ELEPHANT CONSERVATION ACTION PLAN FOR BHUTAN 2018-2028

NATURE CONSERVATION DIVISION
Department of Forests and Park Services
Ministry of Agriculture and Forests
Royal Government of Bhutan

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Suggested citation:
NCD 2019. Elephant Action Plan for Bhutan (2018-2028). Nature Conservation Division, Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu, Bhutan.

Photo Credits: Dorji Rabten, Phibsoo Wildlife Sanctuary/ Unyen Penjor NCD/ Sonam Wangdi NCD/ Department of Forests and Park Services

ISBN: ISBN 978-99980-873-0-9

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MINISTER

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ROYAL GOVERNMENT OF BHUTAN
Ministry of Agriculture & Forests
Tashichhodzong, Thimphu: Bhutan

FOREWORD

With over 11,000 species of wild flora and fauna, Bhutan is a conservation jewel in the eastern Himalayas. Our continued conservation efforts as guided by our visionary monarchs have made Bhutan a leader in environmental conservation. In addition, the Department of Forests and Park Services, over the decades have put tremendous efforts in taking the conservation of wildlife and natural habitats forward, besides meeting the demands of the natural resource requirement for our people.

Amongst the diverse wild mega-fauna in Bhutan, the Asian elephant, besides being a globally threatened species has a deep cultural significance in our Bhutanese culture. The species is also strictly protected under Schedule I of the Forests and Nature Conservation Act 1995, a protection equivalent to CITES Appendix I. Despite our efforts to set the right priority to conserve this species, there wasn't a conservation strategy document for this species until now. I am delighted to learn that Department of Forests and Park Services have taken the much needed step for framing the first Elephant Conservation Action Plan for Bhutan.

The last national elephant survey conducted in 2016-17 has estimated a population of 678 elephants (range 605-761) in the southern foothills of Bhutan. It is heartening to note that the important findings from elephant survey have helped to set clear directions for framing this conservation action plan which was also thoroughly consulted amongst the field offices. As such this action plan takes into account the data from scientific research, conservation dialogues and cultural significance, thus making the conservation plan holistic.

This action plan comes at a time when we are beginning the implementation of the 12th five year plan and Bhutan for Life initiatives. Therefore, I am convinced that we can successfully implement the proposed actions in this conservation action plan by making the judicious and synergetic utilization of the resources in hand.

Lastly, I would like to express my sincere gratitude to WWF Bhutan and the IUCN Asian Elephant Specialist Group for their timely and generous support. I also express my appreciation to the Department of Forests and Park Services and all other stakeholders engaged in formulating this plan. I wish them good luck for the successful implementation of this plan.

Tashi Delek!

(Yeshey Penjor)

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SECRETARY

PREFACE

Elephants are revered for their magnificence and worshipped as religious symbols in various cultures around the world. Ecologically, elephants are considered as premier flagship species having enormous role in shaping the ecosystems they inhabit. In Bhutan, we are proud to have over 678 wild Asian elephants thriving in the forests of the southern foothills along with to so many other key species. Yet this mega herbivore is globally threatened due to loss of habitat and poaching for ivory. With the increasing infrastructures development and changing landuse pattern, elephants in Bhutan also face similar threats from loss and fragmentation of habitats resulting to conflict with humans. Besides the risks of retaliatory killing and injury to the elephants, our farmers in the south bear the brunt of human elephant conflict sacrificing their bountiful harvest annually and often their precious lives.

We are in an era where the conservation of the species is more important than ever, but the wellbeing of the communities is increasingly at stake. There is an urgent need for coexistence between the elephants and the communities with minimal conflict. In order to strive towards achieving that goal, I am happy to introduce the Elephant Conservation Action Plan for Bhutan which will be implemented from the July 2019 to June 2029 for a period of ten years.

The plan besides intending to address the direct threats to elephant conservation also strategizes to minimize conflict with the communities residing inside or at the fringes of elephant habitats. In addition to charting out measures to mitigate and resolve conflicts, the plan focuses on preventing conflict through habitat improvement, restoration of migratory routes and ensuring of safe passages for elephants. I am sure these approaches will help reduce conflict thereby contributing to our national goal of achieving food self-sufficiency while ensuring species conservation.

I would like to congratulate the Department of Forests and Park Services for their hard work in formulation of this important document. I also acknowledge the WWF Bhutan for the financial support and IUCN Asian Elephant Specialist Group for their technical inputs in making this plan holistic and relevant to the global efforts of elephant conservation. I am optimistic that the plan will be successfully implemented with the unwavering support from Royal Government of Bhutan, Bhutan for Life project, and other conservation partners.

Tashi Delek and best wishes!

(Rinzin Dorji)

DIRECTOR

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Royal Government of Bhutan
Ministry of Agriculture and Forests
Department of Forests and Park Services
Thimphu

ACKNOWLEDGEMENT

The Department of Forests and Park Services would like to sincerely acknowledge the tireless efforts and contributions made by individuals and institutions in development of this first Elephant Conservation Action Plan for Bhutan. First of all, I would like to congratulate and thank the Nature Conservation Division (NCD) for initiating and successfully formulating this important document. At individual level, my appreciating goes to Chief Forestry Officer (CFO) and the officers from NCD who lead this important task.

I would like to acknowledge the CFOs and focal officers of elephant range field offices for their relentless support and valuable inputs starting from the inception of plan development.

I am also highly indebted to Mr. Vivek Menon, Chair, Asian Elephant Specialist Group (AsESG) and the distinguished members of AsESG for their valuable support and technical inputs in making this plan holistic and relevant to the global context. I sincerely express my gratitude to the Elephant Family for the valuable support rendered to organize the AsESG Working Group meeting in Bhutan. The meeting was extremely instrumental in shaping of this plan.

I sincerely thank generous funding support and inputs by WWF Bhutan in this plan in addition to their lasting contribution in conservation of Bhutan's natural heritage. I look forward for continued support from all our conservation partners towards implementing the actions prescribed in this plan towards securing the future of the Asian elephants while taking care of wellbeing of our people.

My best wishes and Tashi Delek !

(Lobzang Dorji)

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TABLE OF CONTENTS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Elephants are revered for their magnificence in many cultures and traditions across Asia. In Bhutan, elephants are revered as a form of Buddha by the Buddhists and worshiped as Ganesha by the Hindus. In addition to being a charismatic mega-vertebrate, elephant is also considered as premier flagship and umbrella species whose conservation is essential for the functioning of the forest ecosystem including seed dispersal over long distances.

Regardless of being a charismatic species with critical role in shaping the forest ecosystems, the Asian elephant (*Elephas maximus)* throughout its range continues to face threats of extinction. Once roamed throughout Asia, the Asian elephant is now restricted in isolated populations in 13 range countries. With only less than 50,000 individuals in the wild, Asian elephant is listed as endangered under the International Union for Conservation of Nature (IUCN) Red List of Threatened Species and listed on Appendix I of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

In Bhutan, elephants receive highest legal protection as listed under Schedule I of Forests and Nature Conservation Act, 1995. Bhutan also offers very good opportunities for elephant conservation through existing enabling polices and legislations, conservation commitments, and strong institutional setup and linkages besides having good forest cover and protected area network that serves as good refuge for elephants. Today, Bhutan has an estimate of 678 (605-761) elephants inhabiting the southern belt bordering with India.

As the developmental activities accelerate, elephants in Bhutan faces threats from habitat degradation and fragmentation resulting in conflict with human which cascades into retaliatory killing and also risks transmission of zoonotic diseases. Due to the lucrative market in illegal wildlife trade, poaching remains as a potential threat to elephants in Bhutan.

This conservation action plan developed with inputs from the field managers and species experts seeks to address the threats and challenges faced by elephants in Bhutan and across the border for the next ten years and beyond. The plan envisions a viable population of elephants in coexistence with the people in the landscape. The vision will be realized with a goal to maintain a viable population of elephants through improved habitat and reduced conflict with human. The goal will be achieved through implementation of strategic actions under eight broad objectives as outlined below.

Objective 1: To prevent habitat loss and improve the existing habitat condition. For this, elephant habitats will be zoned to reduce loss from land use change while degraded critical habitats will be restored and managed. Elephant migratory routes will be mapped, delineated and managed to ensure habitat connectivity.

Objective 2: Reduce human elephant conflict through adoption of science based and community driven approaches. Successful preventive and mitigation measures will be upscaled and community protection groups will be strengthened. Ex-gratia schemes and incentives will be provided to increase tolerance of communities to elephants and the possibility of translocating the problem animals will be explored.

Objective 3: Increase knowledge base on elephant and its habitat. In order to achieve this, studies will be carried out to understand ecology and behavior of elephants including population survey, radio-telemetry and vulnerability to climate change.

Objective 4: Improve coordination among stakeholders including trans-boundary partners. Transboundary consultative meeting, exchange programs and synchronized patrolling and species monitoring works will be carried out. Collaboration with other stakeholders involved at policy and planning to grassroots and other line agencies will be enhanced.

Objective 5: Strengthen institutional capacity and human resource development. In order to strengthen institutional and human capacity, national elephant conservation program will be instituted both at national and field level. A cadre of professionals will be trained on various aspects of elephant conservation and management.

