MSc Medical Anthropology	Transdisciplinarity and multisectoral collaborations; Co-teaching; Culture, ethics and integrity; Communication; System thinking; Gender; Leadership and management; Policy and advocacy	10.1079/onehealthcases.2024.0019 10.1016/j.onehlt.2022.100460
Malawi	Veterinary Schools	No curriculum on human-environment health interactions.	LUANAR's veterinary program lacks interdiciplinary modules.
	KUHes	Absence of training on animal-borne disease prevention.	Medical Council of Malawi survey - graduates feel unprepared for zoonotic outbreaks.
	Public Health Programs	Weak focus on environmental health determinants.	Public health curriculums lack integration with environmental science.
	Environmental Science Departments	No public health components in courses	Environmental Affairs Department notes graduates lack skills to engage in health policy.
	Social Sciences	One Health excluded from community engagement training.	Social work programs omit animal-environment-health linkages.
	VC, DVC, DROs	OH concepts. Transdisciplinarity.	Lack of institutional strategies and policies promoting OH education.

Mozambique	Academia (decision makers)	Leadership	Advancing One Health Capacities in Mozambique: A Case Study of COHESA
	Academia (teachers, facilitators, researchers and relevant stakeholders	-Soft skills -Engagement and networking	Advancing One Health Capacities in Mozambique: A Case Study of COHESA
	Students	Knowledge	Advancing One Health Capacities in Mozambique: A Case Study of COHESA
Namibia	Veterinary and Medical School	No Short courses on One Health Lack of post graduate curriculum	Inadequate collaboration between the Veterinary and Medical campus No integrated OH programs/ practical Minimal OH concepts in Curriculum
	Public health school	No one health undergraduate curriculum	No OH health module
	Diagnostic and research Labs	Inadequate diagnostic and research labs	Lack of collaboration Lack of harmonized data for lab and lab equipment
	Animal Science	Lack of one health concept and systematic understanding Lack of Collaborative and resilient working No integration of OH concept into the curriculum	No visible OH concept in the curriculum
	Wildlife management	Lack of one health concept and systematic understanding Lack of Collaborative and resilient working No integration of OH concept into the curriculum	No visible OH concept in the curriculum

	Environmental Science	Lack of one health concept and systematic understanding Lack of Collaborative and resilient working No integration of OH concept into the curriculum	No visible OH concept in the curriculum
	Social Science	Lack of one health concept and systematic understanding Lack of Collaborative and resilient working No integration of OH concept into the curriculum	No visible OH concept in the curriculum
	Crop production	Lack of one health concept and systematic understanding Lack of Collaborative and resilient working No integration of OH concept into the curriculum	No visible OH concept in the curriculum
	Fisheries	-Lack of one health concept and systematic understanding -Lack of Collaborative and resilient working No integration of OH concept into the curriculum	No visible OH concept in the curriculum
Rwanda	Vet, medical, public health, environment, social sciences, etc.	One Health Partnership, advocacy, Consortia & Collaboration	Absence of structured advocacy training in One Health curricula.

	Vet, medical, public health, environment, social sciences, etc	Monitoring and Evaluation in One Health	• Inadequate training in integrated M&E for multisectoral programs.
	Vet, medical, public health, environment, social sciences, etc	General Principle of Ecology	• Limited integration of ecological principles in disease emergence and transmission studies. • Inadequate ecological risk assessment training in medical and veterinary schools. Minimal field-based ecological studies in One Health education.
	Vet, medical, public health, environment, social sciences, etc	Research Methods & Biostatistics	• Shortage of professionals skilled in One Health-focused biostatistics and epidemiology. • Limited use of interdisciplinary research approaches combining human, animal, and environmental health. Few training programs addressing advanced biostatistics in One Health research.
	Vet, medical, public health, environment, social sciences, etc	One Health Community Engagement	• Weak integration of community engagement methodologies in One Health curricula. Lack of culturally sensitive training for community-based health interventions.
		Field Attachment (Experiential learning - One Health)	Limited opportunities for field-based One Health training.
		Health promotion & Behavioral change	• Weak emphasis on behavioral change theories in One Health curricula. Few training programs on risk communication and public health messaging.

		Mental health and Psychosocial Support	Lack of integration of mental health in One Health training programs.
		Principles of Biorisk Management	- Lack of standardized biorisk management training across disciplines. - Limited biosecurity measures field settings. Few professionals trained in biosafety and biosecurity risk assessment.
Tanzania	Higher Learning Institutions	OH competencies were Integrated into specific courses-(7 universities)	Meeting report. (Need to follow-up to determine which competencies were integrated)
		OH ST, OH leadership, OH RA, (noted that were not considered before)	
	Short course training	Online course-free?? AFROHUN-Fee-based	
	Diploma and certificate	AFROHUN Competency support-OH leadership	
Uganda	Higher Education Institutions, Colleges and Universities in Uganda	Trainers/Professionals are not regularly retooled in One Health. e.g Pedagogy in One Health	Publication,
		Most trainings are on short terms and often the training schedule is very fast.	
	Vet school, Medical school, Social Sciences	The number of curricula lacks OH: Traditional teaching courses modules	

		Curriculum and teaching lack cross-cutting aspects of OH Gender, Communication skills, Leadership skills, management and administration.	Benchmark for Masters of One Health
		Concerns about limited technical and crosscutting OH competencies	
		Ministry of Education has not embraced OH Education. The Ministry of Education has not yet embraced the OH Education as the learning curriculum at different levels does not completely holistically address the issues of OH.	
		Poor systems thinking and advocacy skills focusing on One Health	
Zambia	Veterinary Schools	Limited integration of One Health into curricula	Cross-cutting - Interdisciplinary education
	Medical Schools	Inadequate training on zoonotic diseases	Technical - One Health disease management
	Environmental Science Programs	Weak linkage between environmental health and One Health	Cross-Cutting - Systems thinking
	Public Health Programs	Minimal emphasis on multisectoral approaches	Cross-Cutting - One Health governance and collaboration

	Social Science Programs	Insufficient training on behavioral aspects of One Health	Cross-Cutting - Community engagement and risk communication
	Research Institutions	Limited capacity in OH-focused research methodologies	Technical - Research and evidence generation
Zimbabwe	1.OH Education a)Masters Programmes b)Undergraduate Programmes Secondary and Primary Schools	-Effective communication -OH concepts OH concepts	Zimbabwe CABI OH Case study Publication
	2.Research and Innovation	Setting the agenda for OH research Problem solving OH awareness approaches	Zimbabwe CABI OH Case study Publication

*Ethiopia- N.B all the above technical competencies are the same across the discipline