Government of Nepal
Ministry of Forests and Environment

ELEPHANT CONSERVATION ACTION PLAN FOR NEPAL (2025-2035)

Department of Forests and Soil Conservation

Department of National Parks and Wildlife Conservation

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Technical Team

Mr. Hari Bhadra Acharya, Senior Ecologist, Department of National Parks and Wildlife Conservation
Ms. Sabnam Pathak, Forest Officer, Department of Forests and Soil Conservation
Ms. Rachana Shah, Head of Species Conservation and Research Department,
National Trust for Nature Conservation
Dr. Sashanka Poudel, Wildlife Biologist, WWF Nepal
Dr. Dinesh Neupane, Conservation Biologist, ZSL Nepal
Mr. Rishi Ram Dhakal, Ecologist, Department of National Parks and Wildlife Conservation
Ms. Pragya Khanal, Ecologist, Department of National Parks and Wildlife Conservation
Mr. Bishnu Singh Thakuri, Senior Conservation Officer, National Trust for Nature Conservation

Review Team

Dr. Ram Chandra Kandel, Director General, Department of National Parks and Wildlife Conservation
Mr. Badri Raj Dhungana, Director General, Department of Forests and Soil Conservation
Mr. Bed Kumar Dhakal, Deputy Director General, Department of National Parks and Wildlife Conservation
Dr. Naresh Subedi, Member Secretary, National Trust for Nature Conservation
Dr. Chiranjibi Prasad Pokheral, Director, National Trust for Nature Conservation
Dr. Madhu Chetri, Program Manager, National Trust for Nature Conservation
Dr. Narendra Man Babu Pradhan, Country Representative, IUCN Nepal
Dr. Ganesh Pant, Senior Conservation Officer, Chitwan National Park
Dr. Ashok Kumar Ram, Senior Conservation Officer, Bardia National Park

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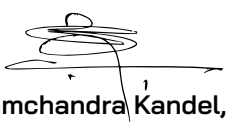
Foreword

The Asian Elephant (*Elephas maximus*) is one of the largest terrestrial mammals which is listed in the endangered category of the IUCN Red List of Threatened Species. This megaherbivore is included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and in Schedule I of the National Parks and Wildlife Conservation Act of 1973 and has got priority for conservation. More than 50% of the total habitat of Asian elephants lies outside the protected areas in Nepal. Most of these habitats are being managed as community forests and government-managed forests. In recent decades, the survival of this species has faced severe threats such as disruption of corridors and connectivity, habitat loss, degradation, and fragmentation of forests, and retaliatory killings. To address these issues, the Government of Nepal has put consistent efforts into practicing an integrated conservation approach and multi-stakeholder involvement for the long-term survival of this species. The Elephant Conservation Action Plan for Nepal (2025-35) aims to improve the national status of elephants and secure their habitat against current threats. This action plan also focuses on conducting extensive research using rigorous scientific tools and techniques to understand their behavior and conflict issues, diseases, ecology and habitat dynamics. Furthermore, it also emphasizes curbing poaching, controlling illegal trade, and strengthening local stewardship for elephant conservation. We hope it will also create environment to synergize the combined efforts of concerning stakeholders including the Department of National Park and Wildlife Conservation, the Department of Forests and Soil Conservation, provincial and local governments, conservation partners, and local communities to achieve this goal.

Finally, we would like to appriciate the efforts made by technical team members and reviewers. Similarly, we thank the National Trust for Nature Conservation (NTNC) for providing support to prepare this action plan. The Department of National Parks and Wildlife Conservation and the Department of Forests and Soil Conservation is committed to the effective implementation of the plan. We believe that this action plan will be a guiding document for the conservation of elephants in Nepal.

Badri Raj Dhungana
Director General
Department of Forests and Soil Conservation



Ramchandra Kandel, PhD
Director General
Department of National Parks
and Wildlife Conservation

Table of Contents

Acronyms and Abbreviations

APF	Armed Police Force
AsESG	Asian Elephant Specialist Group
BaNP	Banke National Park
BNP	Bardia National Park
BZCFUG	Buffer Zone Community Forest Users Groups
BZMC	Buffer Zone Management Committee
BZUC	Buffer Zone User Committee
BZUGs	Buffer Zone User Groups
CBAPOs	Community Based Antipoaching Operations
CBAPU	Community Based Antipoaching Unit
CBO	Community Based Organization
CF	Community Forest
CFUGs	Community Forest User Groups
CIB	Central Bureau of Investigation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNP	Chitwan National Park
DFO	Division Forest Office
DNA	Deoxyribonucleic Acid
DNPWC	Department of National Parks and Wildlife Conservation
DoFSC	Department of Forests and Soil Conservation
EEHV	Elephant Endotheliotropic Herpesvirus
ETB	Elephant Tuberculosis
GoN	Government of Nepal
HEC	Human-Elephant Conflict
HECx	Human Elephant Co-existence
INGO	International Non-government Organization
IUCN	International Union for Conservation of Nature
IWT	Illegal Wildlife Trade
KTWR	Koshi Tappu Wildlife Reserve
MIKE	Monitoring the Illegal Killing of Elephants
MOFE	Ministry of Forests and Environment
NBS	National Biodiversity Strategy
NCS	National Conservation Strategy
NEPAP	Nepal Environmental Policy and Action Plan
NGO	Non-government Organization
NPR	Nepali Rupee
NPWC Act	National Parks and Wildlife Conservation Act
NTCC	National Tiger Conservation Committee
NTNC	National Trust for Nature Conservation
NWCCCC	National Wildlife Crime Control Coordination Committee
OECM	Other Effective Area-Based Conservation Measures
PA	Protected Area
PNP	Parsa National Park
SAWEN	South Asia Wildlife Enforcement Network
SD	Standard Deviation
ShNP	Shuklaphanta National Park
TAL	Tarai Arc Landscape
BZUCs	Buffer Zone User Committees
WCCB	Wildlife Crime Control Bureau
WWF	World Wildlife Fund
ZSL	Zoological Society of London

(Photo: Ayush Maharjan, DNPWC)

Executive Summary

The Asian elephant (*Elephas maximus*) is one of the iconic and the largest terrestrial mammals in Asia, confined in 13 Asian countries including Nepal with less than 50,000 total population in the wild. They play an important role to maintain ecological processes and are known as umbrella species. They are deeply tied with Asian culture and therefore people in the range countries do have some level of cultural and religious tolerance towards them. Asian elephants are listed as Endangered under the IUCN red list of threatened species as its global population is declining due to threats such as habitat loss and fragmentation, disrupted corridors and connectivity, conflict with humans and development, poaching and retaliatory killings.

Nepal has two subpopulations of Asian elephants – population of Jhapa to Chitwan eastern region, and Kapilvastu to Kanchanpur western region. With the roughly estimated population of 230 individuals, the country's elephant population is increasing steadily despite many conservation and management challenges. Besides, there are about 180 elephants in captivity in the country, out of which some are government managed and other are private. About 150 wild elephants traverse between Nepal and India regularly. The Tarai and Churia region of Nepal contains about 20,000 km^2 forest area with high fragmentations out of which only about 12,000 km^2 forest area is ecologically suitable for the survival of wild elephants and about 50% of it lies outside the protected areas. The elephant habitat decreased at the rate of 0.27% annually between 1930 and 2020 and still continuing at the same pace. The Government of Nepal has listed the Asian elephant in Schedule - I under the National Park and Wildlife Conservation Act 1973 giving high priority to its protection. Habitat loss and fragmentation, destruction of traditionally traversing ranges and corridors, human elephant conflict, unplanned linear infrastructures without considering the importance of wildlife value and their safety measures such as highways, irrigation canals that are dissecting the elephant habitats, and climate induced effects are some of the key challenges to elephant conservation in Nepal.

This elephant conservation action plan (2025-2035) has been finalized after a series of stakeholder consultations and sharing at the local, provincial, and national levels, consultations and feedback from national and international experts, and a rigorous literature review. The main goal of the action plan is to 'maintain a viable population of elephants in harmony with conservation importance and development need in Nepal'. Major objectives set to achieve the goal are:

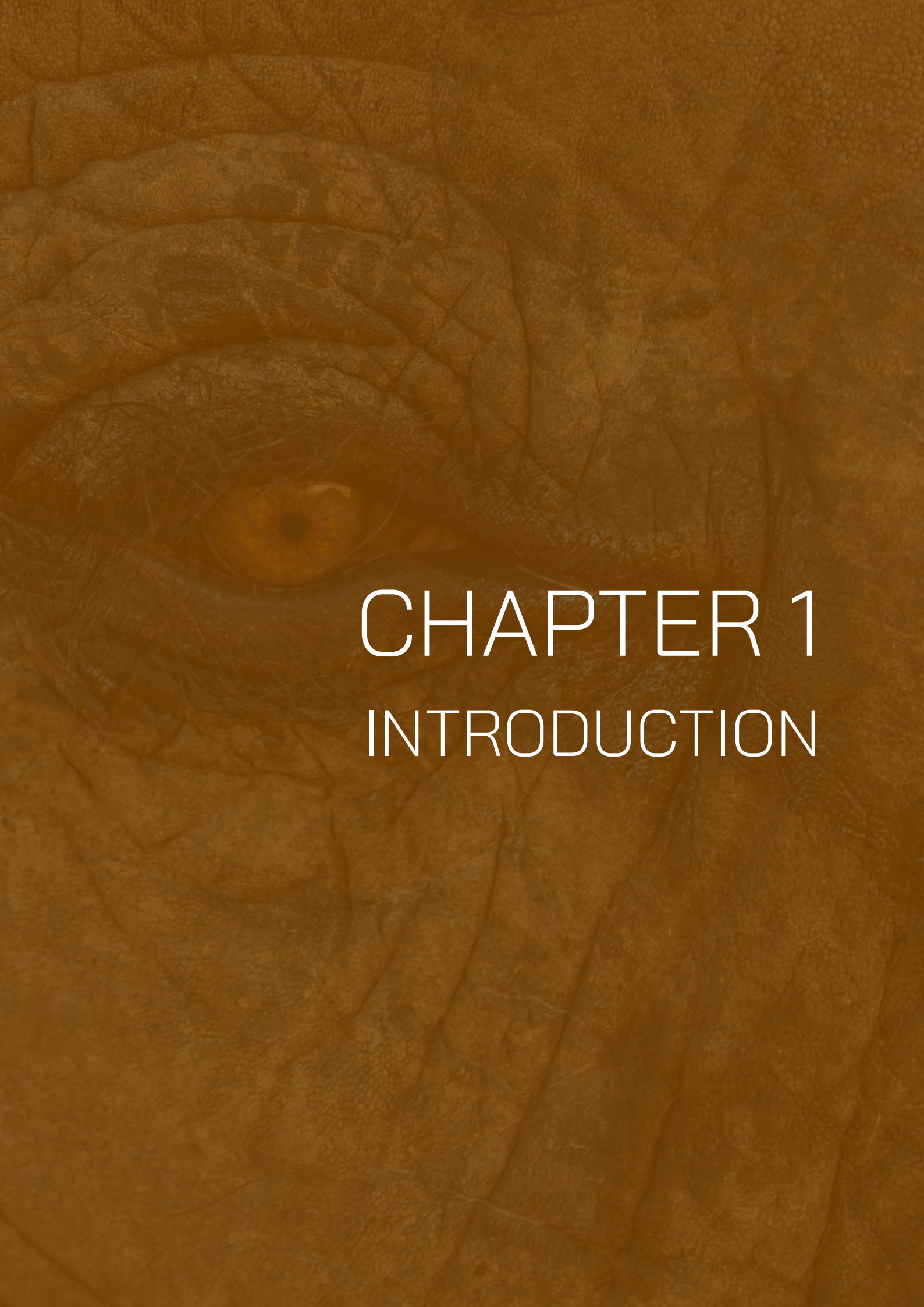
- Objective 1. Maintain existing elephant habitat, and protect critical corridors and forest patches to provide safe movement to the elephants
- Objective 2. Reduce human elephant conflict, minimize retaliatory killing and strengthen human elephant co-existence
- Objective 3. Enhance capacity and knowledge base on elephant monitoring and conservation using cutting-edge technologies
- Objective 4. Strengthen coordination, cooperation and partnership with local, provincial, national, and global stakeholders for elephant conservation
- Objective 5. Control poaching and illegal trade
- Objective 6. Manage and maintain a healthy captive elephant population in Nepal

The Department of National Parks and Wildlife Conservation, the Department of Forests and Soil Conservation, and Provincial Ministry of

Forests and Environment will take an overall lead in implementing this action plan through various means. The plan has emphasized greater partnership with the local community and to global community for the effective implementation of the plan.

The major focus of the plan is on maintaining and strengthening human elephant co-existence by maintaining the forest corridors and connectivity. A total of NPR 4,581,800,000 (In words: four billion five hundred eighty-one million and eight hundred thousand only) has been proposed as indicative budget for the conservation action plan implementation for ten years period. Mid-term review of the plan will be carried out in sixth year and further examined for the improvement in the future.

(Photo: Rabin K.C., NTNC)



CHAPTER 1
INTRODUCTION

1.1 Relevance of the Action Plan

Asian elephant once 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), restricted to 13 Asian range countries with ~5% remaining habitat in Asia. The Asian elephant is an iconic flagship species, culturally worshiped, and an ecological engineer of forest ecosystems. The global population of Asian elephants is declining and therefore the species has been listed as endangered by the IUCN since 1986 (Williams et al. 2020). Asian elephant is listed in Appendix-I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The National Parks and Wildlife Conservation Act (NPWC Act) 1973 of Nepal has also listed Asian elephants in Schedule - I and has given priority to conservation.

In Nepal, Asian elephants are distributed in the two large landscapes i.e. eastern and western parts of Tarai region. Their habitat extends both inside and outside the protected areas, as it is a landscape animal (Ram et al., 2024). Nepal bears about 230 elephants in the wild in the remaining habitat (Ram and Acharya, 2020). Besides that,

(Photo: Ayush Maharjan, DNPWC)

there are about 180 elephants in captivity. The migratory population from India (both the east and west of Nepal) has been acting as a source population for Nepal. Almost ~150 elephants each year migrate to Nepal and stay for several months which also sometimes creates a threat to the people residing in the migratory routes of elephants outside the Protected Areas (PAs).

The government of Nepal (GoN) has implemented its ever first 10 years Elephant Conservation Action Plan for Nepal (2009 - 2018). The effectiveness of the plan implementation was satisfactory, however, unable to reduce human elephant conflicts (HEC) in the landscape significantly. Different interventions were carried out during the period. Some efforts initiated for Asian elephants at the local level are also supported by tiger and rhino conservation action plans, but it is inadequate to ensure species survival and conservation as the species need a vast area of habitat for long-term survival and interventions at the landscape level. Therefore, this elephant conservation action plan has been envisioned to ensure the conservation of Asian elephants at the national level.

Realizing the need for revision of the action plan with an aim to make a strategic move in minimizing and managing human elephant conflicts and creating co-existence environment and increasing our knowledge on ecological and behavioral aspects of elephants, the GoN has prepared this conservation action plan under the leadership of Department of National Parks and Wildlife Conservation (DNPWC) in coordination with Department of Forests and Soil Conservation (DoFSC). The action plan has been prepared under the framework of prevailing national policies and plans. The guiding policies and plans include the National Forest Policy 2019, National Biodiversity Strategy and Action Plan (2014-2020), Terai Arc Strategy and Action Plan (2015-2025), Chitwan Annapurna Landscape Strategy and Action Plan (2016-2025), Protected Area Management Strategy (2022-2030) and management plans of Koshi Tappu Wildlife Reserve, Parsa, Chitwan, Banke, Bardia and Shuklaphanta National Parks. Similarly, 3rd Range State Meeting on Asian Elephant Conservation held in Kathmandu in 2022 has also emphasized the need to prepare the national elephant conservation action plans by the elephant range states and their effective implementation. Thus, this elephant conservation action plan is relevant to national and international conservation priorities.

1.2 Action Plan Development Process

A working group composed of representatives from the Department of National Parks and Wildlife Conservation (DNPWC), Department of Forests and Soil Conservation (DoFSC), National Trust for Nature Conservation (NTNC), ZSL Nepal,

and WWF Nepal was formed to guide the technical process of action plan preparation. National level consultants were hired to review the previous plan, field consultations, and prepare a draft of the action plan. Several consultations were carried out at the local level with the involvement of protected area authorities, Divisional Forest Officers, representatives from the local and provincial governments, members of Community Forest User Groups (CFUGs) and Buffer Zone User Groups and Committees (BZUGs/UCs), to identify the real issues and solutions. The resolution of 3rd Range state meeting and feedback from the Asian elephant specialist group (AsESG) also contributed to the preparation of this action plan for Nepal.

After the preparation of the draft action plan, it was shared at the national level with different stakeholders to get their input. A series of feedbacks were obtained from managers, experts, and policymakers. All the comments and inputs were incorporated and the final action plan was prepared under the leadership of DNPWC and DoFSC. A schematic diagram to represent the process is presented in figure 1.

1.3 Scope of the Action Plan

The scope of this action plan implementation goes to federal, provincial and local government. Therefore, it is deemed appropriate to direct the enforcement agencies including the DNPWC and DoFSC including their field level organizations, conservation partners, and local communities for elephant conservation. Since the elephant is considered an umbrella species of the Tarai forests, its conservation could ensure the well-being of the associated biodiversity and ecosystem.

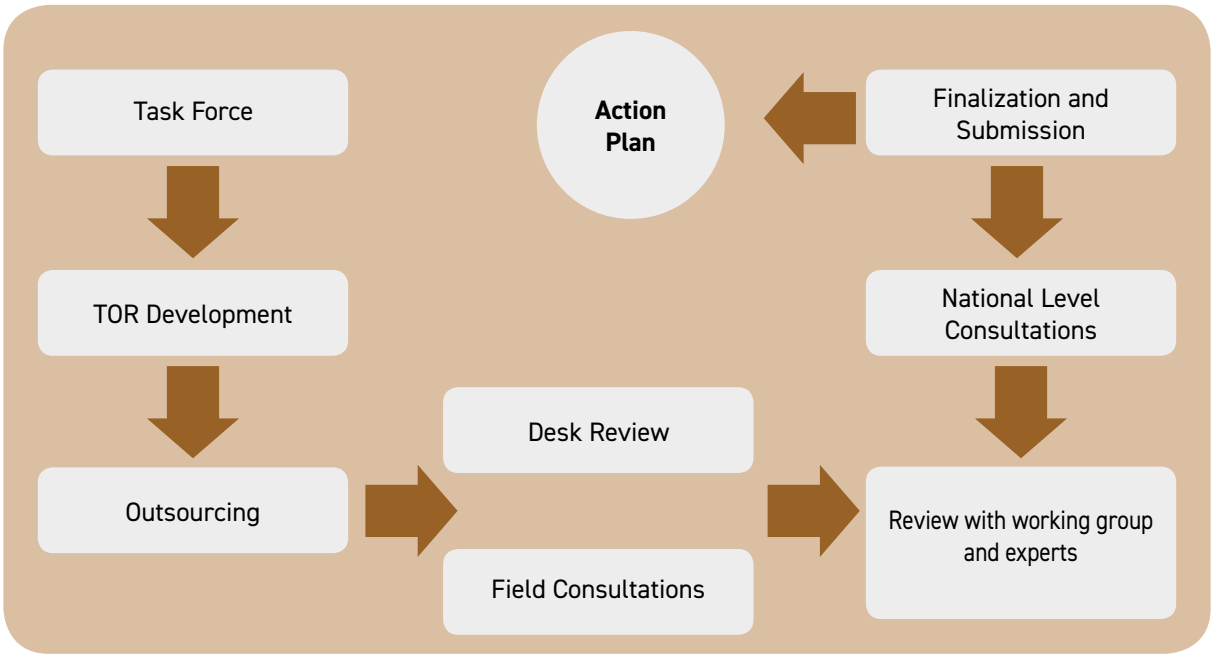
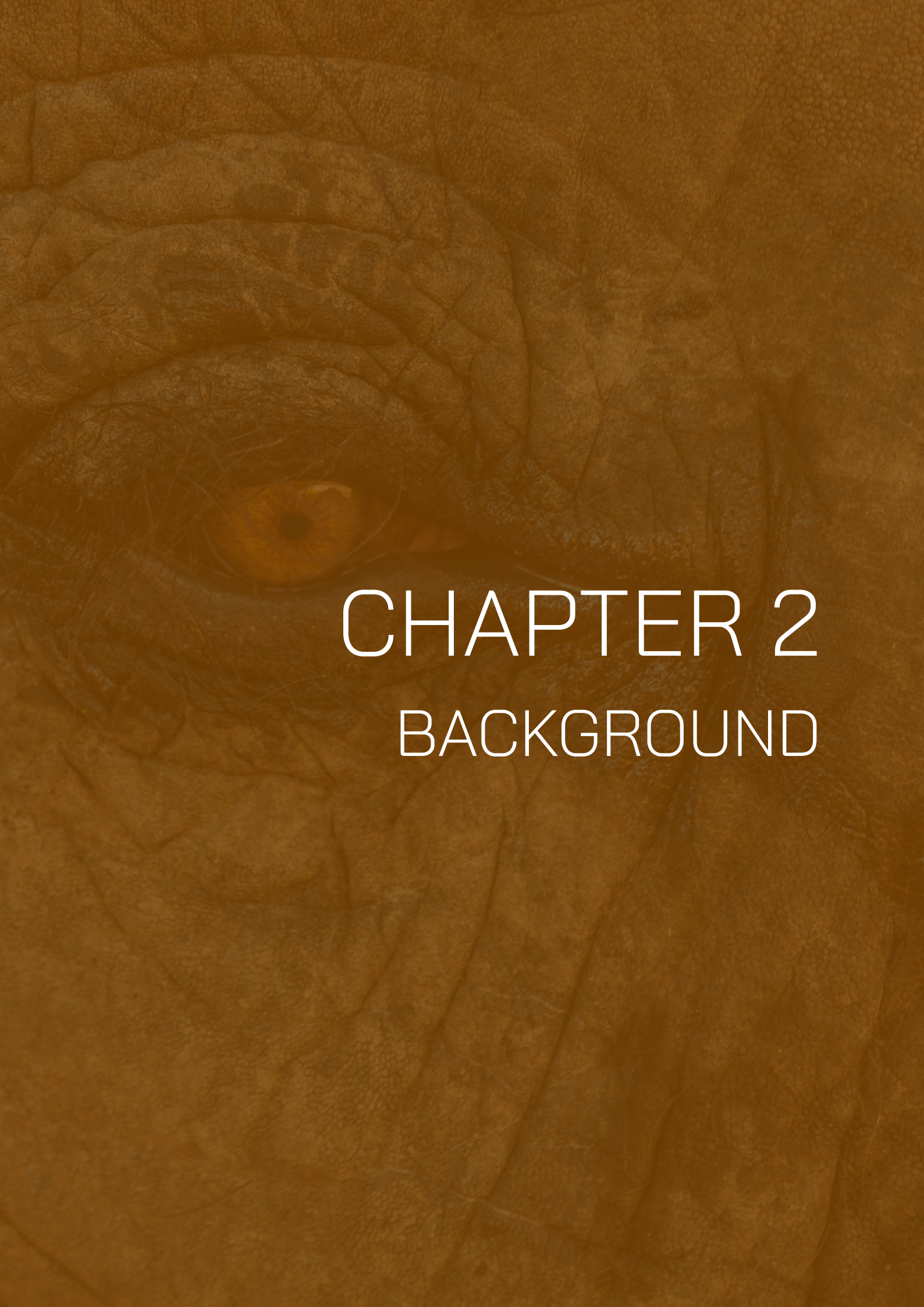


Figure 1: Process followed in the preparation of elephant conservation action plan.



