ASIATIC BLACK BEAR CONSERVATION ACTION PLAN (2023-2033)

"Securing a future for Asiatic Black Bears in Bhutan"

Nature Conservation Division

Department of Forests and Park Services

Ministry of Energy and Natural Resources

Royal Government of Bhutan

ASIATIC BLACK BEAR
CONSERVATION ACTION PLAN
FOR BHUTAN
(July 2023-June 2034)

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Nature Conservation Division
Department of Forests and Park Services
Ministry of Energy and Natural Resources

Plan prepared by:

Nature Conservation Division
Department of Forests and Park Services

Planning, coordination and compilation:

Tashi Dhendup, Bhutan Tiger Center, Nature Conservation Division
Letro, Nature Conservation Division
Namgay Wangchuck, Nature Conservation Division (now with BTFEC)
Sonam Wangdi, Nature Conservation Division

With inputs from:

Ugyen, Jigme Khesar Strict Nature Reserve
Sonam Tobgay, Trashigang Forest Division
Jigme Gyeltshen, Jigme Dorji National Park
Sonam Phuntsho, Paro Forest Division
Tashi Phuentsho, Wangdue Forest Division
Yeshi Gyeltshen, Gedu Forest Division
Karma Tenzin, Bumthang Forest Division
Kinzang Wangchuk, Bumdeling Wildlife Sanctuary
Kinley Dorji, Wangchuk Centennial National Park
Chogyal Tashi, Samtse Forest Division
Sonam Jamtsho, Sakten Wildlife Sanctuary
Ugyen Dorji, Thimphu Forest Division

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FOREWORD

Bhutan, a small kingdom in the Himalayas with more than 71 per cent forest cover, is home to many threatened flora and fauna. While the rest of the world is whirling under the threat of species extinction, habitat loss, and changing climate, Bhutanese are fortunate to have visionary Monarchs for their stewardship in environmental conservation. Therefore, we are the champion and the leader in environmental conservation in the world. Today, Bhutan is part of global biodiversity hotspots and hotpots for Asiatic black bears, which are widespread in the Asian continent.

In Bhutan, the Asiatic black bear has been confirmed throughout the districts, ranging from 1200 to 3750 meters above sea level. Like many other globally threatened species, Asiatic black bears face increased threats from habitat fragmentation, poaching, illegal trade, and inadvertent killings. Thus, this species merits protection. The declaration of more than 51 per cent of Bhutan's land area under a protected area network with functional biological corridors is a testament to international conservation commitment. Similarly, developing this important action plan will further enhance and guarantee the firm conservation pledge of the country.

This action plan will ensure the realisation of the biodiversity conservation goal of the country in harmonisation with other important developmental objectives and priorities. I sincerely thank the Bhutan for Life (BFL) secretariat for funding the action planning processes. I also sincerely appreciate and congratulate the Department of Forests and Park Services and others who prepared this holistic plan. I express good wishes for the successful implementation of this plan.

Tashi Delek

(Lobzang Dorji)
Director

ACKNOWLEDGEMENT

I want to express my sincere gratitude to everyone who contributed to developing the Asiatic black bear conservation action plan. This plan was only possible with the hard work, dedication, and commitment of many individuals and organisations.

First and foremost, I would like to thank the Director, DoFPS for his strategic guidance and support in developing this plan. I also appreciate the Technical Advisory Committee (TAC) members of the department, who provided valuable insights, expertise, and feedback to shape this conservation action plan. Their knowledge and passion for wildlife conservation have been instrumental in creating a comprehensive and effective strategy for protecting the Asiatic black bear. The Department would like to extend special gratitude to "Bhutan for Life" (BFL) for the generous and timely funding support, without which the development of this conservation action plan wouldn't have been possible.

Finally, I extend my heartfelt thanks to all the field staff, researchers, Law Enforcement Agencies (RBP, RBA, Customs officials, BFRA), and volunteers who work tirelessly to protect and conserve the Asiatic black bear in the wild. Their dedication and commitment to wildlife conservation are genuinely inspiring and provide hope for the future of this magnificent yet threatened species.

Once again, thank you to everyone who contributed to developing the Asiatic black bear conservation action plan. Your efforts are greatly appreciated, and I look forward to working together to implement this plan and secure a brighter future for the Asiatic black bear.

