

Workshop Summary

Prioritizing Zoonotic Diseases for Multisectoral One Health Collaboration in Zambia



Livingstone, Zambia



AfricaCDC
Centres for Disease Control
and Prevention



Implemented by
giz
Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH





FOREWORD

Zoonotic diseases remain a significant threat to Zambia's public health, animal health, biodiversity, livelihoods and socioeconomic development. The movement of people and animals, changes in land use, climate variability, expanding human-animal-wildlife interactions and increasingly interconnected food systems reinforce the need for coordinated action across sectors. No single institution or discipline can adequately prevent, detect and respond to these threats in isolation.

The Government of the Republic of Zambia has therefore continued to promote the One Health approach, recognising the interconnectedness of human, animal and environmental health. Central to this commitment is the need to identify the zoonotic diseases of greatest national concern and to direct limited resources towards interventions that offer the greatest public value.

This report presents the outcomes of Zambia's One Health Zoonotic Disease Prioritization Workshop, held in Livingstone from 24 to 26 July 2023. The process brought together representatives from the human health, livestock, wildlife and environmental sectors, alongside academia and cooperating partners. Participants reviewed 48 zoonotic diseases and applied five nationally agreed criteria: disease severity; availability of capacity to prevent, detect and control disease; pandemic or epidemic potential; socioeconomic and environmental impact; and the availability of mechanisms for One Health collaboration.

Through a structured, evidence-informed and country-led process, ten priority zoonotic diseases or disease groups were identified for multisectoral action: African trypanosomiasis, anthrax, rabies, plague, zoonotic avian influenza, viral haemorrhagic fevers including Ebola, zoonotic tuberculosis, cysticercosis, salmonellosis and brucellosis. The final priorities reflect both the results of the technical assessment and the collective judgement of national stakeholders, taking Zambia's epidemiological, institutional and socioeconomic context into account.

Importantly, the workshop went beyond identifying diseases. Participants developed practical next steps covering One Health coordination, surveillance, preparedness, outbreak response, prevention and control, workforce development and research. These recommendations provide a common foundation for aligning policies, operational plans, investments and partner support across sectors and at national and subnational levels.

This report should therefore be regarded not as an endpoint, but as a framework for coordinated implementation and accountability. Its value will be realised through sustained political commitment, adequate domestic financing, effective information sharing, strengthened institutional capacity and meaningful participation by all relevant sectors. The priorities should also be periodically reviewed as disease patterns, environmental conditions, scientific evidence and national capacities evolve.

On behalf of the Zambia National Public Health Institute, I commend all institutions and individuals who contributed to this important national process. I call upon Government institutions, academia, civil society, communities and cooperating partners to use these findings to strengthen Zambia's collective capacity to prevent, detect and respond to zoonotic disease threats, thereby protecting lives, livelihoods, animals, ecosystems and national development.



Professor Roma Chilengi

Director General

Zambia National Public Health Institute



ACKNOWLEDGEMENT

The Zambia National Public Health Institute gratefully acknowledges the collective contributions of all institutions and individuals who supported the successful planning and conduct of the One Health Zoonotic Disease Prioritization Workshop held in Livingstone from 24 to 26 July 2023, as well as the preparation of this report.

Appreciation is extended to the Government institutions that provided leadership, technical expertise and country ownership throughout the process: the Ministry of Health; the Ministry of Fisheries and Livestock; the Ministry of Green Economy and Environment; the Zambia National Public Health Institute; and the Department of National Parks and Wildlife. The participation of representatives from the human health, livestock, wildlife and environmental sectors ensured that the prioritization process reflected Zambia's multisectoral context and the fundamental principles of One Health.

We sincerely acknowledge the voting members, observers, subject-matter experts, workshop organisers, external facilitators and trained in-country facilitators. Their careful review of available evidence, open deliberation and professional judgement were essential to developing the criteria, assessing the 48 zoonotic diseases and agreeing on the final national priority list and corresponding actions.

Special appreciation is extended to the U.S. Centers for Disease Control and Prevention, including its Zambia Country Office and One Health Office, and to Africa Centres for Disease Control and Prevention for their technical support, facilitation and contribution to strengthening national capacity to apply the One Health Zoonotic Disease Prioritization process.

We further recognise the valuable contributions of the World Health Organization (WHO), the U.S. Agency for International Development (USAID), Africa Centres for Disease Control and Prevention (Africa CDC), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the World Organisation for Animal Health (WOAH), the United Kingdom Health Security Agency (UKHSA), the U.S. Centers for Disease Control and Prevention (US CDC), the Food and Agriculture Organization of the United Nations (FAO), the University of Zambia School of Veterinary Medicine, Capacitating One Health in Eastern and Southern Africa (COHESA), and USAID Breakthrough ACTION.

We also acknowledge the administrative and logistical teams whose work behind the scenes enabled the process to proceed successfully, and all those who contributed to reviewing, compiling and refining this report.

Above all, we recognise that this report represents a shared national commitment. Its successful implementation will depend on continued collaboration among Government institutions, academia, cooperating partners, civil society and communities. May the priorities and actions identified herein translate into stronger systems and better health outcomes for Zambia's people, animals and environment.