CHAPTER 2
BACKGROUND

2.1 Ecology of Asian Elephants

Asian elephant (*Elephas maximus*) is the only extant member of the order Proboscidea and family Elephantidae in Asia and is more closely related to the extinct mammoths than to the other surviving African elephant *Loxodonta africana*. Three subspecies of Elephas maximus have been identified: *Elephas maximus indicus* in the Asian mainland, *Elephas maximus maximus* in Srilanka and *Elephas maximus sumatrans* in the Indonesian Island of Sumatra (Shoshani & Tassy, 2005). However, *Elephas maximus borneensis* has been described as a separate subspecies (Fernando et al., 2003), and recently Asian Elephant Specialist Group Meeting held in Malaysia has accepted the species to be endemic to Borneo Island.

Asian elephants give a birth to calf of about 120 kg. Unlike other mammals, they continue to grow well into adult life up to sixty years. Moreover, females cease growth at 25-30 years and males at 35-45. Male Asian elephants typically weigh up to 5000 kg. and sometimes even more. However, females gain weight up to 3,000 kg. Male height reaches up to 3.2 meters at the shoulder. The elephant's trunk is, anatomically, a fusion between its nose and upper lip. The trunk is remarkably sensitive, flexible, and maneuverable, and it is immensely strong. It contains no bone or cartilage but is principally composed of muscle, comprising a total of about 150,000 separately moveable muscle units. The trunk is used for a wide variety of functions including feeding, vocalization, bathing, and fighting (Sahoshani & Eisenberg, 1982).

Elephants are highly intelligent animals with a complex repertoire of social interactions. Within the family group, individuals of all ages greet, and maintain bonding, by touching their trunk tips to each other's bodies, inserting their trunks in each other's mouths, rubbing together, and with sound communication and scent (Shoshani & Eisenberg 1982; Sukumar 2003). Elephants have relatively poor vision but highly developed senses of smell. They obtain chemical cues by using their trunks to touch each other's genitals, mouths, temporal glands, and urine. Elephants also have very acute hearing and are highly vocal, communicating through a wide variety of vocalizations. Their auditory communication extends down into the low-frequency range inaudible to humans. Low frequency sound is less subject to environmental attenuation, and elephant rumbles and low frequency sound are audible to other elephants over a range of 4 to 10 km. An AI-based study on elephant communication explored that elephants communicate with each other by asking their respective name of their family. So, these creatures are very smart, and intelligent and that's why they are surviving with humans.

In both Asian and African elephants, the basic social unit is the family unit, a group of 8–25 individuals, comprising related adult females and

their young. Females remain in the female herds of their birth, which are led and coordinated by the oldest reproducing female (the matriarch), who is also probably the mother, aunt, or grandmother of most of the herd members. Calves, especially when very young, stay close to their mother, but all females in the group will assist in raising the calves. The members of the family unit may separate for short intervals during the day, but will soon regroup. Family units also form looser associations, or 'bond groups', with more distantly related families. These come together on occasion but even then, individual family groups maintain their integrity within the larger association of animals (McKay, 1973; Sukumar, 1989; Baskaran et al. 1995; Fernando & Lande, 2000).

By contrast, males leave the family of their birth at 12-15 years of age and after that time, although they may frequently associate with female groups for feeding or mating, they have no long-term bonds with them, or with each other. Adult males tend to be solitary or form temporary associations of two or three unrelated males (known as 'bull herds' or bachelor groups'). There is a dominance hierarchy among males, generally related to their age, size, and power. If two males of roughly equal size meet, they may assess each other by engaging their tusks or by intertwining their trunks, pushing and pulling each other in the process. Rarely, such sparring may lead to a full-scale fight, sometimes (but not always) for access to an estrus female. The fight will end either by withdrawal of the weaker animal or with death (McKay, 1973). However, elephants are not territorial: individuals and family units have home ranges, but those of different animals overlap and are not defended (McKay, 1973; Shoshani & Eisenberg, 1982; Sukumar, 2003).

Females become sexually matured between 9-12 years and have a long reproductive period, up to about 60 years, during which time they could produce as many as seven calves. Males reach sexual maturity between 12-15 year, and they disperse from their natal (birth) herds to prevent inbreeding. Male elephants exhibit the phenomenon of musth, during which time testosterone levels in the blood increase to much higher levels than usual. Although the secretions of the temporal glands are associated with heightened sexual activity and aggressiveness among males, they can successfully mate with females even in the absence of musth. Nevertheless, strong males in musth generally have higher chances of mating; in practice, strong males have been selected as breeding males in the female herd, which is led by a matriarch and actively participated in breeding up to 30 years old. Two defenders regularly roamed around the female herds, which provided security from the external enemies to the groups while they were dispersing and foraging. Females are in estrus only for a short time every 13–17 weeks each year, and they signal their brief receptive periods through chemical, auditory, and behavioral cues increasing the likelihood that multiple males will

(Photo: Naresh Subedi, NTNC)

be available as mates to choose from. Copulation begins as the male reaches over the female's shoulder with his trunk from behind. The male may remain with the estrous female for mating from a few hours to a few weeks, sometimes they do mate with her occasionally or regularly in a certain time interval and guard her against the advances of rival males (Shoshani & Eisenberg, 1982; Sukumar, 2003).

After successful mating, the female gets pregnant and gives birth to a calf after 20-24 months. (Moss, 1988). Female helpers, known as 'allomothers', are important in rearing of calves (Gadgil & Nair, 1984). A calf that is born into a large family with several allomothers has a better chance of surviving than one born into a small family with few or no allomothers (Poole, 1994). Females in good-quality habitats can give birth every three to four years, while the inter-birth interval can be much longer among females in poor-quality areas (McKay, 1973; Shoshani & Eisenberg, 1982). A female can give birth to a maximum of seven calf in their life; however, the average calf birth rate is 4. Very rarely females gave birth to twins. There are very rare cases of twin birth recorded in Nepal, Srilanka, Myanmar, Kenya, Thailand, and in the Rosmond Gifford Zoo New York.

(Photo: Ashok Kumar Ram, DNPWC)

Given their large size and concomitant energy requirements, elephants need to consume large quantities of food per day. They are habitat generalists and browse and graze on a variety of plants. For example, in Sri Lanka elephants may feed on more than 60 species of plants belonging to 30 families (McKay, 1973), while in southern India, Baskaran (2002) recorded those elephants fed on 82 species of plants (59 woody plant species and 23 grass species). The proportions of different plant types in their diets vary with their habitat and season. During the dry season in southern India, Sukumar (1989) observed that 70% of the elephants' diet was browse, while in the wet season, grasses made up about 55% of the food they consumed. However, in an adjoining area, Baskaran (2002) observed that browse formed only 15% of the diet in dry deciduous forests and 47% of the diet in the thorn forest in the dry season, while the annual diet was dominated by grass (84%).

The passage of food through the gut is fast, and the ingested food is only partially digested, with about 40-50% ending up as waste (Shoshani & Eisenberg, 1982). Elephants may spend 16-18 hours a day feeding, during which they may consume up to 10% of their body weight as fresh weight fodder (Vancuylenberg, 1977; Sukumar, 1989). They defecate about 12-15 times per 24 hours and poop up to 100 kilograms per day. So, an elephant can produce 40 tons of dung per year. Elephants typically drink at least once a day (140 liters of water may be consumed in a day) and so are usually never more than a day's walk from a water source. Like most herbivorous mammals, elephants require sodium and other trace elements and will dig with their tusks in saltlicks and other mineral-rich areas consuming the soil. In areas where elephants live close to the sea, the use of salt licks is less common and may be absent altogether (Shoshani & Eisenberg, 1982).

Asian elephants are habitat generalists and occur in grasslands, tropical evergreen forests, semi-evergreen forests, moist deciduous forests, dry deciduous forests, dry thorn forests, bamboo forests, and scrublands, as well as in cultivated lands. Asian elephants typically occur from sea

level to over 3,000 m asl (McKay, 1973; Olivier, 1978b; Sukumar, 2003). In the Eastern Himalayas in northeast India, they regularly move up above 3,000 m in summer at a few sites (Choudhury, 1999).

Unlike African elephants, Asian elephants do not typically make long-distance migrations and in those areas where such seasonal migrations were present, they have typically been disrupted by human agricultural developments (Olivier, 1978). Home ranges of individual African elephants may be thousands of square kilometers in size but those of Asian elephants tend to be significantly smaller. Radio-telemetric studies carried out in India (Baskaran et al., 1995) have revealed home range sizes of 250–1,000km² for family herds. By contrast, much smaller home range sizes, 30–160 km² for females and 53–345 km² for males have been recorded in Sri Lanka (Fernando et al., 2005). As with other species, the area over which elephants move is dependent on the availability of food and water: where both are abundant, elephants may move over relatively small distances, but elsewhere they may move over much larger areas (McKay, 1973; Olivier, 1978; Sukumar, 2003). Regional information on home range sizes and elephant movement is thus important for conservation planning. In addition, given their requirements for large home ranges (in many regions), elephants are regarded as an 'umbrella species' because their conservation can also protect a large number of other species occupying the same area.

2.2 Global Distribution and Population

Once widely distributed in tropical and subtropical Asia, Asian wild elephants are now confined in 13 countries namely: Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Srilanka, Thailand, and Vietnam (Figure 2). The elephants have lost over 95% of their historical range (Sukumar, 2006) and are now confined to small isolated pockets. The current population estimate of elephants in the wild is about 50,000 based on information from multiple sources and Range Country officials. An estimated 189 wild Asian elephant populations occur in 13 Range States of which 61% with less than 50 individuals in a population (Hedges et al., 2009). Asian elephants have a major cultural influence in Asia and have been widely kept in captivity for different purposes. Currently, there are about 15,000 elephants in captivity.

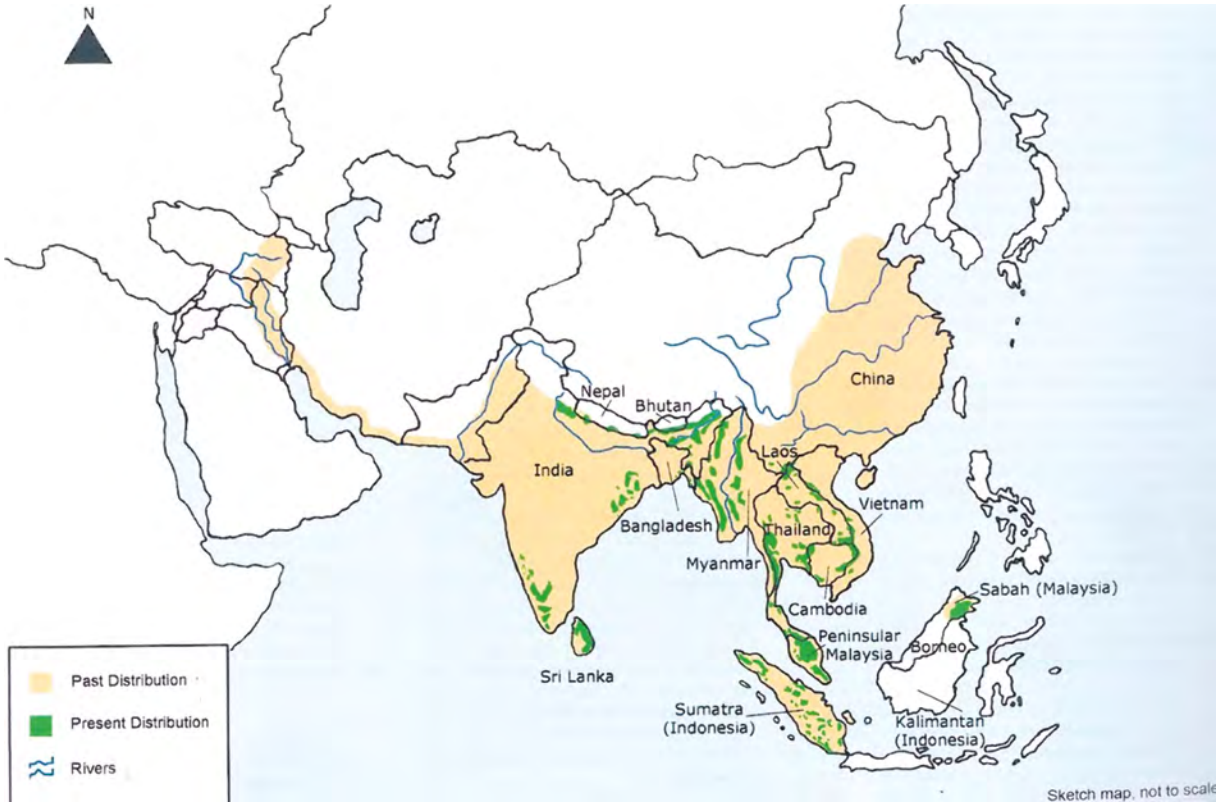
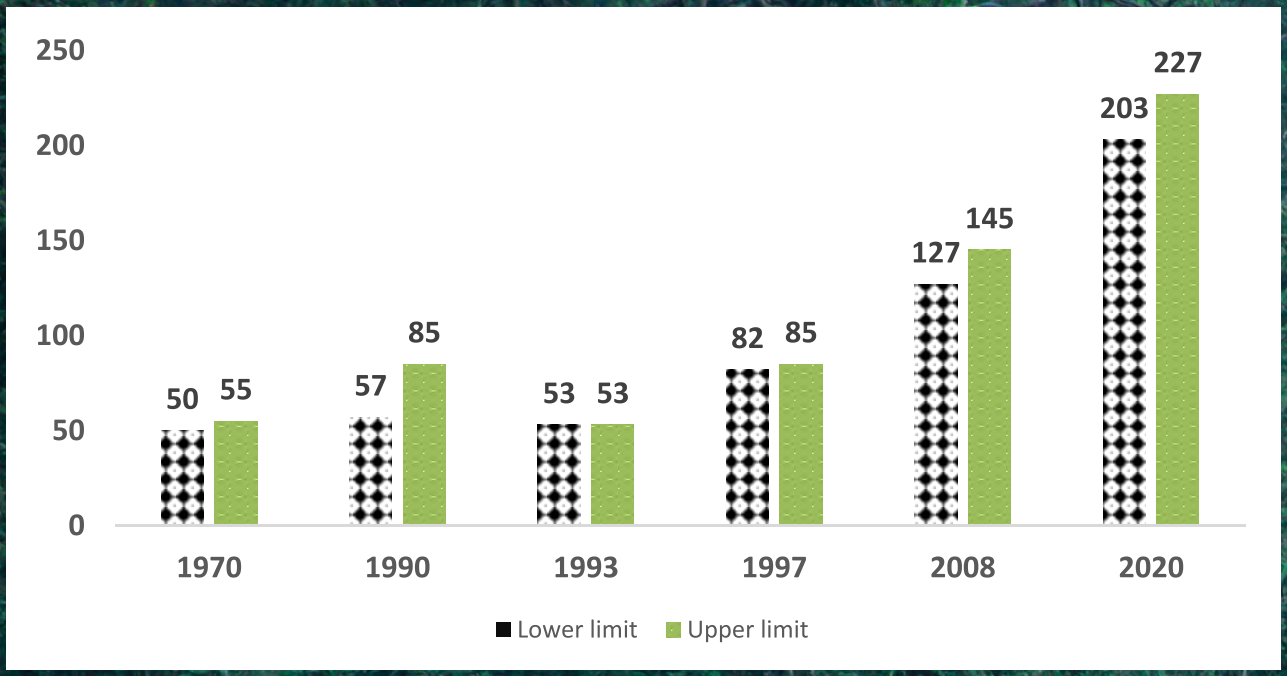
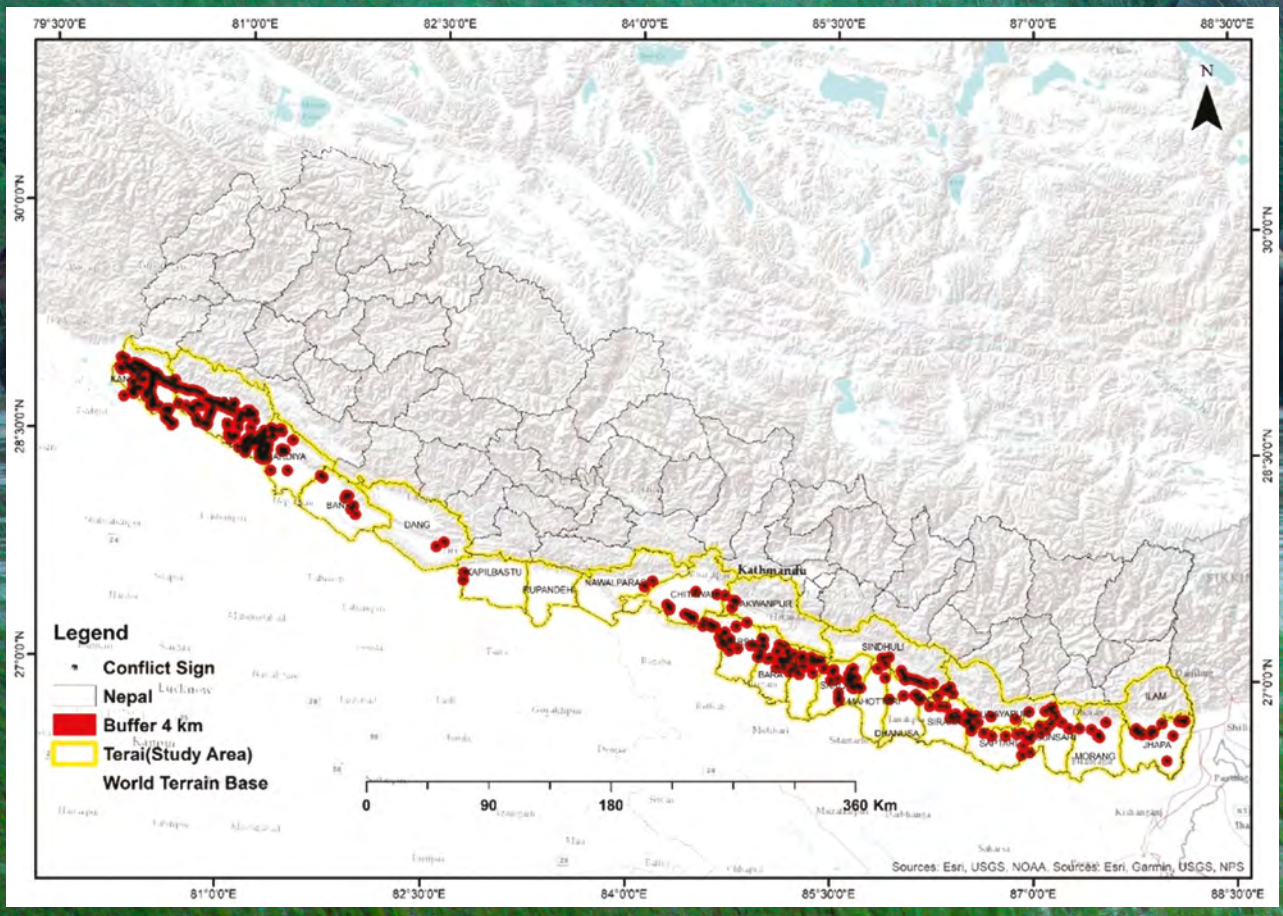


Figure 2: Historical and present distribution of Asian elephants (Adapted from Sukumar, 2011).



