

2024-06-26

# Implementation of One Health Approach in Tanzania: Strengths and Challenges

Vianney, John-Mary

CABI Digital Library

---

<https://doi.org/10.1079/onehealthcases.2024.0011>

*Provided with love from The Nelson Mandela African Institution of Science and Technology*



# ONE HEALTH CASES

June 2024

## Implementation of One Health Approach in Tanzania: Strengths and Challenges

The governance framework for One Health (OH) in Tanzania is based on the national OH Strategic Plan (2022–2027), and it provides a clear road map to implement an OH approach. Under the COHESA project, the status of OH implementation in Tanzania was assessed to strengthen OH operationalization across different levels.

Authors: John-Mary Vianney<sup>1</sup>, Esther G. Kimaro<sup>1</sup>, Joram Buza<sup>1</sup>, Theo Knight-Jones<sup>2,3</sup>, Eric Fevre<sup>2,3,4</sup>, Shauna Richards<sup>2,3</sup>, and Gabriel M. Shirima<sup>1</sup>

Affiliations: <sup>1</sup>The Nelson Mandela African Institution of Science and Technology, Arusha, Tanzania

<sup>2</sup>International Livestock Research Institute, Nairobi, Kenya

<sup>3</sup>International Livestock Research Institute, Addis Ababa, Ethiopia

<sup>4</sup>University of Liverpool, United Kingdom

© The Authors 2024. Open Access. This article is licensed under a Creative Commons Attribution 4.0 International License.

# Table of Contents

Abstract .....	2
What is the Incremental Value that Makes this a One Health Case?.....	2
Learning Outcomes.....	3
Background and Context .....	3
Transdisciplinary Process.....	4
Project Impact .....	9
Project Outlook/Conclusions .....	10
Group Discussion Questions .....	10
Further Reading .....	11
References .....	11

## Abstract

One Health (OH) approach has recently been defined by the OH High-Level Expert Panel (OHHLEP) as an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems. Under the Prime Minister's Office (PMO), the OH section (OHS) is responsible for OH implementation. The OHS task is to bring together multiple sectors and disciplines to work together with clear OH approach coordination in the country. Following the recent revision of the OH strategic plan (2022–2027), the OHS is now eligible to receive funding from the government. In addition, through OHS, Tanzania has supporting documents for OH, including the National Action Plan for Antimicrobial Resistance, the prioritized list of zoonotic diseases, and strategic prevention and control plans. Despite these developments in OH in Tanzania, the Capacitating One Health in Eastern and Southern Africa (COHESA) project helped identify the challenges and gaps that Tanzania faces in OH implementation. A baseline assessment study was conducted in four settings: Desktop Review, Focus Group Discussion (FGD), Key Informants Interview (KII), and OH net mapping. Results showed that the country's OH challenges include a lack of OH resources, OH education inclusiveness, and OH awareness at the subnational level. There are limited suitable OH monitoring mechanisms to assess the progress of the OH approach in Tanzania. Thus, COHESA supports the country in addressing these challenges to improve at all levels of OH sectoral performance in the context of OH governance, education, and implementation.

## What is the Incremental Value that Makes this a One Health Case?

Under the Prime Minister's office, the OH Section is responsible for OH implementation in Tanzania. Tanzania's most recent OH strategy was revised for 2022–2027 and incorporates new concepts such as food security and climate change to better involve all relevant stakeholders in OH. Despite these developments in OH in Tanzania, the implementation has been slow. The COHESA project has supported and helped identify Tanzania's challenges and gaps in OH implementation by conducting a baseline assessment. The study included four assessment settings: Desktop Review, Focus Group Discussion (FGD), Key Informants Interview (KII), and OH net mapping. Results showed that the country's OH challenges include a lack of OH resources, OH education inclusiveness, limited OH monitoring mechanisms to assess the progress of the OH approach, poor actors' coordination, and OH awareness at the subnational level. With the COHESA project facilitation, the COHESA country multiplier, in collaboration with the Office of the Prime Minister, worked to resolve the identified challenges. One Health committee at the regional and district levels has been formed to interact with communities on OH issues and ecosystem services and advocacy activities,

including hosting OH conference; the OHS is now eligible to receive funding from the government to facilitate OH matters, and One Health harmonized curriculum is under discussion. The COHESA country multiplier team continues to bring together relevant sectoral representation in Tanzania's OH governance to facilitate and ensure the OH concept and approach are grasped and practiced.

## Learning Outcomes

1. Understand One Health operationalization in Tanzania, including OH advocacy, multisectoral coordination and the involvement of relevant actors.
2. Describe the benefits of establishing an OH multisectoral technical committee at subregional and district levels to address OH ecosystem services at the grassroots level.
3. Evaluate the OH education programme in Tanzania's higher education institutions.

