

# NATIONAL WILDLIFE HEALTH ACTION PLAN

## 2023-2032



Government of Nepal  
Ministry of Forests and Environment  
**DEPARTMENT OF NATIONAL PARKS  
AND WILDLIFE CONSERVATION**  
Babarmahal, Kathmandu, 2023







# **NATIONAL WILDLIFE HEALTH ACTION PLAN 2023-2032**

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**DEPARTMENT OF NATIONAL PARKS AND WILDLIFE CONSERVATION**  
**Babarmahal, Kathmandu**  
**2023**





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### List of Contributors:

Dr. Sindhu Prasad Dhungana, Director General, DNPWC  
Dr. Maheshwar Dhakal, Joint Secretary, MoFE  
Dr. Ram Chandra Kandel, Secretary, MoITFE, Gandaki Province  
Mr. Bed Kumar Dhakal, Deputy Director General, DNPWC  
Mr. Ajay Karki, Deputy Director General, DNPWC  
Mr. Haribhadra Acharya, Senior Planning Officer, DNPWC  
Mr. Manoj Kumar Shah, Senior Conservation Officer, Banke National Park  
Dr. Ganesh Pant, Senior Conservation Officer, Shivapuri Nagarjun National Park  
Mr. Shyam Kumar Shah, Senior Ecologist, DNPWC  
Dr. Shant Raj Jnawali, Senior Advisor- Biodiversity Conservation, WWF Nepal  
Mr. Shiv Raj Bhatta, Senior Advisor - Conservation Program, WWF Nepal  
Dr. Kamal Prasad Gairhe, Veterinary Doctor  
Dr. Kanchan Thapa, Deputy Conservation Program Director, WWF Nepal  
Dr. Chiranjibi Pokheral, Director, NTNC  
Dr. Naresh Subedi, Director, NTNC  
Dr. Amir Sadaula, Veterinary Doctor, NTNC  
Mr. Shashank Poudel, Wildlife Biologist, WWF Nepal  
Mr. Samundra Ambuhang Subba, Senior Research Officer, WWF Nepal

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# ACRONYMS & ABBREVIATIONS

DNPWC	Department of National Parks and Wildlife Conservation
DoFSC	Department of Forests and Soil Conservation
IUCN	International Union for Conservation of Nature
NARC	National Agriculture Research Council
NWHAP	National Wildlife Health Action Plan
PA	Protected Area
TB	Tuberculosis
TU	Tribhuvan University
WHFS	Wildlife Health Field Stations
WHP	Wildlife Health Program
WHMU	Wildlife Health Management Unit

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Government of Nepal  
**Ministry of Forests and Environment**



Ref.No.

P.O.Box No.3987  
Singha Durbar, Kathmandu

**Message**

Date :-

One Health Approach is developed in response to evidence of the spreading of zoonotic diseases between species and increasing awareness of the interdependence of human and animal health and ecological change. In the light of this fact, public health is no longer seen in purely human terms. Needless to say, animals and humans suffer from the same zoonotic diseases.

With the growing global understanding of the human-animal-environment interface, One Health approach is gaining momentum. Since Nepal is a member of United Nations and a member state of World Organization for Animal Health, Nepal developed "One Health Strategy, 2019" to fulfill its national obligation in line with the collaboration for One-Health Approach among the Quadripartite Organizations- the Food and Agriculture of the United Nations (FAO), the United Nations Environment Programme (UNEP), the World Organizations for Animal Health (WOAH, founded as OIE), and the World Health Organization (WHO).

In keeping with the Strategy, the National Wildlife Health Action Plan, 2023-2032 has been framed to address the challenges associated with one important component, i.e., wildlife, of the trio for a healthy Nepal. This action plan has been prepared in consultation with the government authorities, experts, academicians, researchers, and conservation partners. With this action plan, Nepal has ushered in a new era of treating wildlife health as a priority action.

It goes without saying that the successful implementation of this plan entails the better understanding among several agencies. The plan has been crafted in the best possible way to ensure the maximum coordination and collaboration among the agencies.

I have strong optimism that this plan will promote research and innovations in the days to come. Based on the new findings and scientific knowledge, this plan will evolve over the years to suit the changed contexts.

Finally, I would like to thank Dr. Sindhu Prasad Dhungana, Director General, DNPWC and his team for preparing this action plan. I believe that every possible effort will be made to implement this plan. Moreover, I would like to thank all the conservation partners for their contribution.

I request all the state and non-state actors to contribute in the successful implementation of this plan.

  
Dr. Birendra Prasad Mahato

Hon. Minister

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**Secretary:- 4211567**

**Fax:- 4211868**





Government of Nepal  
Ministry of Forests and Environment



Ref.No.

P.O.Box No.3987  
Singha Durbar, Kathmandu

## Foreword

Date :-

The conservation and well-being of our planet's wildlife are crucial for maintaining healthy and balanced ecosystems. Wildlife populations face numerous challenges, including habitat fragmentation and loss; illegal killing; adverse impacts from climate change; land, water, and air pollution; and more importantly, the spread of diseases. To safeguard wildlife resources from the potential risk of diseases, it is imperative that we take proactive measures for the health of our wildlife and mitigate the health related risks they face.

This National Wildlife Health Action Plan (2023-2032) represents a comprehensive and collaborative approach to address the health issues affecting our wildlife populations. This action plan is based on the results of extensive research, consultation with experts, and a commitment to safeguarding the diverse range of species that inhabit in and around our protected areas system.

The plan emphasizes the importance of understanding the interconnections among wildlife health, human health, and health of ecosystems under the one health approach, and recognizes that wildlife health is not an isolated concern but a global challenge that requires a multidisciplinary approach. It brings together scientists, conservationists, veterinarians, policymakers, and local communities to collaborate and share knowledge, resources, and expertise.

This action plan is not a static document but a living framework that will evolve over time. As our understanding of wildlife health advances and new challenges emerge, we must employ adaptive and responsive approaches. Regular evaluations, updates, and revisions of the plan will enable us to refine our strategies and mobilize resources effectively.

Finally, I would like to thank Dr. Sindhu Prasad Dhungana, Director General, DNPWC and his team for developing this action plan. Together, let us embrace this National Wildlife Health Action Plan 2023-2032 as a roadmap for safeguarding the health of our precious wildlife. By working collectively and with unwavering dedication, we can secure a future where wildlife thrives, ecosystems flourish, and the well-being of our planet is preserved for generations to come.

Dr. Deepak Kumar Kharal  
Secretary





**Government of Nepal**  
**Ministry of Forests and Environment**  
**Department of National Parks & Wildlife Conservation**



Nepal is globally renowned for its biological diversity, and its natural heritage is vital to the economy, health, and well-being of the Nepali people, providing critical ecosystem services. The country has set aside over 23.39% of its landmass to protect and conserve representative ecosystems and globally significant wildlife resources. Protected area systems in Nepal are becoming increasingly popular destinations for visitors from across the world, contributing to the local and national economy. However, the conservation of the natural resource base has become difficult due to the ever increasing development needs and the advancement of climate change. Wildlife health is an emerging as an issue across the country in general and the protected area system in particular. The importance of wildlife health management has become more relevant in the present time. Needless to say, a pandemic like COVID-19, which originated from the human-wildlife nexus, affected almost all sectors of Nepal.

We have learned that the management of wildlife health issues has been inadequately addressed with our existing capacity and resources. Therefore, we realized the need to develop a comprehensive National Wildlife Health Action Plan to guide all the concerned stakeholders, with the leadership of the Government, towards the management of wildlife health in Nepal. We are glad that the action plan will be instrumental in tackling the emerging threats of diseases to our wildlife wealth.