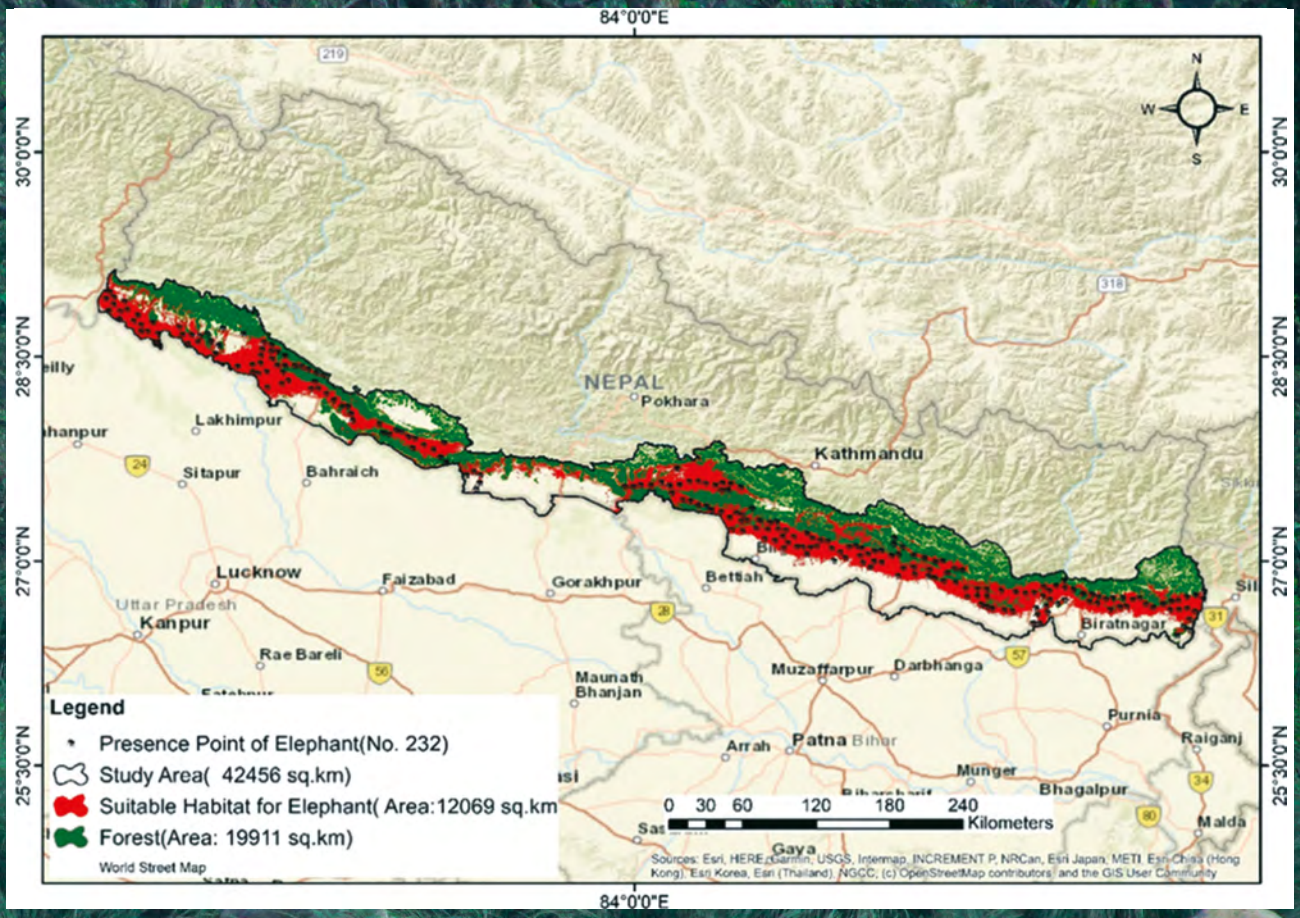
Source: Ram and Acharya 2020

Figure 3: Estimated population of wild elephants in Nepal.



Source: Ram and Acharya 2020

Figure 4: Map showing human elephant conflict signs and two distinct subpopulations of wild elephants in Nepal.



Source: Ram and Acharya 2020

Figure 5: Map showing elephant distribution and suitable habitat in Nepal.

2.3 Population Status and Distribution in Nepal

Before the 1950s, Nepal Tarai region had an intact forest area and there was a good population of wild elephants and other species. After 1950, the loss of Nepal's Tarai forest was not only tied with malaria eradication but also with the Tarai resettlement driven by three large spatial events: 1) in the early 1960s, Nepalis residing in Myanmar (Burma) returned including thousands of Nepalis and ex-army families from northeast India; 2) exodus of hill people in the western Tarai took place after the 1954 flood, and incidence of poverty with crop failures, and 3) land reform program which brought thousands of migrant laborers from India who resided in Nepal since then (Kansakar, 1979). Therefore, Nepal Tarai's and part of north and northeast Indian populations of wild elephants segregated in recent times, largely because of deforestation. Pradhan et al. (2011) estimated about 107-145 elephants in 21 districts of Nepal in four isolated populations. The estimated elephant population of 107 -145 Indian elephants in Nepal in four geographic areas includes 7 - 15 elephants in eastern Tarai, 25 - 30 elephants in central Tarai, 60-80 elephants in western Tarai, and 15-20 elephants in far western Tarai. Recent survey carried out in 2018 and 2019 revealed that elephants were present in 22 districts (Jhapa, Ilam, Morang, Sunsari, Saptari, Udaypur, Siraha, Mahottari, Dhanusa, Sindhuli, Sarlahi, Rautahat, Bara, Parsa, Makwanpur, Chitwan, Kapilvastu, Dang, Banke, Bardia, Kailali and Kanchanpur). The estimated population of Nepal was about 230 individuals (Figure 3). Further, the recent study also shows that Nepal's wild elephant population can be divided into eastern and western subpopulations (Ram et al., 2024) (Figure 4). The eastern subpopulation is distributed from Chitwan to Jhapa and is connected through roaming bulls and the western elephant population is connected from Shuklaphanta National Park (ShNP) to Gugauli of west Kapilbastu. No elephants have been reported in Nawalparasi and Rupandehi districts since many years.

The Chure and Tarai region of Nepal contains about 19,911 km^2 of forest area with high fragmentations out of which only 12,069 km^2 of forest area in the Tarai and Chure range of Nepal was found suitable for the wild elephants (Figure 5). The Banke-Bardia Complex (ca. 2500 km^2) of western Tarai including Kamdi and Khata forest corridors and Chitwan-Parsa Complex (ca. 2,000 km^2) hold almost 60% of the elephant population of Nepal. With development infrastructures and increasing pressures on the forests of Nepal, these two complexes have some potential to support increasing populations of elephants in Nepal.

2.4 Status of Captive Elephants in Nepal

The term captive 'elephants' means those caught in the wild and trained or bred in captivity and trained for human use. Historically, many landlords of the Tarai had kept captive elephants for their various uses and dignity but there are none now. Government elephant stables (Hattisars) were established in the past with wild-caught and trained captive elephants but now all the elephants are bred in captivity.

Between 1898 and 1970, there were 31 government stables for captive elephants, which stretched from Jhapa to Kanchanpur. Elephants were captured from the wild, subdued, and trained in stables for reliable mode of transport and hunting. The last wild elephant was captured near Parsa in 1969. By late 1970, both elephant stables and private owners declined drastically with the loss of forest, the rising cost of up keeping, and mechanical modes of transport being available in the country. As of now, there are seven government elephant stables, one each in all six Tarai protected areas, and one elephant breeding and training center in Chitwan that was established in 1985 (Gopali, 2003). There are 177 captive elephants in Nepal. Of which 100 are owned by the government, 8 by NTNC, and 69 by private sectors (Table 2). The captive elephants owned by the government are mostly used for patrolling in the park, research, and monitoring and partly for tourism purposes. The captive elephants owned by NTNC are mostly used for research and monitoring purposes. While the elephants owned by the private sector are mostly used for tourism purposes.

Table 1: Status of captive elephants in Nepal as of 2024.

Owner	Male	Female	Total
Government sector			
Koshi Tappu WR	1	9	10
Parsa NP	2	7	9
Chitwan NP	27	26	53
Banke NP	4	2	6
Bardia NP	3	10	13
Shuklaphanta NP	5	4	9
Sub total	**42**	**58**	**100**
NTNC	**1**	**7**	**8**
Private sector			
Sauraha hotels	4	41	45
Meghauli hotels	0	1	1
Kasara hotels	0	4	4
Nawalparasi	1	16	17
Rautahat	0	1	1
Kapilvastu	0	1	1
Subtotal	**5**	**64**	**69**
Total	**48**	**129**	**177**

(Photo: Madhu Chetri, NTNC)

2.4.1 Elephant Breeding Center

A sharp decline of the Asian elephant population warranted the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which in response banned the international trading of the species in 1975 and listed it in Appendix I. Habitat shrinkage due to increased agricultural activities also affected the wild elephant population in Nepal but the nation required a constant supply of working elephants for conservation activities. Thus, the Elephant Breeding and Training Center was established in 1986 with the following major objectives:

- Fulfill the number of captive working elephants for protected areas,
- Captive breeding as an instrumental tool in conserving the species,
- To enhance scientific knowledge related to elephant reproduction, husbandry, nutrition, and health,
- To retain traditional knowledge of elephant keeping and training.

The elephant breeding program began with 20 elephants out of which 4 individuals were received from the Government of India while 4 were gifted by the Government of Myanmar and the Government of Thailand. A significant number of elephant calves were born at this center and are successfully replenishing the aged ones in the National Parks and Wildlife Reserves. Traditionally, captive elephants were not raised for breeding in Nepal though available records show that 16 calves from captive elephants were born during 1901-1961. Currently, there are 21 captive elephants in the breeding center at Chitwan of which 12 are female and 9 are calves.

2.4.2 Captive Elephants in Private Sector

Tourism in Chitwan has largely been promoted by the availability of trained captive elephants for jungle safaris to observe endangered wildlife species including rhinos and tigers in the tall grassland and marshy areas. Captive elephants in Chitwan are increasingly marketed as value-added tourism in the form of adventure activities, such as the world elephant polo and annual elephant festival, but breeding of elephants by the private sector is not preferred in Nepal because breeding elephants is costly and largely unsuccessful when compared with the ease of buying elephants. In India, Sonepur of Bihar used to be the trade point of captive elephants for Nepali merchants through middle person negotiating the sale and purchase of elephants for almost three decades. But CITES forbids such because wild elephants are listed in Appendix I. In addition, under the aegis of CITES, MIKE (Monitoring the Illegal Killing of Elephants) supports elephant range states like Nepal to measure levels and trends of the illegal hunting of elephants.

Trade of elephants has been prohibited at Sonepur Mela India since 2004 owing to strict enforcement of the Wildlife Protection Act, 1972 of India and further denial of transfer of ownership certificate to the elephant owners. In 2001, the number of elephants brought to the Sonepur fair was 92; 35 elephants in 2004, while in 2016 thirteen elephants made it to the fair, only for display, not for sale. In 2017, there were 3 tuskers at the fair. Thus, the Nepalese source of privately owned elephants may be limited if elephant merchants in India do not use alternate methods to sell elephants to Nepalese hoteliers.

2.5 Conservation Status in Nepal

Asian elephant is a schedule-I species under the National Parks and Wildlife Conservation Act, 1973 and has got special conservation attention in Nepal. Capture, hunting, or any harm to the elephants are forbidden. The species is also assessed as endangered at the national level in Nepal (Jnawali et al., 2011). Elephants are embedded with culture and religions. The elephants are worshipped as *God Ganesh* in the Hindu Sanatan. Therefore, elephants are respected in the cultural and religious aspects as well.

CHAPTER 3

CONSERVATION EFFORTS AND ACHIEVEMENTS

Nepal made significant efforts in elephant conservation during the last action plan implementation period, addressing the threats faced by the elephant through a combination of legislative, ecological, and community-focused initiatives. One of the most significant efforts made to conserve elephant population was the expansion of protected areas and creating a network of PAs, particularly in the Tarai region, which is also primeval home to wild elephant population. Government of Nepal established Banke National Park in July 2010 reflecting its commitment to biodiversity conservation at the landscape level. The Bardia National Park, Shuklaphanta National Park, Chitwan National Park, Parsa National Park, Koshi Tappu Wildlife Reserve and forest patches in eastern Nepal serve as the primary habitats for elephants in Nepal. The government has deputed around 1200 park staff along with five battalions of the Nepal Army in these protected areas for the preservation of elephants and other five mega species of the landscape. Efforts of strengthening law enforcement are ongoing, especially to protect corridors and bottlenecks from encroachments. During this period, regular transboundary meetings were held between Nepal and India for transboundary conservation issues.

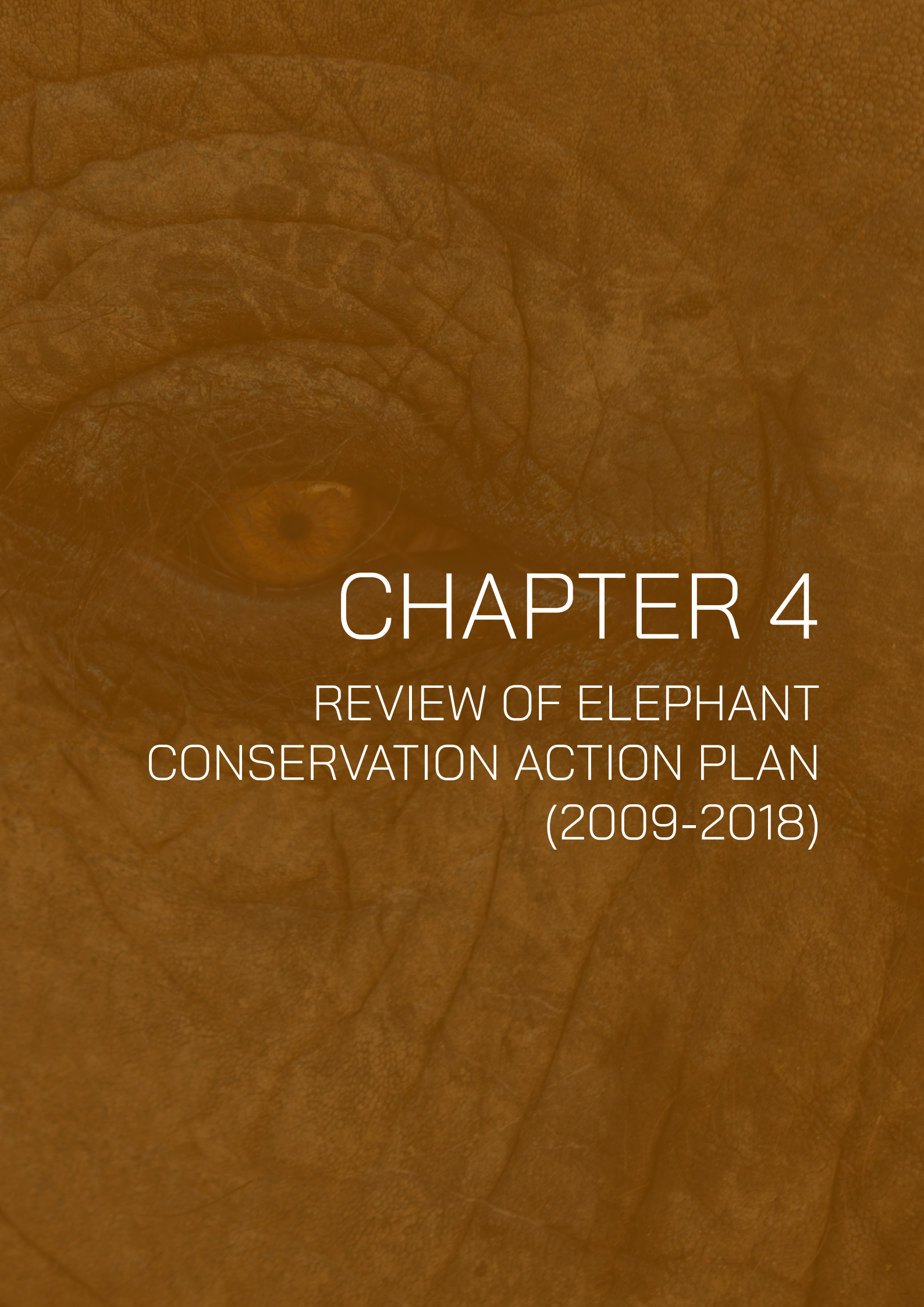
(Photo: Birendra Gautam, NTNC)

The government has focused on creating and conserving wildlife corridors to ensure that animals like elephants can safely travel between different protected areas through its former range. Habitat restoration and management activities were the main focus areas of interventions in and outside protected areas. These corridors were critical in reducing the frequency of human-elephant conflicts, which had been a major issue, particularly in the lowland Tarai region, where elephants often raid crops and damaged property. Different activities were practiced in Nepal to minimize and manage HEC that includes physical barriers (fences), use of trenches to delay elephant movements where early warnings are used, and relief programs. Real time-based monitoring of problem elephants using GPS collars, Mobilizing Community Based Antipoaching Units (CBAPUs), and Elephant Response Teams (ERTs) have helped to reduce human casualties as well as crop and property damages. Moreover, continuous awareness raising, and initiation of different measures for reducing HEC by conservation partners like NTNC, WWF, ZSL and the Government itself have played enormous roles in reducing human fatality in the landscape. To reduce the HEC in eastern Nepal, NTNC has installed over 65 km electric fence in Jhapa area in supervision and support of the Ministry of Forests and Environment.

DNPWC is coordinating with different line agencies, including the livestock department to give emphasis to veterinary health care to wildlife. Anti-poaching efforts were another major intervention made for Nepal's elephant conservation strategy. There was a notable decrease in the illegal killing of elephants, particularly due to the strong enforcement of wildlife laws. The DNPWC, in partnership with organizations like NTNC and WWF Nepal initiated anti-poaching programs enhancing the capacity of park rangers and engaging local communities in community-based anti-poaching efforts.

In addition to the protection of wild elephants, Nepal also focused on improving the welfare of captive elephants. There was a concerted effort to reform the conditions of elephants used in tourism, particularly in Chitwan National Park, where elephants were employed for rides. Similarly, elephant health camps were done on a regular basis for medical care and welfare of captive elephants which includes government and privately owned elephants.

Overall, the period since 2009 reported considerable progress in elephant conservation in Nepal. Through effective law enforcement, habitat restoration, community engagement, and improvements in captive elephant welfare, Nepal made measurable advances in protecting this endangered species. However, challenges remained, particularly with ongoing threats from habitat loss and potential HEC, requiring continued vigilance and adaptation of strategies to ensure long-term success in elephant conservation.



CHAPTER 4

REVIEW OF ELEPHANT CONSERVATION ACTION PLAN (2009-2018)

4.1 Implementation Status

The Elephant Conservation Action Plan 2009-2018 specifically focused on in-situ conservation aiming to sustain existing populations in the Tarai national forests and protected areas. There were six objectives with several outputs and activities proposed under that action plan. Most of the proposed activities were initiated and some of them were completed as proposed in the plan. A brief review of key outputs under each objective is analyzed below.

Objective 1. Determine and monitor the status of both resident and migrating elephant herds in all Tarai districts of Nepal

The proposed activities under this objective were partially achieved. Though the elephant monitoring and assessment of population status were not performed regularly, a survey in 2018 has been made. During this period, 11 wild elephants, mostly problematic bulls, have been satellite radio-collared to monitor them on real time basis with the main aim of minimizing the HEC. Findings of their ranging behavior and habitat use will be instrumental in devising elephant conservation policies and strategies at the landscape level.