Dr Raymond Hamoonga

National One Health Coordinator
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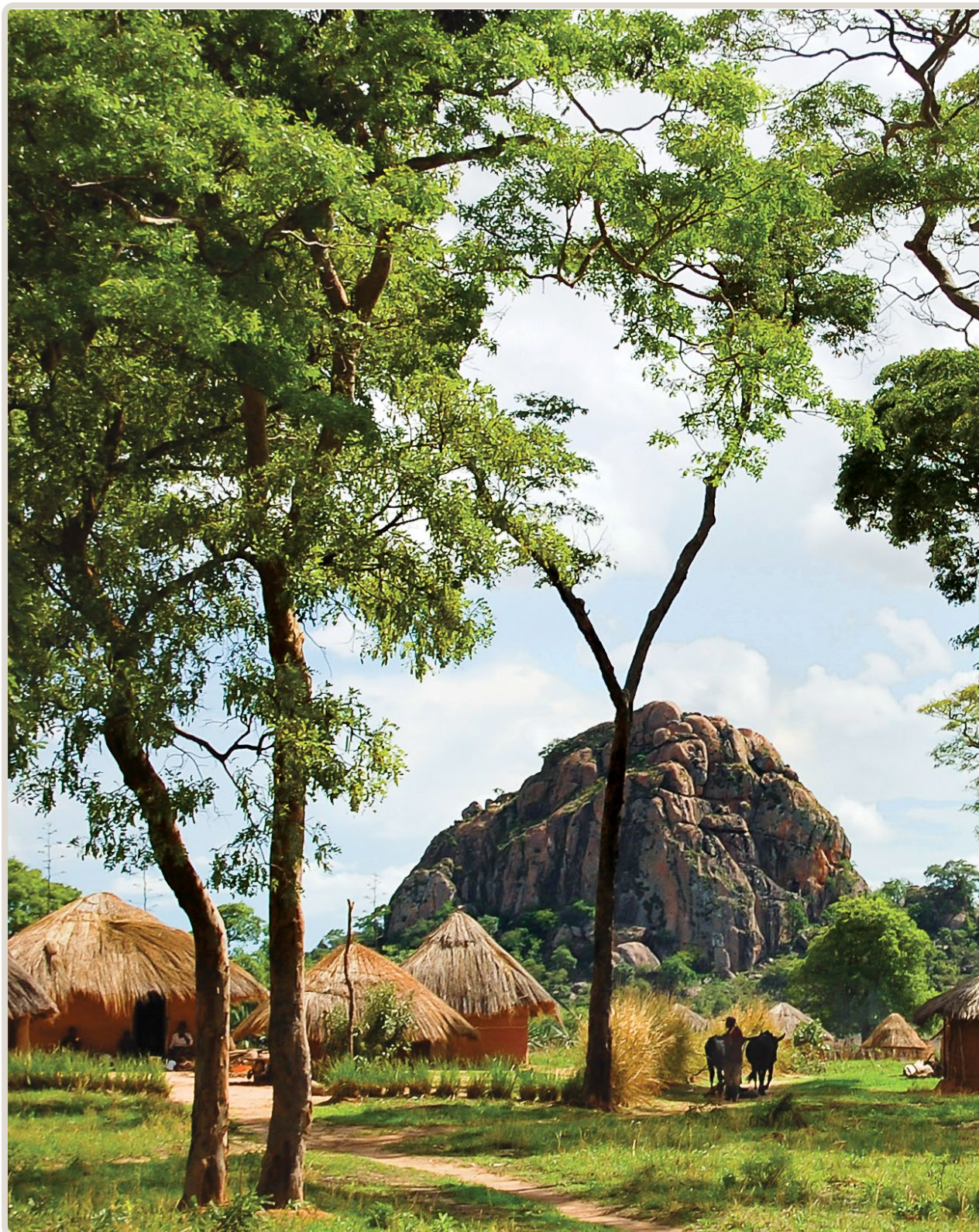


Photo 1. A small village in Zambia.

DISCLAIMER

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the U.S. Centers for Disease Control and Prevention.

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Photo 2. View of Victoria Falls, located at the border between Zambia and Zimbabwe.

EXECUTIVE SUMMARY



Photo 3. Participants from the One Health Zoonotic Disease Prioritization Workshop in Zambia

The purpose of the One Health Zoonotic Disease Prioritization (OHZDP) workshop for Zambia was to prioritize zoonotic diseases of greatest concern using a multisectoral, One Health approach with equal input from representatives of human, animal (domestic and wildlife), and environmental health sectors and other relevant partners.

The specific workshop goals were to use a multisectoral, One Health approach to:

1. Prioritize zoonotic diseases of greatest concern for Zambia, and
2. Develop next steps and action plans to address the priority zoonotic diseases in collaboration with One Health partners.

During the workshop, participants developed a list of zoonotic diseases for prioritization for Zambia, defined the criteria, and determined questions and weights relevant to each criterion. A total of 10 zoonotic diseases were identified as a priority by participants using a mixed methods prioritization approach; the OHZDP Process, developed by the U.S. Centers for Disease Control and Prevention (CDC) (Appendix A).

After the participants selected the priority zoonotic diseases, participants developed next steps and action plans to address the priority zoonotic diseases in collaboration with One Health partners.

The priority zoonotic diseases for multisectoral, One Health collaboration for Zambia are:

- African trypanosomiasis
- Anthrax
- Rabies
- Plague
- Influenza-like illnesses (zoonotic avian influenza)
- Viral hemorrhagic fevers (Ebola)
- Zoonotic tuberculosis
- Cysticercosis
- Enteric diseases (salmonellosis)
- Brucellosis

This report summarizes the OHZDP process used to prioritize zoonotic diseases of greatest concern for Zambia, as well as next steps and action plans to jointly address these zoonotic diseases using a multisectoral, One Health approach including human, animal, and environmental health ministries and other relevant sectors.

PARTICIPATING ORGANIZATIONS

- Ministry of Health
- Ministry of Fisheries and Livestock
- Ministry of Green Economy & Environment
- Zambia National Public Health Institute
- Department of National Parks and Wildlife
- University of Zambia, School of Veterinary Medicine
- Africa Centre for Disease Control and Prevention (Africa CDC)
- Capacitating One Health in Eastern & Southern Africa (COHESA)
- Food and Agriculture Organization of the United Nations (FAO)
- The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- United Kingdom Health Security Agency (UKHSA)
- U.S. Centers for Disease Control and Prevention (US CDC)
- U.S. Agency for International Development (USAID)
- U.S. Agency for International Development (USAID) Breakthrough ACTION
- World Health Organization (WHO)
- World Organisation for Animal Health (WOAH)



Photo 4. Aerial view of the city of Lusaka, Zambia .