We would like to thank Mr. Ajay Karki, Deputy Director General, for his leading role in giving the final shape to this action plan. I would like to admire the unwavering dedication of Mr. Shyam Kumar Shah, Senior Ecologist, DNPWC in reframing the document in the changed policy context and to appreciate the inputs from the authorities of DNPWC-Mr. Hari Bhadra Acharya, Mr. Manoj Kumar Sah, Dr. Ganesh Pant, Mr. Ram Chandra Khatriwada, and Mrs. Shusma Rana.

We highly appreciate Prof. I. P. Dhakal from Nepal, Dr. Gretchen Kaufman, Dr. David Bunn, and Dr. Joseph K. Gaydos, and Dr. Christine Johnson from the US, as well as Dr. Richard Kock from the UK, for their contributions to preparing the initial draft of this Action Plan.

USAID and WWF Nepal provided financial resources to formulate the initial draft and finalize this Action Plan. Our special thanks go to Dr. Shant Raj Jnawali, Shiv Raj Bhatta and Dr. Kanchan Thapa for their incessant effort to bring this plan in the current form.

We are confident that this plan will guide us in managing emerging health issues and ensure the long term survival of our precious wildlife resources in Nepal.

Sindhu Prasad Dhungana, PhD  
Director General

# EXECUTIVE SUMMARY

Numerous innovative approaches have been adopted in the biodiversity and wildlife conservation activities in Nepal which are globally recognized. However, concrete approaches to address wildlife health are not yet adapted in Nepal. To develop a coherent program and service, there is a need to build the capacity and practical measure in addressing wildlife health issues across the entire country in general and protected area system in specific. Periodic surveillance and epidemiological studies, outbreak responses and strengthened quarantine services are very important aspects of sustaining wildlife health in fragmented populations. A well-equipped multidisciplinary team including wildlife veterinarians, health professionals, ecologists, biologists and supporting technical staff is needed to deal with the issues. Despite many trained professionals currently working in the field of wildlife conservation, there are still knowledge and resource gaps particularly in the field of wildlife health and diseases thereof. Building professional capacity through training and field experience is a high priority task to be done. Infrastructure development, including facilities for sample storage, basic laboratory work and temporary animal holding/quarantine and treatment is very crucial.

Nepal has several acts, regulations and policies on biodiversity conservation and wildlife management but lacks a comprehensive policy and plan recognizing wildlife disease and/or the need to sustain wildlife health especially where human and domestic animal impacts or diseases affect wildlife and vice versa. All policies currently are basically oriented to human and domestic animals.

Guided by the “One-Health Strategy, 2019” this action plan has been formulated by engaging all the stakeholders including local communities. This action plan sets a vision towards providing science-based solutions to wildlife health, ecosystem resilience and human health. To maintain the health and welfare of Nepal’s wildlife, it is imperative to implement a sustainable wildlife health management program utilizing a collaborative and coordinated multi-sectoral approach embracing human and domestic animal health and serving national conservation priorities.

This action plan has set four objectives which focuses on (1) establishing a Wildlife Health Management Unit (WHMU) in DNPWC and develop facilities in PAs to ensure an effective Wildlife Health Program (WHP); (2) capacitating the machinery to identify the epidemics in wildlife on time and ensure the effective communication system; (3) capacitating the machinery for preparedness and response; and (4) promoting advocacy of One Health in communities in coordination and collaboration with other stakeholders.

It is anticipated that this action plan will benefit wildlife conservation, and further the health of both the human and domestic animals. In a nutshell, it is realized to establish a well-resourced wildlife health unit or division in or under the Department of National Parks and Wildlife Conservation (DNPWC) as the first necessary step. It is intended to replicate the best practices in the field units of Division Forest Offices in the days to come. Thus, strengthened institutional set up will cater to the needs of the country in the ensuing years. The coordinating committee under the chairmanship of Director General, DNPWC will coordinate with other experts and organizations that are working in wildlife conservation; and human and domestic animal health including government and funding agencies, university researchers and international partners. The total budget to implement this plan is estimated at NRs. 96,10,00,000 over a 10-year period (2023-2032).



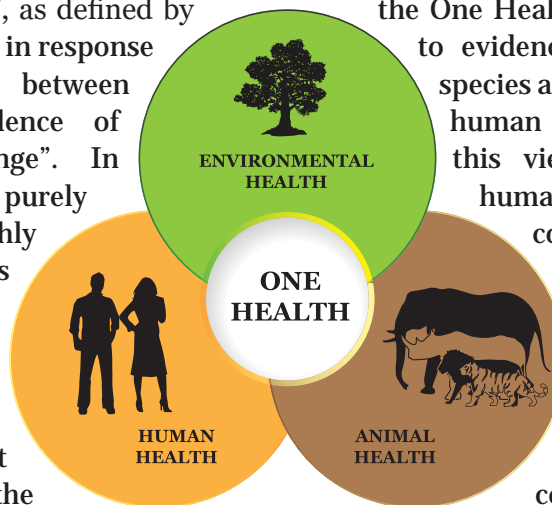
# ONE HEALTH APPROACH

## 1.1

### INTRODUCTION

“One World, One Health Symposium” 2004 concluded with Manhattan principles listing 12 recommendations for establishing a more holistic approach to preventing epidemic / epizootic disease and for maintaining ecosystem integrity for the benefit of humans, their domesticated animals, and the foundational biodiversity that supports us all. Globally, almost 70 percent of the new diseases emerge in animals and infect humans. Due to global scares surrounding the H5N1 influenza outbreaks of the early-mid 2000s, the American Veterinary Medical Association established a One Health Initiative Task Force in 2006. Thereafter, global communities engaged in several rounds of discussions and deliberations and came together to move forward the One Health initiative. One Health is at the intersection of human health, animal health, and environmental health.

One Health is an approach calling for “the collaborative efforts of multiple disciplines working locally, nationally, and globally, to attain optimal health for people, animals and our environment”, as defined by the One Health Initiative Task Force (OHITF). It developed in response to evidence of the spreading of zoonotic diseases between species and increasing awareness of “the interdependence of human and animal health and ecological change”. In this viewpoint, public health is no longer seen in purely human terms. Due to a shared environment and highly conserved physiology, animals and humans not only suffer from the same zoonotic diseases but can also be treated by either identical drugs. For this reason, special care must be taken to avoid unnecessary or over-treatment of zoonotic diseases, particularly in the context of drug resistance in infectious microbes.



A number of organizations throughout the world support the objectives of “One Health” including the One Health Commission (OHC), One Health Initiative, One Health Platform, The FAO-OIE-WHO collaboration, CDC One Health Office and others.

The Quadripartite Organizations – the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), the World Organization for Animal Health (WOAH, founded as OIE), and the World Health Organization (WHO) – collaborate to drive the change and transformation required to mitigate the impact of current and future health challenges at the human–animal– plant–environment interface at global, regional, and country level.

Wildlife health is an important component of the One Health approach, which recognizes the interconnectedness of animal, human, and environmental health. Health threats to wildlife often arise as a direct result of the pressures on and disturbance of natural

communities from human activities, including agriculture and development activities that constrain or fragment habitats and degrade landscapes. The effects of emerging wildlife diseases are global and profound, resulting in the declines of wildlife populations, loss of human lives, economic and agricultural impacts, and ecological disturbance. Wildlife diseases are often transmitted through the wildlife trade, interaction with humans and livestock, and species migration. Since a healthy planet supports healthy people, a robust One Health approach is also gaining momentum in Nepal.