## Background and Context

Before 2015, Tanzania's One Health (OH) approach mainly involved the human and livestock sectors to address specific zoonoses. In 2015, the OH Strategic Plan was launched (OHSP, 2015–2020), and the OH Coordination Desk (OHCD) was formed and housed in the Prime Minister's Office (PMO) within the Disaster Management Division. This brought together multiple sectors and disciplines to work together with clear coordination in the country. More recently, following the revision of the plan (OHSP, 2022–2027), the OHCD has been elevated to the OH Section headed by an Assistant Director and is now eligible to receive funding from the government. In addition, Tanzania has supporting documents for OH, including the National Action Plan for Antimicrobial Resistance, a prioritized list of zoonotic diseases, and their strategic prevention and control plans. These strategies are capacitated through the OH Section under the PMO. Capacitating One Health in Eastern and Southern Africa (COHESA) is a 48-month project that began in December 2021 and aims to increase the relevance of OH education, research, and policies. It also aims to enhance national and subregional cross-sectorial collaboration between government entities with OH mandates and increase the capacity of government and non-government stakeholders to deliver OH solutions. By bringing together OH stakeholders across society, education, governance, and research institutes, the countries will be better equipped to tackle OH issues in Eastern and Southern Africa. Currently, COHESA works in 12 countries, and in Tanzania, the Nelson Mandela African Institution of Science and Technology (NM-AIST), located in Arusha, takes the country multiplier role (i.e. partner) to implement COHESA's objectives. NM-AIST was chosen to be a multiplier due to its strong postgraduate training experience in science and technology, including One Health at the master's level.

A few assessments have been conducted to evaluate the OH approach in African countries, including Tanzania. The Network for the Evaluation of One Health (NEOH), an initiative funded by the European Cooperation is one of the tools used in OH evaluation (Rüegg *et al.*, 2018). Fasina *et al.* (2022), using the NEOH tool, conducted an OH assessment, where the six main integrated areas were evaluated: Thinking, Planning, Working, Sharing, Learning, and Systemic Organization. Tanzania scored high (80–100%) in most assessed areas except Learning and Planning. Generally, the NEOH tool showed that only Systemic Organization and Working were well practiced in the African countries; the other areas must be optimized to achieve the goal. One Health Research Centre in Africa (OHRECA) also assessed the existing OH initiatives in sub-Saharan African countries. The evaluation also included Tanzania, which appeared to have 14 available OH initiatives (ILRI, 2020: Available at: <http://bit.ly/ohafrika>). This online assessment system also provided information such as the name of the OH initiative, the type of initiative, the focus area, the duration, funding sources, the management structure, and the contacts in each country. Unfortunately, such information was unavailable in Tanzania, indicating a challenge for the country's data repository and accessibility (ILRI, 2020: Available at: <http://bit.ly/ohafrika>). The Global One Health Index (GOHI) scoring system proposed by Zhang *et al.* (2022) included Tanzania in the survey. This scoring system evaluated (i) the external drivers (social, economic, cultural, technology, and institution systems); (ii) Intrinsic drivers' index (OH practice at the interfaces of human, animal, and environment health); and (iii) Core Driver Index (OH implementation in managing core scientific fields such as emerging zoonotic infectious diseases, food security, antimicrobial resistance, climate change, and government). Tanzania scored a GOHI ranging from 40–50%, while the highest GOHI attained globally was 65%. The Global One Health Intelligent System (GOHIS) has been recently developed to connect the existing data and systems at the national, regional, and global levels to operationalize OH intelligence systems (FAO, 2022, CC1533EN/1/08.22). It is expected that GOHIS will also include Tanzania in its assessment.

Although Tanzania appears in several OH global assessments, the country's information is somewhat limited because of the lack of information about the country's OH activities. A specific country survey that could explore the specific country gaps, strengths, and challenges in OH-related governance and other activities was lacking. The COHESA project helped to understand the country's specific status in integrating the OH approach. By involving Tanzania's OH stakeholders face-to-face, the COHESA project identified gaps, challenges, and strengths specific and relevant to Tanzania situation, which may differ from other countries. Thus, the COHESA country multiplier conducted a country-specific baseline study to assess the OH approach landscape in the country. The study had four assessments: Desktop Review, Focus Group Discussion (FGD), OH Net Mapping, and Key Informants' Interview (KII). Participants for the KII and FGD exercises were purposively selected. Five people from government agencies, academic institutions, research institutions, and non-government organizations (NGOs) were invited for the interview. The project team analyzed the data to identify strengths and gaps in the OH approach in areas of interest, including research and innovation, governance, education, and implementation, to develop a way forward for the OH approach in Tanzania.