INTRODUCTION

Zoonotic diseases are diseases that are spread between animals and humans. Most known human infectious diseases and about three-quarters of newly emerging infections originate from animals. Zoonotic diseases that occur in large numbers can impact society in three main ways. Specifically, they:

- Threaten the health of animals resulting in illness, loss of productivity, and death;
- Threaten the livelihood of the population dependent on livestock as a major source of income; and
- Threaten the health of people, with the ability to cause many illnesses and death, which is associated with significant social and economic losses.

To best address zoonotic disease threats, a multisectoral, One Health approach should be applied. One Health means a collaborative, multisectoral, and transdisciplinary approach—working at the local (subnational), national, regional, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnectedness between people, animals, plants, and their shared environment.

To begin addressing zoonotic disease challenges in Zambia, an OHZDP workshop was held July 24–26, 2023 at the Radisson Blu Hotel in Livingstone, Zambia.

The specific workshop goals were to use a multisectoral, One Health approach to:

1. Prioritize zoonotic diseases of greatest concern for Zambia; and
2. Develop next steps and action plans to address the priority zoonotic diseases in collaboration with One Health partners.

To build in-country capacity to conduct future OHZDP workshops, six participants from government and quasi-government institutions were trained by CDC and Africa CDC on the OHZDP Process. The participants were selected from the following relevant One Health institutions:

- I. Ministry of Health (MoH)
- II. Ministry of Fisheries and Livestock (MFL)
- III. Ministry of Green Economy and Environment (MGEE)
- IV. Zambia National Public Health Institute (ZNPHI)
- V. The University of Zambia (UNZA)

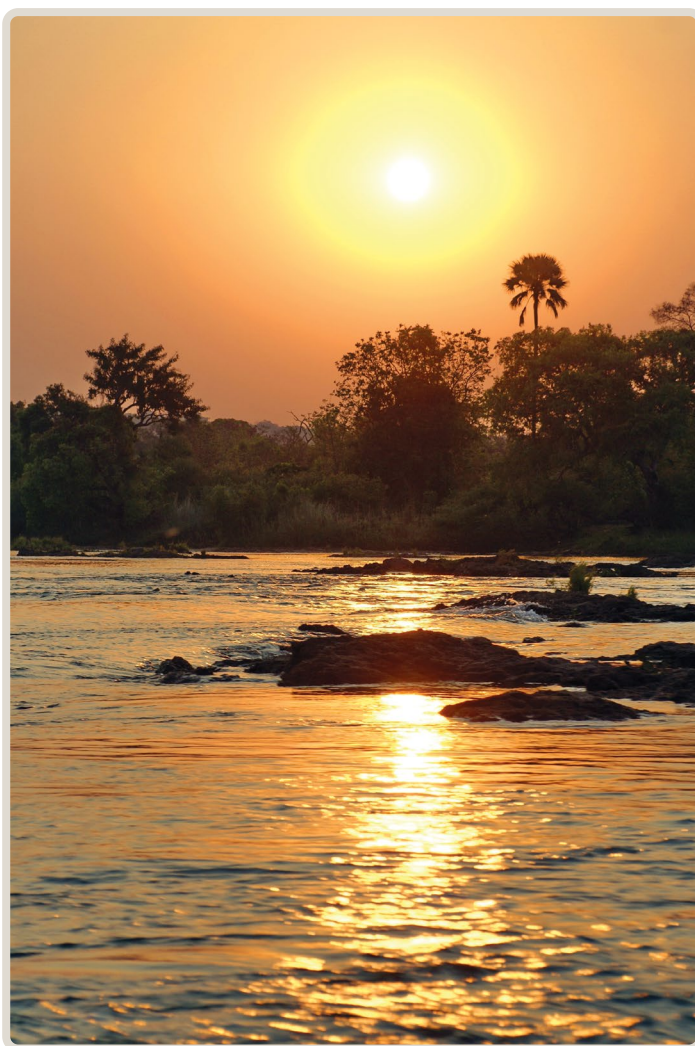


Photo 5. Sunset over the Zambezi River, in Livingstone, Zambia

WORKSHOP METHODS

The OHZDP Process uses a mixed methods approach developed by CDC's One Health Office. The methods have been previously described in detail (Appendix A). Preparation and planning for the workshop began months in advance. During the workshop, participants (Appendix B) first reviewed an initial zoonotic disease list to focus on for prioritization. A zoonotic disease was selected if it was known to be spread between humans and animals of concern for Zambia. Zoonotic diseases on human or animal reportable disease lists were included on the initial list. A list of 48 zoonotic diseases (Appendix C), were considered during the workshop.



The participants then developed five criteria for ranking the 48 zoonotic diseases. Once the five criteria were developed, one categorical question was developed for each criterion through group discussions. The questions were developed to best measure each criterion. All questions had ordinal, binomial, or multinomial answers. The ordinal nature is necessary for the scoring process and each answer choice was given a score, which was determined by the participants. Voting members then individually ranked their preferences for the relative importance of each criterion. Each individual voting member's ranking was then inputted into the OHZDP Tool by a facilitator and a group weight for each criterion was calculated. Facilitators and participants answered each question for each zoonotic disease using data that were identified through an extensive literature search, as well as information from WHO, WOA, ProMED, and other relevant sources. Data on disease transmission, severity, pandemic and epidemic potential, economic impact, prevention and control, and environmental impact were collected for each zoonotic disease. If information for a particular zoonotic disease was not available for Zambia, regional or global data were used. Other articles were collected with zoonotic disease-specific information on transmission, severity, pandemic and epidemic potential, economic impact, prevention and control, and environmental impact to the country, region, and globally. These references were compiled and shared with all workshop participants.