Thank you.

(Sonam Wangdi)
Chief Forestry Officer

LIST OF ACRONYMS

DoFPS	Department of Forests and Park Services
IUCN	Convention on International Trade of Endangered Species of Wild Fauna and Flora
MoENR	Ministry of Environment and Natural Resources
NGO	Non-Governmental Organisation
NWFP	Non-wood Forest Products
NCD	Nature Conservation Division
JDNP	Jigme Dorji National Park
RGoB	Royal Government of Bhutan
WCNP	Wangchuck Centennial National Park
MoAF	Ministry of Agriculture and Forests
HWC	Human-wildlife conflict
SMART	Spatial Monitoring and Reporting Tool
RBP	Royal Bhutan Police
RBA	Royal Bhutan Army
BFDA	Bhutan Food and Drug Authority
UWIFoRT	Ugyen Wangchuck Institute for Forest Research and Training

EXECUTIVE SUMMARY

The Asiatic black bear *Ursus thibetanus* is a globally threatened species experiencing a decline in population due to habitat loss and degradation, poaching and illegal wildlife trade, and human-bear conflict. Bears frequently conflict with people as they deprecate crops and livestock and cause damage to life and property. In Bhutan, locally known as "Dom," bears occur widely and are mostly feared and disliked. People have often expressed the culling of bears to manage human-bear conflict, some even desiring complete eradication.

Bears are listed in Schedule II of the Forest and Nature Conservation Act of Bhutan 2023, and any form of hunting or illegal trade of bears and bear parts is completely prohibited. The Asiatic black bear conservation action plan (2023-2033) for ten years is the first for Bhutan. It aims to ensure a viable population of bears in the country and, at the same time, to provide interventions that can address and alleviate human-bear conflict. Bears are an essential part of the ecosystem and provide numerous ecosystem services, such as acting as seed dispersers to predators, maintaining prey populations and cleaning up the forests by scavenging on carrion. Communities are also an equally important part of the ecosystem, and their support is critical for conservation. Therefore, the action plan aims to create a harmonious balance between nature and people and reiterates the need for coexistence.

At a consultative workshop in April 2023 in Bumthang, forestry officials from the Department of Forests and Park Services noted that bears in Bhutan faced several threats nationwide. The threats included human-bear conflict, poaching and illegal trade, habitat loss and degradation, inadequate knowledge and research, climate change, and diseases. The group also noted several challenges to bear conservation: poor stakeholder coordination and engagement, limited resources and technical capacity, negative perceptions/attitudes toward bears, and traditional livelihood practices and rights. To address the threats and challenges, several strategies were identified, which are listed below:

Objective 1: Prevent and manage human-bear conflict
Output 1: Enhanced prevention of human-bear conflict.
Output 2: Mitigation measures put in place in case of conflict occurrence.
Output 3: Strengthening response team.

Objective 2. Prevent poaching and illegal trade of bear parts
Output 1: Asiatic black bear poaching reduced.

Output 2: Stakeholder collaboration and cooperation enhanced.
Output 3: The capacity of law enforcement agencies enhanced.
Output 4: Infrastructure and equipment for anti-poaching strengthened.

Objective 3: Secure habitats to ensure a viable population of Asiatic black bears
Output 1: Asiatic black bear habitat assessed and mapped to sustain a viable population in the wild.
Output 2: Degraded habitats restored.
Output 3: Monitoring and surveillance of bears improved.

Objective 4: Increase science-based information on ecology, threats, and conservation of Asiatic black bears.
Output 1: The extent and severity of human-bear conflict in the country are assessed.
Output 2: The population demographics and spatial distribution of Asiatic black bears in the country are understood.
Output 3: Threats to Asiatic black bears are understood.

The total indicative budget for the ten-year action plan is estimated at Nu. 347 million. About 41% of the budget is estimated for preventing poaching and illegal trade of bear parts, followed by preventing and managing human-bear conflict (29.45%), research and monitoring (14.89%), and habitat management (14.38%). The funds for the activities are expected to be met by the Royal Government of Bhutan, Bhutan for Life project, and other relevant partners.