## Transdisciplinary Process

The OH approach embraces collaboration among human medicine, veterinary science, environmental health, ecology, and social sciences. This cross-sector collaboration enhances knowledge sharing, innovative solutions, and comprehensive problem-solving, which entails the One Health approach. The current baseline assessment ensured that a transdisciplinary across various sectors was represented. As stated above, the study had four assessments that involved OH stakeholders. The FGD group consisted of 12 individuals; five were from academia, three were from government, two were from private research institutes, and two were from NGOs. However, the gender was not balanced, as males surpassed the females in 5:1 ratio because of participants' availability. On the other hand, the KII group had 15 participants in total, whereas eight were males and seven were females. The average age of participants was 47 years old, with the majority having more than 7 years of work experience in OH-related fields. Most KII and FGD participants had expertise in the health field (Table 1).

**Table 1.** Focus group and key informants participants.

Area of expertise	Count*	Percentage (%)
Human medicine/health	7	46.6
Public health	6	40
Laboratory	4	26.6
Veterinary medicine/AH	5	33.3
Plant science/plant health	2	13.3
Ecology	3	20
Policy	2	13.3
Data analysis	4	26.6
Environmental sciences	2	13.3
Social sciences	2	13.3
Economics	2	13.3

\*Note: Some participants reported more than one area of expertise.

## OH research and innovation

One of the objectives within the Tanzania OH Strategic Plan (OHSP: (2015–2020), (2022–2027)) emphasizes that OH research is an important component to improving the health of humans, animals, and the environment through evidence-based knowledge generation. The OH research landscape mainly focuses on establishing a national OH research agenda stipulated in the OHSP under pillar 4.1.1. However, Desktop Review, FGD, and KII assessments revealed that although there are a number of studies on zoonotic diseases and antimicrobial resistance in Tanzania, most of these studies are not OH approach-oriented, that is, are not a multidisciplinary-based approach. Moreover, the research only involves the human and animal health sectors (Mangesho *et al.*, 2017; Kidima, 2019; Lushasi *et al.*, 2020) surveillance systems (George *et al.*, 2022). It was also noted that researchers on environmental, climate change, plant health, wildlife, social scientists, and anthropologists were less involved in OH research (NEP, 2021).

In addition to limited sectoral collaboration on research, there was inadequate knowledge sharing of OH research findings. Thus, a need to break silos in OH-related research has been highly encouraged (Mbungi *et al.*, 2012).

The assessments, however, showed strengths in some research areas regarding technical knowledge related to zoonoses and antimicrobial resistance (AMR: Frumence *et al.*, 2021; Mdegela *et al.*, 2021; National Action Plan on AMR, 2023–2028). Guidelines and action plans have been developed for National Action Plan on AMR, 2023–2028, and some of the prioritized zoonotic diseases (PZD, 2017) and AMR (National Action Plan on AMR, 2017). The six prioritized zoonotic diseases include rabies, Rift Valley fever, viral hemorrhagic fevers, zoonotic Avian influenza, anthrax, human African trypanosomiasis, brucellosis, which are under national surveillance (One Health Zoonotic Disease Prioritization of Multisectoral Engagement in Tanzania, 2017).

## Governance

One Health in Tanzania was conceptualized in the 1990s through veterinary and medical research activities (Shirima *et al.*, 2018). Higher learning institutions, specifically Muhimbili University of Health and Allied Sciences (MUHAS) and Sokoine University of Agriculture (SUA), were pioneers in initiating the implementation of the OH approach in Tanzania (AFROHUN, 2010). A formal OH strategy was developed by the OH Coordination Desk (OHCD) for the period of 2015–2022 (National One Health Action Plan, 2015–2020). This OHCD coordinated OH in Tanzania until the recent transition to the OH Section (OHS), which was established under the office of the Prime Minister. The OHS launched an updated OH strategy on 8 February 2023 by Prime Minister Hon. Majaliwa Kasim Majaliwa (National One Health Action Plan, 2022–2027). Changing OHCD to OHS meant that the OHS assumed more mandates and responsibilities. These responsibilities include supporting the six OH Technical Working Groups (OH-TWG), namely, Coordination TWG; Surveillance, Detection, Prevention and Control TWG; Preparedness and Response TWG; Research and Development TWG; Awareness, Advocacy and Communication TWG; and Training and Education TWG. These technical working groups are constituted by members recruited from relevant ministries and other OH stakeholders in Tanzania. The updated OH strategic plan incorporates new concepts such as food security and climate change to better involve all relevant stakeholders in OH. Despite this development, the TWGs' operationalization has been limited in coordination, advocacy, and collaboration. With COHESA support, stakeholders in these groups have been capacitated through various activities, including workshops and meetings on OH approach strategies.