After scoring all zoonotic diseases, decision tree analysis was used to determine the ranked zoonotic disease list. Each weighted criterion was applied across each question's answers for each zoonotic disease. The scores for all five questions for each zoonotic disease were summed. The largest raw score was then normalized giving that zoonotic disease a normalized score of 1. See Appendix C for a complete listing of raw and normalized scores for all zoonotic diseases that were considered for prioritization.

The zoonotic diseases, with their raw and normalized scores, were presented to the participants for discussion. Workshop participants then utilized the ranked OHZDP list to discuss and decide on a final priority list of zoonotic diseases. After the participants decided on the priority zoonotic diseases, they developed next steps and action plans to address the priority zoonotic diseases.

CRITERIA AND QUESTION DESCRIPTION DEVELOPED

The criteria for ranking zoonotic diseases selected by the voting members in Zambia are listed in order of importance below. A description of how the questions assessed the criteria are listed below. For the full question and answer choices, see Appendix D.

Rank	Criteria	Weight	Question Description
1	Disease Severity	0.40	What are the disease morbidity and mortality rates for humans and animals in the country?
2	Availability of Coping Capacity to Prevent, Detect, and Control	0.22	Is there capacity to present and/or detect and/or control the zoonotic disease in the country?
3	Pandemic/Epidemic Potential	0.17	How many outbreaks has the zoonotic disease caused affecting animals or humans in the country or outside the country in the last 10 years?
4	Socioeconomic/Environmental Impact	0.11	What are the social-economic or environmental impact of the disease?
5	One Health Collaboration	0.09	Are there any formal mechanisms for multisectoral collaboration and coordination for the disease at national and subnational levels?

PRIORITY ZONOTIC DISEASE LIST FOR ZAMBIA

- African trypanosomiasis
- Anthrax
- Rabies
- Plague
- Influenza-like Illnesses (zoonotic avian influenza)
- Viral hemorrhagic fevers (Ebola)
- Zoonotic tuberculosis
- Cysticercosis
- Enteric diseases (salmonellosis)
- Brucellosis



Photo 7. Tourists observing a Hippopotamus (*Hippopotamus amphibius*) in the Zambeze river.



Photo 9. A group of Black Lechwe (*Kobus leche smithemani*) near Lake Bangweulu in Zambia.

NEXT STEPS AND ACTION PLANS

After finalizing the list of priority zoonotic diseases, workshop participants discussed next steps and action plans to address the diseases using a multisectoral, One Health approach. A summary of the recommendations organized by theme follows.

One Health Coordination

Goal: Strengthening Interagency Cooperation

Next Steps	Indicators to measure when the next steps are achieved	Sector(s) Responsible
Hold six national and 40 subnational meetings to review and harmonize legislation that addresses the management of zoonotic diseases (including select agents) in the three sectors	Number of meetings held at national level Number of meetings held at subnational level	One Health Governance and Coordination Technical Working Group (TWG)
Submit legislation to Ministry of Justice for approval	Number of legislations submitted to Ministry of Justice for approval	One Health Governance and Coordination TWG
Conduct One Health advocacy meetings for government budget allocation for zoonotic disease management	Number of meetings held at national level Number of meetings held at subnational level	One Health Governance and Coordination TWG
Develop One Health financing concept notes and proposals for management of zoonotic diseases	Number of financing concept notes and proposals for management of zoonotic diseases developed	One Health Governance and Coordination TWG
Conduct One Health in-country simulation exercises for management of zoonotic diseases to improve coordination mechanisms	Number of simulation exercises conducted	One Health Governance and Coordination TWG
Conduct One Health multi-country simulation exercises for management of zoonotic diseases to improve coordination mechanisms, leveraging on existing regional initiatives	Number of simulation exercises conducted	One Health Governance and Coordination TWG
Timeframe for Progress Check	By 2026	

Surveillance Capacity

Goal: A functional One Health Surveillance System to prevent and control zoonotic diseases

Next Steps	Indicators to measure when the next steps are achieved	Sector(s) Responsible
Develop an action plan for the integrated surveillance system	Action plan developed	One Health Surveillance TWG
Identify the data needs for integrated surveillance system	Data needs identified	One Health Surveillance TWG
Develop an integrated surveillance system for the highest priority zoonotic diseases	Integrated surveillance system developed	One Health Surveillance TWG
Conduct training needs assessment on One Health surveillance	Training needs assessment conducted	One Health Surveillance TWG
Conduct capacity building for the integrated surveillance system	Number of surveillance personnel trained in the One Health sector	One Health Surveillance TWG
Conduct a pilot on One Health implementation	Pilot on One Health implementation conducted	One Health Surveillance TWG
Conduct advocacy meetings and workshops with policy and decision makers on the One Health integrated surveillance system	Advocacy meetings held	One Health Advocacy, Communication and Training TWG
Roll out the integrated surveillance system	Surveillance system rolled out	One Health Surveillance TWG
Timeframe for Progress Check	By 2026	

Outbreak Response

Goal: To strengthen the One Health approach in outbreak response at all levels by 2026

Next Steps	Indicators to measure when the next steps are achieved	Sector(s) Responsible
Operationalize access to emergency funds to support all relevant sectors to carry out immediate investigation in public health events	Proportion of emergency funds accessed by all sectors	One Health Governance and Coordination TWG
Conduct after action report (AAR) for priority zoonotic disease outbreaks	Number of AAR for zoonotic disease outbreak conducted	One Health Preparedness and Response TWG
Develop priority zoonotic disease risk communication and community engagement (RCCE) strategy	Number of RCCE strategies developed	One Health Advocacy, Communication and Training TWG
Develop RCCE messages for all prioritized zoonotic diseases	Number of disease specific RCCE messages developed	One Health Advocacy, Communication and Training TWG
Timeframe for Progress Check	Progress review to be conducted every 3 months (1st review to be held in November 2023)	