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CHAPTER 01: BACKGROUND

1.1.Global status and distribution

The Asiatic black bear *Ursus thibetanus*, also known as Moon Bear, is widespread in Asia and can be found in 18 countries. Their distribution ranges from south-eastern Iran to Pakistan and Afghanistan, in the Himalayas across Nepal, India, and Bhutan, and continues into mainland Asia - south of Myanmar and Thailand. China contains half of the total range area of the species, and populations are concentrated mainly in the south-central and southwestern parts of the country. However, bears also occur in north-eastern China, the southern part of the Russian Far East, the Korean peninsula, Japan, and Taiwan.

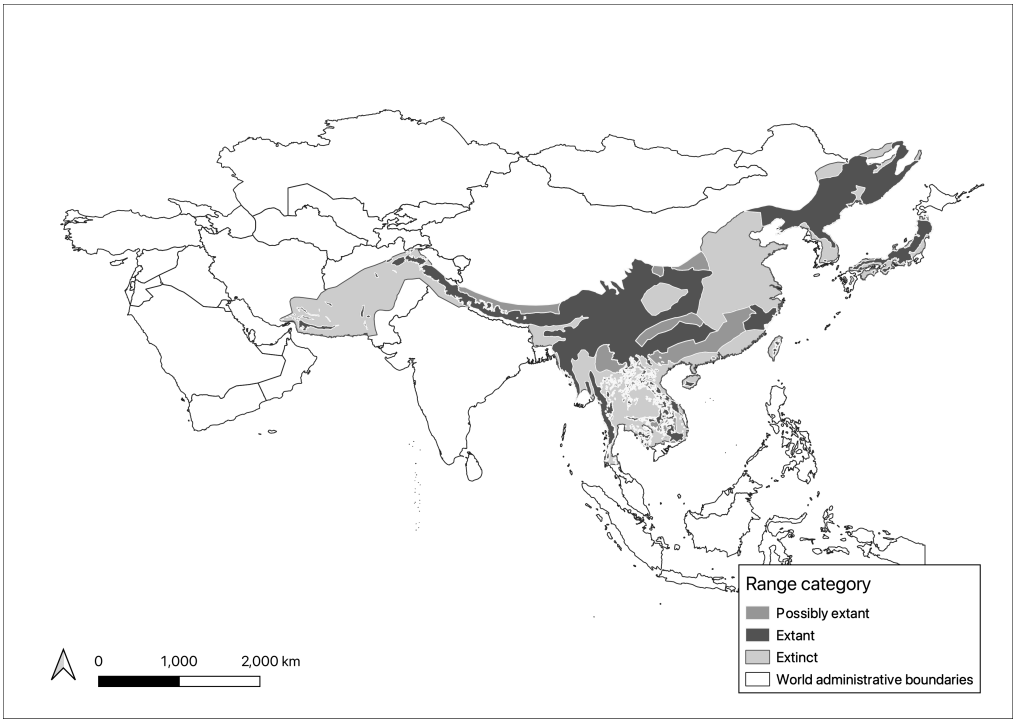

Figure 1 Asiatic black bear distribution across the range countries. Range data was downloaded from the IUCN red list website.

Bear are found mostly in temperate broadleaved deciduous forests across the range. They also occur in temperate conifer, tropical, and boreal forests. Seasonally, they occur in alpine areas above the tree line in the Himalayan countries.

Asiatic black bears have been listed as Vulnerable on the IUCN Red List of Threatened categories and Appendix I of the CITES since 1979. Asiatic black bears are experiencing a decline in population worldwide. In the past 30 years, the global population is estimated to have declined by about 31% and is projected to decrease further by similar proportions in the next 30 years (Garshelis *et al*., 2020). Population reduction has been brought about by habitat loss and degradation, poaching, and retaliatory killing due to human-bear conflict. Bears are primarily poached for gallbladders (which contain bile) for medicinal purposes and for paws which are considered a delicacy in some countries like China. Bears also frequently conflict with people and are often killed in retaliation. Throughout the bear range countries, the conflict (Human-bear Conflict) includes damage to agricultural and horticultural crops, apiaries, fish farms, livestock, and even humans, as reported by (Charoo *et al.,* 2011; Liu *et al.,* 2011a; Sangay & Vernes, 2008).