Objective 6: Identify and address the current and emerging disease. Elephants are susceptible to disease transmission both within themselves and from humans and livestock. Disease outbreak and transmission will be prevented and controlled through adoption of international guidelines and protocols including enlisting of potential diseases, staff training and disease surveillance.

Objective 7: Prevent poaching and illegal trade of elephant parts and products. Poaching and illegal trade of elephants will be prevented through implementation of zero poaching strategy and MIKE program in the elephant range protected areas and forest divisions. The provision on elephants in the National Forest Policy and Forest and Nature Conservation Act of Bhutan 1995 will be harmonized.

Objective 8: Improved management of captive elephants. Although captive elephant population in Bhutan is small, they need proper care and management. For this, health of captive elephants will be monitored on regular basis following standard protocols.

Proper housing and diet for the elephants and training and welfare of the mahouts will be accounted.

The conservation action plan will be implemented for the period of ten years starting July 2018 to June 2028. The total budget outlay for the plan implementation is Nu.440 million which will be met from RGoB allocation, Bhutan for Life Project funding and through support from other conservation donors. The plan will be implemented by respective field offices, NCD and UWICER as annual work plans through RGoB funds and project tied activities. The plan implementation will be monitored by NCD as per the logical framework.

LIST OF ACRONYMS

AsESG	Asian Elephant Specialist Group
BAFRA	Bhutan Food and Agriculture Regulatory Authority
BDCM	Border District Coordination Meeting
BFL	Bhutan for Life Project
BPC	Bhutan Power Corporation
BTFEC	Bhutan Trust Fund for Environmental Conservation
CBD	Convention on Biological Diversity
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
DGPC	Druk Green Power Corporation
DGM	Department of Geology and Mines
DoFPS	Department of Forests and Park Services, MoAF
DoL	Department of Livestock
DoR	Department of Roads
FPED	Forest Protection and Enforcement Division, DoFPS
FNCA	Forest and Nature Conservation Action of Bhutan, 1995
FRMD	Forest Resource Management Division, DoFPS
FYP	Five Year Plan
G2C	Government to Citizen Initiative
GNHC	Gross National Happiness Commission
GPS	Global Positioning System
HEC	Human Elephant Conflict
IUCN	International Union for Conservation of Nature
KLCDI	Kanchenjanga Landscape Development Initiative
LG	Local Government
MIKE	Monitoring the Illegal Killing of Elephants
MoAF	Ministry of Agriculture and Forests
MoWHS	Ministry of Works and Human Settlement
NBC	National Biodiversity Centre, MoAF
NBSAB	National Biodiversity Strategies and Action Plan
NCD	Nature Conservation Division, DoFPS
NEC	National Environment Commission
NGO	Non-Governmental Organization
NLCS	National Land Commission Secretariat
NSB	National Statistics Bureau
RBA	Royal Bhutan Army
RBP	Royal Bhutan Police
RGoB	Royal Government of Bhutan
SMART	Spatial Monitoring and Reporting Tool
TAC	Technical Advisory Committee, DoFPS
TCB	Tourism Council of Bhutan
TraMCA	Transboundary Manas Conservation Area
UWICER	Ugyen Wangchuck Institute for Conservation and Environmental Research, DoFPS
WWF	World Wide Fund for Nature

CHAPTER 1: BACKGROUND AND CONTEXT

1.1 Conservation status and significance

The Asian elephant (*Elephas maximus)* ranged from West Asia through the Iranian coast to the Indian subcontinent, eastwards into south-east Asia covering an area of approximately 9 million km^2 (Olivier, 1978; Sukumar, 2003). Today, the range of this mega-herbivore is much reduced, occurring in isolated populations in 13 countries, with a very approximate total range area of 486,800 km^2 (Sukumar, 2003). The population of wild elephants has declined significantly in the last two hundred years because of habitat fragmentation and destruction caused by the expansion of agriculture and human settlement (Sukumar, 1989). The growing pressure on elephant habitats and movement corridors has led to crop raids and human casualties, which has created negative public sentiment towards elephant conservation throughout its range (Ngure, 1995; Lahm, 1996; Ekobo, 1997). Poaching of elephant for ivory trade is another determinants to declining population of wild elephants (Stiles, 2004).

As only less than 50,000 estimated Asian elephants live in the wild with a decreasing population trend (Sukumar 2003), the species is listed as endangered under the International Union for Conservation of Nature (IUCN) Red List of Threatened Species and listed on Appendix I of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

In Bhutan, elephants are distributed throughout the southern belt of Bhutan (Samtse, Chhukha, Dagana, Tsirang, Phibsoo Wildlife Sanctuary, Sarpang, Royal Manas National Park, Pemagatshel, Samdrup Jongkhar, and Jomotshangkha Wildlife Sanctuary). They have been recorded from elevations as low as 100m to above 2000m, and have been found to use diverse habitats ranging from subtropical forests to cool broadleaved forests. The recent national elephant survey conducted in 2017 estimated 678 (range 605-761) elephants in Bhutan (NCD, 2018). In order to give maximum legal protection, elephants are listed under the Schedule I of Forests and Nature Conservation Act of Bhutan 1995.

Elephants are revered for their magnificence and sheer power in many cultures and traditions across Asia. In Bhutanese culture, elephants are portrayed as an important figure often revered as a form of Buddha. Elephant pictures are most prominently seen as wall paintings in the form of 'four harmonious friends' or *thuenpa puenzhi* (Jigme and Williams, 2011). Elephant constitutes an important element of the seven precious possessions (or *Rinchen Nadun*), *Langpo Rinpoche* (or the Precious Elephant) which signifies strength and power (Phuntsho, 2017). Further, in Hindu culture elephants are worshipped as Lord Ganesha (son of mighty Lord Shiva).

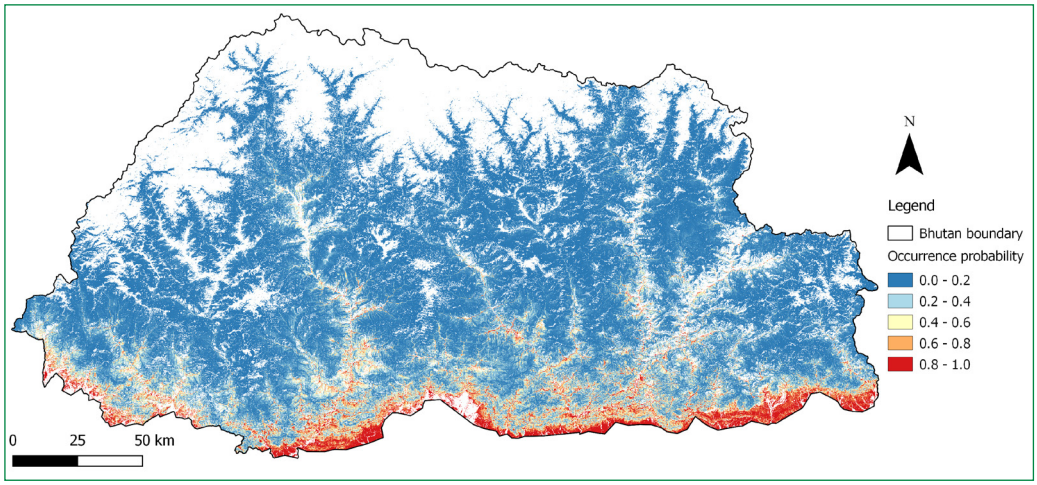

Figure 1. Predicted Asian elephant distribution in Bhutan (NCD, 2018)

Elephants, in addition to value as a charismatic mega-vertebrate, is also considered as premier flagship and umbrella species (Fernando et al., 2008) whose conservation is essential for the structure and functioning of the forest and mountain ecosystem. Elephants directly influence forest composition and density, and can alter the broader landscape. In tropical forests, elephants create clearings and gaps in the canopy that encourage tree regeneration. Elephants are known seed dispersers across different habitats and potentially disperse seeds over long distances thus helping in the key process of the population and community dynamics in plants (Corlett, 1998; Wang and Smith, 2002; Campos-Arceiz, et al., 2008). Since elephants disperse several different species, some of which have no other known disperser, their habitat fragmentation and population decline has serious implications for the maintenance of forest diversity (Chapman et al., 1992).

1.2 Elephant conservation initiatives and achievements

As Bhutan's conservation policy and efforts are aimed towards ecosystem conservation, very limited elephant specific conservation works were carried out in Bhutan (Dorji, 2015). The first nation-wide elephant survey was conducted in 2005 based on the direct observation and block count method (Jigme and Williams, 2011), and later in 2011 another survey was conducted, confining to sites where there are high occurrence of elephant (Jigme and Williams, 2011). It was from the second survey that first density (0.641 elephants per km^2) and population (513 elephants) were estimated. However, no elephant specific conservation projects were initiated in Bhutan.

Despite lacking conservation program, the cultural significance and environmental ethics in the past have rendered good protection to elephant population in Bhutan. The elephant population of Gaylegphug used to be so large that the area was once known as the *Hatisar*, meaning "The Land of Elephants" (Dorji, 2015). Today, sadly, many of the forests in this area have disappeared and continue to disappear and along with them, much of the elephant population.