A national occupancy survey of elephants was carried out in 2015. Large gaps in understanding of landscape-scale habitat use were overcome through a study that released the fact that elephants visit non-forested, human-dominated areas (i.e. crop fields and settlements) least in winter (February) and most in rice harvesting season (late October to November) emphasizing efforts to mitigate HEC to be concentrated during August through December in human-elephant interacting landscapes (Lamichhane et al., 2017).

Objective 2. Identify and maintain all critical forests and corridors used by both resident and migratory elephant herds in all Tarai districts

Major achievements under this objective were i) relocation of settlements from Rambhori Bhata and Ramauli Pratappur of Parsa National Park creating additional habitat for a range of wildlife

species including elephants ii) declaration of Barandabhar, Chitwan (10,466 ha); Khata, Bardia (4,504 ha), Laljhadi- Mohana, Kanchanpur (29,642 ha), and Basanta, Kailali (69,001 ha) as protected corridor forests to provide special protection to biodiversity (DOF, 2017), and iii) evacuation of hotels from core area of Chitwan National Park, iv) Extension of Parsa National Park including Halkhoriya Daha area. v) declaration of Banke National Park (BaNP) on 13th May 2010 which is connected to Bardia National Park and then to Katerniaghat Wildlife Sanctuary and Suhelwa Wildlife Sanctuary in India via national and community forests of Khata and Kamdi forest corridors, and vi) restoration of some critical parts of forest corridors through community participation and conservation of corridors.

Objective 3. Conserve elephants by reducing people- elephant conflicts through best viable measures like electric fencing, compensation that alleviates human suffering

Major achievements under this objective included power fencing in the Jhapa- Bahundangi

(Photo: Chungba Sherpa)

corridor, Haripur- Prakashpur area of Koshi Tappu Wildlife reserve, Thori of Parsa NP, most buffer zone areas of Chitwan NP, Bardia NP and Shuklaphanta NP and some parts of divisional forest area of Jhapa, Chitwan, Parsa, Bara, Bardia and Kanchanpur districts. Over 350 km of power fence in all these areas with solar back up has been installed across the country in HEC prone areas and maintained by the communities. The performance of power fence has mixed results. In the communities where there was regular maintenance and power supply, the power fences were found to be effective but less effective in the areas where communities did not own the fences. There was a huge achievement in providing relief fund to the victim families by wildlife species including elephant. Local communities were provided relief amount by following "Wildlife Damage Relief Guidelines, 2012" which was prepared under the NPWC Act. Communities received relief amounts in case of elephant damage to humans, properties, and crops.

Objective 4. Maintain viable populations of captive/domestic elephants by continuing breeding with captive females with free-ranging males to enhance heterozygosity in domestic progeny to benefit tourism and conservation education

Captive females are reproducing well by mating with wild bulls in Elephant Breeding and Training Center (EBTC) in Chitwan, enhancing heterozygocity in the progeny. Captive females are producing calves at Elephant Breeding and Training Center of CNP, and also in BNP, ShNP, PNP and KTWR as well as in the private sector. About 24 calves were born during the last 10-year period. The plan to produce breeding elephants and elephant handlers management guideline is not accomplished however training and regular health check-ups of both handlers and captive elephants are in place. Tuberculosis (TB) in captive elephants has been controlled by implementing the action plan, but the continuation and implementation of the plan have become a challenge because of limited technical capacity and funding. A new disease, Elephant Endotheliotropic Herpes Virus (EEHV) caused the death of seven elephant calves in the last 10 years and may arise as a major challenge for the growth of captive elephant population.

The recruitment of permanent Mahout staffs on government Hattisar has not been done for a long time which may have impacted elephant health and husbandry due to frequent changes of Mahouts employed on a contract basis. The plan of establishing an integrated private Hattisar in safe location to reduce possible damages caused during the movement of wild males to mate with the captive females in scattered areas has not been materialized yet.

Objective 5. Establish and strengthen a functional modality at local and central levels, between concerned agencies of India and Nepal

A couple of Nepalese scientists are collaborating with Indian institutions and other international scientific communities to advance the current knowledge about Asian elephant landscape ecology and population biology in Nepal. Monitoring the Illegal Killing of Elephants (MIKE) has been an important platform to conduct dialogues through cross-border meetings and

report technical issues of elephants to respective governments. The CITES- MIKE program is an international collaboration that keeps track of trends of illegal killing of elephants in selected sites across Africa and Asia. MIKE provides vital information to elephant range states which are useful for management and enforcement decisions, and to build institutional capacity for the long-term management of elephant populations.

Preparation and implementation of a joint action plan by the forest departments of West Bengal and Nepal is very essential. Better coordination among the forest Officials of West Bengal, India and Forest Officials of Jhapa, Nepal to share information about the movement of elephant herds, existence of problem elephants, and activities of elephant poachers and regular trans-boundary meetings between Nepal and India at the local level have been emphasized (Mitra, 2013) by both sides but never firmly established.

Provisions of local level transborder meetings and cooperation have been made by the Indian and Nepal Governments mainly in the Chitwan-Parsa-Valmiki Complex, Bardia-Katerniaghat Complex, and Shuklaphanta-Pilibhit Complex. Achievement under this objective also included the formation of the Wildlife Crime Control Bureau (WCCB) in all Tarai districts.

Objective 6. Build a greater and effective partnership between rural communities, concerned government line agencies and conservation organizations to provide continual support to people and protect elephants

The two activities under this objective achieved very few progresses. The objective of the plan intended to the formation of an Elephant Conservation Action Plan Steering Committee which was never formed. Similarly, no institutions were assigned to monitor the activities of the action plan. However, the Wildlife Crime Control Bureau (WCCB) and National Wildlife Crime Control Coordination Committee (NWCCCC) at the central level and WCCB at the district level have been institutionalized to coordinate with different enforcement agencies and make synergistic impacts on the control of wildlife crime. This has a big impact on improving the control mechanism of poaching and illegal wildlife trade in the country.

4.2 Stakeholders in Implementing the Plan

The Department of National Parks and Wildlife Conservation and Department of Forests and Soil Conservation were the major implementing agencies of this action plan. The Nepali Army played an important role in implementing the plan, especially for protection, anti-poaching, and surveillance. Nepal Police/ CIB and Armed Police Force, Nepal had an important role in wildlife crime control and coordination. Several other government and non-government institutions played important roles in the implementation of the plan. Buffer Zone Management Committees, Buffer Zone Users Committees, Buffer Zone and Community Forest Users Groups, Community Based Anti-Poaching Units and local communities also made vital contributions to elephant conservation and supported the government in the implementation of the Plan. Conservation partners including the National Trust for Nature Conservation, WWF Nepal, and ZSL Nepal provided technical and additional financial support to implement the plan. Several local NGOs, CBOs, and Media also supported in implementation of the plan.

CHAPTER 5

ELEPHANT CONSERVATION CHALLENGES AND OPPORTUNITIES

Conserving long-ranging mammals like Asian elephants in highly fragmented and human-dominated landscapes is one of the greater challenges for Nepal. Habitat loss, degradation, and fragmentation along with fewer cases of poaching are the most pressing anthropogenic threats to elephant conservation (Ram et al., 2021 & Singh et al., 2019). Climate change is likely to impact elephant survival due to altered precipitation and drought. Besides, the construction of wider roads, irrigation canals, railway lines across the elephant corridors, and other development projects along the elephant habitat create obstacles on elephant movement. Understanding the impacts of these projects to elephant conservation in different areas of the country are paramount importance for before project planning and developing. Successful conservation of elephants in Nepal largely depends on how these threats are addressed appropriately.

5.1 Conservation Challenges

5.1.1 Habitat Loss and Fragmentation

Forest cover is the primary determinant of elephant distribution. At present, ~19,000 km^2 of forest cover is available as elephant habitats in Chure Tarai region of Nepal, however over 50% lies outside protected areas. The elephant habitat decreased at the rate of 0.27% annually between 1930 and 2020, with a major change between 1930 and 1975 by a deforestation rate of 0.29%. The highest rate of deforestation was documented in the western (0.33%) followed by eastern (0.29%), far western (0.28%), and central (0.16%) regions between 1930 to 2020. In 2020, the far western region had the highest forest area (35.42%) followed by the western region (26.18%), central (19.78%), and eastern region (18.61%) of Chure Tarai region. Overall, 21.5% of elephant habitat was lost between 1930 and 2020, with a larger (12.3%) forest cover loss between 1930 and 1975 (Ram et al. 2021b) in Nepal. Similarly, the area of large forest patches has declined severely while the number of small fragmented forest patches has increased in the recent past. Elephant habitat is more fragmented outside of protected areas due to high pressure of encroachment and developmental activities (Peh, 2010). These forests are also used more frequently by the local communities to meet their subsistence needs of livestock grazing and dependence on forest products (Acharya et al., 2016; Lamichhane et al., 2018)we show how biological sign surveys in forested components of a human-dominated landscape can be combined with human interviews in agricultural portions of a landscape to provide a full picture of seasonal use of different landscape components by wide-ranging animals and resulting human–wildlife conflict. We selected Asian elephants (Elephas maximus. With increasing forest fragmentation, elephants and other wildlife are also forced to live in smaller forest patches with spatial overlap with human activities (Carter et al., 2012). This increases the chances of confrontation between humans and elephants, often leading to fatal attacks (Choudhury, 2004; Ram et al., 2021)therefore, may undermine public support for conservation. Although Nepal, with rich biodiversity, is doing well in its conservation efforts, human-wildlife conflicts have been a major challenge in recent years. The lack of detailed information on the spatial and temporal patterns of human-wildlife conflicts at the national level impedes the development of effective conflict mitigation plans. We examined patterns of human injury and death caused by large mammals using data from attack events and their spatiotemporal dimensions collected from a national survey of data available in Nepal over five years (2010-2014. The eastern region had the highest forest fragmentation (57.3% of large forest lost) where HEC incidents were also the highest. The eastern region also bears a long migratory route of a large herd of elephants (>100) and provides habitat for some residential and migratory elephants.

Forest loss and fragmentation induced a negative impact on elephant conservation in Nepal. Such fragmentation brought both the elephants and humans along the forest's edge, where they interact with each other, often resulting in severe HEC. The continued habitat loss and fragmentation probably fragmented elephant populations during the last century and made them insular with long-term ramifications for elephant conservation and human-elephant conflict. Given the substantial loss in forest cover and high levels of fragmentation, improving the resilience of elephant populations in Nepal would urgently require habitat and corridor restoration to enable the movement of elephants.

The historical forest fragmentation study on the last nine decades (1930-2020) found that the total number of patches increased from 201 in 1930 to 28,559 in 2020 and the mean patch size decreased from 12096 ha in 1930 to 66.8 ha in 2020 indicates that forest has been fragmented into small patches in the last 90 years. The mean perimeter ratio of the forest has been increased from 187 in 1930 to 1210 in 2020. The edge metrics showed that edge density increased from 5.48 (m/ha) to 36.30 (m/ha), where the mean patch edge was reduced to 2,426.63 ha from 66,271.31 ha. Similarly, the shape index suggested that the mean shape index (MSI) decreased sharply whereas the mean perimeter area ratio (MPAR)

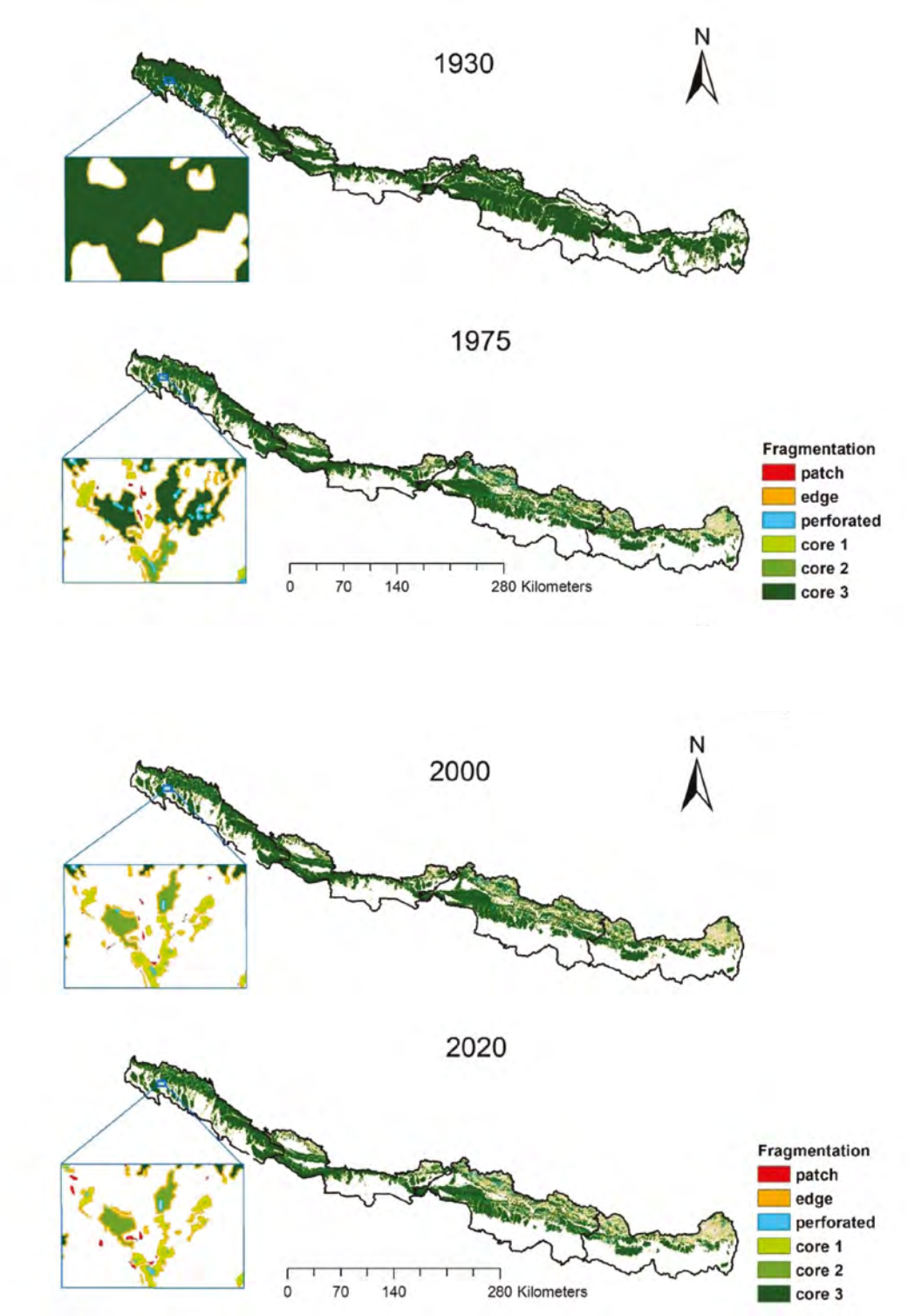


Figure 6: Forest fragmentation (1930-2020). Inset shows an enlarged view of habitat fragmentation in four different periods (1930, 1975, 2000, and 2020) at a particular location (Source: Ram et al.,2021).

increased progressively. Forest fragmentation continued and resulted in an increase in HEC due to the large opening up of the forests (Ram et al., 2021).

5.1.2 Increasing Human Elephant Conflict

Nepal's elephant population is increasing gradually despite habitat fragmentation and habitat loss (Ram et al., 2021). HEC is one of the major conservation challenges in Nepal (DNPWC, 2022). HEC leads to a large number of human deaths and injuries, threatening the survival of Asian elephants throughout its range (Fernando et al., 2005; Ram et al., 2021a). The nature and extent of HEC vary among ethnic groups, cultural practices, type of crops, seasons of cropping, habitat characteristics, elephant population size, environmental conditions along with individual elephant behavior and the people willingness to protect elephants (Dickman, 2010; Shaffer et al., 2019; Ram et al 2021a). Chure Tarai region comprises the entire elephant range in Nepal and provides connectivity for the meta-population across the Tarai region (Ram et al., 2021). The continued fragmentation had fragmented elephant populations during the last century and escalated HEC (Ram et al., 2021a). The Asian elephant is the most problematic species among the large mammals which is responsible for more than 40% of the wildlife-human conflict and 70% of the wildlife-caused human casualties in Nepal (Bajimaya, 2012).

A total of 10,798 records of HEC events were recorded between January 2000 and June 2020 (Ram et al., 2022). Out of these, 274 cases were

Table 2: Spatial extent of HEC in the Chure Tarai region between 2010 and 2020 (adopted from Ram et al 2022).

District	Crop damage	Human death	Human injury	Livestock loss	Property damage	Total
Banke	5	2	1			8
Bara		20	4			24
Bardiya	2,006	40	26	10	958	3,040
Chitwan	918	26	17	3	529	1,493
Dhanusha		9	3			12
Ilam		4				4
Jhapa	1,789	41	25	3	1,314	3,172
Kanchanpur	41	5	10		11	67
Mahottari		1				1
Makwanpur		5	4			9
Morang	1	8	4	6	15	34
Nawalparasi		1		1	3	5
Parsa	194	21	7	2	113	337
Rautahat		7	1			8
Saptari	403	23	11		276	713
Sarlahi		5	4			9
Sindhuli		9	3			12
Siraha		16	3			19
Sunsari	1,227	15	15		532	1,789
Udaypur	22	16			4	42
Total	6,606	274	138	25	3,755	10,798

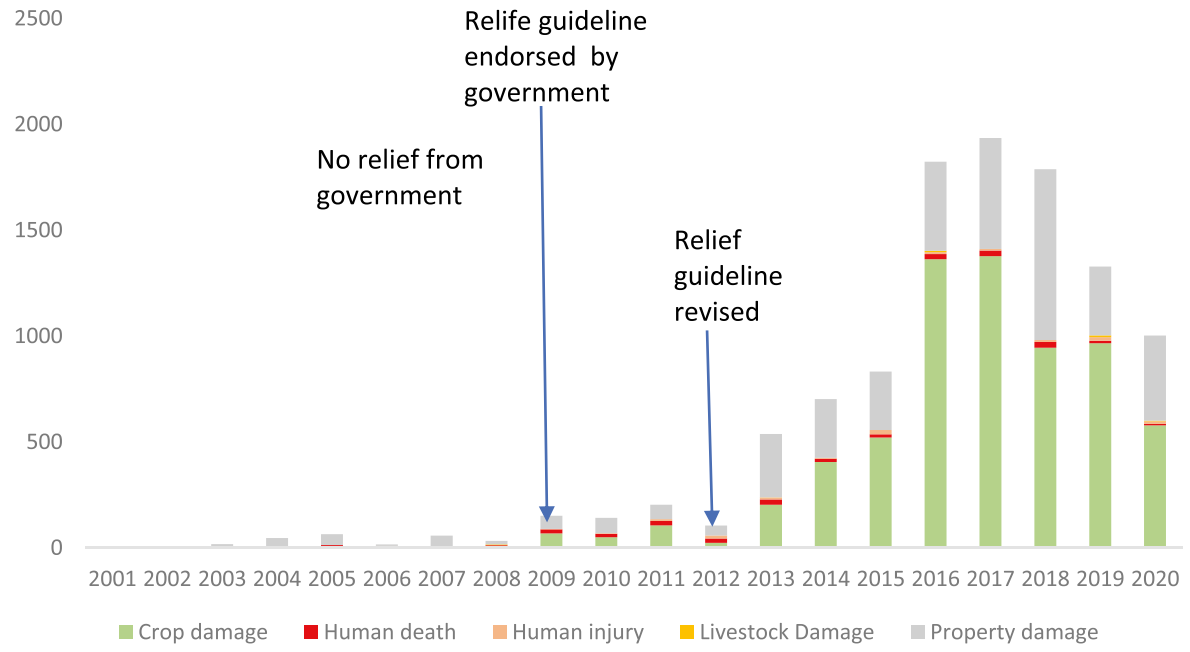


Figure 7: Temporal extent of human elephant conflict (Ram et al., 2022)

human fatalities, 138 cases of human injuries, 6,606 cases of crop damage, and 3,757 cases of property damage. The number of HEC incidents reported to the respective authorities since 2009 shows a gradual increase till 2017 and slightly decreased afterward. The highest number of HEC incidents were recorded in 2017 and 2018.

Human elephant conflict is distributed in the 20 districts of the Chure Tarai region, which explored landscape-level spatial spreads of HEC throughout the landscape except some districts viz. Nawalparasi, Kapilbastu and Rupandehi. Similarly, a temporal pattern shows very less incidents before 2009 and increased spontaneously reaching a maximum in 2017. The number of reported incidents slightly decreased afterward.