Preparedness Planning

Goal: To strengthen preparedness planning and improve the ability to respond to public health threats through the One Health approach at all levels by 2026

Next Steps	Indicators to measure when the next steps are achieved	Sector(s) Responsible
Create a database for subject matter experts on priority zoonotic diseases and other public health threats	Number of subject matter experts on priority zoonotic diseases database developed	One Health Preparedness and Response TWG
Conduct trainings in Emergency Preparedness and Response (multi-hazard approach) for rapid response teams (RRT) using One Health approach at national and subnational levels	Proportion of RRT trained in emergency preparedness and response	One Health Preparedness and Response TWG
Develop disease-specific contingency plans for prioritized zoonotic diseases	Number of disease-specific contingency plans developed	One Health Preparedness and Response TWG
Conduct simulation exercises for prioritized zoonotic diseases	Number of simulation exercises conducted	One Health Preparedness and Response TWG
Conduct training of One Health RRT in Public Health Emergency Management (PHEM)	Proportion of RRT trained in PHEM	One Health Preparedness and Response TWG
Timeframe for Progress Check	Progress review to be conducted every 3 months (1st review to be held in November 2023)	

Prevention and Control

Goal: To strengthen prevention and control of the prioritized zoonotic diseases

Next Steps	Indicators to measure when the next steps are achieved	Sector(s) Responsible
Conduct and publish systematic review of baseline assessments for the incidence, mortality, and morbidity for these prioritized zoonotic diseases	Number of reviews and baseline assessments conducted and published	One Health Research TWG
Create/operationalize a technical working group specifically for disease prevention, control, and elimination with members from other line ministries and partners	List of appointed members from all sectors Availability of Terms of Reference (ToRs) and minutes	One Health Governance and Coordination
Create metrics and evaluation framework for specific health Information system for all priority zoonotic diseases	Framework developed	One Health Governance and Coordination
Assess and analyze the funding gaps to estimate the resources needed for elimination or control for priority zoonotic diseases	Funding gap report produced	One Health Governance and Coordination
Participate in stakeholder landscaping and quantification of different prophylaxis and vaccines as appropriate	Meeting reports	One Health Governance and Coordination
Timeframe for Progress Check	Progress review to be conducted every 3 months (1st review to be held in March 2024)	

Workforce

Goal: Have a functional and well coordinated One Health national program that addresses Zoonotic diseases

Next Steps	Indicators to measure when the next steps are achieved	Sector(s) Responsible
Hold orientation meetings for One Health focal point based in all line ministries (including ministry leaders) to contribute to collaborative management of zoonotic diseases	Number of meetings held	One Health Governance and Coordination TWG
Conduct a human resource needs assessment and develop a training plan for zoonotic disease management at all levels	Number of needs assessments conducted	One Health Governance and Coordination TWG
Recruit adequate numbers of appropriately skilled staff to manage zoonotic diseases	Number of staff recruited	One Health Governance and Coordination TWG
Conduct zoonotic disease management-related trainings for staff according to the training plan	Number of staff trained	One Health Governance and Coordination TWG
Timeframe for Progress Check	By 2026	

Research

Goal: To increase intersectoral collaborative One Health research with regards to the prioritized zoonotic disease list in Zambia