Later, realizing the considerable threats that elephant is facing, conservation priorities are identified in country. Three reserves in the southern foothills, Royal Manas National Park, Phibsoo Wildlife Sanctuary and Jomotshangkha Wildlife Sanctuary offer over 1600 km^2 of protected habitat for elephant with reinforced anti-poaching patrolling. The conservation management plan for the protected areas have identified conservation activities for the elephant conservation and are being implemented.

With human-elephant conflict (HEC) identified as a serious issue driven by various anthropogenic disturbances to its habitat, all forest divisions and protected areas in the southern belt have been striving to address this issue. SAFE system approaches for mitigating human wildlife conflict are being implemented (NPPC and WWF-Bhutan, 2016) and measures for reducing HEC are piloted and implemented in all the elephant range areas. Further, to ascertain the population status of elephants in Bhutan and to identify key threats, the recent National Elephant Survey of 2017 was conducted using different field methods such as radio-telemetry, camera trapping, dung count, etc.., and robustly analyzed using the methods such as Royle-Nichols model, N-mixture model and occupancy frameworks (NCD, 2018). With the reliable estimate of population size and ecosystem characteristics, a number of strong environmental initiatives and laws already in place, and with dedicated frontline staffs, Bhutan is well placed to conserve the Asian elephant through planned monitoring and adaptive management.

1.3 Action planning process

Consultative meeting with the field managers and focal points

A consultative meeting workshop was held from 22-26 February, 2019 at Phuntsholing. The workshop was attended by Chief Forestry Officers and focal officers from elephant range field offices. During the meeting, the participants from the respective field offices were tasked to identify threats and challenges to elephant conservation in Bhutan. The threats and challenges for the respective areas were ranked in terms of severity and urgency. The ranked threats and challenges for respective areas were then clubbed together to come up with a national ranking.

The participants then drafted the vision, goal and objectives of the plan. The participants were then divided into smaller groups based on different objectives to develop strategies and actions to meet the objectives with incorporation of budget and timeline. The participants also developed a draft results framework for plan monitoring and evaluation.

Figure 2. Chief Forestry Officers and Focal Officers from elephant range field offices with officials from NCD and WWF during consultative workshop in Phuntsholing

Meeting with the IUCN Asian Elephant Specialist Group

The draft plan was presented by NCD during the meeting of working group members of the IUCN Asian Elephant Special Group (AsESG) held on 19th February at Paro. The AsESG members deliberated extensively on the draft plan and provided many inputs and feedbacks which were incorporated later by NCD.

Figure 3. Chair and members of AsESG with officials from NCD during AsESG meeting at Paro

CHAPTER 2: THREATS AND CHALLENGES TO ELEPHANT CONSERVATION IN BHUTAN

2.1 Threats

2.1.1 Habitat degradation

With large body size and unique habits of feeding on low energy diet, elephants need large area for foraging and survival (Baskaran & Desai, 1996). An adult elephant can consume a variety of plant species up to 150 kgs and drink over 140 litres of water per day (Fernando & Pastorini, 2011). Habitat degradation leading to deprivation of required energy resources, therefore, is a major threat to conservation of elephants. Though elephant is a habitat generalist, an ideal elephant habitat should contain nutritive fodder, water and mineral licks (Fernando & Leimgruber, 2011).

Little is known about the habitat preferences and foraging behaviour of elephants in Bhutan. On the contrary, since a decade ago, invasive species such as *Lantana camera, Chromolaena odorata* and *Pogostemon spp.* are found invading the natural forests thereby overtaking palatable species. Intensive livestock grazing in the elephant habitat especially along the international border also deplete the food availability. Besides, the increased accessibility to the forests has led to excessive extraction of resources such as banana and bamboo, which are described as preferred fodder species for the elephants (Joshi & Singh, 2008).

There are also instances in the natural habitats where streams are drying and natural ponds gets filled up with sediments and debris leading to shrinkage of available water. Furthermore, incidences of streams being completely tapped for irrigation or drinking in the human settlements are causing shortage of water for the wildlife and elephants at the forest periphery, which lead to straying of elephants in human settlements and causing havoc. In many occasions, un-prescribed fire is set from across the border which results in the growth of low quality grass and weeds, which in the long run impacts the soil quality. Soil erosion and landslides during the monsoon seasons also deteriorates the habitat quality by eroding mineral lick.

2.1.2 Habitat fragmentation and loss

Excessive degradation of habitats not only fragments the suitable habitats thus losing contiguity but also leads to eventual loss of favourable habitats. In Bhutan, elephant population is confined to the limited southern plains and foothills adjoining the Indian borders (NCD, 2018). Therefore, even a small scale fragmentation and habitat loss will

have adverse impact to the elephant population. With elephants now seen at altitudes as high as 2000masl , the elephant habitats run across high hills, steep slopes and rugged terrains. A safe and contagious habitat is vital for enabling safe movement of elephants.

Linear infrastructure such as roads, irrigation canals, electric transmission lines and electric fences are the major obstacles on the elephant routes in Bhutan. Expansion of urban spaces, excessive mining and development of infrastructure like airport on the other hand leads to complete loss of elephant habitat, which heightens human-elephant conflict. Left with limited habitats for elephants to forage due to habitat fragmentation and loss, elephants are forced to come in the proximity of human settlements corresponding to increased incidences of crop raiding and destruction of properties. Once in a while, we hear the mournful news of human being trampled to death by elephant in Bhutan Wangchuk, K. (2018, December 12), which in most of the cases are at the fringes of urban areas and protected areas.

While developmental activities for the socio-economic welfare of people cannot be halted for the need of conservation, it is vital that proper assessments and studies are conducted prior to the commencement of developmental works. Where required, movement corridor for elephant needs to be secured to enable safe passage for the elephants so that they will avoid humans and settlements. Declaration of elephant habitat and corridor with proper zonation, and identification of permanent migratory routes needs to be carried out to address it.

2.1.3 Retaliatory killing, accidental death and injury

Retaliatory killing of elephants is becoming common and poses a serious threat to elephant conservation. In India during the recent years, more HEC related elephant deaths were recorded than those due to poaching (AsERSM, 2017). HEC not only increases the local community's hostility towards elephants, but also towards conservation in general. While the causes of elephant rummaging into the human sphere are varied ranging from habitat fragmentation and loss, shortage of energy resources in natural habitat, intra-specific competitions leading to isolation from the herd, etc., they all face the same fate of intolerance from human. Killing and injury of elephant as a result of retaliation and accidents is identified as one of the threats to conservation of Asian elephants. In Bhutan, there are no records of retaliatory killing of elephants using firearms. However, there are chances of retaliatory killing using poisoned arrows or poisoned food as the incidences of elephants causing destruction to human property increases. Observations from the field reveals that elephants injured across the border in India are found taking refuge in Bhutan. To prevent brutal retaliatory actions such as throwing burning materials and

firearms in Bhutan, innovative approaches towards mitigating the HEC is necessary.

Elephant in Bhutan are also prone to accidental deaths and injury posed by steep terrains, transmission lines and foraging habits of elephant. Two elephants were killed due to food poisoning caused by the consumption of non-edible things in 2018. Solidified cement was found in the gut content of a dead elephant at Samdrup Jongkhar and post mortem report of the latest accidental death of elephant at Gedu revealed that the elephant died due to poisoning after consuming *Tapioca spp*. Transmission lines sagging low on ridges accidentally coming in contact with trees and other vegetation can also lead to electrocution of elephants. One elephant was killed in Samdrup Jongkhar in 2016 due electrocution after the elephant bit the live electric lines and one elephant was electrocuted at Jomotsangkha in 2017 due to leakage of electric current. Such unfortunate incidences are eye opener to the conservation agencies, which calls for framing stringent policies to curbs such mishaps.

2.1.4 Poaching and illegal trade

The illegal trade in wildlife presents a threat to many rare species and thus to biodiversity. In its global range, the elephant is facing serious threat from poaching as they are source of bush meat and their 'white gold 'can provide a substantial reward for poachers (Lemieux & Clarke, 2009). The ivory-driven poaching across the globe has led to a substantial decline in elephant populations. For the Asian elephant where tusk are borne only with the males, poaching has led to skewed sex ratios in some herds, calling into question their long-term survival.

Elephant poaching in Bhutan is insignificant. Yet, owing to porous international border and existence of illegal trade of elephant parts and products in the region, poaching remains as a constant threat to its conservation. Four cases of illegal ivory trade by the people across the border have been recorded (offence report/FIRMS, 2018) between 2012-2015. Though not apprehended, camera trap images revealed the presence of unidentified personals equipped with arms in the prime wildlife habitats, which cannot be denied as poachers. Besides, the park officials conducting patrol also encounter indirect evidences of poachers. The use of ivory products in the Bhutanese culture is also likely to trigger poaching and illegal trade if stringent preventive measures are not taken. To address the problems, anti-poaching measures and prevention of illegal trade need to be enhanced.