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## 1.2

### ONE HEALTH STRATEGY, 2019

Human Immunodeficiency Virus (HIV), which originated in non-human primates in Central and West Africa and infected millions of people, has remained an endless fight for the entire world so far. In a similar fashion, flu outbreaks create huge human and property losses time and again. In fact, human history is full of epidemics from animal sources. In the modern world, COVID-19 set the ground for taking collective measures to cope with such uncomfortable scenarios. After the initiative of leading Quadripartite Organizations, Nepal responded to the international collaboration to prevent future pandemics and to promote health sustainably through the One Health approach. As a result, Government of Nepal approved “One Health Strategy” on 30th December 2019.

It is the constitutional obligation of the government to safeguard the fundamental necessities of the citizens embodied in the clause 51 of the Constitution of Nepal. The Strategy has emphasized on the collective effort of the agencies responsible for the animal, human and environment health. This approach of the strategy is reflected in the vision, objectives and strategies mentioned below:

#### VISION

To achieve maximum health benefit by managing the common threats and challenges affecting human, livestock, wild animals and environment health.

#### MISSION

To align activities with One Health approach by judicious use of available resources in effective coordination and collaboration for regular surveillance, prevention, and control of new pandemic and zoonotic diseases.

#### OBJECTIVES

- To develop a network of multi-stakeholders for coordination and collaboration.
- To identify the epidemics/ zoonotic diseases on time and strengthen the communication system.
- To capacitate multi-stakeholders for preparedness and response.
- To promote advocacy for One Health in communities.

## STRATEGIES

One Health Strategy will be implemented by acting on following five thematic areas:

- A. Regular unified surveillance of zoonotic diseases and lab facilities
- B. Preparedness and response
- C. Capacity building of stakeholders
- D. Communication and advocacy
- E. Coordination and collaboration

The strategy has made provisions for 2 committees for its smooth implementation. “Federal One-Health Director Committee” is the most powerful body to formulate policies for One-Health approach and guide other agencies. The committee is tasked with.

- Formulating policies for the successful implementation of One-Health Strategy.
- Approving proposals forwarded by “Federal One-Health Technical Coordination Committee.”
- Mobilizing required resources for the implementation of the Strategy.
- Guiding “Federal One-Health Technical Coordination Committee.”

“Federal One-Health Technical Coordination Committee” will implement the Strategy under the guidance of “Federal One-Health Director Committee.” This committee is tasked with.

- Setting priorities, drafting policies and identifying technical issues and proposing them in “Federal One-Health Director Committee.”
- Mobilizing the unified machinery on the event of a disease outbreak/ health issues because of human-animal-environment interface and submitting the report to “Federal One-Health Director Committee.”
- Preparing One-Health Action Plan and submitting it to “Federal One-Health Director Committee for the endorsement.”
- Seeking technical assistance from the stakeholders and development partners.
- Monitoring and evaluating the implementation of One-Health Action Plan.

With the agglomeration of environmental issues, there are lurking threats to the entire planet. In the midst of the long roster of environmental problems, the spread of zoonotic diseases from and to wildlife is an important concern. Being an important component of the One-Health Approach, the DNPWC is urgently in need of a National Wildlife Health Action Plan to consolidate the efforts to safeguard the lives of both wildlife and human-beings.



# NATIONAL WILDLIFE HEALTH ACTION PLAN

## 2.1

### INTRODUCTION

Nepal is globally renowned for its biological diversity, which is vital to the economy, health, and well-being of the Nepalese people. It supports nature-based tourism and provides critical ecosystem services. The country has shown its commitment to preserving its natural resources by protecting diverse ecosystems in 12 National Parks, 1 Wildlife Reserve, 1 Hunting Reserve, 6 Conservation Areas, 13 Buffer Zones, 11 Protected Forests, and 10 Ramsar Sites located at various geographic areas.

Wildlife species are under threat globally, with rapid population declines putting the globe on a path for an unprecedented sixth mass extinction. In Nepal, 26.4% of its mammal species, 6.1% of its bird species, and 6.4% of its reptile species are listed under the IUCN Red List of threatened species. Major threats to Nepal's wildlife population include habitat loss, degradation, and fragmentation; poaching and trade of wildlife and their body parts; human-wildlife conflict; wildlife disease; and climatic and non-climatic disasters. With the changing context of climate change, wildlife species are likely to suffer more; and hence, National Wildlife Health Action Plan at the national level is imperative to avoid the increased risks from diseases and create a healthy environment for the country's wildlife in their natural habitats.

Biodiversity loss is one of the triple planetary crises, and an increasing number of zoonotic diseases is likely to further aggravate the loss. Thus, there is a need for an effective wildlife health investigation, including both surveillance and research. The ability for effective wildlife health management, including disease prevention and response, is now widely recognized. Wildlife health surveillance has become an integral component in the identification and management of potential threats to human and animal health in pursuit of the One Health approach. Management of wildlife diseases should consider the human-livestock-wildlife interface, including assessment of risk from contact among these groups; and where appropriate, through management of wildlife habitat, predators, disease agents, and host populations.

Recent emergence of critical and infectious diseases such as tuberculosis in captive elephants and free-ranging rhinoceros, canine distemper in felids, rabies in canids, anthrax and hemorrhagic septicemia in ungulates, African swine fever in wild boars and avian influenza in birds are examples of how wildlife disease investigation in Nepal can inform a greater understanding of diseases that would be transmitted among human, livestock, and wildlife populations.

Global warming also poses huge threats to biodiversity conservation in different ways, from exposures to natural hazards to contact with infectious diseases. Environmental change has been associated with changes in host-pathogen-vector interactions and consequently with the dynamics of infectious diseases. Moreover, climate change can have further direct impacts on the distribution, life cycle, and physiological status of hosts-pathogens-vectors, which can result in impacts on wildlife ecology and wildlife, domestic animal, and human health. The erratic precipitation patterns and prolonged droughts have led to increased scarcity of water, resulting in the increased contact between wildlife, livestock, and people

as they share diminishing waterholes, rivers, and streams. These contacts can possibly lead to an increased risk of disease transmission.

Disease risks to the health of Nepal's wildlife population are poorly studied, understood and documented. Few sporadic reports with the definitive diagnosis of disease in a few individual animals or outbreaks in populations exist. Endangered or threatened wildlife populations are at risk. Therefore, a comprehensive wildlife health program is required to respond to health emergencies and outbreaks, address climate change impacts on wildlife health, and provide an opportunity to enact policies and preventative measures. Establishment and sustainable operation of a wildlife health management information system having networks within National Parks, Wildlife Reserves, Hunting Reserves, Conservation Areas, and Zoos/Zoological Gardens will be an added advantage to identify and treat the diseases of wild animals. This action plan is intended to provide broad strategies and actions for the development of a national wildlife health program for Nepal.

Wildlife often stray and intermingle in rural and urban environments due to increased wildlife population and limited habitat availability. This is severe in settlement/village areas that lie in the immediate vicinity of and/or within protected areas. Likewise, domestic animals and people enter protected areas and interact with wildlife for multiple purposes. Vectors such as ticks, lice, fleas, and mosquitoes often transmit diseases over distances and cause infections across a wide variety of species, including humans. The trade of wild animals and wildlife parts can also spread diseases. These types of interactions can result in disease transmission among wildlife, domestic animals, and humans in multiple directions, leading to unpredictable disease dynamics, outbreaks, and sometimes novel disease emergence. Monitoring diseases among these three groups is critical to understand the changing dynamics and take early actions to prevent serious consequences.