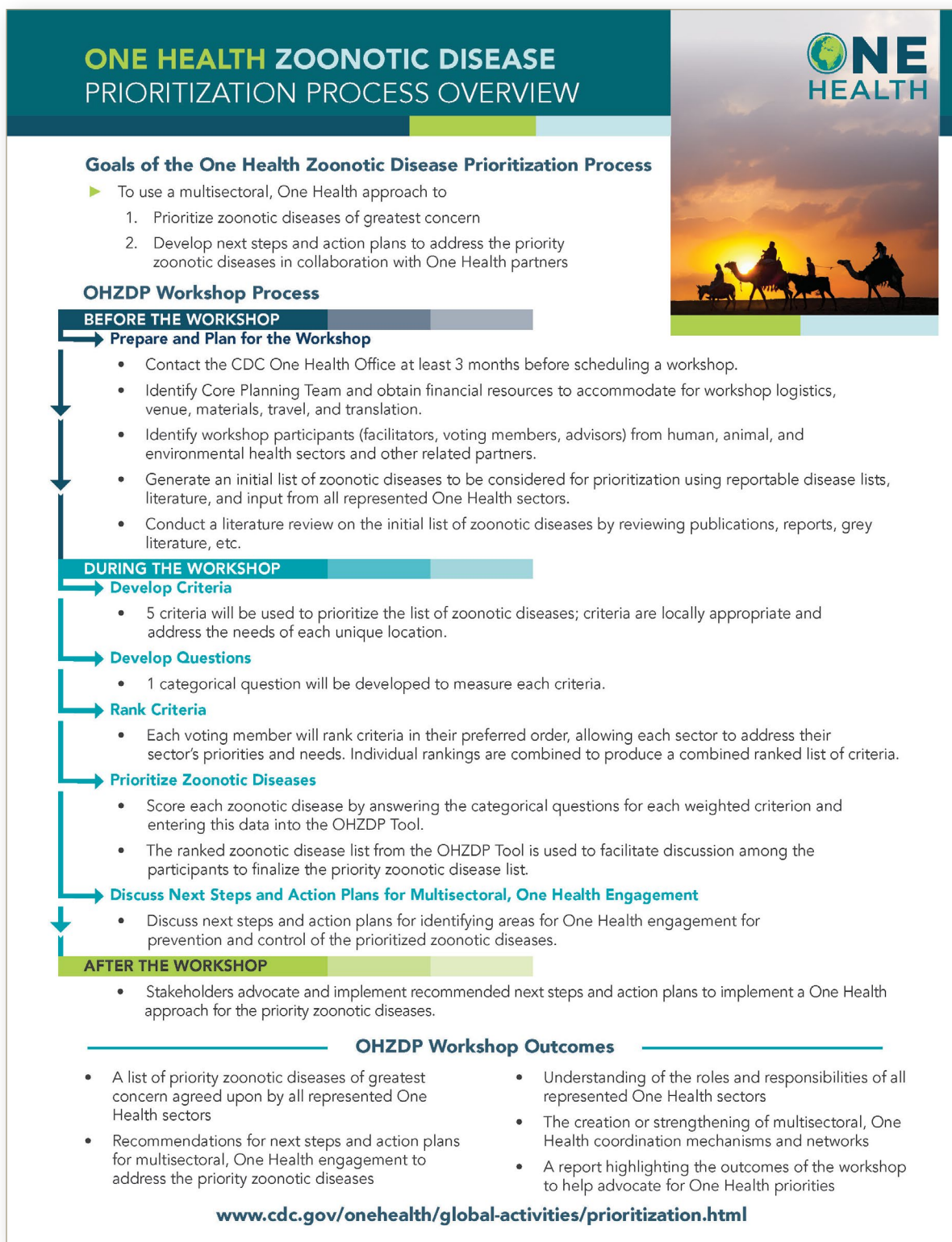
Next Steps	Indicators to measure when the next steps are achieved	Sector(s) Responsible
Review the Zambia National Health Research Agenda to include prioritized zoonotic diseases	Availability of a document that outlines research topics to be considered	One Health Research TWG
Develop collaborative One Health research proposals and conduct the research	Number of OH research proposals developed and submitted to the TWG. The priority zoonotic diseases included in the Zambia National Health Research Agenda	One Health Research TWG
Operationalize a One Health Research (TWG)	List of the appointed TWG members, availability of TORs, meeting schedules, minutes of the meetings	One Health Governance and Coordination TWG
Develop, review, and revise memoranda of understanding (MoUs) and Material Transfer Agreements (MTAs)/Data Transfer Agreements (DTAs) to include One Health among relevant research institutions	Number of MoUs, MTAs and DTAs, developed and signed Number of MOU planned	One Health Research TWG
Assess inventory on existing capacity and develop database	Inventory and database in place	One Health Research TWG
Training of research teams in One Health themes	Number of teams trained and availability of reports	One Health Research TWG
Hold meetings to harmonize institutional policy and regulations on utilization of laboratory services towards One Health research	Number of meetings and harmonized institutional policy and documents	One Health Research TWG
Timeframe for Progress Check	Progress review to be conducted every 3 months (1st review to be held in March 2024)	



Photo 10. White Rhinoceros (*Ceratotherium simum*), eating grass in Mosi-oa-Tunya National Park in Zambia.

APPENDIX A: Overview of the One Health Zoonotic Disease Prioritization Process

U.S. Centers for Disease Control and Prevention: Overview of the One Health Zoonotic Disease Prioritization Workshop <https://www.cdc.gov/onehealth/what-we-do/zoonotic-disease-prioritization/>



APPENDIX B: One Health Zoonotic Disease Prioritization Workshop Participants for Zambia

Voting Members

Name	Organization	Title/Position
Dr Gift Munthali	Ministry of Fisheries and Livestock	Chief Veterinary Officer
Dr Kalinga Chilongo	Ministry of Fisheries and Livestock	Chief Tsetse Control and Ecology Officer— Tsetse and Trypanosomiasis
Dr Edgar Kayesa	Ministry of Fisheries and Livestock	Senior Veterinary Research Officer-Pathology
Dr Ricky Chazya	Ministry of Fisheries and Livestock	Senior Epidemio-surveillance and Information Officer
Prof Nathan Kapata	Zambia National Public Health Institute/MoH	Director, Emergency Preparedness and Response
Ms Hillary Moono Siamuzyulu	Ministry of Health (MoH)	Laboratory Scientist and Chief Analyst FDL
Dr Kunda Musonda	Zambia National Public Health Institute/MoH	Director, Laboratory Systems and Networks
Dr Davie Simwaba	Zambia National Public Health Institute/MoH	Public Health Specialist and EBS Focal point
Ms Judith Shonga	Ministry of Green Economy and Environment	Planner
Mr Lasford Mandela Champo	Ministry of Green Economy and Environment	Senior Forest Officer
Dr Jonathan Sinyiza	Department of National Parks and Wildlife	Wildlife Veterinarian
Mr Wisdom Moola	Ministry of Green Economy and Environment	Ag Senior Ecosystems Analyst

Observers

Name	Organization	Title/Position
Dr Charles Maseka	Ministry of Fisheries and Livestock	Principal Veterinary Officer-Wildlife
Dr Caesar Lubaba	Ministry of Fisheries and Livestock	Chief Epidemio-surveillance and Information Officer
Dr George Dautu	Ministry of Fisheries and Livestock	Senior Veterinary Research Officer-Virology
Dr Christine Inambao	Ministry of Fisheries and Livestock	Senior Veterinary Officer-Public health
Dr Masuzyo Ngoma	Ministry of Fisheries and Livestock	Veterinary Research Officer-Virology
Dr Chilufya Mulenga	Ministry of Fisheries and Livestock	Veterinary Officer
Dr Job Kasweshi	Ministry of Health	Clinical Care Services
Ms Willingness Zyambo	Ministry of Health	Ag Principal Analyst
Ms Juanita Ntemba	Ministry of Health	Senior Environmental Health Officer
Ms Florence Ngala	Ministry of Health	Chief Environmental Health Officer
Mr Innocent Hamuganyu	Ministry of Health	Principal Environmental Health Officer
Dr Zoran Muhimba	Ministry of Health	AMR TWG
Dr Nyuma Mbewe	Zambia National Public Health Institute	Infectious Disease Specialist
Dr Chikama Mukwangole	Zambia National Public Health Institute	PHEOC Manager
Mr Masuzyo Chakwe	Ministry of Green Economy and Environment	Information Officer
Joseph Nikisi	Zambia National Public Health Institute	ACDC Project Coordinator
Mr Lyson Phiri	Ministry of Green Economy and Environment	Meteorologist