1.2.National status and distribution

The Field Guide to Mammals of Bhutan reports two species of bears in Bhutan- the Asiatic black bear *Ursus thibetanus* and the Sloth bear *Melursus ursinus* (Wangchuk et al. 2004). Although the Sloth bear was once reported in a camera trap in Royal Manas National Park in 2009, there have been no records of the species in the country ever since (Garshelis *et al.* 2015).

Weighing up to 200kg and measuring up to 190cm, the Asiatic black bear is one of many larger-sized carnivores in Bhutan. The species is recorded to be widespread, and in some parts of the country, like Gasa and Bumthang, bears are even considered pests. Although a national population count currently needs to be made available, rising incidences of conflicts, sightings, and rescue cases suggest it to be stable, if not increasing.

Bears in Bhutan are found in various habitat types and occupy varying elevation gradients. They are found in sub-tropical forests in the south at elevations as low as 100 masl to more than 5000m in the subalpine regions of the north. However, they prefer the temperate forests of central and western Bhutan.

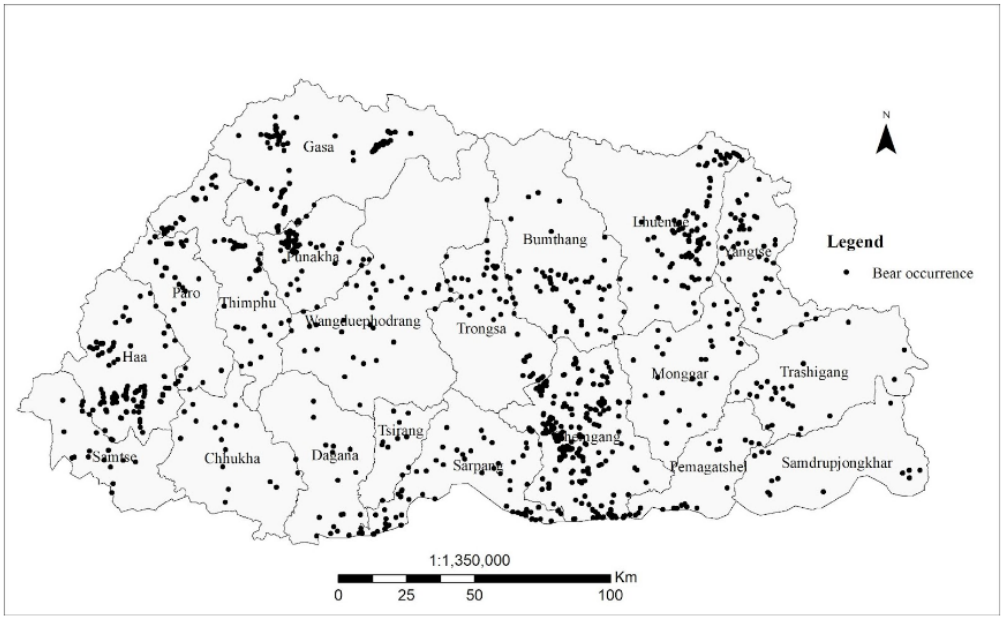

Figure 2 Map showing the current distribution of Asiatic black bears in Bhutan based on presence data from camera trap surveys, direct sightings and human-bear conflict incidences.

In Bhutan, the Asiatic black bear is protected under Bhutan's Forest and Nature Conservation Act 1995. The species is threatened by poaching and illegal wildlife trade. Human-bear conflict is also common and reported nationwide, especially among rural people (DoFPS, 2011; Sangay & Vernes, 2008; Liu *et al*., 2011a; Chuan, 2003). Crop raiding, livestock predation, and attacks on humans by Asiatic black bears are severe problems in Wangchuck Centennial National Park and Jigme Dorji National Park, and it appears to be on an increasing trend in other parts of the country (NCD, 2008). The increase in conflict could be due to habitat fragmentation resulting from developmental activities and agricultural land extension.