The average number of incidences of human attacks was 11 (±8.5 SD) during 2000- 2010 which increased to 29 attacks (±11.2 SD) during 2011- 2020. Ethnic or Janajati people were the most affected group followed by BCT, socially disadvantaged, Madhesi, and Muslim. A quarter of elephant attacks occurred while people were chasing elephants and half took place around settlements or homes. Most of the people attacked had low levels of education and the two third of the victims of elephant attacks were living in the thatched house. Most of the problem causing elephants were solitary bulls. HEC cases increase during the crop harvesting season when the elephants enter the farmland and human settlements (Ram et al., 2021). Both the spatial and temporal pattern of HEC is increased in scale. HEC increased throughout the elephant region at Chure Tarai region, reaching 21 districts and HEC is also recorded throughout the year, however, September to November was experiencing the highest number of incidents including human deaths due to paddy harvesting season.

Due to increased human elephant conflict in some pockets of Nepal, retaliatory killings of wild elephants have increased in Nepal. At present, 5-6 wild elephants have been killed in retaliation every year in Nepal which is on increasing trend and therefore needs special attention on this aspect to save elephants.

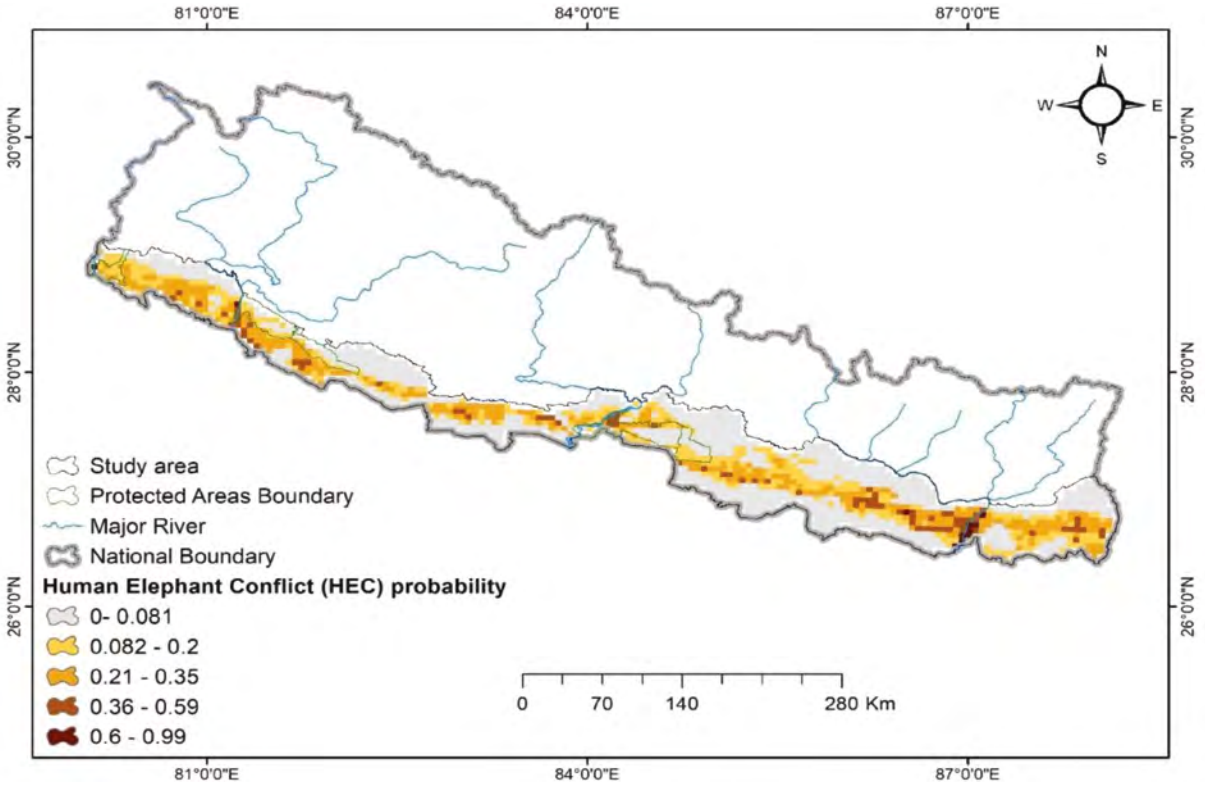


Figure 8: Human Elephant Conflict probability map. The darker color means a higher probability of conflict.

5.1.3 Poaching and Illegal Trade

The poaching of elephants for ivory, meat, hide, and other parts (mainly for use in traditional medicine) is still prevalent in many countries across Asia, however, poaching of elephants for ivory is not common in Nepal. Asian elephants are far less prone to poaching because only males have tusks. There are few cases of elephant ivory seizures recorded in Nepal which suggests that elephant poaching may gradually increase in Nepal and warns for effective conservation. Despite worldwide protection through the CITES, the value placed on elephant products, particularly ivory, the lack of effective enforcement, and the remoteness of areas of elephant habitat escalated elephant killings in the ivory trade (Aryal et al., 2018).

5.1.4 Small and Isolated Populations

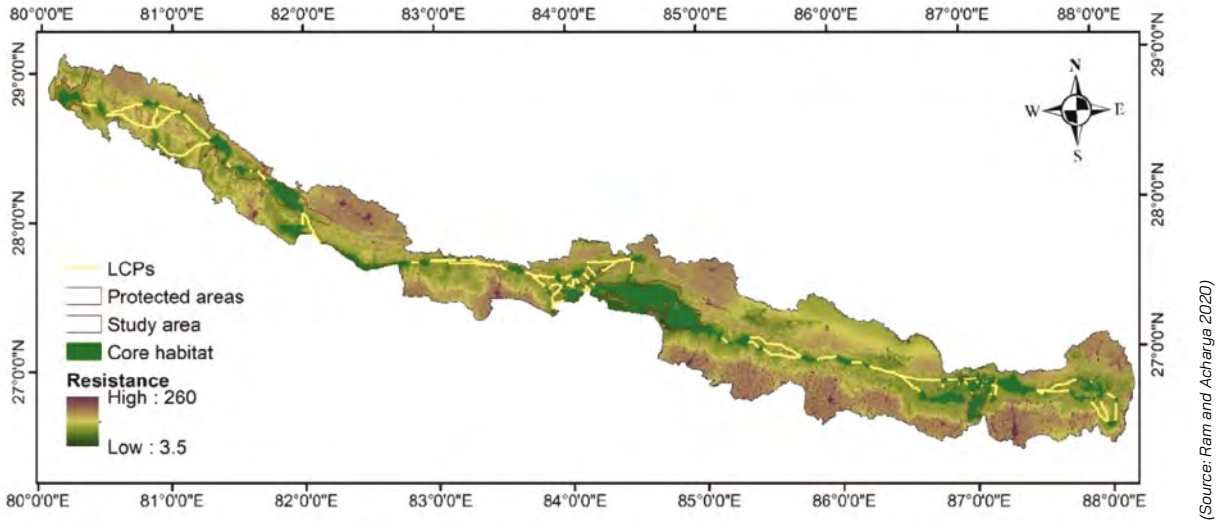
Nepal bears a very small population of elephants ~230 in the two different fragmented landscapes i.e. eastern and western. The small population has a greater tendency towards extinction due to inbreeding depression and natural catastrophes. Asian elephants occur in small island populations within and outside the PAs in Nepal. Biological corridors connecting sub-populations are still inadequate and are not well protected. It is likely that some of the Asian elephant populations in Nepal will face inbreeding problems followed by a loss of genetic diversity in the near future. Extinction risk in the mammalian order Elephandidae, of which the Asian elephant is a member, is predicted more strongly than by exposure to the rest of anthropogenic effects (Ripple et al., 2017). Extinction risk is most acute for the world's largest and smallest vertebrates. Management of elephant subpopulations in the metapopulation approach shall be the solution to overcome this problem.

5.1.5 Disrupted Habitat Connectivity and Corridors

Landscape connectivity provides a linkage between two or more than two core habitats. Chure Tarai region is the last remnant habitat for Asian elephants in Nepal. The resistance surface and connectivity map were created by using elephant presence data collected during the occupancy grid survey from Chure Tarai region. However, detailed information on animal

dispersal viz. telemetry, and camera trapping data were preferred in the estimation of landscape resistance (Suksavate et al., 2019). Recent study results indicate that there were many factors associated with the resistance to dispersal of the elephant. Elephants are dispersing east-west through the Chure foothills, which is mostly occupied by settlements and agriculture; however, Chure Tarai region is also a biological hotspot providing habitats for many flagship species viz. tiger, one-horned rhinoceros, gaur, water buffaloes, and many other endangered flora and fauna. The elephant movement depended upon the availability of resources, migratory routes, and available corridors. The dispersal behaviour increased the risk of HEC in these areas which were human-wildlife interface zone because elephants' habitat extended for foraging to the fringe of crop fields where food and water resources were abundant (Wanghongsa et al., 2007; (Li et al., 2018; Vinitpornsawan et al., 2016). Usually, elephants interact severely while dispersing through this landscape, resulting large number of human losses and huge amounts of crop, and property damage. Sometimes, they were also killed in retaliation. These serious human elephant interactions happened due to breached in the corridor and connectivity in the landscape level and densely populated areas in their migratory routes, and bottlenecks. Elephants are distributed in the four isolated populations, however, they are more often used to disperse from one population to another, though landscape connectivity is severely breached. The large herds rarely migrated east-west, however, the solitary bulls and a small sub-adult male group having 8-13 individuals frequently dispersed east-west.

The eastern transboundary migratory herds from West Bengal (~130 individuals) visited each year to Mechi river and a majority of large herds return to West Bengal (India). Similarly, some the male sub-adult groups are found to be travelling from eastern Nepal to Chitwan Parsa complex. Besides that, the large herd from Uttarakhand (i.e. Pilibhit, Dudhuwa) shares both the habitat of Suklaphanta National Park and Bardia National Park using the transborder territory of western Tarai Arc Landscape. The large herd is dispersed each year from Duduwa, Pilibhita, and Katarniaghat to Badia National Park (BNP) during mid of June and stays for four months. Some of the loners and subadults (8-10) dispersed towards the east up to Banke National Park (BaNP) and dispersed up to the Sohelba Wildlife Sanctuary of India through Kamdi corridor (Dang) and reached to Gugauli area of the western boundary of Kapilbastu district. Beyond Gugauli, no elephants have been reported. There are 51 least-cost corridors resulted during elephant habitat connectivity analysis in Chure Tarai region, however, only 39 connectivity were found alive and 12 were found dead. Out of 39 elephant habitat connectivity, most of them are either farmland or rivers, however, elephants were found using settlements in harsh conditions, which were newly established or encroached settlements in the elephant corridors.



(Source: Ram and Acharya 2020)

Figure 9: Least cost corridors: Total 51, Live corridor: 39, totally dead corridor 12

5.1.6 Problem Elephant Management

More than 85% of human deaths were caused due to loner tuskers or males during the last 24 years. There are ~37 bulls involved in human killing in the entire elephant ranges of Nepal. Currently, there are only seven problematic elephant and they are being monitored by collaring with satellite radio tracking on real real-time basis to reduce human attacks and preserve elephant life from retaliation (Ram et al., 2021).

5.1.7 Emerging Diseases

A recently recognized herpesvirus, EEHV (elephant endotheliotropic herpesvirus), can cause severe hemorrhagic disease in elephants and is associated with a high fatality rate in young (<8 years) Asian elephants. Death frequently occurs within 1-2 days of the first visible signs, and early diagnosis and treatment is critical to survival. The disease has been diagnosed in the wild population of elephants in India and thus may hamper the growth of population density (Zachariah et al., 2013). In Nepal, the EEHV has killed over 10 young calves recently and 3 calves affected by EEHV have been cured by wildlife veterinarians of NTNC and DNPWC. Early detection and immediate vaccination could save the calves.

Similarly, elephant tuberculosis, an ancient disease of humans and animals, can reduce reproductive efficiency and limit the growth rate of the elephant population in Nepal (Gairhe, 2012; Zachariah et al., 2017, Amin et al., 2018). Both

(Photo: Birendra Gautam, NTNC)

diseases are prevalent in the Nepalese captive elephant population and require a deeper study of how these diseases are affecting the species across the landscapes. About 20% of the captive elephants in Nepal are affected by TB and some are under treatment. Building capacity of ongoing ETB surveillance and management teams could greatly help reduce the negative impacts of ETB in Nepal.

Recently, elephants feeding on the city garbage dumping sites have been reported from Sri Lanka and India and anecdotal evidence in Nepal also supports the same. With the increasing urbanization in CTML, the elephants are expected to be exposed to such harsh environments which may trigger more disease and other health-related cases in Nepal.

5.1.8 Lack of Wildlife Friendly Infrastructure

To date over 11,000 kilometers of national highway constructed in Nepal and construction is continuously increasing. East-west highway, Mechi highway, Puspalal highway, Postal highway, Koshi highway, Madan Bhandari highway are major highways that stretch east-west and north-south in Nepal. Out of 11,000 kilometers national highway, around 450 kilometers run through the national forest, forest protection area, national park, and wildlife reserve. Besides Dharan-Itahari highway, all the highways are two lanes and some parts of this two-lane highway i.e. Itahari-Kakarvita, Kanchapur-Kamala, and Narayangarh-Butwal are under construction to make them four-lane highway; similarly, other highways are also on the plan to upgrade them to a four-lane highway in near future. Besides national highways, large structured electric transmission lines, irrigation channels, and east-west railways are also in progress in Nepal. All these linear infrastructures do not have provision for safe wildlife crossings.

Due to these increasing development activities, there is a negative effect on the survival of Asian elephants. Different linear infrastructures have been planned to construct in the Chure Siwaliks or in the foothills which is only the remnant elephant habitat in Nepal. The construction of roads, railways, airports, irrigation canals, dams in the rivers, and high electrical transmission structures through the habitat causes loss of tree cover, habitat fragmentation, obstacles on migratory routes, and food availability of elephants. Knowledge and understanding of how these linear infrastructures will be responded to by the wildlife and what will be the real impacts is still inadequate. Road ecology has emerged as a scientific discourse in the world. Nepal has recently endorsed a wildlife friendly infrastructure development guideline to mitigate the impact of linear infrastructures to wildlife movement. However, how this policy will be translated into action may determine the success of wildlife conservation and wild elephants in particular.

5.1.9 Climate Change and Its Subsequent Impacts on Elephant Conservation

Climate change in Nepal is expected to cause either prolonged and frequent droughts and/or flash floods, changes in water resources availability, and associated other impacts such as invasive alien species. A recent study carried out by Kanagaraj et al (2019) suggested that around 41.8% of the 256,518 km^2 of habitat available at present to the Asian elephant in Nepal and India will be lost by the end of this century due to the combined effects of climate change and human pressure. Changes in climatic water balance could play a crucial role in driving species distributions in regions with monsoonal climates. In response, species would shift their range upwards along gradients of water availability and seasonal droughts. Conservation and management of elephant populations under global change should include the design of movement corridors to enable the dispersal of the elephant and other associated species to more conducive environments.

5.1.10 Transborder Movement of Wild Elephants

There has been a continuous movement of wild elephants between Nepal and India since hundreds of years. With recent developments in both countries and the loss of habitats and connectivity these elephants do come into conflict with people in both countries. Currently, there are three sites (Jhapa, Bardia, and Suklphanta) where wild elephant movement between Nepal and India is quite high. In Jhapa, sometimes ~150 elephants regularly enter into Nepal side for a few days and create havoc among local people. However, small herds of wild elephants consisting of 10-30 individuals regularly travel between Nepal and India. In Bardia, about 40-60 individuals of wild elephants seasonally move between Bardia National Park and India through Khata forest corridor of Nepal. In Kanchanpur, elephants use Brahmadev and Laljhadi forest corridors and travel between Nepal and India. Due to habitat fragmentation and increased human settlements in both countries, these transborder moving elephants create conflicts. Cooperation and joint actions of both Nepal and India could improve HEC in the transborder areas and could further strengthen elephant conservation.

5.1.11 Inadequate Awareness on Elephant Conservation

Elephants are charismatic species and draw the attention of the common people and policymakers. However, many people in Nepal are not aware of the elephant ecology, ways to respond to wild elephants while encountered, and various other aspects of elephants. A recent study carried out by Ram et al (2021) revealed that most of the deaths and attacks due to wild elephants happened due to human ignorance and inadequate knowledge on how to respond to them properly when they come into the farm land and human settlements. Therefore, educating local communities including policymakers on elephant behavior and ecology could promote human elephant co-existence in Nepal.

5.2 Conservation Opportunities

5.2.1 Elephant as Keystone Species

Elephants can be taken as a umbrella species as they have significant role in maintaining the structure and functioning of the ecosystems in which they live. Their activities help shape the environment in a way that sustains biodiversity, influences water cycles, and supports a variety of plant and animal species. Elephants are also known as engineers in their habitats as they facilitate the survival of many other species through seed dispersal and by creating openings in the dense forests and tall grasslands. Protecting elephants is therefore not only important for their survival but also crucial for maintaining the balance of ecosystems.

5.2.2 Human Elephant Co-existence

About two third of the elephant habitat falls outside protected areas in Nepal. Conservation interventions targeting Asian elephants are very minimal in the majority of its habitat which are either being managed by local Community Forest User Groups (CFUGs) or directly by the

Divisional Forest Offices and their field units or by PAs and their BZ programs. Besides, local communities of Jhapa, Morang, Sunsari, Saptari, Udaypur, Sindhuli, Siraha, Rautahat, Bara, and Parsa districts need more sensitization and awareness to strengthen Asian elephant habitat conservation and minimize human and property losses. The majority of the Hindu community in Nepal has religious attachment to the elephants and they respect elephants despite some conflicts. Developing elephant-based tourism and creating human elephant co-existence (HECx) through effective community participation could be one of the best opportunities for the future.

5.2.3 Nature-based Tourism

Asian elephants are one of the most charismatic wildlife species to observe in the wild. Therefore, they offer great opportunities for nature-based tourism, which can provide an extra source of income for local communities. This intervention has been successful in Chitwan, Parsa, Shuklaphanta National Parks; Koshi Tappu Wildlife Reserve, Bahundangi area of Jhapa, and surrounding area can have this opportunity all year round for tourism promotion. However, this species-based tourism is recommended to be promoted with a high sense of security to protect the tourists themselves.

5.2.4 Use of Modern Technology in Research and Monitoring

Use of cutting-edge technology in Asian elephant studies is still lacking. Studies based on remote sensing, camera trapping, satellite collaring, and non-invasive genetic analysis provide better opportunities for understanding their habitat, ecological, behavioral, physiological, and genetic aspects. Despite of Asian elephant being a habitat specialist, impact of climate change on its distribution and survival is yet to be investigated. This could be another pertinent avenue for further exploration based on modern tools and techniques.

5.2.5 Complimenting National Conservation Policy, Acts and Guidelines

Conservation policies of Nepal emphasize the need for the conservation of threatened species and their habitat, as well as socio–economic development, and poverty reduction. Conservation of rare and endangered species, like the Asian elephant, is reflected in various conservation policies of Nepal.

National Conservation Strategy (1988): The National Conservation Strategy (NCS) has emphasized the need to preserve rare or endangered species and to protect their genetic diversity and/or essential life support system.

Master plan for the Forestry Sector (1988): The master plan for the forestry sector has given priority to the ecosystem and genetic resource conservation program as one of the six primary components.

Nepal Environmental Policy and Action Plan (1993): The Nepal Environmental Policy and Action Plan **(**NEPAP) places emphasis on the preservation of endemic and endangered species and their habitats within Nepal.

Buffer Zone Management Regulation (1996): The regulation is aimed at motivating local communities in the participatory management of forest resources to fulfil their needs for forest products through the user groups. The government has made a legal provision to funnel back 30-50 percent of the revenues earned by PAs to the respective buffer zone communities for conservation and development activities.

National Forest Policy (2018): The forestry sector policy focuses on the need for conservation of biodiversity, ecosystems, and genetic resources.

Nepal Biodiversity Strategy and Action Plan (2014-2020): Principle underpinning strategies include full and effective participation of local communities, and cooperation and collaboration

among stakeholders are keys to ensuring long-term sustainability of the biodiversity conservation efforts and long-term scientific research and knowledge generation is an essential element of biodiversity conservation initiatives. NBSAP has also focused on the promotion of landscape conservation and climate-resilient approaches for ecosystems and biodiversity management.

Constitution of Nepal (2015): Provision of special protection of the environment and of rare wildlife is specified in the Constitution of Nepal, 2015.

The National Parks and Wildlife Conservation Act (1973): The National Parks and Wildlife Conservation (NPWC) Act (1973) has been a key instrument for protecting biodiversity within and outside the protected areas system in Nepal. The Act provides complete protection for 27 species of mammals including the Asian elephant, nine species of birds, and three species of reptiles. There is a provision of a penalty for any person committing the offense of killing or attempting to kill the listed species. In case of Asian elephant, the offender can be punished with a penalty that ranges from 500,000 to 1,000,000 NPR or imprisonment of 5 to 15 years or both.