2.1.5 Transmission of zoonotic diseases

The cases of zoonotic diseases transmission from human to elephants and vice versa have been reported from several zoological facilities, which pose risk to both human and elephants (Paudel et al., 2014). However, till date such cases have never been reported in Bhutan. Yet, constant monitoring of both wild and captive elephants need to be ensured to prevent the spread of zoonotic diseases.

2.2 Challenges

2.2.1 Shortage of human and financial resources

There is a shortage of staff under the DoFPS, mainly in the field offices. With lots of emphasis on public service delivery by Government to Citizen (G2C) initiative and the deadlines set for service delivery, majority of the time spent by a forestry personnel especially in the forest divisions is on public service delivery limiting time for conservation activities. The recent organizational development exercise seems to have failed to consider the real field situation while considering the number of staffs required by respective offices.

The RGoB and conservation partners have been supporting conservation in Bhutan but there is limited funding for conservation of elephants. Funding to procure equipment is very scarce and field offices do not have adequate equipment for research, anti-poaching and other conservation related activities. The prime elephant habitats which are outside the protected areas receives less funding for their conservation which could adversely impact the elephant conservation.

2.2.2 Inadequate LG support in mainstreaming of activities related to human elephant conflict

Elephant conservation practice needs support from various stakeholders including political leaders, policy makers, local government (LG), NGOs, and local communities. With the current set up, implementation of developmental plans are usually done by LG in consultation with local communities. However, the local plans hardly incorporate any activities related to conservation or HEC management. Measures such as crop protection and crop insurance schemes which are initiated by the government face poor ownership from the communities.

Therefore, initiating dialogue with the LG to include HEC management in local plans is vital in ensuring sustainability of the program. This will instil a better sense of ownership and in the process built capacity of the LG and communities in managing HEC.

2.2.3 Limited technical capacity

The technical capacity of the staffs working in the field are strong determinant of conservation outcomes. Over the years, the RGoB has invested resources in staff capacity development. Nonetheless, many frontline staffs have never availed any professional development courses apart from their initial trainings from the institutes. With limited training and exposure opportunities, staffs lack capacity and interest to carryout basic researches, data collection, analysis, etc. Activities such as dealing with HEC, rescue and rehabilitation, anti-poaching and law enforcement require adaptive technical expertise.

2.2.4 Inadequate land use planning due to lack of habitat information

Limited information on habitat use and lack of declared elephant habitats outside the PAs in the country is seen as one of major challenges for informed land use planning. Such short comings results leads to irreparable repercussions when suitable habitat are lost and important biodiversity conservation areas are shrunken. It is, therefore, vital that rigorous field research through the use of robust survey designs and equipment are done to model suitable habitats and movement corridors for the elephant. Where required, the support of relevant stakeholders need to be sought. With such inputs, mapping, delineation and notification of elephant habitats into different zones should be carried out to save and conserve elephant habitats from various land use changes.

2.2.5 Weak transboundary collaboration

In Bhutan, the suitable elephant habitats run across the southern belt of the country adjoining India and the recent radio-collaring activity shows majority of the herds are trans-boundary in nature (NCD, 2018). In order to strengthen transboundary conservation, Transboundary Manas Conservation Areas (TraMCA) and Kanchenjanga Landscape Development Initiative (KLCDI) were initiated. However, elephant was not taken up as a focal species under TraMCA and KLCDI and some areas with key elephant habitat like Pemagatshel Forest Division is not part of any initiative and has weak collaboration with the Indian counterparts.

Moreover, most of the activities that possess threat to elephants like illegal logging, poaching, encroachment into elephant habitats and migratory routes etc., are observed along these transboundary areas. Enhanced transboundary conservation initiatives can address these issues and secure habitats and important migratory routes.

2.2.6 Lack of Smart Green Infrastructure

In the era of modernization, infrastructure development is inevitable and the pace of development is alarmingly high in the elephant habitats which overlaps with the prime areas for human settlement. And the worst part is most of the linear infrastructure developed are not elephant friendly excepting for few bridges constructed in Lhamoizingkha and Samrang which have elephant passages.

The road master plan to build southern east-west high way is a great concern for elephant habitat as it will traverse perpendicular to elephant migratory route. In some areas, migratory routes have also been blocked by electric and barbed wire fences. Unsecured garbage disposal sites have been constructed in the elephant feeding areas or along migratory route. Large irrigation channels often pose threat to life of elephants besides blocking their route. Low sagging transmission line and uncleaned vegetation growth expose elephants to electrocution. Inclusion of SGI principles into any developmental plan in elephant habitat needs to be incorporated during issuance of forestry clearance.

CHAPTER 3: OPPORTUNITIES FOR ELEPHANT CONSERVATION IN BHUTAN

Bhutan despite its small size, have a bigger commitment towards conservation. This commitment towards conservation is both inherent through innate cultural values and induced due to issues facing the species survival in its natural habitat. Yet, this incredible journey of conservation has been possible because of the visionary leadership of our beloved monarchs. The opportunities for elephant conservation in Bhutan is, therefore, multifarious.

3.1 National policies and regulations

Following the great precedence set by our visionary monarchs, the Royal Government of Bhutan (RGoB) provides strong administrative and policy support towards conservation in Bhutan. The article five of the Constitution of the Kingdom of Bhutan makes every people a trustee of nation's natural resources and environment, and mandates the Royal Government to maintain at least 60% of the total land area under forest cover for all the time to come, thereby enabling safe haven for wildlife to thrive. Forest and Nature Conservation Act of Bhutan 1995 accords highest protection status to the elephant by listing it under Schedule I species and the current legislations imposes fines ranging from Nu. 15,000.00 for offense committed against elephant to Nu. 100,000.00 as compensation for missing tusks of an elephant (RGoB, 2017).

There are also several other laws and regulations that are relevant to protection of habitat such as the Environment Assessment Act of Bhutan, 2007 and Bhutan Water Policy, 2007 that requires Environmental Impact Assessment (EIA) and watershed protection, respectively. The National Forest Policy of Bhutan 2011 (MoAF, 2011) strives to 'maintain species persistence and ensure long-term sustainability of Bhutan's biodiversity, ecosystem services, and natural habitats through a network of protected areas, biological corridors and management of other parts of the landscape for positive environmental outcomes'. The Biodiversity Act of Bhutan 2003 provides support for the conservation and sustainable utilization of biological resources and associated traditional knowledge. These policies also rationalizes the existence of the protected areas and biological corridors, and zoning within them to ensure persistence of wildlife, which includes elephant.

3.2 Bhutan's conservation commitments

Bhutan is signatory to the Convention on Biological Diversity CBD), ratifying the convention in 1997 and have been actively pursuing the requirements under this convention. One of the main objectives of CBD is the conservation of biological diversity and the primary instrument for implementing the convention is a National Biodiversity Strategies and Action Plan (NBSAP). Bhutan prepared the first NBSAB in 1997 to provide a framework for action for strategic biodiversity management in the country and later updated the document in 2014.

Bhutan is also signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and have been actively engaging in serious of negotiations during subsequent climate dialogues. Today, Bhutan has one of the 'most ambitious pledge' to remain carbon neutral for all the time to come, a climate promise made during the Paris Climate Summit in 2015. Climate change is one of the emerging threats to wildlife conservation and such commitment create opportunities of enabling climate change resilient wildlife habitats in Bhutan.

3.3 Institutional mechanisms

The Ministry of Agriculture and Forests (MoAF) is the central organization for the formulation and implementation of policies and legal frameworks related to biodiversity, forests, livestock and agriculture and the Department of Forests and Park Services (DoFPS) under MoAF is responsible for management of forest resources and wild biodiversity. Since the establishment of Department of Forests in 1952, conservation efforts were taken forward, which resulted into many conservation milestones and international accolades. Within the DoFPS, the Nature Conservation Division (NCD) is tasked with conservation of plants and animals and nature recreation within and outside the protected areas, and the Ugyen Wangchuck Institute for Conservation and Environmental Research (UWICER) is mandated to conduct forestry and wildlife research and training of forestry officials. At the field level, the protected areas and forest divisions equipped with trained manpower and field equipment serves as guardians of the natural heritage. Such strong institutional mechanisms will play a pivotal role in implementing the conservation action plan for elephant.

It is through the strong policies and institutional mechanisms that Bhutan, thus far, has maintained a pristine forest coverage of 71% (FRMD, 2016). Bhutan today have a network of ten protected areas and eight biological corridor covering 51.44% of the total area (DoFPS, 2016) which further secures the conservation landscape vital for threatened species such as elephant.

3.4 Stakeholders and conservation partners

Stronger collaboration between the stakeholders towards our collective goal of conserving and managing the natural heritages is very vital. In Bhutan, the conservation agencies both governmental and NGOs have always maintained a strong coordination for delivering the conservation outputs. Such collaborations are particularly important for addressing the conservation challenges like human-elephant conflict and poaching incidences. For the conservation of elephant, the coordination between agencies like Tourism Council of Bhutan (TCB) will open avenues for creating ecotourism products in the elephant habitats creating alternative livelihoods. Department of Livestock (DoL) and Department of Agriculture (DoA) are important conservation partners as these sectors have viable income opportunities which conservation agencies can help. Local government is an important conservation stakeholder which can facilitate many conservation works in the locality. The good coordination prevailing between these government agencies has helped mitigate human-elephant conflict incidences in many localities and will only improve implementation of the strategic plan in place.