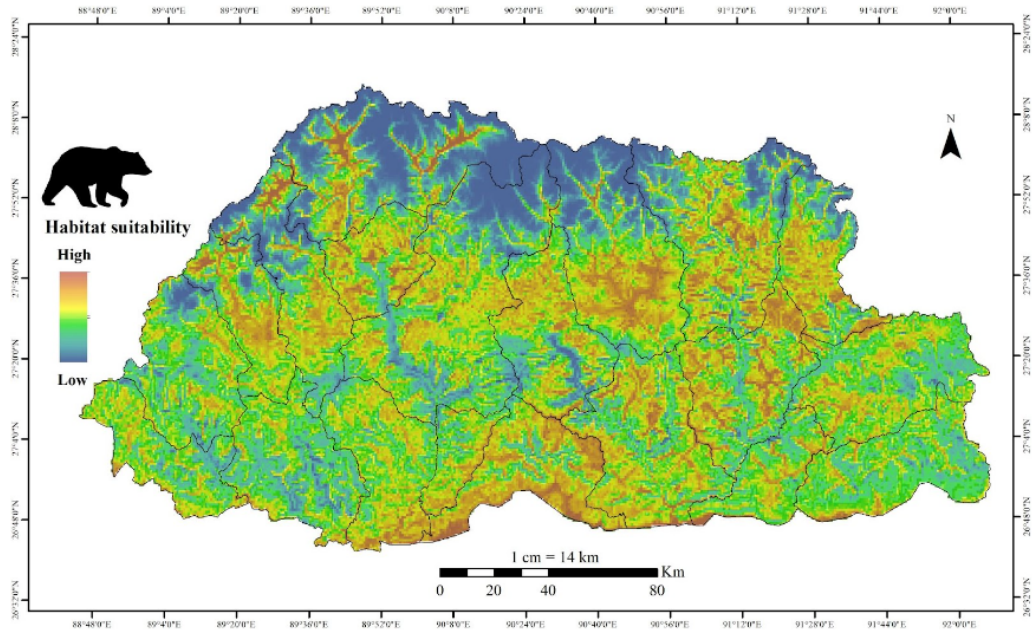

Figure 3 Map showing habitat suitability for Asiatic black bears in Bhutan

1.3.Importance of bear conservation

Asiatic black bears play an important ecological role in their habitats. They are seed dispersers, which help maintain biodiversity and ecosystem health. They also help control insects and smaller mammals, which affects the vegetation and other animals in the ecosystem (Rattan *et al*., 2019). In Asian countries, various parts of the bear are used in traditional medicine, with the bile believed to have healing properties for various ailments (Garshelis and Steinmetz,

2020). Traditionally, Lao people have used bile for centuries to treat various conditions such as arthritis, rheumatism, dizziness, weakness, and cuts and bruises (Scotson, 2010).

The Asiatic black holds significant cultural and traditional value in many parts of the world. In Japanese folklore, the bear symbolises bravery and strength (Knight, 2008), while in Chinese mythology, it represents power and good fortune (Kindaichi & Yoshida, 1949). Art and literature have also depicted the bear for centuries, with traditional paintings and folk tales in Korea featuring the animal (Kim *et al*., 2011). The animal is also an important conservation symbol, listed as vulnerable on the IUCN Red List of Threatened Species.

In Bhutanese folklore and mythology, the bear is considered a sacred and powerful animal, believed to possess supernatural qualities. According to local legends, the Lam Drukpa Kuenley, known as the "Divine Madman," once transformed into a bear to escape enemies. As a result, the animal is regarded as a symbol of strength and protection.

Although hunting is restricted in Bhutan, the bear and its body part continue to be deeply valued for its medicinal value and spiritual practices. There is also a saying that when parents fail to keep a promise, the bear may attack their children. Similarly, suppose a bear enters a village in an odd season and causes harm to people or damages property. In that case, it is believed that the local deity has not been sufficiently appeased. Therefore, the Asiatic black bear holds special cultural and traditional significance in Bhutan.

1.4.The rationale for the conservation action plan

The Asiatic black bear, a species known to be widespread in Bhutan, is at the centre of human-wildlife conflict in the country. The human-bear conflict has increased incidence over the years and is suspected to be due to increased population and habitat disturbances. However, no empirical data exists to back this claim. A growing intolerance among the public has led to retaliatory killings and negative sentiments toward the species. Bears are also illegally traded for bile and meat. There is an urgent need to understand human-bear interactions and provide timely interventions to ensure harmonious co-existence. Therefore, the Department of Forests and Park Services has come up with this conservation action plan to ensure a middle path for bear conservation that caters to the needs of both the species and the affected communities.