Name	Organization	Title/Position
Dr Dabwitso Banda	Zambia National Public Health Institute	Epidemiologist
Prof Roma Chilengi	Zambia National Public Health Institute	Director General
Dr Geoffrey Muuka	Ministry of Fisheries and Livestock	Director, Veterinary Services
Ms Patricia Konsolo	Ministry of Green Economy and Environment	Planner
Mr Miyoba Dindi	Zambia National Public Health Institute	Director, Monitoring and Evaluation
Ms Kabukabu Akufuna	Zambia National Public Health Institute	Senior Environmental Health Officer
Ms Evidence Chooka	Zambia National Public Health Institute	Administrative Assistant
Mr Chazya Simumba	Zambia National Public Health Institute	Laboratory Scientist
Dr Geoffrey Maimda	Food and Agriculture Organization of the United Nations, Zambia	AMR specialist
Dr Chitwambi Makungu	Food and Agriculture Organization of the United Nations, Zambia	Surveillance Specialist
Ms Mwila Kayula	Food and Agriculture Organization of the United Nations, Zambia	Monitoring and Evaluation officer
Mr Frank Banda	Food and Agriculture Organization of the United Nations, Zambia	Laboratory Specialist
Dr Niwael Mtuimalamsha	Food and Agriculture Organization of the United Nations, Zambia	Country Lead-ECTAD
Dr Shikanga Reuben O-tipo	World Health Organization, Zambia	Head, Emergency, Preparedness, and response luster
Ms Stella Mulima	World Health Organization, Zambia	Laboratory Scientist
Ms Malumbo M Nyirenda	Breakthrough ACTION	SBC Advisor
Ms Chime Mukwakwa	Breakthrough ACTION	Senior Country Manager
Ms Carol Mufana	United Kingdom Health Security Agency	Senior Health Advisor
Dr Gideon Chikanya	Department of National Parks and Wildlife	Wildlife Veterinarian
Ms Jones Chibuye	United Kingdom Health Security Agency	Technical Advisor
Joseph Kasongo	U.S. Agency for International Development	Laboratory Advisor

Facilitators

Name	Organization	Title/Position
Dr Cornelius Mundia	Ministry of Fisheries and Livestock	Principal Veterinary Officer-Disease Control
Dr Linous Munsimbwe	Ministry of Fisheries and Livestock	Principal Veterinary Officer-Public Health
Dr Raymond Hamoonga	Zambia National Public Health Institute/MoH	One Health Specialist and National One Health Coordinator
Dr Paul M Zulu	Zambia National Public Health Institute/MoH	Infectious Disease Specialist
Mr Thomas Maunda	Ministry of Green Economy & Environment	Meteorologist
Prof. Musso Munyeme	The University of Zambia	Professor of Veterinary Public Health
Ms Hayley Belles	U.S. Centers for Disease Control and Prevention	Health Scientist/ORISE Fellow
Ms Grace Goryoka	U.S. Centers for Disease Control and Prevention	Public Health Advisor
Dr Modupe Osinubi	U.S. Centers for Disease Control and Prevention	Veterinary Epidemiologist/One Health Liaison

Name	Organization	Title/Position
Dr Yahya Kandeh	Africa Centre for Disease Control and Prevention	Technical Officer Surveillance and Rapid Response/One Health Focal Point, Southern Africa Region
Dr Maryam Ibrahim Buba	Africa Centre for Disease Control and Prevention	EBS Analyst/One Health Focal Point, Western Africa Region
Dr Chinenye Emelife	Africa Centre for Disease Control and Prevention	One Health Programme Officer, Africa CDC Headquarters



Photo 11. African Baobab tree (*Adansonia*) in Zambia.

APPENDIX C: Ranked Zoonotic Disease List in Zambia from the One Health Zoonotic Prioritization Tool