Apart from the strategic plan, Tanzania has several OH-related documents for specific areas of implementation, including the National Action Plan (NAP) for Antimicrobial Resistance (AMR: 2017–2022), which was revised in 2022 (NAP-AMR, 2023–2028). The AMR governance has been successful. Frumence *et al.* outlined the achievements, including establishing a functioning multisectoral coordinating committee for implementing enhancing AMR activities (Frumence *et al.*, 2022). However, some dimensions of the governance areas, including the sustainability of AMR plans, are not effectively implemented (Frumence *et al.*, 2021). Moreover, more strategies are needed to manage the emergence of antimicrobial resistance in the country (Mdegela *et al.*, 2021). Addressing the challenges should involve strengthening communication, collaboration, coordination, and capacity building among the relevant OH actors to ensure the provision of adequate resources and, hence, sustainability.

Strategic plans for prioritized zoonotic diseases for prevention and control (PZD, 2017) have also somewhat succeeded. Some prioritized zoonotic diseases have individual plans, such as the National Strategy for Prevention and Control of Brucellosis in Humans and Animals (2018–2023) and The National Rabies Control Strategy (2019). The overarching goal of the OH prioritization process was to use a multi-sectoral OH approach to prioritize endemic and emerging zoonotic diseases of major public health concern in Tanzania. While some good work is being done, such as joint zoonotic outbreak response (Marburg Virus Disease – The United Republic of Tanzania WHO Press Release, 2023; Tanzania Confirms First-Ever Outbreak of Marburg Virus Disease, 2023), the discussions from the baseline data collection indicate that capacity building, efficiency and timely diagnostics, good surveillance systems, and prevention and control measures need to be enhanced.

## Education

One Health Education in Tanzania was initiated by the OH Central and East Africa (OHCEA) project; The OHCEA project engaged medical and veterinary undergraduate students from Muhimbili Health and Allied

Sciences (MUHAS) and Sokoine University of Agriculture (SUA). Later, the OHCEA was rebranded as Africa One Health University Network (AFROHUN, 2010; AFROHUN Training Modules, 2020), a multi-country initiative of eight African universities' network. The OHCEA/AFROHUN prepared OH modules and other education initiatives for classroom use. However, OH modules are currently administered at the tertiary level: certificate (short-courses) and diploma (professional) levels in human health and livestock-related training. A few universities and institutions have integrated One Health into other programs. For instance, The Nelson Mandela African Institution of Science and Technology (NM-AIST), which only trains postgraduate students, included an OH course in its Health and Biomedical Sciences Graduate Program. The course is taught in the classroom and as practical (Fig. 1) to promote OH research, training, and outreach programs.



**Fig. 1.** NM-AIST OH class outreach program. Students gave seminars on zoonotic diseases with an emphasis on anthrax and brucellosis.

Table 2 lists the universities and research institutions in the country that have included OH training in their programs. One Health content has been integrated into human medicine, environmental health, veterinary medicine, pharmacy, pediatrics, and public health, whereas most are offered at the tertiary and undergraduate levels. However, few OH-related master programs have been established. One Health content has been integrated into the curricula of the Master of Public Health (MUHAS), Master of Veterinary Science (SUA), and Master in Health and Biomedical Sciences (NM-AIST).

NM-AIST, in collaboration with the University of Glasgow, Scotland, has previously offered a one-week OH training for Postgraduate students (both Tanzanians and non-Tanzanians) with up to 25 participants every year (a total of 125 over 5 years from 2016 to 2020) (Shirima G, 2023, Personal Communication). The training aimed to equip professionals from various disciplines with the skills and knowledge needed to address health challenges using the OH approach, the interface of humans, animals, and the environment.

Other OH training programs in Tanzania include the Train of Trainers (ToT) Program offered by AFROHUN. The training takes 4–5 days and is offered to lecturers/tutors who teach at diploma and certificate levels. The ToT program aims to capacitate participants to offer the OH content within the existing curriculum at