The Forest Act (2019): This act provides an opportunity to protect forests outside protected areas. The prevailing laws aim to manage the national forests as Government managed forests, forest protection areas, community forests, partnership forests, lease-hold forests, and religious forests and to make a contribution to national prosperity by protecting, promoting, and utilizing the wildlife, environment, watersheds, and biodiversity while promoting the private, public and urban forests.

Wildlife Damage Relief Distribution Guidelines (2023): This guideline provides relief to wildlife victims. In case of elephant damage to houses and crops, the victims may claim 20 thousand and 10 thousand NPR respectively. In case of human death, the affected family can get 10 Lakh NPR, and in case of injury the treatment costs up to NPR 2 lakh are provided by the government.

(Photo: DNPWC)

CHAPTER 6

ELEPHANT CONSERVATION ACTION PLAN

In the absence of large intact forests, the conservation remains difficult to protect biological wealth including a viable number of elephants, and sustain Nepal's rural populace. Although the protected area system in Nepal has been extended quite well covering ca. 24% of the land, endangered species like elephants facing the risk of local extinction because of habitat fragmentation and conflict with people. Small, disjunct elephant populations as in the case of Nepal may suffer from genetic drift and inbreeding to become susceptible to random demographic changes like high juvenile mortality and stochastic environmental events. Perhaps the best option to protect species with such precarious backgrounds is through landscape - level conservation. However, landscape conservation in developing countries comes with livelihood issues for rural communities who are the custodians of the land. Therefore, this conservation action plan recognizes people as the custodian of the land and makes an all-out effort to build strong linkages among rural communities, academic institutions, government agencies of Nepal and also in the transborder which is connected with India, and international communities and donors. By focusing on maintain existing elephant habitat, creating and protecting critical corridors, minimizing HEC, and strengthening the coordination and collaboration among stakeholders within the country and transborder will ultimately help in maintaining the viable population and creating human-elephant co-existence.

6.1 Goal

Maintain a viable population of elephants in harmony with conservation and development in Nepal

6.2 Specific Objectives

The specific objectives of the action plan are:

Objective 1. Maintain existing elephant habitat, and protect critical corridors and forest patches to provide safe movement to the elephants

Objective 2. Reduce human elephant conflict, minimize retaliatory killing and strengthen human elephant co-existence

Objective 3. Enhance capacity and knowledge base on elephant conservation using cutting-edge technologies

Objective 4. Strengthen coordination, cooperation and partnership with local, provincial, national, and global stakeholders for elephant conservation

Objective 5: Control poaching and illegal trade

Objective 6. Manage and maintain a healthy captive elephant population

6.3 Objectives, Outputs, and Actions

Objective 1: Maintain existing elephant habitat, protect critical corridors and forest patches to provide safe movement to the elephants

Rationale

Human population and their activities are increasing rapidly throughout the elephant's range including deforestation and encroachment of public lands. The encroachment and forest degradation have intensified the conflict between people and elephants. Habitat loss increases the fragmentation of the remaining forest pockets of suitable habitat.

Habitat loss and fragmentation is one of the major challenges for Asian elephant conservation. This issue should be seriously considered in future conservation endeavors. Drivers of habitat loss and degradation, however, vary from one place to another place. Therefore, a site-specific assessment of elephant population, their habitat and potential corridors is utmost importance before planning the conservation program for different areas. Available potential Asian elephant habitat is fragmented into nearly 400 patches (MoFSC, 2016) and there should be an intact habitat to support at least 100 mature individuals to maintain a genetically viable population (Jnawali et al., 2011). Therefore, the landscape-level conservation approach seems necessary for ensuring the success of Asian elephant conservation endeavor in Nepal which entails the need for biological corridors and habitat improvement interventions. The livelihoods of people living around Asian elephant habitats depend heavily on natural resources. Therefore, Asian elephant conservation planning should include carefully targeted support for livelihood improvement that links the needs of local villagers to conservation.

Outputs and Actions:

Output 1.1. Existing habitats within protected areas and outside protected areas maintained

Activity 1.1.1. Continue management of forests and other habitats within the protected areas as well as protection of corridors and connectivity

Activity 1.1.2 Continue management and improvement of community-based forests outside the protected areas

Activity 1.1.3 Habitat management through water holes creation, water source conservation and afforestation in community forests and river banks

Activity 1.1.4 Key hot-spots, bottlenecks, pinch points, least cost pathways, and potential corridors identified and prioritized for protection and program interventions

Activity 1.1.5. Equip and support protected areas and divisional forest authorities for effective patrols, surveillance, investigations, and control forest encroachment and degradation

(Photo: Rabin K.C., NTNC)

Activity 1.1.6. Engage local communities on forest and corridor protection through livelihood support programs, conservation awareness, and by providing opportunities of employment and revenue generation through nature-based tourism

Output 1.2. Wildlife crossings across linear infrastructures ensured for safe movement of wildlife including wild elephants

Activity 1.2.1. Develop provincial level strategic management intervention work plan and maintain all critical forest corridors (forest protection area, production forest, community forest, and collaborative managed forest) used by both resident and migratory herds of elephant in most of the Tarai districts

Activity 1.2.2. Wildlife-friendly infrastructure development in critical corridors and habitats in Pathlaiya-Amlekhgunj of Parsa NP, Bharandabhar corridor in Chitwan, Khata corridor and other important corridors in eastern Tarai along east-west highway

Activity 1.2.3. Assess effectiveness of wildlife crossings and long-term impacts of linear infrastructures on wildlife

Activity 1.2.4. Sensitize and build capacity of stakeholders on wildlife-friendly and climate-smart development

Activity 1.2.5. Guiding fences along the linear infrastructures established effectively

Objective 2. Reduce human-elephant conflict, minimize retaliatory killing and strengthen human elephant co-existence

Rationale

With rapid habitat loss and fragmentations, elephants live in proximity to farmlands and human settlements. Consequently, elephants are compelled to raid crops and take refuge in the nearby forests. Therefore, such behavioral shift perhaps, is an adaptation where agriculture fields support to sustain elephants seasonally. Local communities have used several means to reduce the conflict with elephant such as fire crackers, sirens, torch lights, monitoring from watch towers, firing gunshots into the air, using chili and peppers powders, erecting cemented walls, installing solar fences along the settlements and digging trenches, in their attempts to keep away elephants from their farms and houses. However, elephants get habituated with those intervention and the conflict cases are still existed. Reviewing current practices in Nepal, electric fences appear to be the top choice provided that they are well maintained. On the other hand, concrete walls mounted in the village fringes in Bardia and Chitwan have been claimed effective against elephant problem.

Realizing the multiplying effect of elephant-related losses and widespread retaliatory, the Government of Nepal provides relief fund to the farmers against wildlife damages. However, the relief amount for crops and house damages are still low and has to be revised accordingly. Meanwhile, it is imperative to protect the elephants in conflict with farmers from their retaliatory actions by providing quick relief amount for the loss of human lives.

Outputs and Actions:

Output 2.1 HEC managed using effective scientific approaches and human elephant co-existence strengthened

Activity 2.1.1. Establish national HEC database for Nepal and map out HEC hotspots and increase field actions in the hotspots

Activity 2.1.2. Develop site-specific HEC management strategies and plans and implement in partnership with local and provincial governments

Activity 2.1.3. Assess the effectiveness of the HEC management interventions and scale up the best practices

Activity 2.1.4. Revise wildlife damage relief guidelines

Activity 2.1.5. Initiate insurance schemes, i.e. life insurance as well as non-life insurance for human and livestock loss, crop and property damage

Activity 2.1.6. Promote non-palatable and commercially important crops in the HEC prone sites

Activity 2.1.7. Regularly maintain existing electric fences and establish new fences in high HEC prone pockets to protect crops and human lives

Activity 2.1.8. Conduct surveys on community attitude and tolerance towards elephants on a periodic basis across Nepal

Activity 2.1.9. Strengthen behavior change campaign among local communities to increase their tolerance towards elephants

Activity 2.1.10 Promote wild elephant-based tourism in the most conflicting regions such as Jhapa and Khata forest corridors

Output 2.2 Capacity to deal with HEC in all provinces improved.

Activity 2.2.1. Continue real-time tracking of problem elephants using cutting-edge technologies and establish early warning systems in communities

Activity 2.2.2. Establish well-equipped and dedicated elephant response teams (ERTS) in each province and build their capacity

Activity 2.2.3. Mobilize ERTs/ RRTs/CBAPUs to increase awareness among local people and revert problem animals from settlements

Activity 2.2.4 Conduct capacity building training on HEC management and HECx to relevant stakeholders and the general public living in the vicinity of elephant prime habitats

Activity 2.2.5. Equip protected area and divisional forest offices with vehicles, training, and mobility resources for quick response to HEC

Activity 2.2.6. Develop education and outreach toolkits, manuals, booklets, hoarding boards, etc. on HECx and disseminate among communities, government staff and other stakeholders

Objective 3. Enhance capacity and knowledge base on elephant conservation using cutting-edge technologies

Rationale:

There are some studies carried out on wild and captive elephants in Nepal. Most of the studies are on feeding ecology, molecular studies, habitat use, and human-elephant conflict. Studying elephants using cutting-edge technologies (e.g. genetic approach, radio collars) has not been carried out on a full scale in Nepal. How the changing climate, how various diseases in the wild and captivity may affect the elephants, how development projects like linear infrastructures and land use planning could affect the elephants, and what should be the best effective interventions to minimize the impacts of these activities are still poorly understood. Because of this limited knowledge base, conservation planning is being poorly designed in Nepal. Therefore, new research is needed to update our knowledge of Asian elephant ecology, behavior, and climate change impact on their survival. As Nepal receives seasonal elephant migration in the east, west, and far west, it is also important to know their annual movement pattern, home range, and the most efficient and effective means to address elephant - human conflict.

Outputs and Actions:

Output 3.1 Long-term elephant monitoring and research using cutting-edge technologies initiated and strengthened

Activity 3.1.1. Conduct periodic survey of wild elephant population, monitoring and research on habitat dynamics at landscape scale

Activity 3.1.2. National elephant population estimated using latest technologies and methods

Activity 3.1.3. Promote the use of DNA approach and satellite radio-collaring to understand various ecological aspects of residential and seasonally dispersing elephants

Activity 3.1.4. Initiate long-term study to understand climate change and its impacts on Asian elephants and their habitat

Activity 3.1.5. Collaborate with national, regional, and international partnership on elephant research

Activity 3.1.6. Capacity of Nepali professionals working on wild elephants, especially in using cutting-edge technologies on field data collection, analysis, and findings dissemination improved through rigorous training and academic packages

Output 3.2 Capacity to deal with elephant diseases enhanced and knowledge base improved

Activity 3.2.1. Build capacity of Nepali veterinarians on elephant disease control and management

Activity 3.2.2. Studies on nutritional ecology of captive and wild elephants conducted to improve elephant health

Activity 3.2.3. Strengthen capacity of wildlife hospitals, laboratories, and professional staff through national and international partnership

Activity 3.2.4. Document indigenous knowledge and practices of elephant management in Nepal

Objective 4. Strengthen coordination, cooperation, and partnership with local, provincial, national, and global stakeholders for elephant conservation

Rationale

The survival of elephants has become a cross-sectoral issue. Therefore, building a cohort of stakeholders in these days of diminishing forest and dwindling funds is fundamental. Preparing this Asian elephant conservation action plan has already brought together a number of key stakeholders. To implement the action plan effectively, strong partnership and collaboration needs to continue at the national level and, most importantly, be developed locally at all the priority sites to fulfill its conservation goal. Nepal's new federal governance system has further manifested the need for cooperation and collaboration among the local and provincial institutions. Not only the Asian elephant habitat have connectivity with neighboring country India, but there are also need to work with China as some critical wildlife trafficking routes are towards northern border of Nepal. Therefore, transboundary coordination and cooperation between the neighboring countries is necessary to safeguard the Asian elephants and their habitats and control illegal trade of elephant tusk. Likewise, the exchange and sharing of knowledge are equally important to enhance the impact of conservation programs.

Outputs and Actions:

Output 4.1. Increased support for Asian elephant conservation at local, provincial, national, and international level

Activity 4.1.1. Organize regular interaction meetings, seminars, and dialogues among key stakeholders at local, provincial, national and transboundary levels on elephant conservation

Activity 4.1.2. Execute HECx joint activities on a broader partnership approach

Activity 4.1.3. Leverage funding from local and provincial governments and synchronize these national priority actions on elephant conservation

Activity 4.1.4. Organize national and international conferences on elephant conservation to share best practices and learn from global communities

Activity 4.1.5. Participation in international conventions, workshops, range state meetings, and conferences

Activity 4.1.6 Collaborate national and international media for elephant conservation awareness and partnership

Output 4.2. Transboundary cooperation and support strengthened for Asian elephant conservation between India and Nepal

Activity 4.2.1. Organize regular transboundary meetings with neighboring countries at local and national level

Activity 4.2.2. Establish mechanism for regular exchange visits between India and Nepal at the community level, district/provincial level, and national level to learn from each other

Activity 4.2.3 Establish mechanism for information sharing on curbing wildlife crime and reducing human elephant conflict (HEC) at the transborder level

Activity 4.2.4. Promote joint patrols and monitoring systems in critical areas to ensure safe movement of elephants between two countries

Objective 5. Control poaching and illegal trade

Rationale

Poaching of Asian elephants and illegal trade of their body parts was not a serious threat to Asian elephant survival in Nepal in the past. However, poaching and retaliatory killings have been recorded in recent years. Community-based anti-poaching units (CBAPUs) and youth groups need to be strengthened at the grassroots level and the Central Investigation Bureau (CIB) needs to be further strengthened to curb wildlife crimes s in Nepal.

Outputs and Actions:

Output 5.1. Capacity of enforcement agencies to combat elephant retaliation, poaching, and illegal trade enhanced

Activity 5.1.1. Support for field gear, vehicles, and equipment for enforcement agencies

Activity 5.1.2. Conduct capacity development training for enforcement staff members at the local, provincial, and national level

Activity 5.1.3. Launch awareness campaigns against poaching and IWT at various levels

Activity 5.1.4. Organize CBAPU capacity building trainings and exposure visits and mobilize them at grass roots level

Activity 5.1.5. Information collection, management, and networking at various levels

Output 5.2. Database on elephant poaching and illegal trade maintained

Activity 5.2.1. Field staff train in data collection and management

Activity 5.2.2. Periodic reports production and sharing

Activity 5.2.3. Central-level database establishment and operation

Output 5.3. Cooperation and coordination among enforcement agencies strengthened and retaliation of elephants reduced

Activity 5.3.1. Organize periodic meetings of WCCB at district, province and center level

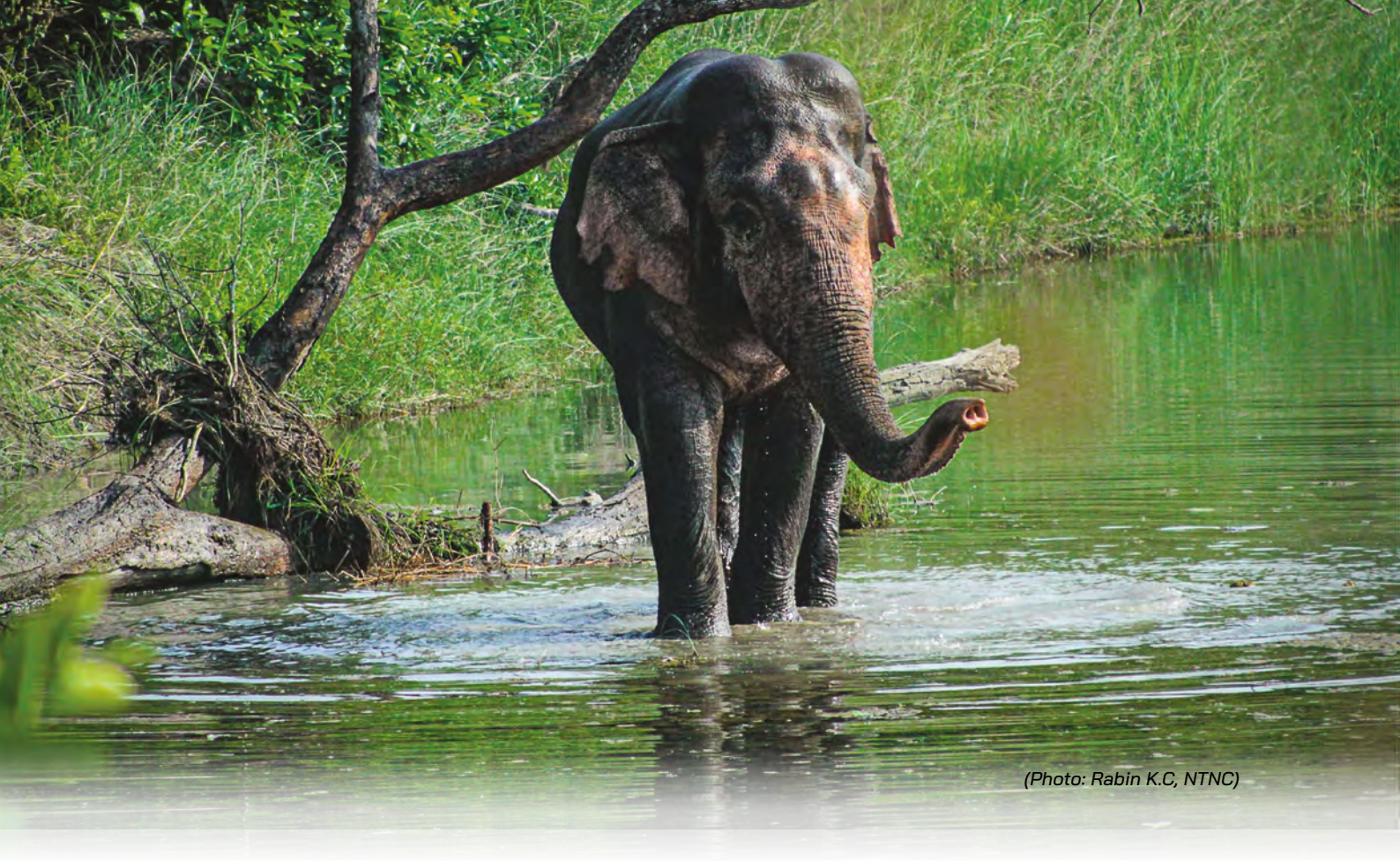
Activity 5.3.2 Organize capacity-building training and exposure to WCCB members

Activity 5.3.3. Conduct periodic experience-sharing workshops and seminars among enforcement agencies

Objective 6. Strengthen captive elephant health, breeding, and welfare

Rationale

Captive elephants in Nepal do not appear to have a future in itself unless strategic management intervention is made. Captive and trained elephant population is crucial for the management of Tarai national parks and wildlife reserves and for special works such as wildlife population monitoring, rescue and translocations, and patrolling. They are equally important for tourism and are part of Nepalese heritage and need to be maintained for the new generation for self-esteem, knowledge, skill, amusement. The number of captive elephants is about 200. It is vital to breed and care them well with due respect to the efforts of Mahouts and veterinarians attending them.