While the research institutes such as Ugyen Wangchuck Institute for Conservation and Environmental Research, College of Natural Resources are engaged in research works to identify conservation priorities by filling up the information gap in elephant conservation, donors have been keen in supporting the conservation initiatives in Bhutan. The World Wide Fund for Nature (WWF) Bhutan Program is a donor and conservation partner in Bhutan since 1997, WWF will remain a key partner for elephant conservation in Bhutan. The Bhutan Trust Fund for Environmental Conservation (BTFEC), established in 1992, supports conservation projects within and outside the protected areas. The UNDP office in Bhutan is currently the implementing agency of the GEF-6 project cycle, including the Small Grant Projects (SGPs) to support area-based community ventures related to nature conservation.

The Royal Bhutan Police (RBP) is a crucial partner for information networking, apprehending, and detention of suspects and convicts related to wildlife crimes. The Royal Bhutan Army (RBA) support surveillance, joint patrolling, and apprehending wildlife poachers and smugglers. Both RBA and RBP help tackle forest fires and natural disasters related to climate change. Other key partners in curtailing wildlife trade are Bhutan Agriculture and Food Regulatory Authority (BAFRA) and the Department of Revenue and Customs (DRC) who regularly inspects the entry and exit of wildlife products.

In addition to the conservation partners in Bhutan, the technical support from AsESG will be key in elephant conservation in Bhutan. Also, the International Fund for Animal Welfare and Wildlife Trust of India will remain as key partners in strengthening capacity of frontline staff.

With the Bhutan for Life (BFL) project rolled out for financing the protected areas for the next fourteen years, the conservation opportunities has increased manifolds and amongst others, elephants will secure its share of funding in implementing this conservation action plan.

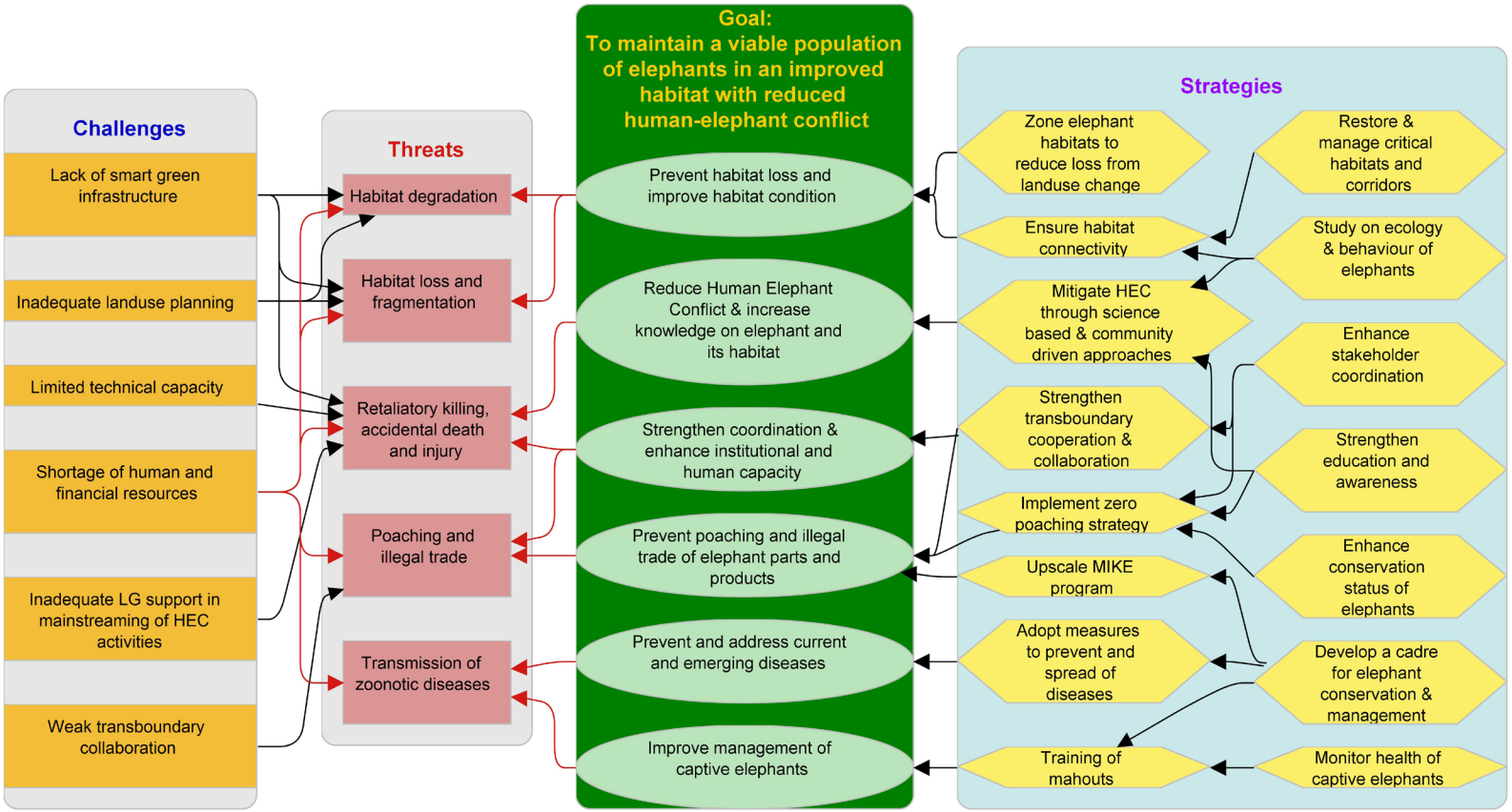

Figure 4. Conceptual model for elephant conservation in Bhutan

CHAPTER 4: ACTION PLAN

4.1 Vision:

"A viable population of elephants in coexistence with the people in the landscape"

4.2 Goal:

To maintain a viable population of elephants in an improved habitat with reduced human-elephant conflict

4.3 Objectives:

4.3.1 Objective 1: Prevent habitat loss and improve the existing habitat condition

Habitat loss and fragmentation due to expanding human population and growing resource demands is the biggest threat to the continuing survival of Asian elephants (Sukumar, 1989, Leimgruber et al., 2003). As elephant habitat diminishes, the elephants are pushed into increasingly smaller areas and resources are constrained resulting in crop raiding, prone to poaching, risk of inbreeding etc.., which are all detrimental for maintaining viable population of elephant. Elephants in Bhutan are confined to smaller land area in the southern plains and foothills adjoining Indian borders and even a small scale fragmentation and habitat loss will have adverse impact to the elephant. There are regular incidences of elephants coming to the human settlements and raiding the property and crop in southern Bhutan, which can be linked to disturbed habitat in its natural habitat. Elephants strolling into Gelephu town has become a regular habit and often cause chaos amongst the people Pokhrel, N. (2018, December 5). This is mainly because the elephant migratory routes are disrupted by expansion of urban areas and development of linear infrastructures. It is therefore vital that the strategies are put into place to secure the habitats, prevent loss of habitat and ensure habitat connectivity. Other pertinent threats to the elephant habitat is the overtaking of palatable species by invasive species such as *Lantana camera, Chromolaena odorata* and *Pogostemon spp.* which calls for strategies to restore the habitats invaded by such species. The actions under this objective will, therefore, address these issues and help in maintaining a secure habitat condition.

Output 1.1: Elephant habitat zoned to reduce loss from land use change

Action 1.1.1. Assess habitat and notify delineated management zones to regulate land use change and resource extraction

Action 1.1.2. Develop guidelines for issuance of forestry clearance in elephant habitat

Output 1.2: Degraded critical habitats restored and managed

Action 1.2.1. Remove invasive species and improve habitat through enrichment plantations using local palatable species

Action 1.2.2. Maintain natural water sources and create new ones wherever necessary

Action 1.2.3. Identify and maintain mineral/ salt lick areas and create new ones if necessary

Action 1.2.4. Carryout prescribed burning and suppress unplanned fire in grassland

Output 1.3: Habitat connectivity ensured

Action 1.3.1. Map and assess the functionality of existing migratory routes and transboundary corridors (overlay with biological corridor wherever relevant).

Action 1.3.2. Delineate, notify, secure and manage important elephant corridors

Action 1.3.3. Assess and integrate smart green infrastructure principle during issuance of forestry clearance and monitor during the implementation of the projects

4.3.2 Objective 2: Reduce human elephant conflict

Elephants being mega-herbivores require high quantity of fodder and they commonly raid crops during dry seasons, causing economic losses, and death and injury to people (Sukumar, 1989). Moreover, with over two thirds of Asian elephant habitat in non-conservation areas (Sukumar, 1989), human–elephant conflict represents a widespread, complex, and intractable challenge to conservation and is the major threat to elephants across their range. In Bhutan, the elephants are found throughout the southern belt in both protected areas and forest divisions and often elephants come into conflict with the communities. Crop raiding by elephants is the most prevalent form of human–elephant conflict and can result in devastating economic losses for farmers, loss of human lives and the killing of elephants. It is, therefore, vital that drivers causing the conflicts are identified, the conflict hotspots are mapped and strategic actions towards mitigating the conflicts are identified.