**Table 2.** List of OH-related courses administered by higher education institutions in Tanzania.

Name of the institute	Type of training	Course name	Number of graduates/year
Tertiary colleges			
Health Integrated Multi-sectoral Development (HIMD) Arusha –Tanzania	Short courses	Public Health	50
Livestock Training Agency (LITA)	Certificate and diploma	1. One Health (AMR and Zoonoses)	300 in each course
	Farmers knowledge	1. Zoonoses (Brucellosis) and AMR (withdrawal period)	100–300
Higher learning institutions			
Muhimbili University of Health and Allied Sciences (MUHAS)	Diploma, undergraduate, and graduate Programs	1. Diploma in Environmental Health Sciences 2. Bachelor of Environmental Health Sciences 3. Doctor of Medicine 4. Master of Public Health 5. Master of Science in Tropical Diseases Control 6. Master of Medicine in Community Health	(An average) for diplomas: 200 Undergraduate programs: 200 Graduate programs: 100
Sokoine University of Agriculture (SUA)	Diploma and postgraduates Professional regulators, professional body associations, training departments	1. One Health Medicine 2. One Health concept and practices 3. One Health and application to AMR	200
The Nelson Mandela African Institution of Science and Technology	Master's and PhD in Health and Biomedical Sciences	1. One Health 2. One health short course 3. Global Health	10–15 per intake 25 per intake 5–10 per intake
Catholic University of Health and Allied Sciences (CUHAS) Kilimanjaro Clinical Research Institute (KCRI)	Diploma, undergraduate, postgraduate, and scientific conferences	1. Bacteriology and Virology 2. AMR and One Health	100
	Postgraduates	Molecular diagnosis of Infectious diseases (One Health-related)	20
	Technicians, clinicians, and nurses	1. AMR – Drivers 2. Social Science in relation to AMR	40

their respective colleges. However, during the validation of the baseline study, stakeholders suggested that OH education programs can be expanded to include teachers and students at primary school, secondary school, and vocational training.

In summary, the baseline assessment of OH facilitated by COHESA in Tanzania has shown that OH education has strengths, gaps, and challenges. One major strength is that the OH training modules that AFROHUN developed are an indication that, to some extent, OH education is offered in Tanzania. However, it is limited to certificate and diploma levels. Challenges include a lack of inclusiveness where OH education does not cover all levels of education; that is, some OH-related courses are offered at tertiary and few at degree levels, whereas primary, secondary, and vocational training have been left behind. Moreover, most OH courses offered at tertiary institutions are not similar; thus, harmonizing teaching modules is recommended. The COHESA project in Tanzania supports these solution initiatives, which include harmonizing OH courses at higher institutions and creating OH concept awareness at primary and secondary schools.

## Implementation

The second National One Health Strategic Plan (2022–2027) is in place. It was developed using a multisectoral approach, drawing expertise and experiences from various sectors to reflect a shared commitment to enhanced collaboration among human, animal, wildlife, and environmental health sectors. The primary aim of the plan was to reduce the burden of zoonotic diseases, AMR, and other public health threats. Funding to review the national OH strategic plan was obtained from FAO, WHO, and OHCD. This strategic plan is an overarching guiding government document summarizing strategic OH activities among various stakeholders. The plan also aims to create and maintain active collaboration, coordination, and communication among the relevant sectors for better prevention, prediction, detection, and response to



health threats. The successful implementation of the current Tanzania OH strategic plan will contribute significantly to improving public health, food safety and security, and the livelihoods and well-being of Tanzanians. This strategic plan is considered a road map for implementing OH activities in Tanzania. Currently, the guideline for OH strategic plan implementation is underway. One Health Section has been working with COHESA through the COHESA country team based at NM-AIST to support the capacity building of OHS staff and OH Multisectoral Technical Committees at sub-national levels in two regions (Arusha and Kilimanjaro) in four selected districts (Rombo, Hai, Meru, and Monduli). These Multisectoral Technical Committees implement OH-related functions at sub-national levels within Tanzania.

One Health Section organizes several events annually, including commemorating Antibiotic Resistance Week by running a series of meetings and public addresses to raise awareness and commemorating Rabies Day by conducting vaccination campaigns (Fig. 2). Moreover, several intervention studies on rabies control have been successfully conducted with convincing results (Lushasi *et al.*, 2020, 2021; Cleaveland *et al.*, 2018).



**Fig. 2.** Source: Anna Rhobi, October 1, 2022: Fighting Against Rabies: EAAW Vaccinates Dogs in Tanzania (Available at: <https://dailynews.co.tz/fighting-against-rabies-eaaw-vaccinates-over-5000-dogs/>).

An advantage of the OH approach is the early detection of emerging and re-emerging infectious diseases. This happens by monitoring and analyzing health data from humans, animals, and entire ecosystems to allow timely response measures to prevent or mitigate the spread of diseases and potential pandemics. For instance, the early detection system enabled Tanzania to rapidly respond and manage the Marburg outbreak in the Kagera region in just three months, from 21 March 2023 to 2 June 2023 (WHO, 2023). It was a highly organized OH approach that included all OH-relevant sectors in the country (Fig. 3).