(Photo: Rabin K.C, NTNC)

Outputs and Actions:

Output 6.1. Captive elephant management rules, guidelines, and protocols developed

Activity 6.1.1. Develop captive elephant management guidelines

Activity 6.1.2. Elephant handling and management protocol development

Activity 6.1.3. Register all captive elephants and fit with identification chips to track their movement

Activity 6.1.4. Prepare training manuals for Mahouts to train and handle elephant calves

Activity 6.1.5. Develop a mechanism to monitor captive elephant movement and transport and control illegal trade of captive elephants

Activity 6.1.6. Organize various trainings to build capacity of elephant handlers and care takers

Output 6.2. Elephant stable facilities and health services of captive elephants improved

Activity 6.2.1. Improve facilities in all private and government elephant stables

Activity 6.2.2. Organize periodic health checkups and treatments for both elephants and care takers

Activity 6.2.3. Revise elephant diet (ration) and increase protein, vitamins, and minerals on regular diet to improve captive elephant health

Activity 6.2.4. Organize regular elephant health camps

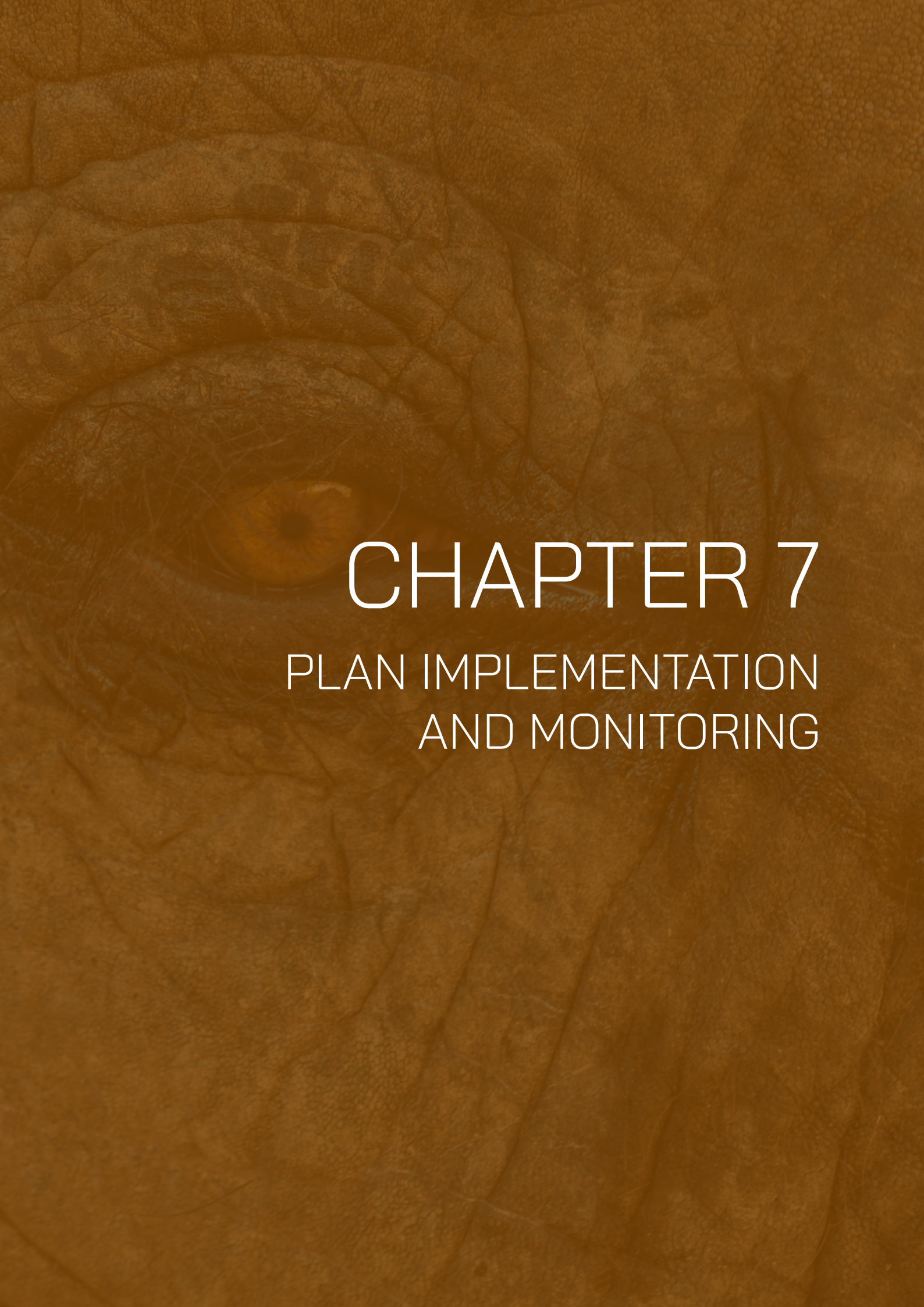
Activity 6.2.5. Prepare elephant patrolling manual, sensitize the Nepal army, mahouts, and park staff on captive elephant handling

Activity 6.2.6. Long-term monitoring and treatment of TB, EEHV, and other diseases

Activity 6.2.7. Improve elephant transport facilities

Activity 6.2.8. Improve visitor information center and visitor facilities at EBC, Chitwan

Activity 6.2.9. Develop integrated private elephant conservation camp and promote tourism activities



CHAPTER 7

PLAN IMPLEMENTATION AND MONITORING

7.1 Institutional Arrangement

The Department of National Parks and Wildlife Conservation, the Department of Forests and Soil Conservation and provincial governments will take an overall lead role in implementing this action plan. Local governments will be coordinated through these departments and provincial forest ministries while implementing the plan. Technical and financial support will be secured from the government of Nepal, other conservation partners such as the National Trust for Nature Conservation, World Wildlife Fund, Zoological Society of London-Nepal, IUCN Nepal, and other partners. Besides, local conservation bodies including NGOs, CFUGs, BZUCs, and security agencies will also equally have role to contribute to the implementation of this plan. The DNPWC and DoFSC will also coordinate with international agencies to secure the fund and strengthen transboundary cooperation. Overall umbrella role will be played by the Ministry of Forests and Environment in binding all the authorities and securing funds.

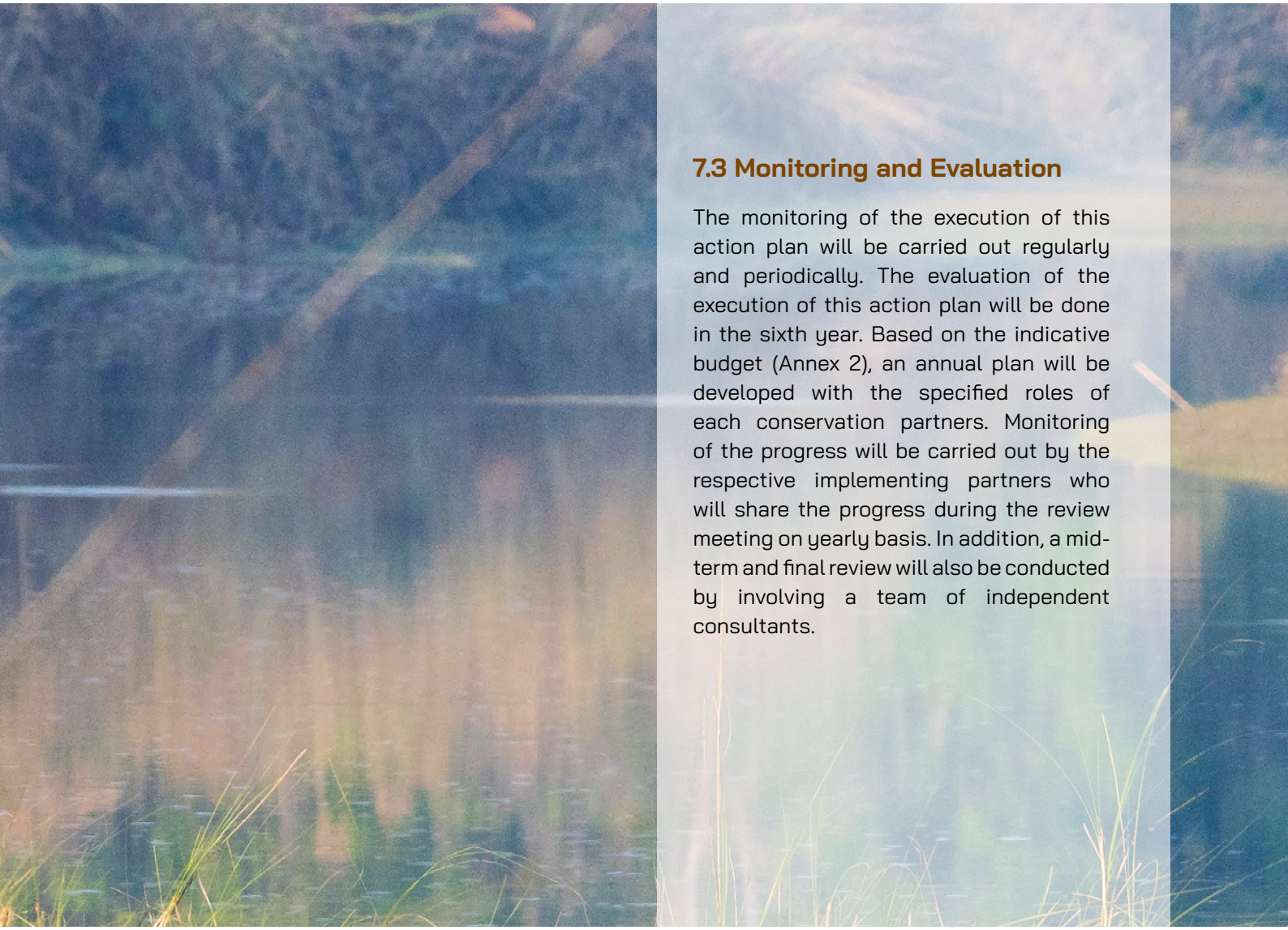
7.2 Financial Plan

The total estimated budget for this ten-year action plan implementation is NPR 4,581,800,000 (In words four billion five hundred eighty-one million and eight hundred thousand Nepali Rupees) (Table 3, Annex 2). The government bodies including DNPWC, DoFSC, and other local and provincial governments will allocate a certain proportion of this amount in their annual budget, while the rest of the amount will be secured from national and international conservation partners.

(Photo: Deepak Rajbamsi)

Table 3: Summary budget for the implementation of the action plan (2025-35).

Objective	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Objective 1: Maintain existing elephant habitat, protect critical corridors and forest patches to provide safe movement to the elephants	112,000	127,000	382,000	142,000	172,000	149,000	184,000	159,000	194,000	181,000	1,802,000
Objective 2. Reduce Human elephant conflict, retaliatory killing and strengthen human elephant co-existence	124,100	124,000	152,000	103,500	159,500	103,200	158,200	87,500	144,500	145,500	1,302,000
Objective 3. Enhance capacity and knowledge base on elephant conservation using cutting edge technologies	36,000	36,000	36,000	47,000	53,000	38,000	44,000	36,000	47,000	54,000	427,000
Objective 4. Strengthen coordination, cooperation and partnership with local, provincial, national and global stakeholders for elephant conservation	20,000	27,500	23,500	26,500	40,000	25,000	35,500	28,500	31,000	41,000	298,500
Objective 5. Control poaching and illegal trade	23,000	30,500	30,500	31,000	31,500	27,300	32,500	36,500	32,500	32,500	307,800
Objective 6. Strengthen captive elephant health, breeding and welfare	36,000	53,500	47,500	43,000	60,000	32,500	57,500	40,000	34,000	40,500	444,500
Total	**351,100**	**398,500**	**671,500**	**393,000**	**516,000**	**375,000**	**511,700**	**387,500**	**483,000**	**494,500**	**4,581,800**



7.3 Monitoring and Evaluation

The monitoring of the execution of this action plan will be carried out regularly and periodically. The evaluation of the execution of this action plan will be done in the sixth year. Based on the indicative budget (Annex 2), an annual plan will be developed with the specified roles of each conservation partners. Monitoring of the progress will be carried out by the respective implementing partners who will share the progress during the review meeting on yearly basis. In addition, a mid-term and final review will also be conducted by involving a team of independent consultants.

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ANNEXES

Annex 1:

Logical Framework for Elephant Conservation Action Plan Implementation

Narrative Summary	Indicators	Means of Verification	Assumptions
Goal: Maintain a viable population of elephants in harmony with conservation and development in Nepal			
Objective 1: Maintain existing elephant habitat, protect critical corridors and forest patches to provide safe movement to the elephants			
Outputs • Existing habitats within protected areas and outside protected areas maintained • Wildlife crossings along linear infrastructures ensured for safe movement of wildlife including wild elephants	• Existing elephant habitats, critical forest corridors, and forest patches condition maintained/improved • Key hot-spots, bottlenecks, and potential corridors identified and prioritized • Degraded forest and elephant habitat restored • Number of local communities' engagement increased in managing and improving elephant habitats • Provincial or district-level strategic elephant management intervention plan developed • Wildlife-friendly infrastructure construction adopted in critical corridors and habitats	• DNPWC, DoFSC, PAs, DFO, and MOFE official documents and reports • Official document and report of the Ministry of Physical Infrastructure and Transport (MoPIT) and its departments • Official document and report of provincial and local government • Academic Institutions and Conservation Partners research reports • Scientific publications and assessment reports	• Enabling policy environment created • All stakeholders join the efforts of the Nepal government • MoPIT and its departments continued to adopt Wildlife-friendly Infrastructure Construction Directives and guidelines
Actions • Continue management of forests and other habitats within the protected areas as well as protection of corridors and connectivity • Continue management and improvement of community-based forests outside the protected areas • Habitat management through water holes creation, water source conservation and afforestation in community forests and river banks • Key hot-spots, bottlenecks, pinch point, least cost pathways, and potential corridors identified and prioritized for protection and program interventions • Equip and support protected areas and divisional forest authorities for effective patrols, surveillance, investigations, and control forest encroachment and degradation • Engage local communities on forest and corridor protection through livelihood support programs, conservation awareness, and by providing opportunities of employment and revenue generation through nature-based tourism • Develop provincial level strategic management intervention work plan and maintain all critical forest corridors (forest protection area, production forest, community forest, and collaborative managed forest) used by both resident and migratory herds of elephant in most of the Tarai districts			

• Wildlife-friendly infrastructure construction in critical corridors and habitats • Assess effectiveness of wildlife crossings and long-term impacts of linear infrastructures on wildlife • Sensitize and build capacity of stakeholders on wildlife-friendly and climate-smart development • Guiding fences along the linear infrastructures established effectively			
Objective 2. Reduce human elephant conflict, minimize retaliatory killing and strengthen human elephant co-existence			
Outputs • HEC managed using effective scientific approaches and human elephant co-existence • Capacity to deal with HEC in all provinces improved	• Trend of human elephant conflict cases decreased • National HEC database in place • HEC hotspots map produced • Revised relief guidelines in place • 100 % of relief claims from elephant-induced victim families resolved • Initiated model insurance schemes • More than 20 number of HEC related scientific studies conducted • Retaliatory killing of elephants reduced • More than 100 elephant response teams (ERTS), Rapid response teams (RRTs) formed and mobilized at the provincial and local level • At least 150 km electric fence reducing the conflict installed/ maintained • Early warning system developed and capacity of local community people build to handle the system • A significant number of elephants affected HHs received benefits from livelihood improvement interventions • Capacity of more than 20,000 people strengthened to deal with HEC • Behaviour change campaign conducted to more than 200,000 people	• DNPWC, DoFSC, PAs, DFO, and MOFE official documents and reports • Official document and report of provincial and local government • Academic Institutions and Conservation Partners research reports • Scientific publications and assessment reports	• Government continued to invest in HEC management and HECx • Government policy to reduce HEC remained a priority • Conservation partners and stakeholders join the effort of the Nepal government • Provincial and Local governments also prioritize their annual plan for HEC management • Conducive working environment prevails

Actions

- Establish a national HEC database for Nepal and map out HEC hotspots and increase field actions in the hotspots
- Develop site-specific HEC management strategies and plans and implement in partnership with local and provincial governments
- Assess the effectiveness of the HEC management interventions and scale up the best practices
- Revise wildlife damage relief guidelines
- Initiate insurance schemes, i.e. life insurance as well as non-life insurance for human and livestock loss, crop and property damage
- Promote non-palatable and commercially important crops in the HEC prone sites
- Regularly maintain existing electric fences and establish new fences in high HEC prone pockets to protect crops and human lives
- Conduct surveys on community attitude and tolerance towards elephants on a periodic basis across Nepal
- Strengthen behaviour change campaign among local communities to increase their tolerance towards elephants
- Promote wild elephant-based tourism in the most conflicting regions such as Jhapa and Khata forest corridors
- Continue real-time tracking of problem elephants using cutting-edge technologies and establish early warning systems in communities
- Establish well-equipped and dedicated elephant response teams (ERTS) in each province and build their capacity
- Mobilize ERTs/ RRTs/CBAPUs to increase awareness among local people and revert problem animals from settlements
- Conduct capacity building training on HEC management and HECx to relevant stakeholders and the general public living in the vicinity of elephant prime habitats
- Equip protected area and divisional forest offices with vehicles, training, and mobility resources for quick response to HEC
- Develop education and outreach toolkits, manuals, booklets, hoarding boards, etc. on HECx and disseminate among communities, government staff and other stakeholders

Objective 3. Enhance capacity and knowledge base on elephant conservation using cutting-edge technologies			
Outputs • Long-term elephant monitoring and research using cutting-edge technologies initiated and strengthened • Capacity to deal with various elephant diseases enhanced and knowledge base improved	• Protocol for wild elephant survey prepared • National elephant population and status assessed using latest technologies and methods • Long-term elephant monitoring initiated in all elephant bearing habitat sites • Various ecological aspects of elephants assessed through DNA approach and satellite radio collaring at all isolated elephant population sites • At least 20 academic research reports and scientific papers published • Foster national, regional, and international partnership with Elephant range countries • National capacity to deal with various elephant diseases built by strengthening wildlife hospital, labs, veterinarians, and technicians • At least one document related to indigenous traditional knowledge of elephant management produced	• National elephant population status reports • DNPWC, DoFSC, PAs, DFO, and MOFE official documents and reports • Academic Institutions and Conservation Partners research reports • Academic research reports and scientific papers	• Elephant monitoring and research remains one of the priority areas of Government and Universities in Nepal • All stakeholders and conservation partners join the effort of the Nepal government
Actions • Conduct periodic survey of wild elephant population, monitoring and research on habitat dynamics at landscape scale • National elephant population estimated using latest technologies and methods • Promote the use of DNA approach and satellite radio-collaring to understand various ecological aspects of residential and seasonally dispersing elephants • Initiate long-term study to understand climate change and its impacts on Asian elephants and their habitat • Collaborate with national, regional, and international partnership on elephant research • Capacity of Nepali professionals working on wild elephants, especially in using cutting-edge technologies on field data collection, analysis, and findings dissemination improved through rigorous training and academic packages • Build capacity of Nepali veterinarians on elephant disease control and management			

<table>
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Studies on nutritional ecology of captive and wild elephants conducted to improve elephant health
Strengthen capacity of wildlife hospitals, laboratories, and professional staff through national and international partnership
Document indigenous knowledge and practices of elephant management in Nepal

</td></tr>
<tr><td colspan="4">Objective 4. Strengthen coordination, cooperation and partnership with local, provincial, national and global stakeholders for elephant conservation</td></tr>
<tr><td>Outputs
Increased support for Asian elephant conservation at local, provincial, national, and international level
Transboundary cooperation and support strengthened for Asian elephant conservation between India and Nepal</td><td>Conduct or involve in national, transboundary, regional, and international coordination meetings/ workshops regularly
Interaction meetings, seminars, and dialogues among key stakeholders at local, provincial, and national levels conducted in all elephant isolated population sites annually
Increase in international funding support for elephant conservation
Fund leveraging from local, provincial government and conservation partners increased gradually every year
Number of transboundary cooperation and meetings increased
Information sharing mechanism to curb wildlife crime and reduce HEC at transborder level established
Number of transboundary joint patrols and monitoring increased</td><td>MoFE, DNPWC, and DoFSC, official documents and reports
Stakeholders and conservation partners' reports
Official document regarding transborder information sharing mechanism</td><td>Elephant conservation and conflict management remain the priority areas of the Nepal government as well as the transborder country
Elephant conservation and conflict management remain the priority of Local governments as well
Conducive working environment prevails</td></tr>
<tr><td colspan="4">Actions
Organize regular interaction meetings, seminars, and dialogues among key stakeholders at local, provincial, national and transboundary levels on elephant conservation
Execute HECx joint activities on a broader partnership approach
Leverage funding from local and provincial governments and synchronize these national priority actions on elephant conservation
Organize national and international conferences on elephant conservation to share best practices and learn from global communities
Participation in international conventions, workshops, range state meetings, and conferences
Collaborate national and international media for elephant conservation awareness and partnership
Organize regular transboundary meetings with neighbouring countries at local and national level
Establish mechanism for regular exchange visits between India and Nepal at the community level, district/provincial level, and national level to learn from each other
Establish mechanism for information sharing on curbing wildlife crime and reducing HEC at the transborder level
Promote joint patrols and monitoring systems in critical areas to ensure safe movement of elephants between two countries</td></tr>
</table>

Objective 5. Control poaching and illegal trade			
Outputs • Capacity of enforcement agencies to combat elephant retaliation, poaching, and illegal trade enhanced • Database of elephant poaching and illegal trade maintained • Cooperation and coordination among enforcement agencies strengthened and retaliation and poaching of elephants reduced	• Populations of elephants increased/ stabilized • Enforcement agencies equipped with field gear, monitoring vehicles, and equipment essential to combat elephant retaliation, poaching, and illegal trade • Enforcement capacity development trainings provided to at least 250 enforcement staff members at the local, provincial, and national level • Trends of elephant retaliatory kills, cases of poaching, and illegal trade decreased • Awareness campaign conducted to at least 1,000,000 people in ten years period • All CBAPU formed around PAs and Tarai area strengthened and mobilized • Central-level database management system prepared to track HEC, poaching, and illegal trade • WCCB formed in all Tarai district and encouraged to conduct periodic meetings regularly • Periodic experience sharing workshops, and seminars among enforcement agencies conducted at least once a year	• Academic research reports and scientific papers • MoFE, DNPWC, DoFSC, PAs, and DFO documents and reports • Reports of stakeholders and conservation partners • Evidence of central-level database management system	• Elephant Conservation remains the priority area of the Government • All stakeholders and conservation partners join the effort of the Nepal government
Actions • Support for field gear, vehicles, and equipment for enforcement agencies • Conduct capacity development training for enforcement staff members at the local, provincial, and national level • Launch awareness campaigns against poaching and IWT at various levels • Organize CBAPU capacity building trainings and exposure visits and mobilize them at grass roots level • Field staff train in data collection and management • Periodic reports production and sharing • Central-level database establishment and operation			