Rank#	Zoonotic Disease	Zoonotic Disease	Raw Score	Final Score
1	Zoonotic swine influenza	Influenza A viruses	1.061	1.000
2	African trypanosomiasis	<i>Trypanosoma brucei</i>	1.029	0.970
3	Anthrax	<i>Bacillus anthracis</i>	0.999	0.941
4	Erysipelas	<i>Erysipelothrix rhusiopathiae</i>	0.983	0.927
5	Theileriosis	<i>Theileria spp.</i>	0.955	0.900
6	Shigellosis	<i>Shigella spp.</i>	0.926	0.873
7	Marburg	Marburg virus	0.914	0.862
8	Rift Valley fever	Rift Valley fever virus	0.914	0.862
9	Rabies	Rabies virus	0.913	0.861
10	Plague	<i>Yersinia pestis</i>	0.899	0.847
11	Newcastle disease	Newcastle disease virus	0.897	0.846
12	Lassa	Lassa virus	0.885	0.835
13	Zoonotic avian influenza	Influenza A viruses	0.885	0.834
14	Listeriosis	<i>Listeria spp.</i>	0.855	0.806
15	Ebola	Ebola virus	0.854	0.805
16	Scrapie	Prion	0.841	0.793
17	Bovine spongiform encephalopathy	Prion	0.841	0.793
18	Glanders	<i>Burkholderia mallei</i>	0.840	0.792
19	Bordetella	<i>Bordetella bronchiseptica</i>	0.820	0.773
20	E. Coli infection	<i>Escherichia Coli</i>	0.805	0.758
21	Echinococcosis	<i>Echinococcus granulosus</i>	0.796	0.750
22	Zoonotic tuberculosis	<i>Mycobacterium bovis</i>	0.791	0.746
23	Cysticercosis	<i>Taenia solium</i>	0.791	0.746
24	Yellow fever	Yellow fever virus	0.783	0.738
25	Tungiasis	<i>Tunga penetrans</i>	0.775	0.731
26	Lujo viral hemorrhagic fever	<i>Lujo mammarenavirus</i>	0.743	0.700
27	Chikungunya	Chikungunya virus	0.734	0.692
28	Schistosomiasis	<i>Schistosoma spp.</i>	0.734	0.692
29	Lymphatic filariasis	<i>Wuchereria bancrofti</i>	0.734	0.692
30	Toxoplasmosis	<i>Toxoplasma gondii</i>	0.734	0.692
31	Salmonellosis	<i>Salmonella spp.</i>	0.731	0.689
32	Leptospirosis	<i>Leptospira spp.</i>	0.722	0.681
33	Brucellosis	<i>Brucella abortus, brucella melitensis</i>	0.720	0.679
34	Campylobacteriosis	<i>Campylobacter spp.</i>	0.718	0.677

Rank#	Zoonotic Disease	Zoonotic Disease	Raw Score	Final Score
35	Trichinellosis	<i>Trichinella spp.</i>	0.718	0.677
36	Hepatitis E	Hepatitis E Virus	0.692	0.652
37	Onchocerciasis	<i>Onchocerca volvulus</i>	0.661	0.623
38	COVID-19	SARS-CoV-2	0.658	0.620
39	Bovine anaplasmosis	<i>Anaplasma marginale</i>	0.657	0.619
40	Middle East respiratory syndrome (MERS)	Middle East Respiratory syndrome coronavirus (MERS-CoV)	0.649	0.611
41	Q fever	<i>Coxiella burnetii</i>	0.590	0.556
42	Dengue	Dengue virus	0.587	0.554
43	Crimean-Congo hemorrhagic fever (CCHF)	Crimean-Congo hemorrhagic fever virus	0.545	0.514
44	Zika virus disease	Zika virus	0.514	0.485
45	Leishmaniasis	<i>Leishmania spp.</i>	0.514	0.485
46	Mpox	Mpox virus	0.485	0.458
47	Leprosy	<i>Mycobacterium leprae</i>	0.429	0.404
48	Dracunculiasis (Guinea worm disease)	<i>Dracunculus medinensis</i>	0.429	0.404



Photo 12. A group of African Wild Dogs (*Lycaon pictus*) in South Lunagwa National Park

APPENDIX D: Criteria and Questions Utilized to Determine the Ranked Outcomes of the One Health Zoonotic Disease Prioritization Process in Zambia

1. Severity of Disease (criteria weight = 0.404)

Question: What are the disease morbidity and mortality rates for humans and animals in the country?

Assumptions: When country level data was not available, global data was utilized.
When global data was not available, subject matter expertise was used.

Answer:

- ☐ High morbidity AND high mortality in humans and animals (4)
- ☐ High morbidity AND high mortality in either animals or humans (3)
- ☐ High morbidity AND low mortality OR low morbidity AND high mortality (2)
- ☐ Low morbidity AND low mortality in either humans or animals (1)

2. Availability of Coping Capacity to Prevent, Detect, and Control (criteria weight = 0.220)

Question: Is there capacity in any ministry to prevent or detect or control the zoonotic disease in the country?

- Prevent (vaccination, RCCE, indoor residual spraying, mass drug administration, vector control, quarantine)
- Detect (lab diagnostic capacity, surveillance)
- Control (isolation, treatment, movement, control, post-exposure prophylaxis, depopulation control)

Answer:

- ☐ None (4)
- ☐ Yes to one (3)
- ☐ Yes to two (2)
- ☐ Yes to three (1)

3. One Health Collaboration (criteria weight = 0.090)

Question: Are there any formal mechanisms for multisectoral collaboration and coordination for the disease at national and subnational levels?

Descriptions/definitions: Formal mechanisms refers to systems such as One Health strategic plan, TORs, SOPs, TWGs

Multisectoral refers to 2 or more sectors

Answer:

- ☐ Nothing (4)
- ☐ Sub-national (3)
- ☐ National (2)
- ☐ Sub-national and national (1)

4. Pandemic/Epidemic Potential (criteria weight = 0.171)

Question: How many outbreaks has the zoonotic disease caused affecting animals or humans in the country or outside the country in the last 10 years?

Assumptions: For diseases that have no outbreak thresholds in Zambia, but the ministries are responding to them like an outbreak situation or the subject matter experts.

Answer:

- ☐ ≥5 outbreaks and in country (5)
- ☐ <5 outbreaks and in country (4)
- ☐ ≥5 outbreaks and outside of the country (3)
- ☐ <5 and in outside of the country (2)
- ☐ None (1)

5. Socioeconomic/Environmental Impact (criteria weight = 0.115)

Question: What are the socioeconomic or environmental impact of the disease?

Factors

Food security: availability, safety, nutrition

Social: movement, culture (human and animal)

Economic: livelihoods and income

Environmental: Ecosystem

Assumptions: Direct impacts were assessed however participants understand that there may be secondary impacts or impacts that cascade on each other

Answer:

- ☐ All 4 of these (5)
- ☐ 3 of these (4)
- ☐ 2 of these (3)
- ☐ 1 of these (2)
- ☐ None (2)



Photo 13. Aerial view of the lower area of the Zambezi river



<http://www.cdc.gov/onehealth>