Policies and actions developed in the One Health context consider the complexity and implications of common health threats that can produce outcomes that protect all three domains. This action plan strongly advocates for the One Health mechanism that includes representation from the wildlife health sector to ensure that wild animal welfare, conservation, and health priorities are considered for One Health planning and that information sharing is maintained across all sectors.

## 2.2 ACTION PLAN FORMULATION PROCESS

A technical committee led by the then Ecologist (now Senior Ecologist) of the Department of National Parks and Wildlife Conservation (DNPWC) and represented by the officials from Department of Forests and Soil Conservation (DoFSC); National Trust for Nature Conservation (NTNC); and WWF Nepal was tasked with assessing the need of the Wildlife Health Management Action Plan, a novel approach in tackling wildlife health and other environmental issues and preparing a ToR within the framework of "One-Health Strategy, 2019". The Plan was prepared following the guidelines specified in the ToR. The necessary resources to prepare the preliminary draft of this Action Plan was provided by the USAID funded Hariyo Ban Program and WWF Nepal.

Throughout the plan preparation, several consultations were made with the authorities and experts engaged in dealing with wildlife health issues. Recognizing the key role of the local communities in managing zoonotic diseases, consultations were also made with community-based organizations in the buffer zone areas. Moreover, fundamental principles of the One-health approach were shared among conservation partners and other relevant stakeholders. Feedback gathered during the consultation process was incorporated into the initial draft of the plan. A final draft of the Plan was then shared with the technical

committee members and wildlife health experts for their feedback. The input and the feedback were incorporated, and the Plan was consulted with the higher authorities of the department. The invaluable inputs received from them were incorporated and the final version was prepared. Then the plan was approved and endorsed by the Ministry of Forests and Environment. In the entire process, it was ensured that the Plan was aligned with the “One-health Strategy of Nepal, 2019.

## 2.3

### RATIONALE

Existing conservation policy measures and institutional arrangements primarily focus on biodiversity conservation with low priority on wildlife health related issues. The Animal Health and Livestock Service Rule, 2000 on the other hand also focuses on domestic animals only. The Captive Elephant Management Policy, 2003 covers all the prospects for breeding and management but does not address health issues of captive as well as wild elephants. Likewise, Aquatic Animal Protection Act, 2016 prohibits killing of aquatic wildlife by poisoning but is silent over addressing health and diseases. The most specific policy focusing on wildlife health was the Elephant Tuberculosis Control and Management Action Plan (2011-2015) which aimed at controlling tuberculosis in captive elephants and minimizing the risk of transmission to wildlife and people.

The existing legislation pertaining to wildlife management and health is dispersed across various policies and lacks uniformity and clarity. A comprehensive NWHAP is deemed necessary to address existing gaps and incorporate the impacts of the ecological changes in biodiversity conservation, and disease dynamics. This action plan is intended to support comprehensive actions focused exclusively on wildlife health, with critical linkages among various nodes - domestic animal and human health, livelihoods, and wildlife conservation policy.

Similarly, Nepal has an inadequate wildlife health expertise, human capacity, and facilities to adequately address and manage the health of its wildlife. It is anticipated that this NWHAP will help in disease surveillance; treating and rehabilitating sick and injured animals; developing and implementing disease prevention strategies; and reducing disease transmission that might threaten both domestic animals and people.

Moreover, the following critical gaps have been identified and need to be addressed in the NWHAP:

1. Lack of a dedicated Wildlife Health Management Unit in DNPWC.
2. Inadequate animal rescue and rehabilitation facilities and management strategies to address national needs for wildlife health.
3. Inadequate laboratory facilities for addressing wildlife health at a national level.
4. Inadequate professional human resources in wildlife health, particularly wildlife veterinarians and wildlife health technicians.
5. Inadequate training programs and opportunities in wildlife health.
6. Insufficient resources directed at wildlife health at the university or institutional level.
7. Lack of wildlife health management information system.
8. Inadequate policy and legislation supporting wildlife health.
9. Inadequate coordination and collaboration among key stakeholders.

Addressing the above gaps during implementation of the action plan, it is expected that wildlife resources will be safeguarded for addressing emerging zoonotic diseases.



## 2.4

### SCOPE

The scope of the action plan is guided by the imperative for an inclusive One Health approach to addressing the health threats of humans, animals, and plants in an integrated manner, while promoting environment and biodiversity protection and acknowledging the broader systems benefits of cross-sectoral collaboration to achieve collective outcomes.

Specifically, the action plan addresses the risks and consequences of emerging zoonotic diseases with epidemic and pandemic potential, endemic infectious diseases of zoonotic and vector-borne origin in the context of the environment.

This action plan focuses more on wildlife and is basically silent about human health and livestock health. It offers a set of actions for the betterment of wildlife health at all levels. It also offers a set of tools and guidance for international partners and non-state actors, such as civil-society organizations, professional associations, academia, and research institutions, who can draw upon for wildlife health planning and implementation.

The implementation of proposed actions at the national level will need to consider national contexts, priorities, and resources. The action plan is strategically linked to and aligned with many relevant initiatives. It should be noted that this list is not exhaustive and can be completed as appropriate.

## 2.5

### RELEVANCE OF THE ACTION PLAN

Economic development has led to substantial improvements in the well-being of many humans globally, but often at the expense of ecosystems, a healthy environment, and the welfare of animals. With the global human population of 8 billion plus amid unsustainable consumption and production patterns, the pressures on our natural systems are tremendous and will continue to grow (UNDESA, 2022). The earth's natural resources are being used at a faster rate than they can be replenished due to unsustainable and destructive practices and with insufficient consideration for biodiversity or the health of surrounding ecosystems upon which our lives and wellbeing depend.

The effects of environmental degradation and the corresponding erosion of ecosystem services influence the relationships between health, food production and natural systems. There is, therefore, an urgent need to reassess and transform the interactions between humans, animals, plants, and the environment they share. Balancing these interactions ensures human, animal and plant health and well-being, and charts the path towards economic, environmental, and social sustainability. This is critical to achieving the Sustainable Development Goals (SDGs).

In the absence of an action plan, the efforts being made for wildlife health may derail. To build upon long engagement with wildlife health, an action plan is urgently needed. This is more so because the government has approved required human resources for wildlife rescue and rehabilitation centers at three locations in Terai PAs and at one location in Mountain PA.

## 2.6

### VISION, GOAL, AND STRATEGIC ACTIONS

#### VISION

Science based solutions for better wildlife health and resilient ecosystem.

#### MISSION

Advancing wildlife health science for the benefit of animals, humans and environment health.

#### GOAL

To maintain the health and welfare of Nepal's wildlife by implementing a sustainable wildlife health management program that utilizes a collaborative and coordinated multi-sectoral approach embracing human and domestic animal health and serving national conservation priorities.

#### OBJECTIVES

1. Establish a Wildlife Health Management Unit (WHMU) in DNPWC and develop facilities in PAs to ensure an effective Wildlife Health Program (WHP).
2. Capacitate the WHMU to identify the epidemics in wildlife on time and ensure the effective communication system.
3. Capacitate the WHMU for preparedness and response.
4. Promote advocacy for One Health in communities in coordination and collaboration with other stakeholders.