## Synergies with other OH activities in the country

A fundamental factor of OH sectoral performance is synergy between relevant sectors. In the case of Tanzania, synergies between human health (Ministry of Health), animal health sector (Ministry of Livestock), and environment sector (Vice President Office (VPO) Environment Policy, 2021) need to be strengthened because it is mainly the animal and human health sectors that are mainly working on OH activities. The baseline study also revealed that the environmental, wildlife, and plant health sectors are not fully involved in OH activities. Surprisingly, some individuals working in the relevant OH sectors still do not fully understand how the OH approach operates, which may result in poor engagement between OH relevant sectors that the participants have noticed. For instance, in the animal health sector, respondents indicated less team engagement, failure to plan together, inadequate resources for planning activities, and competing interests, indicating that even within sectors, there can be limited collaborative OH work.



**Fig. 3.** Marburg outbreak in Kagera region (21 March 2023–2 June 2023). Source: WHO.

Interaction among the relevant sectors and disciplines is mostly event-based, such as during outbreaks of diseases and some OH-related commemorations (e.g. World Rabies Day and Antimicrobial Resistance Week etc.). In addition, the OH net mapping exercise conducted in Tanzania through COHESA support showed that most of the (4Cs) linkages (Collaboration, Coordination, Communication, Capacity building) between sectors are still weak. One of the possible explanations may be that these linkages between sectors are formed and/or existing but may not necessarily be intended for OH approach activities. With COHESA's support, discussions and activities promoting the four Cs with OH are advocated more than ever.

## Project Impact

Today's world faces unprecedented, interconnected threats to the health of people, animals, and the environment. Addressing these threats requires cross-sectoral, system-wide approaches. This is encapsulated in the OH concept, which recognizes the interconnection of people, animals, plants, and their shared environment. Despite the achievements in OH governance and education in Tanzania, challenges in OH operationalization, inadequate OH resources, non-inclusiveness in OH education, failure to consistently use the OH approach by relevant sectors, and inadequate OH awareness at the community level have contributed to slowing down the momentum in implementing an OH approach in the country. The COHESA project aims to address these gaps by generating an inclusive research and innovation ecosystem that facilitates the uptake, adaptation, and adoption of solutions to issues that an OH approach in Eastern and Southern African countries can address.

In Tanzania, NM-AIST works with COHESA to support OH capacity building in the country, and various activities have been carried out in collaboration with the OHS at the Prime Minister's Office. Initially, the baseline survey focuses on a better understanding of the OH status in Tanzania and where to intervene. A stakeholder validation workshop was conducted to validate the baseline findings, including increasing awareness of the OH concept among the stakeholders involved. In the survey, gaps and challenges were revealed, such as limited OH education to schools and grassroots communities and researchers, that OH key sectors are still working in silos and that OH advocacy and awareness at the community level is still low. The identified gaps/challenges need to be strengthened to effectively operationalize OH in the country. In addition, COHESA has already supported capacity building to key OH stakeholders, including OH Multisectoral Technical Committees in two selected regions and four districts in northern Tanzania.

The training focused on OH communication, collaboration, coordination, capacity building (the OH 4Cs), OH system thinking, and understanding the operations of the OH Strategic Plan, 2022–2027. The COHESA project leads and plans to continue enhancing OH governance and strengthening the OH workforce in Tanzania.

## Project Outlook/Conclusions

The government of Tanzania supports the operationalization of the OH concept. It is willing to harness OH activities nationwide through the OHS at the Prime Minister's Office to continue implementing its OH Strategic Action Plan 2022–2027. Engaging, empowering, and working together with local NGO's such as AFROHUN, One Health Society and Roll Back Initiative-AMR, and other private entities will also continue the OH implementation in the country in collaboration with One Health Section. In summary, the COHESA project in Tanzania has been well received because most of COHESA's work packages (knowledge sharing, governance, education, and research and delivery of OH solutions) align well with Tanzania's OHSP activities. In collaboration with the COHESA consortium, the country multiplier (COHESA team in Tanzania) has been working together to determine the country's specific OH needs in Tanzania and address them. The baseline study designed by COHESA to assess the OH status in the country was successfully conducted. This was an important baseline survey to identify strengths, weaknesses, gaps, and challenges in OH operationalization in Tanzania to facilitate the strengthening of planning for OH in the country. So far, several COHESA activities in Tanzania have been working on strengthening the identified gaps in OH multisectoral performance, One Health education, and increasing OH advocacy to all stakeholders at all levels. The COHESA project has stimulated the joint efforts of OH stakeholders; this engagement should be enhanced to ensure the sustainability of the OH approach in the country.