<table>
<tr><td colspan="4">
• Organize periodic meetings of WCCB at district, province and centre level
• Organize capacity-building training and exposure to WCCB members
• Conduct periodic experience-sharing workshops and seminars among enforcement agencies
</td></tr>
<tr><td colspan="4">Objective 6. Strengthen captive elephant health, breeding and welfare</td></tr>
<tr><td>Outputs

• Captive elephant management rules, guidelines, and protocols developed

• Elephant stable facilities and health and welfare of captive elephants improved</td><td>• Elephant handling and management protocol development and implemented
• Training manuals for Mahouts to train and handle elephant calves prepared
• All captive elephants registered and monitored
• All elephant stables improved
• Captive elephant health camps organized annually
• All captive elephants received health and welfare facilities regularly
• Visitor information Centre and visitor facilities at EBC, Chitwan improved</td><td>• MoFE, DNPWC, DoFSC, PAs, and DFO documents and reports

• Reports of stakeholders and conservation partners

• Guidelines, protocol, and manuals</td><td>• Captive elephant management remains the priority area of the Nepal government

• All stakeholders and conservation partners join the effort of the Nepal government

• Captive elephant owners from the private sector cooperate with the Nepal government's effort</td></tr>
<tr><td colspan="4">Actions
• Develop captive elephant management guidelines
• Elephant handling and management protocol development
• Register all captive elephants and fit with identification chips to track their movement
• Prepare training manuals for Mahouts to train and handle elephant calves
• Develop a mechanism to monitor captive elephant movement and transport and control illegal trade of captive elephants
• Organize various trainings to build capacity of elephant handlers and care takers
• Improve facilities in all private and government elephant stables
• Organize periodic health checkups and treatments for both elephants and care takers
• Revise elephant diet (ration) and increase protein, vitamins, and minerals on regular diet to improve captive elephant health
• Organize regular elephant health camps
• Prepare elephant patrolling manual, sensitize the Nepal army, mahouts, and park staff on captive elephant handling
• Long-term monitoring and treatment of TB, EEHV, and other diseases
• Improve elephant transport facilities
• Improve visitor information centre and visitor facilities at EBC, Chitwan
• Develop integrated private elephant conservation camp and promote tourism activities</td></tr>
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Annex 2:

Indicative Budget for Elephant Conservation Action Plan (2025-2035)

(NPR in thousand)

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Objective 1: Maintain existing elephant habitat, protect critical corridors and forest patches to provide safe movement to the elephants											
Output 1.1. Existing habitats within protected areas and outside protected areas maintained											
Activity 1.1.1. Continue management of forests and other habitats within the protected areas as well as protection of corridors and connectivity	20,000	25,000	25,000	30,000	30,000	30,000	35,000	35,000	40,000	40,000	310,000
Activity 1.1.2 Continue management and improvement of community-based forests outside the protected areas	15,000	15,000	15,000	15,000	15,000	20,000	20,000	20,000	20,000	20,000	175,000
Activity 1.1.3 Habitat management through water holes creation, water source conservation and afforestation in community forests and river banks	20,000	20,000	25,000	25,000	25,000	20,000	25,000	20,000	25,000	25,000	230,000
Activity 1.1.4 Key hot-spots, bottlenecks, pinch points, least cost pathways, and potential corridors identified and prioritized for protection and program interventions	15,000	15,000	15,000	15,000	20,000	20,000	20,000	25,000	25,000	25,000	195,000
Activity 1.1.5. Equip and support protected areas and divisional forest authorities for effective patrols, surveillance, investigations, and control forest encroachment and degradation	20,000	20,000	20,000	20,000	20,000	25,000	25,000	25,000	25,000	25,000	225,000
Activity 1.1.6. Engage local communities on forest and corridor protection through livelihood support programs, conservation awareness, and by providing opportunities of employment and revenue generation through nature-based tourism	15,000	20,000	250,000	25,000	25,000	25,000	30,000	30,000	30,000	30,000	480,000
Subtotal	105,000	115,000	350,000	130,000	135,000	140,000	155,000	155,000	165,000	165,000	1,615,000

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Output 1.2. Wildlife crossings across linear infrastructures ensured for safe movement of wildlife including wild elephants											
Activity 1.2.1. Develop provincial level strategic management intervention work plan and maintain all critical forest corridors (forest protection area, production forest, community forest, and collaborative managed forest) used by both resident and migratory herds of elephant in most of the Tarai districts	-	2,000	2,000	2,000	2,000	-	-	-	-	-	8,000
Activity 1.2.2. Wildlife-friendly infrastructure development in critical corridors and habitats	3,000	5,000	5,000	5,000	5,000	-	5,000	-	5,000	5,000	38,000
Activity 1.2.3. Assess effectiveness of wildlife crossings and long-term impacts of linear infrastructures on wildlife	-	-	-	-	5,000	5,000	-	-	-	7,000	17,000
Activity 1.2.4. Sensitize and build capacity of stakeholders on wildlife-friendly and climate-smart development	4,000	5,000	5,000	5,000	5,000	4,000	4,000	4,000	4,000	4,000	44,000
Activity 1.2.5. Guiding fences along the linear infrastructures established effectively	-	-	20,000	-	20,000	-	20,000	-	20,000	-	80,000
Subtotal	7,000	12,000	32,000	12,000	37,000	9,000	29,000	4,000	29,000	16,000	187,000

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Objective 2. Reduce human-elephant conflict, minimize retaliatory killing and strengthen human elephant co-existence											
Output 2.1 HEC managed using effective scientific approaches and human elephant co-existence strengthened											
Activity 2.1.1. Establish national HEC database for Nepal and map out HEC hotspots and increase field actions in the hotspots	100	5,000	1,000	500	500	700	700	500	500	500	10,000
Activity 2.1.2. Develop site-specific HEC management strategies and plans and implement in partnership with local and provincial governments	-	2,000	-	2,000	2,000	-	3,000	-	-	-	9,000
Activity 2.1.3. Assess the effectiveness of the HEC management interventions and scale up the best practices	-	-	-	-	5,000	-	-	-	-	7,000	12,000
Activity 2.1.4. Revise wildlife damage relief guidelines	2,500	-	-	-	-	3,500	-	-	-	-	6,000
Activity 2.1.5. Initiate insurance schemes, i.e. life insurance as well as non-life insurance for human and livestock loss, crop and property damage	1,500	-	10,000	5,000	-	5,000	10,000	-	10,000	-	41,500
Activity 2.1.6. Promote non-palatable and commercially important crops in the HEC prone sites	5,000	2,000	1,500	2,500	3,500	4,000	7,000	3,000	5,000	5,000	38,500
Activity 2.1.7. Regularly maintain existing electric fences and establish new fences in high HEC prone pockets to protect crops and human lives	40,000	40,000	30,000	30,000	20,000	20,000	15,000	20,000	15,000	30,000	260,000
Activity 2.1.8. Conduct surveys on community attitude and tolerance towards elephants on a periodic basis across Nepal	5,000	-	-	-	6,000	-	-	-	-	7,500	18,500

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Activity 2.1.9. Strengthen behavior change campaign among local communities to increase their tolerance towards elephants	7,500	7,000	7,000	7,500	8,000	8,000	8,000	8,000	8,000	8,000	77,000
Activity 2.1.10 Promote wild elephant-based tourism in the most conflicting regions such as Jhapa and Khata forest corridors	10,000	-	30,000	-	40,000	-	50,000	-	50,000	-	180,000
Subtotal	71,600	56,000	79,500	47,500	85,000	41,200	93,700	31,500	88,500	58,000	652,500
Output 2.2 Capacity to deal with HEC in all provinces improved											
Activity 2.2.1. Continue real-time tracking of problem elephants using cutting-edge technologies and establish early warning systems in communities	5,000	5,500	6,000	6,000	6,000	6,500	7,000	7,000	7,000	7,500	63,500
Activity 2.2.2. Establish well-equipped and dedicated elephant response teams (ERTS) in each province and build their capacity	12,500	13,000	13,500	14,500	15,500	7,500	8,500	8,500	9,000	9,500	112,000
Activity 2.2.3. Mobilize ERTs/ RRTs/ CBAPUs to increase awareness among local people and revert problem animals from settlements	5,000	5,500	6,000	6,000	6,500	6,000	7,000	7,000	6,500	7,000	62,500
Activity 2.2.4 Conduct capacity building training on HEC management and HECx to relevant stakeholders and the general public living in the vicinity of elephant prime habitats	7,500	7,500	8,500	9,000	9,000	9,000	9,000	9,000	9,000	9,000	86,500
Activity 2.2.5. Equip protected area and divisional forest offices with vehicles, training, and mobility resources for quick response to HEC	13,500	28,500	30,500	12,500	30,500	25,000	25,000	15,000	15,000	45,000	240,500

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Activity 2.2.6. Develop education and outreach toolkits, manuals, booklets, hoarding boards, etc. on HECx and disseminate among communities, government staff and other stakeholders	9,000	8,000	8,000	8,000	7,000	8,000	8,000	9,500	9,500	9,500	84,500
Subtotal	52,500	68,000	72,500	56,000	74,500	62,000	64,500	56,000	56,000	87,500	649,500
Objective 3. Enhance capacity and knowledge base on elephant conservation using cutting-edge technologies											
Output 3.1 Long-term elephant monitoring and research using cutting-edge technologies initiated and strengthened											
Activity 3.1.1. Conduct periodic survey of wild elephant population, monitoring and research on habitat dynamics at landscape scale	5,000	3,000	3,000	3,000	6,000	4,000	4,000	4,000	4,000	7,000	43,000
Activity 3.1.2. National elephant population estimated using latest technologies and methods	-	-	-	12,000	12,000	-	-	-	12,000	12,000	48,000
Activity 3.1.3. Promote the use of DNA approach and satellite radio-collaring to understand various ecological aspects of residential and seasonally dispersing elephants	5,000	5,000	5,000	5,000	5,000	6,000	6,000	6,000	6,000	6,000	55,000
Activity 3.1.4. Initiate long-term study to understand climate change and its impacts on Asian elephants and their habitat	-	9,000	3,000	3,000	5,000	4,000	4,000	4,000	4,000	6,000	42,000
Activity 3.1.5. Collaborate with national, regional, and international partnership on elephant research	7,000	5,000	5,000	5,000	6,000	4,000	5,000	4,000	4,000	4,000	49,000

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Activity 3.1.6. Capacity of Nepali professionals working on wild elephants, especially in using cutting-edge technologies on field data collection, analysis, and findings dissemination improved through rigorous training and academic packages	6,000	4,000	4,000	5,000	5,000	6,000	7,000	4,000	4,000	6,000	51,000
Subtotal	23,000	26,000	20,000	33,000	39,000	24,000	26,000	22,000	34,000	41,000	288,000
Output 3.2 Capacity to deal with elephant diseases enhanced and knowledge base improved											
Activity 3.2.1. Build capacity of Nepali veterinarians on elephant disease control and management	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	7,000	7,000	60,000
Activity 3.2.2. Studies on nutritional ecology of captive and wild elephants conducted to improve elephant health	-	-	5,000	-	-	-	5,000	-	-	-	10,000
Activity 3.2.3. Strengthen capacity of wildlife hospitals, laboratories, and professional staff through national and international partnership	8,000	4,000	5,000	5,000	5,000	6,000	6,000	7,000	6,000	6,000	58,000
Activity 3.2.4. Document indigenous knowledge and practices of elephant management in Nepal	1,000	1,000	1,000	3,000	3,000	2,000	-	-	-	-	11,000
Subtotal	13,000	10,000	16,000	14,000	14,000	14,000	18,000	14,000	13,000	13,000	139,000

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Objective 4. Strengthen coordination, cooperation, and partnership with local, provincial, national, and global stakeholders for elephant conservation											
Output 4.1. Increased support for Asian elephant conservation at local, provincial, national, and international level											
Activity 4.1.1. Organize regular interaction meetings, seminars, and dialogues among key stakeholders at local, provincial, national and transboundary levels on elephant conservation	2,000	2,500	2,500	3,000	3,000	3,500	3,500	3,500	3,500	3,500	30,500
Activity 4.1.2. Execute HECx joint activities on a broader partnership approach	3,500	4,000	4,000	4,500	4,500	4,000	5,000	5,000	5,000	5,000	44,500
Activity 4.1.3. Leverage funding from local and provincial governments and synchronize these national priority actions on elephant conservation	3,500	2,000	3,000	3,000	2,500	2,000	2,000	2,500	2,500	2,500	25,500
Activity 4.1.4. Organize national and international conferences on elephant conservation to share best practices and learn from global communities	-	6,000	-	-	7,000	-	8,000	-	-	8,000	29,000
Activity 4.1.5. Participation in international conventions, workshops, range state meetings, and conferences	2,000	2,000	2,000	2,500	2,500	2,000	2,500	2,500	2,500	3,500	24,000
Activity 4.1.6 Collaborate national and international media for elephant conservation awareness and partnership	1,000	1,000	1,500	1,500	2,000	2,500	2,500	2,500	2,500	2,500	19,500
Subtotal	12,000	17,500	13,000	14,500	21,500	14,000	23,500	16,000	16,000	25,000	173,000
Output 4.2. Transboundary cooperation and support strengthened for Asian elephant conservation between India and Nepal											
Activity 4.2.1. Organize regular transboundary meetings with neighboring countries at local and national level	1,000	1,500	2,000	2,000	3,500	3,000	3,000	3,500	5,000	2,000	26,500

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Activity 4.2.2. Establish mechanism for regular exchange visits between India and Nepal at the community level, district/provincial level, and national level to learn from each other	2,000	2,500	2,500	3,500	4,000	2,000	2,500	2,500	3,000	3,000	27,500
Activity 4.2.3 Establish mechanism for information sharing on curbing wildlife crime and reducing human elephant conflict (HEC) at the transborder level	3,500	4,000	4,000	4,000	4,000	3,500	4,000	4,000	4,000	4,000	39,000
Activity 4.2.4. Promote joint patrols and monitoring systems in critical areas to ensure safe movement of elephants between two countries	1,500	2,000	2,000	2,500	7,000	2,500	2,500	2,500	3,000	7,000	32,500
Subtotal	8,000	10,000	10,500	12,000	18,500	11,000	12,000	12,500	15,000	16,000	125,500
Objective 5. Control poaching and illegal trade											
Output 5.1. Capacity of enforcement agencies to combat poaching and illegal trade enhanced											
Activity 5.1.1. Support for field gear, vehicles, and equipment for enforcement agencies	2,000	2,500	2,500	2,500	2,500	3,000	3,000	3,000	3,000	3,000	27,000
Activity 5.1.2. Conduct capacity development training for enforcement staff members at the local, provincial, and national level	2,500	2,000	2,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	24,000
Activity 5.1.3. Launch awareness campaigns against poaching and IWT at various levels	3,000	3,000	3,500	3,500	3,500	2,500	2,500	2,500	2,500	2,500	29,000
Activity 5.1.4. Organize CBAPU capacity building trainings and exposure visits and mobilize them at grass roots level	2,500	3,500	3,500	5,000	3,000	300	3,500	4,000	3,000	3,500	31,800
Activity 5.1.5. Information collection, management, and networking at various levels	2,000	2,500	2,500	3,000	3,000	3,500	3,500	3,500	3,500	3,500	30,500
Subtotal	12,000	13,500	14,000	16,500	14,500	11,800	15,000	15,500	14,500	15,000	142,300

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Output 5.2. Database on elephant retaliation, poaching and illegal trade maintained											
Activity 5.2.1. Field staff train in data collection and management	1,000	2,000	3,000	3,000	3,000	2,500	3,500	3,000	2,500	2,500	26,000
Activity 5.2.2. Periodic reports production and sharing	1,000	2,000	2,500	2,500	2,500	2,500	3,000	3,000	3,000	3,000	25,000
Activity 5.2.3. Central-level database establishment and operation	5,000	7,000	5,000	2,000	2,000	2,500	2,500	6,000	2,500	2,000	36,500
Subtotal	7,000	11,000	10,500	7,500	7,500	7,500	9,000	12,000	8,000	7,500	87,500
Output 5.3. Cooperation and coordination among enforcement agencies strengthened and poaching of elephants reduced											
Activity 5.3.1. Organize periodic meetings of WCCB at district, province and center level	1,500	2,000	2,000	2,500	2,500	3,000	3,000	3,000	3,500	3,500	26,500
Activity 5.3.2 Organize capacity-building training and exposure to WCCB members	1,000	1,500	1,500	1,500	2,000	2,000	2,500	2,500	2,500	2,500	19,500
Activity 5.3.3. Conduct periodic experience-sharing workshops and seminars among enforcement agencies	1,500	2,500	2,500	3,000	5,000	3,000	3,000	3,500	4,000	4,000	32,000
Subtotal	4,000	6,000	6,000	7,000	9,500	8,000	8,500	9,000	10,000	10,000	78,000
Objective 6. Strengthen captive elephant health, breeding and welfare											
Output 6.1. Captive elephant management rules, guidelines and protocols developed											
Activity 6.1.1. Develop captive elephant management guidelines	-	2,500	1,500	-	-	-	2,500	1,500	-	-	8,000
Activity 6.1.2. Elephant handling and management protocol development	-	-	2,500	-	-	-	-	-	-	-	2,500
Activity 6.1.3. Register all captive elephants and fit with identification chips to track their movement	1,000	1,000	1,000	1,500	1,500	1,500	1,500	1,500	1,500	2,000	14,000

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Activity 6.1.4. Prepare training manuals for Mahouts to train and handle elephant calves	2,000	2,000	2,500	2,500	2,500	2,500	1,500	1,500	2,500	2,500	22,000
Activity 6.1.5. Develop a mechanism to monitor captive elephant movement and transport and control illegal trade of captive elephants	2,000	1,500	1,500	1,500	2,500	2,500	2,500	2,500	2,500	2,500	21,500
Activity 6.1.6. Organize various trainings to build capacity of elephant handlers and care takers	2,000	2,500	2,500	2,500	2,000	2,000	4,000	3,000	2,000	2,000	24,500
Subtotal	7,000	9,500	11,500	8,000	8,500	8,500	12,000	10,000	8,500	9,000	92,500
Output 6.2. Elephant stable facilities and health and welfare of captive elephant improved											
Activity 6.2.1. Improve facilities in all private and government elephant stables	7,000	9,000	8,000	7,000	15,000	9,000	11,000	12,000	9,000	9,000	96,000
Activity 6.2.2. Organize periodic health checkups and treatments for both elephants and care takers	3,000	3,000	3,000	3,000	3,500	3,500	4,000	4,000	4,000	4,000	35,000
Activity 6.2.3. Revise elephant diet (ration) and increase protein, vitamins, and minerals on regular diet to improve captive elephant health	1,000	1,500	2,500	1,500	-	-	-	-	-	-	6,500
Activity 6.2.4. Organize regular elephant health camps	3,000	3,000	3,500	3,500	3,500	4,000	4,000	4,000	4,000	4,000	36,500
Activity 6.2.5. Prepare elephant patrolling manual, sensitize the Nepal army, mahouts, and park staff on captive elephant handling	3,500	2,000	2,500	2,500	2,000	1,500	3,500	3,500	2,500	2,000	25,500
Activity 6.2.6. Long-term monitoring and treatment of TB, EEHV, and other diseases	2,000	2,500	6,000	3,500	6,000	3,000	3,000	3,500	3,000	4,000	36,500
Activity 6.2.7. Improve elephant transport facilities	1,000	4,500	5,000	9,000	3,500	-	4,000	-	-	4,500	31,500

Objectives, outputs and actions	Year										Total
	1	2	3	4	5	6	7	8	9	10	
Activity 6.2.8. Improve visitor information center and visitor facilities at EBC, Chitwan	5,000	15,000	2,000	2,000	15,000	2,000	15,000	2,000	2,000	3,000	63,000
Activity 6.2.9. Develop integrated private elephant conservation camp and promote tourism activities	3,500	3,500	3,500	3,000	3,000	1,000	1,000	1,000	1,000	1,000	21,500
Subtotal	29,000	44,000	36,000	35,000	51,500	24,000	45,500	30,000	25,500	31,500	352,000
Total	**351,100**	**398,500**	**671,500**	**393,000**	**516,000**	**375,000**	**511,700**	**387,500**	**483,000**	**494,500**	**4,581,800**

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