Output 2.1. Conflict mitigated through adoption of science based and community driven approaches

Action 2.1.1. Assess the extent of HEC, map the hotspots and undertake rapid assessment of HEC hotspots using SAFE system approach.

Action 2.1.2. Assess perception and tolerance of people on elephant conservation and HEC and understand the social implications of HEC and its impact on conservation of elephants

Action 2.1.3. Use successful preventive measures (eg. trip alarm, chilli fences, and early warning system) to prevent entry of elephants

Action 2.1.4. Evaluate the efficacy of existing mitigation mechanisms at periodic interval and feed back into the plan to come up with new innovative measures

Action 2.1.5. Explore, establish and strengthen community protection units in the HEC hotspot areas

Action 2.1.6. Evaluate the existing ex-gratia schemes, modify and implement

Action 2.1.7. Explore the possibility to capture and translocate problematic elephants as per Population Management Guidelines

Action 2.1.8. Conduct study visit and training for HEC management practices & Smart Green Infrastructure (SGI) principle

4.3.3 Objective 3: Increase knowledge base on elephant and its habitat

Species conservation initiatives should be based on sound science and reliable evidence, yet too often this is not the case (Sutherland, 2004). In its range, Asian elephant does not have a reliable estimate of its wild population size and in many countries, there is no elephant census report (Choudhury et al., 2008). The most recent estimate for the global population size of the Asian elephant was 41,410–52,345 animals (Sukumar, 2003). There is also still not a single Asian elephant distribution map based on actual on-the-ground-data such as a systematic grid survey for any country or location (Fernando & Pastorini, 2011) with the existing map being developed by the AsESG workshop in Cambodia (Hedges et al., 2008). Such lack of information hinders conservation efforts. In Bhutan, the most rigorous study on elephant is the National Elephant Survey conducted in 2016-2017 (NCD, 2018) and critical information on the biology and behavior of elephant, habitat connectivity, and impact of changing scenario including climate change are still lacking. Therefore, it is vital that these information gaps are filled and conservation priorities are set for the conservation of elephant. Periodic elephant population survey is one of the key actions to keep the information updated and priority actions under this objective are directed towards increasing the general knowledge base on elephant and its habitat.

Output 3.1: Ecology and behaviour of elephants studied

Action 3.1.1. Carryout periodic national elephant population survey to monitor elephant population abundance and distribution across landscapes in Bhutan

Action 3.1.2. Assess impact of developmental activities including land use change on elephant population, its migratory routes and corridors

Action 3.1.3. Upscale radio telemetry to understand home range and habitat requirements and spatial and temporal distribution of elephants in the landscape

Action 3.1.4. Assess elephant population and habitat vulnerability to climate change

Action 3.1.5. Conduct economic valuation in elephant habitats and communicate the ecosystem services coming out from elephant habitats

4.3.4 Objective 4: Improve coordination among stakeholders including trans-boundary partners.

Conservation actions requires the coordinated response from relevant stakeholders and for better results in transboundary conservation, improved coordination between the transboundary regions is more vital. Elephant population in Bhutan are mostly transboundary in nature spending at least some time of the year in India. Therefore, weakened enforcement and conservation actions in one country will hamper the survival of elephant in its neighbourhood. Enabling landscape connectivity for elephant movement between the two countries can help maintain viable population, which requires the consented conservation effort from both the sides.

Output 4.1: Trans-boundary cooperation and collaborations strengthened

Action 4.1.1. Strengthen and expand cross border and regional consultative forums/ meetings/exchanges to discuss the elephant conservation and management through the existing collaboration efforts viz. TraMCA, BDCM and KLCDI.

Action 4.1.2. Organize synchronized patrolling with the transboundary partners and explore for synchronized monitoring of elephant population

Action 4.1.3. Initiate bilateral agreement for conservation of transboundary elephant population with India

Output 4.2: Coordination and cooperation with various stakeholders enhanced

Action 4.2.1. Conduct coordination meeting with enforcement agencies (RBP, RBA, BAFRA, DRC, Judiciary) on prevention, detection and prosecution of illegal wildlife trade

Action 4.2.2. Conduct meeting with relevant agencies (GNHC, NEC, NLCS, DGM, MoWHS, DoR, BPC, DGPC, LG) on harmonizing polices and development plans in the elephant habitats

Action 4.2.3. Organize consultative meeting with the conservation partners to collaborate on elephant conservation program

Output 4.3: Disseminate information on conservation of elephants

Action 4.3.1. Observe world elephant day in elephant range field offices to create awareness on elephant conservation to students and general public

Action 4.3.2. Conduct awareness campaign to armed force officials and personnel

Objective 5: Strengthen institutional capacity and human resource development

In addition to the eminent threat from poaching and habitat loss, Asian elephant conservation programmes throughout its range is often confronted with limited capacity of the institutions and individuals involved. In Bhutan, the capacity of the DoFPS which is a mandated institution to oversee country's wildlife conservation has grown drastically over the years. However, with the emerging threats and challenges resulting from increased HEC and changing climate, it is imperative to constantly enhance the capacity of those involved in elephant conservation including the affected communities.

Output 5.1: National elephant conservation program strengthened

Action 5.1.1. Institute national elephant conservation program & knowledge sharing platform

Action 5.1.2. Integrate elephant conservation in national, sectoral and local government plans

Action 5.1.3. Designate section and identify focal person in all elephant range field offices

Action 5.1.4. Strengthen infrastructure and equipment needs in the field offices for elephant conservation

Output 5.2: Developed a cadre for elephant management and conservation

Action 5.2.1. Training on study design and data analysis, population survey and monitoring techniques

Action 5.2.2. Training on rescue, rehabilitation and medication of injured elephants

Action 5.2.3. Training on wildlife crime prevention & law enforcement

Action 5.2.4. Training on habitat and corridor mapping & management

Action 5.2.5. Specialized training in elephant ecology and management

Action 5.2.6. Study on conservation genetics & forensics of elephants

Action 5.2.7. Training of local communities on management of emergency situations during HEC

4.3.5 Objective 6: Identify and address the current and emerging disease

Zoonotic diseases transmission from human to elephants and vice versa poses risk to both human and elephants. For example, zoonotic transmission of *Mycobacterium tuberculosis* from elephants to humans was described in the late 1990s (Murphree et al., 2011). Conversely, wild elephant populations may be adversely or positively affected by captive populations, which have limited fecundity and undocumented levels of compromised health. While such incidences are not reported from Bhutan, we cannot deny that such cases are non-existent in Bhutan as no study is done. Therefore, there is a need to identify strategic investments in Asian elephant health that will yield maximal benefits in elephant conservation. Constant monitoring of both wild and captive elephants need to be ensured to prevent the spread of zoonotic diseases.

Output 6.1: Diseases in elephant prevented and controlled by adopting international guidelines and protocols

Action 6.1.1. Enlist and map susceptible and emerging diseases for elephants in collaboration with Department of Livestock

Action 6.1.2. Co-ordinate and share information on disease outbreak to the stakeholders, affected communities and general public

Action 6.1.3. Develop and implement post-mortem protocol for handling and disposal of dead elephants

Action 6.1.4. Train wildlife veterinarians and district livestock officers on elephant health management

Action 6.1.5. Conduct disease surveillance through opportunistic sample collection

4.3.6 Objective 7: Prevent poaching and illegal trade of elephant parts and products

As per the information with the DoFPS, there is no record of elephant poaching in Bhutan besides a few seizures of elephant parts and products. Nevertheless, with a huge ivory market in the region, poaching will always remain as one of the potential threats to survival of elephants. Use of ivory for making Bhutanese traditional items like cups, prayer beads, jewellery, etc., indicates that there is demand for elephant ivory in the country and this would remain as a prime driver for elephant poaching. Therefore, adequate measures need to be in place to prevent poaching and stop illegal trade of

elephant products. Implementation of national zero poaching strategy and monitoring of tuskers would be crucial in protecting these giants. Intelligence-based protection and enforcement should be strengthened to halt illegal trade of elephant parts and products.

Output 7.1: Conservation status of elephants enhanced with legal provisions

Action 7.1.1. Harmonise the provisions on elephant conservation in the National Forest Policy 2011, FNCA 1995 and FNCRR 2017.

Output 7.2: Zero poaching strategy implemented in elephant landscape

Action 7.2.1. Conduct protection assessment with currently available resources

Action 7.2.2. Procure SMART patrol tools and technology (phone, radio-communication, laptop, camera & lens, GPS, printer)

Action 7.2.3. Conduct SMART patrol refresher trainings and monthly review meetings and patrol planning

Action 7.2.4. Conduct monthly SMART patrolling and produce patrol reports

Output 7.3: MIKE Program for Bhutan upscaled

Action 7.3.1.Train field staff on elephant carcass evaluation and monitoring

Action 7.3.2. Compile elephant conflict and death report from all the elephant range field offices

Action 7.3.3. Monitor tuskers in the respective range field offices

Action 7.3.4. Implement komban decision support system

4.3.7 Objective 8: Improved management of captive elephants

Bhutan currently has ten captive elephants with the DoFPS kept in three protected areas in southern region. Captive elephants are the only means of transport for forestry personnel to carry supplies when accessibility is completely cut off during the rainy season in far flung outposts of the parks. Captive elephants are also used for anti-poaching patrolling and biodiversity monitoring surveys in the protected areas. As there is limited tourism in protected areas, elephants are not used in ecotourism. Elephants are mostly left free under the care till the onset of next monsoon season (Jigme and Williams, 2011). In captivity, each elephant is taken care by two caretakers. However, most of the caretakers has limited knowledge on elephant biology and dietary requirements. The captive elephants also lack proper housing and regular health checkups. In addition, the elephant mahouts and care takers have minimal facilities including accommodation, equipment, insurance and health care.