## Group Discussion Questions

Practically, OH was implemented before official formalization, with a few sectors working together to tackle specific health threats. Under this initiative, the government of Tanzania managed to establish the OH Section under the Prime Minister's office. However, the operationalization of the OH Section is still limited by several factors, such as team building, sectoral collaboration, and inadequate resources. Key questions (Table 3) should still be addressed to advance One Health in Tanzania and elsewhere.

**Table 3.** Group discussion questions.

Question	Response
1. What should be done to make Tanzania's OH approach more vibrant and sustainable?	
2. How best to improve the availability of funds for the sustainable operationalization of OH in Tanzania?	
3. How can we use the OH Section to improve operationalization?	
4. How can we avoid a siloed mentality among OH actors in Tanzania in advancing the OH approach?	

## Acknowledgments

The authors sincerely appreciate the One Health Section under the Prime Minister's Office for the support and coordination extended to the Tanzania COHESA team. In addition, European Union-funded OACPS Research is acknowledged for funding the COHESA project. Last but not least is the Nelson Mandela African Institution of Science and Technology for being a country COHESA multiplier. Participants of the OH baseline survey, the COHESA Consortium, and our Coordinator, Theo Knight-Jones, are highly acknowledged for their support.

## Conflict of interest

The authors have no conflicts of interest to declare.

## Funding statement

Capacitating One Health in Eastern and Southern Africa (COHESA), (Grant/Award Number: 'KE-2009-BHI-1202191058')

## Further Reading

One-Health-Theory-of-Change from the One Health High-Level Expert Panel (2021) Available at: <https://cdn.who.int/media/docs/default-source/one-health/ohhlelep/ohhlelep--one-health-theory-of-change.pdf>.

Tanzania National One Health Strategic Plan (2022–2027) Available at: <https://www.pmo.go.tz/uploads/documents/sw-1677564782-National%20One%20Health%20Strategic%20Plan%202022%20-2027.pdf>.

## References

AFROHUN (2010) Available at: <https://afrohun.org/about-us/>.

AFROHUN Training Modules (2020) Available at: <https://afrohun.org/course/onehealthmodules?/>.

Cleaveland, S. *et al.* (2018) Proof of concept of mass dog vaccination for the control and elimination of canine rabies. *Revue Scientifique et Technique (International Office of Epizootics)* 37(2), 559–568. DOI: 10.20506/rst.37.2.2824.

Duamor, C.T., Lankester, F., Mpolya, E., Ferguson, E.A., Johnson, P.C.D. *et al.* (2022) Participation in mass dog vaccination campaigns in Tanzania: Benefits of community engagement. *Frontiers in Public Health* 10, 1–16. DOI: 10.3389/fpubh.2022.971967.

FAO (2022) The Global One Health Intelligent System (GOHIS). Available at: <https://rafrica.woah.org/app/uploads/2022/08/cc1533en.pdf>.

Fasina, O.F., Thomas, L., Bett, B., Dione, M., Mutua, F. *et al.* (2022) One Health gains momentum in Africa but room exists for improvement. *One Health* 15, 1–8. DOI: 10.1016/j.onehlt.2022.100428. Available at: <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

Fighting Against Rabies: EAAW Vaccinates Dogs in Tanzania (2022). Available at: <https://dailynews.co.tz/fighting-against-rabies-eaaw-vaccinates-over-5000-dogs/>.

Frumence, G., Mboera L.E.G., Sindato, C., Katale, B.Z., Kimera, S. *et al.* (2021) The governance and implementation of national action plan on antimicrobial resistance in Tanzania: A qualitative study. *Antibiotics* 10(273), 1–16.

George, J. *et al.* (2022) Mechanisms and contextual factors affecting the implementation of animal health surveillance in Tanzania: A process evaluation. *Frontiers in Veterinary Science* 8, 1–16. DOI: 10.3389/fvets.2021.790035.

Kidima, W. (2019) Prevalence of zoonotic parasites in stray dogs in rural communities, Tanzania. *Tanzania Journal of Science* 45, 93–100.

Lushasi, K., Steenson, R., Bernard, J., Chagalucha, J.J., Govella, N.J. *et al.* (2020) One Health in practice: Using integrated bite case management to increase detection of rabid animals in Tanzania. *Frontiers in Public Health* 8, 1–10

Lushasi, K., Hayes, S., Ferguson, E.A., Chagalucha, J., Cleaveland, S. *et al.* (2021) Reservoir dynamics of rabies in South-East Tanzania and the roles of cross-species transmission and domestic dog vaccination. *Journal of Applied Ecology* 58, 2673–2685. DOI: 10.1111/1365-2664.13983.