The conservation action plan identifies the most pressing threats to the species and recommends measures to address them, such as habitat protection, anti-poaching, and reducing human-bear conflicts through education and outreach programs. The plan also includes population monitoring and research to understand the species' ecology and behavior better.

CHAPTER 02: THREATS AND CHALLENGES

1.1.Threats

The threat analysis forms an integral part of conservation action planning and management. Once threats are identified, threat ranking prioritizes different strategic interventions. Threats to the Asiatic black bear and its habitats in Bhutan are many, which serves as a major deterrent to their protection and conservation. Using the Miradi threat ranking principle, the various threats identified were ranked based on a score of three dimensions of scope, severity, and irreversibility using 4 points absolute scale of Low, Medium, High, and Very High, culminating into an overall threat rating. The overall threat assessment for the Asiatic black bear in Bhutan was ranked ***Medium*** (Table 1). The human-bear conflict was found to be the most severe threat to the Asiatic black bears, the only threat falling under the High category, mostly because the threat was extensive in Scope and High in Severity. The threat of poaching and illegal trade for bile and body parts, habitat loss and degradation, and the inadequate knowledge and research gap were also some of the threats ranked as **Medium**. The impact of climate change and the transmission of diseases is also another threat that was ranked as a **Low** category compared to others since there have been no cases reported in the past. Nevertheless, it requires further investigation to understand the impact of climate change on the ecosystem and the species' presence.

Threats\Targets	Objective 1: To prevent and manage human-bear conflict.	Objective 2: Prevent poaching and illegal trade of bear parts.	Objective 3: Secure the habitats and ensure viable population in wild.	Objective 4: Increase science-based information on ecology, threats and conservation of Asiatic black bear.	Summary Threat Rating
Human-bear conflict					High
Poaching and illegal trade					Medium
Habitat loss and degradation					Medium
Inadequate knowledge and research					Low
Disease					Low
Climate change					Medium
Summary Target Ratings:	Medium	Low	High	Low	Overall Rating: Medium

Table 1: Miradi table of threats for each target ranked based on scope, severity, and irreversibility.

1.1.1. Human-bear conflict

Human-bear conflict is a major threat to Asiatic black bears in Bhutan, and it will require a multidisciplinary effort to prevent human injury and socioeconomic losses (Penjor & Dorji, 2020). A study reported bear attacks from fourteen of the twenty districts of the country between 2015-2019 (Penjor & Dorji, 2020; Jamtsho & Wangchuk, 2016).