Output 8.1: Health of captive elephants monitored

Action 8.1.1. Develop and implement protocol for captive elephant management

Action 8.1.2. Conduct quarterly health checks for each captive elephant and maintain health cards

Action 8.1.3. Develop appropriate housing for captive elephants

Output 8.2: Established a cadre of skilled and trained mahouts

Action 8.2.1. Recruit and train mahouts as per the requirements

Action 8.2.2. Conduct annual mahout refresher course using modern and scientific management techniques

Action 8.2.3. Initiate welfare of mahouts including health care and screening of zoonotics (tuberculosis (TB), herpes, etc) and incentives

CHAPTER 5: PLAN IMPLEMENTATION AND MONITORING

5.1 Funding and timeline

The major portion of funding for this ten years elephant conservation action plan will be from the RGoB and the BFL as most of the activities are aligned with 12 FYP and BFL plan. However, funding from other donors like WWF, BTFEC, UNDP, Bhutan Foundation and other international donors will be sourced for elephant conservation outside the protected areas. The total budget required for the implementation of the elephant action plan for the next ten years is **Nu. 440 million.** The plan implementation will start from July 2018 and end by June 2028. However, in addition to the annual reporting, a mid-term review of the plan will to be conducted in 2023 to incorporate any changes in the activities which are not foreseen at the time of plan formulation.

5.2 Manpower and equipment requirements

The plan implementation will require trained and dedicated staffs both at field offices within the elephant conservation areas and at the central coordinating level. The staff will need to liaise very closely with other line agencies and local governments to facilitate and integrate elephant conservation requirements into community development and awareness programs. Thus, the elephant range field offices must appoint one focal person to coordinate these activities and submit timely reports to NCD.

The elephant action plan will require a large number of survey equipment and satellite GPS collars. It will also require costs related to using the equipment. In order to keep the overall costs reasonably low, the existing survey equipment at NCD and field offices will be inventoried, repaired and reused and additional equipment will be procured as per the plan.

5.3 Implementation mechanism

The field offices (Samtse Forest Division, Gedu Forest Division, Dagana Forest Division, Tsirang Forest Division, Phibsoo Wildlife Sanctuary, Sarpang Forest Division, Royal Manas National Park, Pemagatshel Forest Division, Samdrup Jongkhar Forest Division, and Jomotshangkha Wildlife Sanctuary) will implement field-based activities while the NCD will implement surveys and centralized coordinated activities, such as population survey, major procurements and organizing workshops and seminars. The UWICER will be the lead agency to coordinate organize staff and farmer trainings, and lead research activities. The activities will be implemented as regular RGoB financed activities or as activities under BFL project or other donor assisted projects managed centrally or by respective field office.

5.4 Monitoring and evaluation

Implementation of the plan will be monitored annually by NCD in collaboration with the field offices. A mid-tern review of the plan will be carried towards the end of the five years of plan implementation. Progress will be monitored from periodic reports submitted by the focal persons from the field offices and present to the Department. The logical framework (Table 1) will be used for monitoring and evaluation, using indicators provided.

This conservation action plan is a living document and the activities prescribed above are dynamic and should change as per the change of policy, priorities or field situations. The annual monitoring and mid-term review should consider any addition or deletion of actions wherever necessary and relevant.

Table 1. Logical framework and implementation plan

Goal: To maintain a viable population of elephants in an improved habitat with reduced human-elephant conflict												
Objective/Output/Action	**Objectively Verifiable Indicator**	**Means of Verification**	**Imple-menting Agency**	**Budget Estimate (Mn Nu.)**	**Timeline**							
					Y1	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**	**Y7**	**Y8**	**Y9**	**Y10**
Objective 1: Reduce habitat loss and improve the existing habitat condition.												
Output 1.1: Elephant habitat zoned to reduce loss from land use change												
Action 1.1.1. Assess habitat and notify delineated management zones to regulate land use change and resource extraction	Elephant habitats delineated and critical habitats notified	Habitat delineation maps Notification letters	DoFPS/ MoAF	6.00										
Action 1.1.2. Develop guidelines for issuance of forestry clearance in elephant habitat	Clear guidelines available for issuance of forestry clearance from elephant habitat	Guideline document	NCD/ FPED	1.00										
Output 1.2: Degraded critical habitats restored and managed												
Action 1.2.1. Remove invasive species and improve habitat through enrichment plantations using local palatable species	Area of critical elephant habitat restored	Progress reports/ Physical verification	Respective field offices	30.00										
Action 1.2.2. Maintain natural water sources and create new ones wherever necessary	No. of water sources maintained or created	Progress reports/ Physical verification	Respective field offices	8.00										

Action 1.2.3. Identify and maintain mineral/ salt lick areas and create new ones if necessary	No. of mineral licks maintained	Progress reports/ Physical verification	Respective field offices	5.00										
Action 1.2.4. Carryout prescribed burning and suppress unplanned fire in grassland	Area of grassland managed with prescribed burning	Progress reports/ Physical verification	Respective field offices	4.00										
Output 1.3: Habitat connectivity ensured														
Action 1.3.1. Map and assess the functionality of existing migratory routes and transboundary corridors (overlay with biological corridor wherever relevant).	Functionality of existing migratory routes and transboundary corridors understood	Assessment reports/ Research publications	UWICER/ NCD/ Respective field offices	4.00										
Action 1.3.2. Delineate, notify and manage important elephant corridors	Elephant corridors delineated, notified and managed	Delineation maps/ Notifications/ Progress reports	NCD/ Respective field offices	10.00										
Action 1.3.3. Assess and integrate smart green infrastructure principle during issuance of forestry clearance and monitor during the implementation of the projects	No. of forestry clearance issued with integration of SGI principle	Forestry clearance/ Physical verification	NCD/ Respective field offices	2.00										

Objective 2: Reduce human elephant conflict														
Output 2.1. Conflict mitigated through adoption of science based and community driven approaches														
Action 2.1.1. Assess the extent of HEC, map the hotspots and undertake rapid assessment of HEC hotspots using SAFE system approach.	HEC hotspot mapped	Hotspot maps/ Assessment reports	NCD/ Respective field offices	8.00										
Action 2.1.2. Assess perception and tolerance of people on elephant conservation and HEC and understand the social implications of HEC and its impact on conservation of elephants	HEC perception assessment conducted	Assessment reports/ Research papers	UWICER	1.00										
Action 2.1.3. Use successful preventive measures (eg. trip alarm, chilli fences, early warning system) to prevent entry of elephants	HEC preventive measures put in place	Progress reports/ Physical verification	Respective field offices	20.00										
Action 2.1.4. Evaluate the efficacy of existing mitigation mechanisms at periodic interval and feed back into the plan to come up with new innovative measures	Evaluation on efficacy of existing mitigation measures completed	Evaluation report/ Research papers	UWICER/ NCD/ Respective field offices	2.00										
Action 2.1.5. Explore, establish and strengthen community protection units in the HEC hotspot areas	No. of community protection units established/ enhanced	Reports/ Agreements/ Bylaws	NCD/ Respective field offices	20.00										

Action 2.1.6. Evaluate the existing ex-gratia schemes, modify and implement	Ex-gratia schemes in place and functioning/ No. of hhs provided with ex-gratia payments	Office orders/ Physical verification	NCD/ Respective field offices	50.00										
Action 2.1.7. Explore the possibility to capture and translocate problematic elephants as per Population Management Guidelines	No. of problematic animals translocated	Translocation reports	NCD/ Respective field offices	2.00										
Action 2.1.8. Conduct study visit and training for HEC management practices & Smart Green Infrastructure (SGI) principle	No. of staffs attending study visit	HR award letters/ Joining reports/ Tour reports	NCD/ Respective field offices	6.00										
Objective 3: Increase knowledge base on elephant and its habitat														
Output 3.1: Ecology and behaviour of elephants studied														
Action 3.1.1. Carryout periodic national elephant population survey to monitor elephant population abundance and distribution across landscapes in Bhutan	Elephant survey report published	Survey report/ Research papers	NCD/ Respective field offices	20.00										
Action 3.1.2. Assess impact of developmental activities including land use change on elephant population, its migratory routes and corridors	Spatial and temporal distribution report published	Technical reports/ Research papers	UWICER/ Respective field offices	4.00										