#### STRATEGIES AND ACTIONS

Under the five strategies, 45 actions have been proposed. They will be implemented over the period of 10 years. Annual break-down of the total budget is presented in Appendix I.

## A. REGULAR UNIFIED SURVEILLANCE OF DISEASES AND LAB FACILITIES

Constant efforts must be made to ensure round the clock surveillance of diseases. There are limited lab facilities for wildlife samples. In this direction, labs must be set up in the protected areas in the plan period. Following are the proposed actions for the period:

A	REGULAR UNIFIED SURVEILLANCE OF DISEASES AND LAB FACILITIES	Budget in Lakh (NRs.)
A.1.	Establish Standard Operating Procedures and Response Guidelines for wildlife health activities, including disease surveillance.	10
A.2.	Develop sectoral mechanisms to support an overarching one Health governance and legal framework.	20
A.3.	Create a WHMU within DNPWC; and assess personnel needs and recruit a senior veterinary officer to guide and develop the WHP to meet the specific health needs of Nepal's wildlife.	1000
A.4.	Develop, support, and review the policies and intervention programs, where necessary, to improve ecosystems and wildlife health.	30
A.5.	Establish multiple wildlife health field stations (WHFSs) that meet the needs of each protected area.	500
A.6.	Establish well-equipped medical facilities (wildlife hospital) to handle complicated cases, with appropriate transport vehicles and portable animal holding equipment to move animals.	1000
A.7.	Establish appropriate laboratory facilities in each field station with all necessary equipment.	1000
A.8.	Create a robust wildlife disease surveillance and research infrastructure within the WHU and in collaboration with key stakeholders.	200
A.9.	Deploy a veterinarian in each protected area to provide immediate and quality health services for injured and sick wild animals, timely rescue of wild animals, and to minimize the casualty of humans and wildlife.	1000
A.10.	Annual health-checkups of captive elephants	100
<b>Sub-Total</b>		<b>4860</b>



## B. PREPAREDNESS AND RESPONSE

The country should develop the policy and bureaucratic infrastructure in a way that it is able to cope with epidemics like COVID-19. This plan aims to strengthen the national capacity in wildlife health to prevent and deal with such emergency situations. The following actions are targeted for preparedness and response capacity.

B	PREPAREDNESS AND RESPONSE	Budget in Lakh (NRs.)
B.1.	Define wildlife health institutional and workforce capacities and develop methodologies and tools to assess national wildlife health performances and identify needs.	100
B.2.	Define processes and develop methodologies for assessing national vulnerabilities to wildlife health challenges, and link with appropriate evidence-based preparedness and response capabilities to tackle risks from emerging and re-emerging pathogens and diseases.	100
B.3.	Regularly monitor potential wildlife disease outbreaks, undertake disease prevention measures and support one-health programs.	100
B.4.	Promote wildlife health research and establish coordination mechanisms with National Research Institutions and Universities that help to identify major knowledge gaps on wildlife health.	500
B.5.	Establish wildlife health surveillance database and network that integrates into national health and disease monitoring systems for animals and people within a One Health umbrella.	500
B.6.	Ensure that system thinking is a core module for academic and in-service biodiversity conservation professionals.	50
B.7.	Mid-term review of the action plan	50
B.8.	Respond to climate change impacts on wildlife health and mainstreaming wildlife health-related vulnerabilities into species and protected area management plans, landscape action plans.	500
Sub-Total		1900

## C. CAPACITY BUILDING OF STAKEHOLDERS

Innovation, effective technology and regular research, training and workshop are necessary steps to accelerate the capacity of the stakeholders. Skill and performance of the stakeholders are the precondition for the better wildlife health. The actions to enhance the capacity of the stakeholders are proposed as follows:

C	CAPACITY BUILDING OF STAKEHOLDERS	Budget in Lakh (NRs.)
C.1.	Develop refresher training and conduct regular training/workshops or short-course opportunities for WHU personnel.	500
C.2.	Identify and quantify the main anthropogenic factors that impact the health of ecosystems and wildlife	100
C.3.	Develop a prioritized research agenda to provide direction for investment.	50
C.4.	Strengthen biosecurity for existing and potentially re-emerging zoonotic diseases (such as zoonotic influenza viruses, SARS-CoV2 and Ebola).	50
C.5.	Conduct pathogen surveillance at the human-animal-wildlife interface through technical networks to support predictive epidemic intelligence	50
C.6.	Leverage innovations and new technologies in disease surveillance, rapid response and control.	100
C.7.	Strengthen the capacity of the staff and provide training that includes refresher opportunities and certification.	500
C.8.	Include WHMU leadership in policy-making activities to educate policy makers and represent the interests of wildlife health at all levels.	50
C.9.	Design a monitoring and evaluation framework for the continuous improvement of the DNPWC's and national wildlife health actions, performance, and capacities.	40
	<b>Sub-Total</b>	<b>1440</b>

## D. COMMUNICATION AND ADVOCACY

The plan underscores the importance of communication among the actors. Since the implementation of “One-Health Approach” can’t materialize without a meaningful communication among all the stakeholders, some actions have been proposed. Moreover, advocacy for “One-Health Approach” is equally important to enhance the acceptability of this approach among the stakeholders. Following actions are proposed to create more conducive environment for wildlife health:

D	COMMUNICATION AND ADVOCACY	Budget in Lakh (NRs.)
D.1.	Devise and implement a comprehensive reporting and communication mechanism that serves the wildlife health program and fosters community education, cooperation, and continued support.	20
D.2.	Strengthen information, awareness and control of vector-and rodent-borne diseases and their specific threat to urban centers.	40
D.3.	Develop methodologies and tools to advocate for and promote political prioritization of wildlife health work in national, sub-national and local development strategies and plans.	40
D.4.	Include WHMU leadership in policy-making activities to educate policy makers and represent the interests of wildlife health at all levels.	50
D.5.	Establish a Wildlife Health Advisory Committee, to assist in formulating wildlife health policy initiatives and promote national and international partnerships.	30
D.6.	Coordinate and collaborate with both Federal One Health Director Committee and Federal One-Health Technical Coordination Committee to integrate wildlife health related issues.	100
D.7.	Support and promote the next generation of wildlife health practitioners, researchers, and technical officers.	200
D.8.	Develop mechanisms for public participation and their horizontal and vertical integration into wildlife health.	100
D.9.	Promote effective communication structures and information and data-sharing systems across organizations, sectors, and society.	100
D.10.	Coordinate with academic institutions to integrate One Health approach (Human, Livestock/Avian, and Wildlife) in their curriculum.	30
D.11.	Promote the adoption of climate-smart and environmentally sound healthcare systems	100
D.12.	Translate environmental knowledge and data to improve policies and legislation and propose practical solutions to prevent and mitigate health threats at the interfaces.	100
	<b>Sub-Total</b>	<b>910</b>



## E. COORDINATION AND COLLABORATION

Without effective coordination and collaboration at different levels, it is difficult to achieve the goal of this NWHAP. The actions listed below are expected to gear up the coordination and collaboration among the concerned stakeholders.