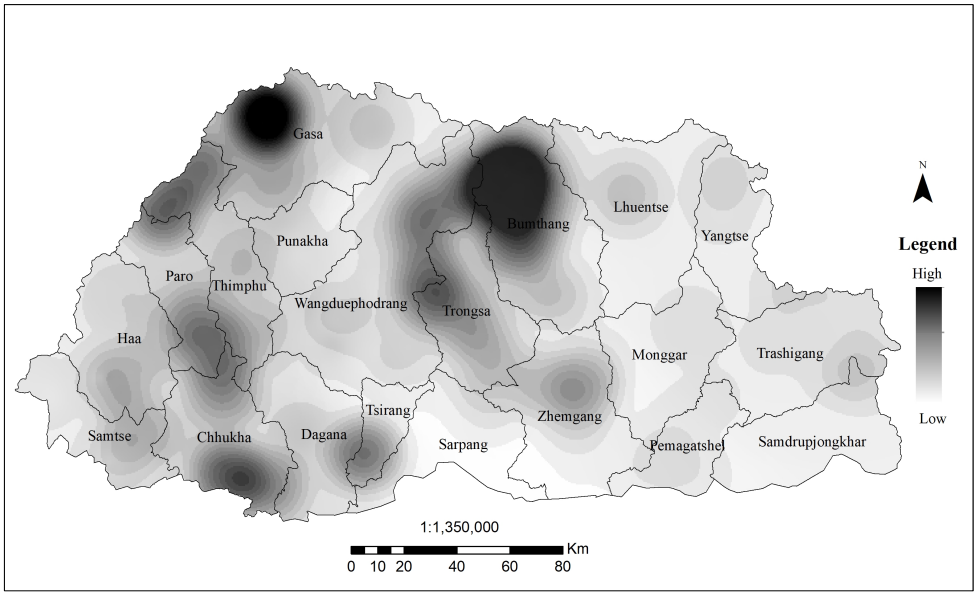

Figure 4 Map showing human-bear conflict hotspots

As human populations expand and encroach into bear habitats, conflicts between humans and bears are increasing, and it is reported from all over the country. The conflict occurs when the resources available in the wild are pressurized by the people. Resource competition for NWFPs can reduce the availability of natural food sources for Asiatic black bears, leading to food scarcity and malnutrition, particularly during the lean season. All the house raids by the bear were observed in autumn and early winter before its hibernation while searching for food, as supported by Tshering & Wangmo (2019). This can also result in bears raiding crops and livestock in human settlements, leading to conflict with humans. Moreover, when bears are habituated to livestock as a food source, they may become more aggressive toward humans leading to a negative attitude towards bears and an increased likelihood of further human-bear conflict. Retaliatory killing (using traps and snares) can have a significant impact on the reduction in population, loss of genetic diversity, and loss of social structure within family

members. Some people also believed that killing bears will solve the human-bear conflict, as observed in their study (Jamtsho & Wangchuk, 2016). Improper disposal of food waste around the settlements and institutions can also attract bears near settlements and adapt to easy food, which leads to change in their behavior as pointed out (Penjor & Dorji, 2020).

Abandoned houses and fallow lands also attract bears and increase the risk of conflict with humans as it provides shelter for bears, especially during the colder months. Moreover, their fallow land may also contain food resources such as wild berries. Similarly, improper storage of food grain in higher altitude areas attracts bears, especially if the food grain is not stored in bear-resistant containers or if it is left exposed since bears have a keen sense of smell and can detect food from miles away. When bears find a food source, they become habituated to the area and return frequently, which can lead to conflict with humans.

Figure 5: Damage caused by bear

1.1.2. Inadequate knowledge and research gap

Understanding the ecology of Asiatic black bears is an important footstep in developing appropriate measures to protect their habitats. As stated by Tshering & Wangmo, 2019, comprehensive studies on ecology need to be conducted for conservation. The lack of studies has often limited the ability to take appropriate measures for conservation. Although the presence of the species is adequately acknowledged, conservation requirements are still poorly understood by the local communities (BNC, 2020). Relevant agencies have been constantly involved in raising awareness; however, there needs to be more of such initiatives as well as innovative approaches in engaging the locals, as pointed out by Tshering & Wangmo, 2019. Further, awareness and advocacy programs are considered the key interventions to increase

local people's tolerance towards wildlife (Jamtsho & Wangchuk, 2016). Inadequate availability of resources, both in terms of financial and technical expertise, are forefront challenges (NCD, 2019) impacting any conservation activities on species of concern. Lack of technical competency and conservation professionals also contribute to the conservation of Himalayan Black Bears.

1.1.3. Poaching and illegal trade

Like any other highly medicinal valued animal across the country, poaching and illegal trade are one of the prominent threats to the survival of the species. The Asiatic black bears are poached for their gallbladder, bile, and bones, which are used for traditional medicine: Meat and paws for the exotic food industry: and teeth, skin, claws, and skulls for trophies (Gomez *et al.*, 2021) internationally. Locally people believe that bear parts contain high medicinal values, and they use bile to cure malaria, diarrhoea, and stomach upset. In recent years people have started using its bile against COVID-19; however, there is no science-based research conducted on such factors. The growing international market, as well as the local market, has contributed to a rampant increase in Asiatic bear poaching; for instance, recently, the Jigme Khesar Strict Nature Reserve (JKSNR) and Wangdue Divisional Forest Office recorded 3 and 6 bear poaching cases, respectively. Likewise, there are possible chances of bear poaching cases that went unreported from other protected areas and Forest Divisional offices across the country.

While some poach Asiatic bears for their medicinal value, the financial constraints of the people also compel them to poach bears as they fetch good prices in the market. From some hearsay from the people, it was learned that a kg of fresh meat costs around Nu. 2000 and a dried one fetch Nu. 5000/kg. The traditional beliefs, such as having to take bear meat annually once taken also contribute to the increased frequency of poaching. The lack of financial and human resources in carrying out regular enforcement activities also encourages poachers to poach more.