Action 3.1.3. Upscale radio telemetry to understand home range and habitat requirements and spatial and temporal distribution of elephants in the landscape	No. of elephants tagged with radio-telemetry equipment	Progress reports/ Technical reports/ Research papers	NCD/ UWICER/ Respective field offices	5.00										
Action 3.1.4. Assess elephant habitat vulnerability to climate change	Vulnerability of elephant habitats to climate change assessed	Assessment reports/ Research papers	UWICER/ Respective field offices	2.00										
Action 3.1.5. Conduct economic valuation in elephant habitats and communicate the ecosystem services coming out from elephant habitats	Valuation of ecosystem services conducted	Technical reports/ Research papers	UWICER/ NCD/ Respective field offices	3.00										
Objective 4: Improve coordination among stakeholders including transboundary partners														
Output 4.1: Trans-boundary cooperation and collaborations strengthened														
Action 4.1.1. Strengthen and expand cross border and regional consultative forums/ meetings/ exchanges to discuss the elephant conservation and management through the existing collaboration efforts viz. TraMCA, BDCM and KLCDI.	No. of consultative meetings and exchange visits conducted with transboundary partners	Meeting minutes/ MoUs/ Tour reports	NCD/ Respective field offices	5.00										

Action 4.1.2. Organize synchronized patrolling and explore for synchronized monitoring of elephant population	No. of synchronized patrolling/ monitoring conducted	Patrol reports/ Monitoring reports	Respective field offices	19.00										
Action 4.1.3. Initiate bilateral agreement for conservation of transboundary elephant population with India	No. of bilateral meetings and agreement on transboundary elephant conservation in place	Meeting minutes/ MoU	RGoB (DoFPS)	1.00										
Output 4.2: Coordination and cooperation with various stakeholders enhanced														
Action 4.2.1. Conduct coordination meeting with enforcement agencies (RBP, RBA, BAFRA, DRC, Judiciary) on prevention, detection and prosecution of illegal wildlife trade	No. of coordination meetings conducted	Meeting minutes	NCD/ Respective field offices	3.00										
Action 4.2.2. Conduct meeting with relevant agencies (GNHC, NEC, NLCS, DGM, MoWHS, DoR, BPC, DGPC, LG) on harmonizing polices and development plans	No. of meetings conducted with relevant agencies	Meeting minutes	NCD/ Respective field offices	3.00										
Action 4.2.3. Organize consultative meeting with the conservation partners to collaborate on elephant conservation program	No. of consultative meetings with conservation partners	Meeting minutes	NCD/ Respective field offices	0.50										

Output 4.3: Disseminate information on conservation of elephants															
Action 4.3.1. Observe world elephant day in elephant range field offices to create awareness on elephant conservation to students and general public	Elephant day observed every year in different field offices	Press releases/ Reports	Respective field offices	4.00											
Action 4.3.2. Conduct awareness campaign to armed force officials and personnel	No. of awareness campaigns conducted	Tour reports	NCD/ Respective field offices	2.00											
Objective 5: Strengthen institutional capacity and human resource development															
Output 5.1: National elephant conservation program strengthened															
Action 5.1.1. Institute national elephant conservation program & knowledge sharing platform.	National elephant conservation program and knowledge sharing platform instituted	Office orders	NCD/ Respective field offices	1.00											
Action 5.1.2. Integrate elephant conservation in national, sectoral and local government plans	No. of plans integrated with elephant conservation program	Plan copies/ Meeting minutes	Respective field offices	5.00											
Action 5.1.3. Designate section and identify focal person in all elephant range field offices.	Elephant focal person identified in each elephant range field office	Office orders/ Progress report/ IWP	Respective field offices	0.50											
Action 5.1.4. Strengthen infrastructure and equipment needs in the field offices for elephant conservation	No. of infrastructure and equipment supplied	Supply order/ Stock register/ Reports	Respective field offices	30.00											

Output 5.2: Developed a cadre for elephant management and conservation														
Action 5.2.1. Training on study design and data analysis, population survey and monitoring techniques	No. of staffs trained	Award letters/ Training reports	UWICER/ Respective field offices	3.00										
Action 5.2.2. Training on rescue, rehabilitation and medication of injured elephants	No. of staffs trained	Award letters/ Training reports	NCD/ Respective field offices	3.00										
Action 5.2.3. Training on wildlife crime prevention & law enforcement	No. of staffs trained	Award letters/ Training reports	UWICER/ FPED/ Respective field offices	10.00										
Action 5.2.4. Training on habitat mapping & management	No. of staffs trained	Award letters/ Training reports	UWICER/ NCD/ Respective field offices	3.00										
Action 5.2.5. Specialization in elephant ecology and management	No. of staffs trained	Award letters/ Training reports	UWICER/ NCD/ Respective field offices	5.00										
Action 5.2.6. Study on conservation genetics & forensics of elephants	No. of staffs trained	Award letters/ Training reports	UWICER/ NCD/ Respective field offices	5.00										

Action 5.2.7. Training of local communities on management of emergency situations during HEC	No of communities/ individuals trained	Training reports	UWCER/ NCD/ Respective field offices	5.00										
Objective 6: Prevent and control of susceptible and emerging diseases effecting population														
Output 6.1: Diseases in elephant prevented and controlled by adopting international guidelines and protocols														
Action 6.1.1. Enlist susceptible and emerging diseases for elephants in collaboration with Department of Livestock	List of susceptible and emerging diseases	Assessment report	NCD/ Respective field offices	0.50										
Action 6.1.2. Co-ordinate and share information on disease outbreak	Incidences of disease outbreak shared	Notification letters	DoL/ NCD	0.50										
Action 6.1.3. Develop and implement post-mortem protocol for handling and disposal of dead elephants	Post mortem protocol developed	Protocol document	NCD	2.00										
Action 6.1.4. Train wildlife veterinarians and district livestock officers on elephant health management	No. of staffs trained	Award letters/ Training reports	DoL/ NCD	3.00										
Action 6.1.5. Conduct disease surveillance through opportunistic sample collection	No. of opportunistic samples collected and analyzed	Analysis reports	DoL/ NCD	1.00										

Objective 7: Prevent poaching and illegal trade of elephant parts and products														
Output 7.1: Conservation status of elephants enhanced with legal provisions														
Action 7.1.1. Harmonize the provisions on elephant conservation in the National Forest Policy 2011, FNCA 1995 and FNCRR 2017.	Sections on elephant in FNCA, FNCRR and Forest Policy harmonized	Sections on elephant conservation in FNCA, FNCRR and Forest Policy	NCD/ FPED./ Respective Field Offices	0.50										
Output 7.2: Zero poaching strategy implemented in elephant landscape														
Action 7.2.1. Conduct protection assessment with currently available resources	Protection assessment conducted	Assessment reports	Respective field offices	3.00										
Action 7.2.2. Procure SMART patrol tools and technology (phone, radio-communication, laptop, camera & lens, GPS, printer)	Patrolling equipment procured	Stock register/ Physical verification	NCD/ Respective field offices	15.50										
Action 7.2.3. Conduct SMART patrol refresher trainings and monthly review meetings and patrol planning	Trainings conducted/ Planning done	Training reports/ Planning reports	FPED/ NCD/ Respective field offices	10.00										
Action 7.2.4. Conduct monthly SMART patrolling and produce patrol reports	No. of days/ No. of offences detected	Patrol reports	Respective field offices	50.00										

Output 7.3: MIKE Program for Bhutan upscaled														
Action 7.3.1.Training of field staff on elephant carcass evaluation and monitoring	No. of staff trained	Award letters/ Training reports	NCD/ Respective field offices	1.00										
Action 7.3.2. Compilation of elephant conflict and death report from all the elephant range field offices	List of elephant conflict and death report	Raw data/ Compiled report	NCD/ Respective field offices	0.50										
Action 7.3.3. Monitor tuskers in the respective range field offices	No. and distribution of tuskers	Monitoring reports	Respective field offices	4.00										
Action 7.3.4. Implement komban decision support system	Komban decision support system functional	Officer order	NCD/ Respective field offices	1.00										
Objective 8: Improve management of captive elephants														
Output 8.1: Health of captive elephants monitored														
Action 8.1.1. Develop and implement protocol for captive elephant management	Protocol for captive elephant management in place	Protocol document	NCD	0.50										
Action 8.1.2. Conduct quarterly health checks for each captive elephant and maintain health cards	Quarterly health checks conducted for each elephant	Health check reports	NCD/ Respective field offices	5.00										

Action 8.1.3. Develop appropriate housing for captive elephants	Appropriate housing available for captive elephants	Progress reports/ Physical verification	Respective field offices	8.00										
Output 8.2: Established a cadre of skilled and trained mahouts														
Action 8.2.1. Recruit and train mahouts as per the requirements	No. of mahouts recruited and trained	Training reports/ Joining reports/	NCD/ Respective field offices	5.00										
Action 8.2.2. Conduct annual mahout refresher course using modern scientific management mechanisms.	No. of mahouts trained on annual basis	Training reports	Respective field offices	3.00										
Action 8.2.3. Initiate welfare of mahouts including health care and screening of zoonotics (TB, herpes, etc)	Mahout welfare schemes instituted	Physical verification/ insurance schemes	Respective field offices	5.00										
			Grand Total	**440.00**										

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ISBN 978-99980-873-0-9

Designed and Printed by United Printing Press