E	COORDINATION AND COLLABORATION	Budget in Lakh (NRs.)
E.1.	Establish a central Unit at DNPWC to facilitate coordination of wildlife health activities within the Department and with other agencies involved.	50
E.2.	Enhance private-sector and non-governmental organization (NGO) engagement in sustainable wildlife healthcare.	50
E.3.	Develop advocacy training and tools for environmental decision makers and professionals to influence decision makers in other sectors.	100
E.4.	Conduct joint One Health risk assessments and mapping, leading to evidence-based and targeted risk management.	100
E.5.	Collaborate with provincial and local governments in demonstrating the benefits of healthy ecosystems, updating the identified risk factors and drivers and finding their solutions.	100
E.6.	Collaborate with the provincial and local governments for the prevention and control of zoonotic epidemics/pandemics related to wildlife	100
	<b>Sub-Total</b>	500

## 2.7

### EXPECTED OUTCOMES

This action plan will result in a wealth of new knowledge about the health of Nepal's wildlife which will inform policy and action to reduce the impact of endemic and epidemic disease on wildlife populations in coordination with One Health policies. Improvements in education and training will support University programs. This should create opportunities and ensure the necessary professional expertise in the veterinary sector. This shall appropriately respond to wildlife health issues and provide leadership in scientific research. This shall also contribute to policy drafting complementing One Health and conservation needs. Infrastructural enhancements will provide the necessary tools and facilities for wildlife health professionals to ensure safe and efficient wild animal care and disease outbreak response activities. The inter-sectoral approach will enhance understanding of the importance of disease threats to wildlife health among key stakeholders.

## IMPLEMENTATION OF THE ACTION PLAN

### 3.1

#### INSTITUTIONAL ARRANGEMENTS

Wildlife species of primary concern are largely found within the territorial jurisdiction of the DNPWC. Hence, the major responsibility for implementing these action plans also lies with the DNPWC. Wildlife health management outside the protected areas system will be coordinated through the Department of Forests and Soil Conservation (DoFSC), provincial, and local governments.

DNPWC will develop the WHMU at its central office in Kathmandu. DNPWC will also set up a well-equipped wildlife health management unit in at least 10 protected areas and will work closely with provincial and local level veterinarians, including rescue and wildlife care centers developed previously in the country. The Central Zoo will also work closely with the DNPWC and provide technical assistance for wildlife management, including translocation and wildlife treatments. Based on the experiences gained during the process, DoFSC and provincial governments will also be encouraged to set up similar facilities in their territorial jurisdictions.

### 3.2

#### FINANCIAL PLAN

Substantial financial resources will be required to implement this action plan. This section of the action plan provides indicative financial resources required to implement the activities specified in the plan. The total estimated cost is NRs. 9,610 lakhs to implement the activities for achieving the desired objectives in the next 10-year period. The funds will be made available from government support, foreign aid, conservation partners, and the private sector.

### 3.3

#### SUSTAINABLE FINANCING

Of the total estimated budget required to implement this action plan, a large proportion of the budget will be managed through government budgets allocated for DNPWC, DoFSC, provincial as well as local governments. In addition to the government budget, ongoing landscape conservation programs supported by conservation partners are expected to make significant contributions to support the implementation of this action plan.

### 3.4

#### KEY STAKEHOLDERS AND THEIR ROLES

Wildlife veterinarians, along with ecologists and epidemiologists, are fundamental members of a multi-disciplinary One Health approach. Wildlife veterinarians should work in close coordination with park managers and other key stakeholders at different levels, and their roles in managing wildlife health programs are given below (Table 1).

**TABLE 1: KEY STAKEHOLDERS AND THEIR ROLES**

<b>ACTORS</b>	<b>KEY ROLES</b>
Federal Government	Enabling policy formulation, facilitation, coordination and monitoring, information dissemination, resource allocation
Provincial Governments	Creating enabling policy and human resource management, financial support, and coordination
Local Governments	Coordination, partnership, financial support, joint planning and coordination, service delivery
Government line agencies (DNPWC, DoFSC, PAs; Division Forest Offices, Veterinary Offices at District and local levels, Health Offices at District and local levels, academic institutions)	Program design, coordination, implementation, rapid response, research and monitoring/surveillance, lead knowledge management, technology development and transfer, human resource development and mobilization, financial resource management
Conservation Partners	Financial and technical assistance, support in implementation, capacity building, research, and knowledge management
Community institutions and networks	Support in implementation, partnership, and resource leverage
WHMU, WHFS & Wildlife Hospital	Planning and implementation, managing equipment and medicine, coordination and communication, and response, rescue, and rehabilitation.



## 3.5

### COORDINATION MECHANISM

The strategic actions under this action plan will be implemented by the government and key stakeholders at different levels. The following wildlife health coordination committee will ensure effective coordination among all inter-sectoral agencies for planning and resource allocation on a priority basis:

**Chair:** Director General, DNPWC

**Members:**

Deputy Director General, Department of National Parks and Wildlife Conservation

Deputy Director General, Department of Forests and Soil Conservation

Deputy Director General, Livestock Department

Deputy Director General, Department of Health Services

Head, TU/Zoology Department

Senior Veterinary Scientist, NARC

Chief, Central Zoo

Head, Conservation Partners: 3

Wildlife Health Expert (National/International): 2

Member Secretary: Senior Ecologist, DNPWC

## 3.6

### MONITORING, EVALUATION, AND KNOWLEDGE MANAGEMENT

#### 3.6.1

#### Monitoring, Evaluation, and Review of the Plan

DNPWC will be responsible for the overall monitoring and evaluation of the progress of the action plan during various phases in close coordination with respective protected areas, DoFSC, provincial and local governments, and other government line agencies. This action plan will be reviewed towards the end of the plan by DNPWC in coordination with the key stakeholders and the support of conservation partners. A mid-term review of the action plan will also be conducted. The findings and lessons learnt from these reviews will feed into the next action plan.

#### 3.6.2

#### Knowledge Management and Communication

To facilitate information sharing, a web-based system, such as a wildlife health portal, will provide appropriate information to a variety of audiences. Public and community audiences will be able to access basic wildlife health information and will be encouraged to provide important input, especially at the wildlife-livestock/avian interface. Academics, students, veterinarians, researchers, and policy makers will be able to network through the portal and potentially access more confidential health data.

## ANNEX I : STRATEGIC ACTIONS AND INDICATIVE BUDGET

WILDLIFE HEALTH ACTIONS		Budget in Lakhs (NRs.)										
		Year										
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	Total
A. REGULAR UNIFIED SURVEILLANCE OF DISEASES AND LAB FACILITIES												
A.1	Establish Standard Operating Procedures and Response Guidelines for wildlife health activities, including disease surveillance.		10									10
A.2.	Develop sectoral mechanisms to support an overarching one Health governance and legal framework.	10	10									20
A.3.	Create a WHMU within DNPWC; and assess personnel needs and recruit a senior veterinary officer to guide and develop the WHP to meet the specific health needs of Nepal's wildlife.		200	200	200	200	200					1000
A.4.	Develop, support, & review the policies and intervention programs, where necessary, to improve ecosystems & wildlife health.		10	10	10							30
A.5.	Establish multiple wildlife health field stations (WHFSs) that meet the needs of each protected area.		50	150	100	100	100					500
A.6.	Establish well-equipped medical facilities (wildlife hospital) to handle complicated cases, with appropriate transport vehicles and portable animal holding equipment to move animals.	100	100	100	100	100	100	100	100	100	100	1000
A.7.	Establish appropriate laboratory facilities in each field station with all necessary equipment.	100	100	100	100	100	100	100	100	100	100	1000
A.8.	Create a robust wildlife disease surveillance and research infrastructure within the WHU and in collaboration with key stakeholders.		50	50	50	50						200
A.9.	Deploy a veterinarian in each protected area to provide immediate and quality health services for injured and sick wild animals, timely rescue of wild animals, and to minimize the casualty of humans and wildlife.	100	100	100	100	100	100	100	100	100	100	1000
A.10.	Annual health-checkups of government captive elephants.	110	10	10	10	10	10	10	10	10	10	100
											Sub-Total	4,860