Mangesho, P.E., Neselle, M.O., Karimuribo, E.D., Mwangwa, J.E., Queenan, K. *et al.* (2017) Exploring local knowledge and perceptions on zoonoses among pastoralists in Northern and Eastern Tanzania. *PLOS Neglected Tropical Diseases* 11, 1–22.

Marburg outbreak in Kagera Region (2023) Available at: <https://www.who.int/emergencies/disease/news/item/2023>.

Mbungu, E.V., Kayunze, K.A., Katale, B.Z., Kendall, S., Good, L. *et al.* (2012) One Health infectious diseases surveillance in Tanzania: Are we all on board the same flight? *Onderstepoort Journal of Veterinary Research* 79, 1–7.

Mdegela, R.H., Mwakapeje, E.R., Rubegwa, B., Gebeyehu, D.T., Niyigena, S. *et al.* (2021) Antimicrobial use, residues, resistance and governance in the food and agriculture sectors, Tanzania. *Antibiotics* 10(454), 1–23.

National Environment Policy-Tanzania (2021) The United Republic of Tanzania Vice President's Office (Vpo)-Environment. Available at: <https://www.vpo.go.tz/uploads/publications/sw-1644923087-NATIONAL%20%20ENVIRONMENTAL%20POLICY%202021%20new.pdf>.

National One Health Strategic Plan (2015–2020) Available at: [https://drmims.sadc.int/sites/default/files/document/2020-03/FINAL\\_URT\\_One\\_Health\\_Strategy\\_Plan\\_20151021.pdf](https://drmims.sadc.int/sites/default/files/document/2020-03/FINAL_URT_One_Health_Strategy_Plan_20151021.pdf).

National One Health Strategic Plan (2022–2027) Available at: <https://www.pmo.go.tz/uploads/documents/sw-1677564782-National%20One%20Health%20Strategic%20Plan%202022%20-2027.pdf>.

National Strategy for Prevention and Control of Brucellosis in Humans and Animals (2018–2023) Available at: <https://www.mifugouvuvu.go.tz/uploads/publications/sw1602245043-NATIONAL%20STRATEGY%20ON%20PREVENTION%20AND%20CONTROL%20OF%20BRUCELOSIS%20IN%20HUMANS%20AND%20ANIMALS.pdf>.

One Health Research Centre in Africa (OHRECA)/ International Livestock Research Institute (ILRI) (2020) Available at: <http://bit.ly/ohafrica>.

One Health Theory of Change: One Health High-Level Expert Panel (2021) Available at: <https://cdn.who.int/media/docs/default-source/one-health/ohhlepanel/ohhlepanel--one-health-theory-ofchance.pdf>.

One Health Zoonotic Disease Prioritization for Multisectoral Engagement in Tanzania (2017) Available at: <https://stacks.cdc.gov/view/cdc/53725>.

Rüegg, S.R., Häslar, B. and Jakob, Z.J. (2018) Integrated Approaches to Health: A Handbook for the Evaluation of One Health. Available at: <https://www.wageningenacademic.com/doi/book/10.3920/978-90-8686-875-9>.

Shirima, G., Mpolya, E., Nkya, E., Swai, H., Vianney, J.M., Buza, J. and Kunda, J. (2018) Genesis of One Health activities and operationalization in Tanzania: Opportunities and challenges. *5th International One Health Congress, 22nd–25th June 2018 at TCU Place Saskatoon*. Poster Presentation, Canada.

Tanzania Confirms First-Ever Outbreak of Marburg Virus Disease (2023) Available at: <https://www.afro.who.int/countries/united-republic-of-tanzania/news/tanzania-confirms-first-ever-outbreak-marburg-virus-disease>.

The National Action Plan on Antimicrobial Resistance 2017–2022–Tanzania (2017) Available at: <https://www.flemingfund.org/wp-content/uploads/8b8fc897c422e11504c8c2ba126fac02.pdf>.

The National Action Plan on Antimicrobial Resistance 2023 – 2028 -Tanzania (2023) Available at: <https://www.mifugouvuvu.go.tz/uploads/publications/sw1679278889>.

The National Rabies Control (2022) Available at: <https://static1.squarespace.com/static/60ae10230c660f2b45453582/t/61237d549a97d543daf6728b/1629715811493/National+Rabies+Control+Strategy+2019.pdf>.

Zhang, X.X. *et al.* (2022) Towards a global One Health index: A potential assessment tool for One Health performance. *Journal of Infectious Diseases and Poverty* 11, 57. DOI: 10.1186/s40249-022-00979-9.