WILDLIFE HEALTH ACTIONS		Budget in Lakhs (NRs.)										
		Year										
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	Total
B. PREPAREDNESS AND RESPONSE												
B.1.	Define wildlife health institutional and workforce capacities and develop methodologies and tools to assess national wildlife health performances and identify needs.		50	50								100
B.2.	Define processes and develop methodologies for assessing national vulnerabilities to wildlife health challenges, and link with appropriate evidence-based preparedness and response capabilities to tackle risks from emerging and re-emerging pathogens and diseases.		20	40	40							100
B.3.	Regularly monitor potential wildlife disease outbreaks, undertake disease prevention measures and support one-health programs.	10	10	10	10	10	10	10	10	10	10	100
B.4.	Promote wildlife health research and establish coordination mechanisms with National Research Institutions and Universities that help to identify major knowledge gaps on wildlife health.	50	50	50	50	50	50	50	50	50	50	500
B.5.	Establish wildlife health surveillance database and network that integrates into national health and disease monitoring systems for animals and people within a One Health umbrella.	50	50	50	50	50	50	50	50	50	50	500
B.6.	Ensure that systems thinking is a core module for academic and in-service biodiversity conservation professionals.			25		25						50
B.7.	Respond to climate change impacts on wildlife health and mainstreaming wildlife health-related vulnerabilities into species and protected area management plans, landscape action plans.	50	50	50	50	50	50	50	50	50	50	500
B.8.	Mid-term review of the action plan						50					50
Sub-Total											1,900	



WILDLIFE HEALTH ACTIONS		Budget in Lakhs (NRs.)										
		Year										
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	Total
C. CAPACITY BUILDING OF STAKEHOLDERS												
C.1.	Develop refresher training and conduct regular training/workshops or short-course opportunities for WHU personnel.	50	50	50	50	50	50	50	50	50	50	500
C.2.	Identify and quantify the main anthropogenic factors that impact the health of ecosystems and wildlife	10	10	10	10	10	10	10	10	10	10	100
C.3.	Develop a prioritized research agenda to provide direction for investment.		10	20	10							50
C.4.	Strengthen biosecurity for existing and potentially re-emerging zoonotic diseases (such as zoonotic influenza viruses, SARS-CoV2 and Ebola).		10	20	20							50
C.5.	Conduct pathogen surveillance at the human-animal-wildlife interface through technical networks to support predictive epidemic intelligence	10	10	10	10	10						50
C.6.	Leverage innovations and new technologies in disease surveillance, rapid response and control.		25	25	25		25					100
C.7.	Strengthen the capacity of the staff and provide training that includes refresher opportunities and certification.	50	50	50	50	50	50	50	50	50	50	500
C.8.	Include WHMU leadership in policy-making activities to educate policy makers and represent the interests of wildlife health at all levels.		10	10	10	10	10					50
C.9.	Design a monitoring and evaluation framework for the continuous improvement of the DNPWC's and national wildlife health actions, performance and capacities.		20	20								40
Sub-Total											1,440	

WILDLIFE HEALTH ACTIONS		Budget in Lakhs (NRs.)										
		Year										
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	Total
D. COMMUNICATION AND ADVOCACY												
D.1.	Devise and implement a comprehensive reporting and communication mechanism that serves the wildlife health program and fosters community education, cooperation, and continued support.		20									20
D.2.	Strengthen information, awareness and control of vector- and rodent-borne diseases and their specific threat to urban centers.		10	10	10	10						40
D.3.	Develop methodologies and tools to advocate for and promote political prioritization of wildlife health work in national, sub-national and local development strategies and plans.		10	10	10	10						40
D.4.	Include WHMU leadership in policy-making activities to educate policy makers and represent the interests of wildlife health at all levels.		10	10	10	10	10					50
D.5.	Establish a Wildlife Health Advisory Committee, to assist in formulating wildlife health policy initiatives and promote national and international partnerships.		30									30
D.6.	Coordinate and collaborate with both Federal One Health Director Committee and Federal One-Health Technical Coordination Committee to integrate wildlife health related issues.	10	10	10	10	10	10	10	10	10	10	100
D.7.	Support and promote the next generation of wildlife health practitioners, researchers, and technical officers.	20	20	20	20	20	20	20	20	20	20	200
D.8.	Develop mechanisms for public participation and their horizontal and vertical integration into wildlife health.	10	10	10	10	10	10	10	10	10	10	100
D.9.	Promote effective communication structures and information and data-sharing systems across organizations, sectors, and society.	10	10	10	10	10	10	10	10	10	10	100
D.10.	Coordinate with academic institutions to integrate One Health approach (Human, Livestock/Avian, and Wildlife) in their curriculum.		15	15								30
D.11.	Promote the adoption of climate-smart and environmentally sound healthcare systems		25	25	25	25						100
D.12.	Translate environmental knowledge and data to improve policies and legislation and propose practical solutions to prevent and mitigate health threats at the interfaces.	10	10	10	10	10	10	10	10	10	10	100
Sub-Total											910	

WILDLIFE HEALTH ACTIONS		Budget in Lakhs (NRs.)										
		Year										
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	Total
C. CAPACITY BUILDING OF STAKEHOLDERS												
E.1.	Establish a central Unit at DNPWC to facilitate coordination of wildlife health activities within the Department and with other agencies involved.		30	20								50
E.2.	Enhance private-sector and non-governmental organization (NGO) engagement in sustainable wildlife healthcare.		25	25								50
E.3.	Develop advocacy training and tools for environmental decision makers and professionals to influence decision makers in other sectors.		30	30	40							100
E.4.	Conduct joint One Health risk assessments and mapping, leading to evidence-based and targeted risk management.		25	25	25	25						100
E.5.	Collaborate with provincial and local governments in demonstrating the benefits of healthy ecosystems, updating the identified risk factors and drivers and finding their solutions.		20	20	20	20	20					100
E.6.	Collaborate with the provincial and local governments for the prevention and control of zoonotic epidemics/pandemics related to wildlife	10	10	10	10	10	10	10	10	10	10	100
											Sub-Total	500
											Grand Total	9,610

## ANNEX II

This section provides examples of diseases that have been identified and prioritized as potential direct threats for wildlife species of concern in Nepal and those threats that wildlife may transmit to domestic animals and people. This list is by no means exhaustive, but it provides some guidance for developing resources and conducting epidemiological studies in Nepal's wildlife. The outcomes of such studies will begin to establish an important baseline so that disease trends can be more easily detected.

### DISEASES OF ZONOTIC CONCERNS

Disease Name	Susceptible Wildlife Species	Susceptible Domestic Animal Species	Zoonotic Concern
<b>VIRAL DISEASES</b>			
Rabies	All Mammals	All Mammals	Yes
Canine Distemper Virus*	All Carnivores	Dogs	No
Parvovirus (Canine/Feline/etc.)	All Carnivores	Dogs And Cats	No
Feline Immunodeficiency Virus & Feline Leukemia Virus	All Felidae	Cats	No
Feline Coronavirus	Felidae	Cats	No
Feline Calicivirus	Felidae	Cats	No
Feline Viral Rhinotracheitis	Felidae	Cats	No
Sars Coronavirus	Civets	Cats	Yes
Foot and Mouth Disease*	Wild Ruminants, Elephant, Wild Pigs	Cattle, Buffalo, Goats, Sheep, Yak, Pigs	No
Malignant Catarrhal Fever	Wild Ruminants	Cattle, Buffalo, Goats, Sheep,	No
Sheep/Goat Pox	Wild Sheep, Goats	Sheep, Goats	Yes
Peste Des Petits Ruminants*	Deer, Wild Sheep, Antelope	Sheep, Goats	No
Bluetongue	Wild Pigs, Wild Ruminants	Cattle, Buffalo, Goats, Sheep	No
Hog Cholera	Wild Pigs	Pigs	No
Swine Influenza	Wild Pigs	Pigs	Yes
Classical Swine Fever	Wild Pigs	Pigs	No
Avian Influenza*	Weasels, Civets, Tiger, Wild Pigs, Rabbits/ Rodents	Ducks, Chickens, Dogs, Cats, Pigs	Yes
Newcastle Disease*	Many Bird Species	Poultry	Yes
<b>ELEPHANT ENDOTHELIOTROPIC</b>			
Herpesvirus	Elephants	-	No
Pneumonia	Blackbuck		

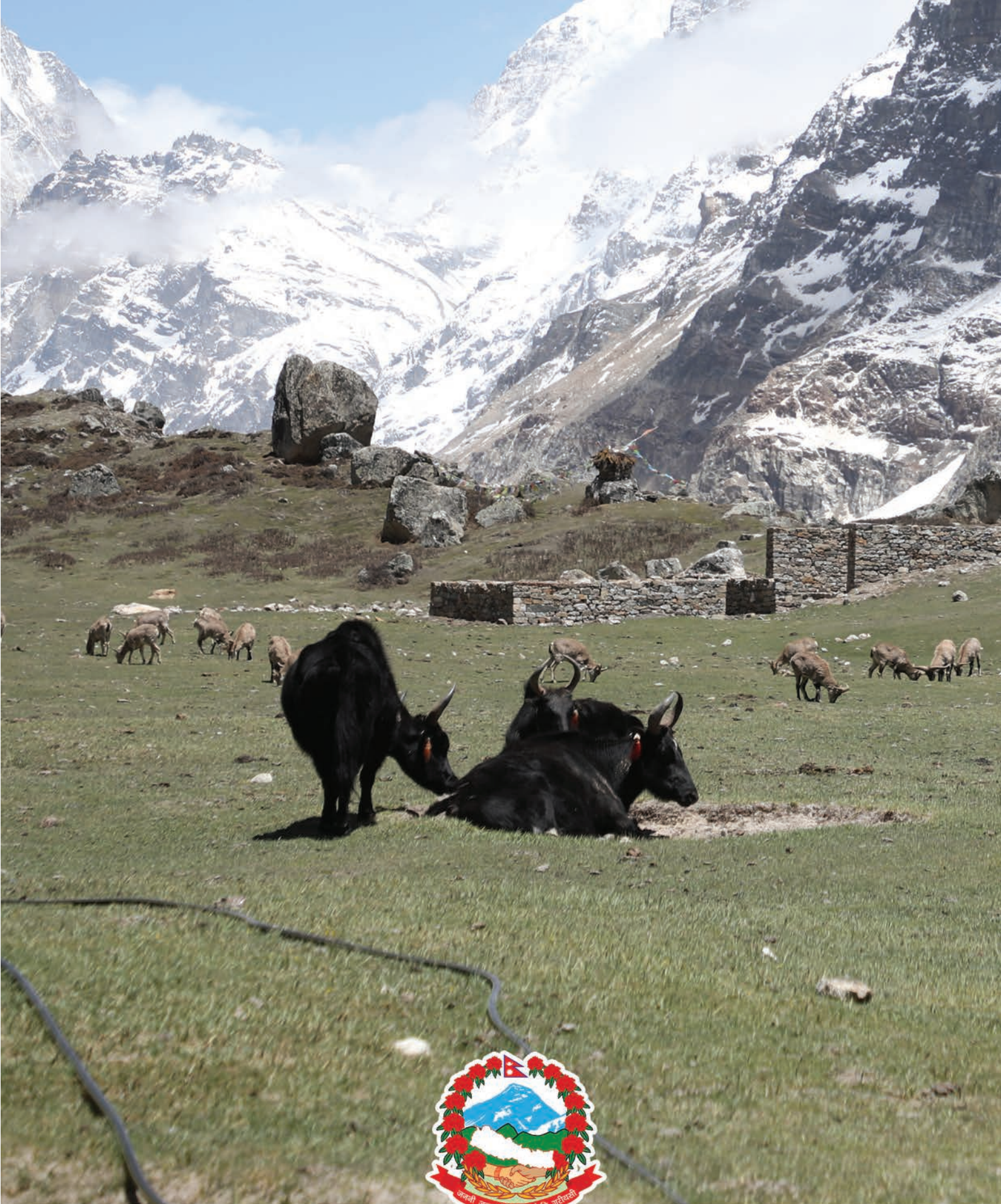


Disease Name	Susceptible Wildlife Species	Susceptible Domestic Animal Species	Zoonotic Concern
<b>BACTERIAL DISEASES</b>			
Anthrax*	All Mammals	All Mammals	Yes
Erysipelas	Wild Pigs	Pigs, Sheep	No
Mycobacterium tuberculosis complex* M. TB, M. bovis, M. Orygis	All Mammals – Prioritize Elephant, Rhino, Carnivores	All Mammals – Prioritize Livestock	Yes
Mycobacterium Paratuberculosis	Wild Ruminants	Cattle, Buffalo, Goats, Sheep	No
Brucellosis	All Mammals (Potential)	All Mammals	Yes
Leptospirosis	All Mammals	All Mammals	Yes
Mycoplasma haemofelis	Wild Canids, Felids	Cats, Dogs	No
Salmonella etc.	All Mammals, Birds (Potential)	All Mammals, Birds (Potential)	Yes
Pasteurella* Hemorrhagic Septicemia	Wild Ruminants, Birds (Potential)	Ruminants, Birds (Potential)	No
Pseudomonas mallei	Bear, Wild Felids, Wild Sheep	Dogs, Cats, Equids, Goats, Sheep	Yes
<b>BACTERIAL DISEASES</b>			
Trypanosomiasis	Wild Canids, Civets, Deer, Mongoose, Leopard, Tiger, Elephant, Rhino, Wild Pigs, Wild Sheep	Equids, Cattle, Buffalo, Goats, Sheep, Pigs	Yes
Theileriosis	Elephant, Rhino, Wild Ass, Wild Ruminants	Cattle, Buffalo, Goats, Sheep	No
Toxoplasmosis	All Mammals, Birds (Potential), Esp. Rodents	All Mammals, Birds	Yes
Ehrlichiosis	Wild Canids, Wild Ruminants, Rabbits/ Rodents	Dogs, Cats, Equids, Cattle, Buffalo, Sheep, Goats	
Echinococcosis	Wild Carnivores, Wild Ruminants, Rabbits/ Rodents	Dogs, Cattle, Buffalo, Sheep, Goats,	Yes
Fascioliasis	Elephant, Rhino, Wild Ruminants	Equids, Cattle, Buffalo, Sheep Goats	No

\*Adapted from “Species and Diseases of Concern in Nepal.”  
(Source: Kaufman and Sadaula 2017).







Government of Nepal  
Ministry of Forests and Environment  
**DEPARTMENT OF NATIONAL PARKS AND WILDLIFE CONSERVATION**  
Babarmahal, Kathmandu, 2023