1.1.4. Diseases

Diseases certainly pose a threat to all wildlife. Some common diseases that affect wildlife include rabies, distemper, tuberculosis, Lyme, and mange. Bears can be susceptible to various diseases, including viral, bacterial, and parasitic infections. Disease outbreaks can have a

significant impact on the bear population, particularly if the disease is highly contagious and has a high mortality rate. In addition to the direct effects of disease, outbreaks can also indirectly affect bear populations, such as by reducing food availability or altering social dynamics. Conservation efforts should include monitoring and managing disease outbreaks in bear populations. This can include measures such as vaccination programs while carrying out rescue and rehabilitation operations, monitoring of disease prevalence and transmission, and measures to reduce human-bear interactions that can increase the risk of disease transmission.

1.1.5. Climate change

Due to climate change, it is estimated that by the end of the 21st century, approximately 20% - 30% of plants and animal species are at risk of extinction, posing a threat to Asiatic black bears foraging. Climate Change disrupts the biological and ethological responses, hibernation, reproduction, and intraspecific and interspecific interactions (Zahoor *et al*., 2021). According to Wester *et al*. (2019), the distribution pattern and habitat of bears are predicted to be altered corresponding to the shift of forest tree line and prey abundance. Further, climate change is a major detrimental factor in habitat alteration and fragmentation of large mammal habitats and populations. The study carried out by Honda & Kozakai, 2020 explained how the change in temperature leads to a reduction of food sources and leads to human-bear conflicts.

1.1.6. Habitat loss and degradation

Asiatic Black Bear is a wide-ranging species. Wildlife habitat conservation has become difficult in the face of human population increase and resulting developmental pressure. The assessment of the Drivers of Deforestation and Forest Degradation in Bhutan (MoAF, 2017) establishes that deforestation is driven chiefly by allotment of SRF land for various purposes (1923 ha/year), hydropower projects (1880 ha/year), road (820 ha/year), agriculture (778 ha/year), mines and quarries (633 ha/year) and powerlines (542 ha/year).

Human dependence on forests for timber, fuelwood, and other forest products degrades bear habitat. (MoAF, 2017) ranked timber harvesting (161,008 m^3/year) and firewood extraction (84,936 m^3/year) as the two top drivers of forest degradation. National Forest Inventory Report, 2016 and (MoAF, 2017) show that the construction of roads opens up forest areas for resource extraction. (DoFPS, 2016) recorded grazing evidence from 54% of enumerated plots and thus,

identified grazing as the greatest forest disturbances factor. Livestock grazing and non-wood forest products degrade bear habitat through the depletion of food resources in the wild. In addition to natural and anthropogenic factors causing habitat degradation, climate change is expected to accelerate habitat degradation processes in the future (RSPN, 2020).

2.2.Challenges

2.2.1. Poor stakeholder coordination and engagement

Asiatic bear conservation needs support and coordination from several stakeholders, including political leaders, policymakers, local government (LG), NGOs, academia, research institutions, and local communities. Coordination among various stakeholders provides diverse viewpoints because key stakeholders come from different backgrounds and cultures, which will address various challenges in conservation. Moreover, the technical expertise of the subject can also be addressed through inputs from various key stakeholders.

2.2.2. Limited resources and technical capacity

One of the pertinent challenges in Bhutanese conservation is limited financial and human resources capacity which hinders the implementation of enforcement activities, thereby leading to challenges in conserving the Asiatic black bear and biodiversity as a whole. Department of Forest and Park Services (DoFPS) has limitations in human resources and most of the time bogged down in delivering the services to the people, thereby having no or limited time to conduct conservation activities like anti-poaching patrolling.

Conservation in Bhutan is mostly driven by donors, and no separate conservation funds are allotted within our country, hindering research on the ecology and distribution of the species, which are vital in developing effective conservation management plans for the species. Limited conservation funds hinder the procurement of good quality patrolling equipment and first aid equipment for the patrol team.

2.2.3. Negative perceptions/attitudes towards bears

Negative attitudes towards bears can make it difficult to gain public support for conservation measures such as habitat protection, reintroduction programs, and bear management plans. This lack of support can lead to a failure to implement effective conservation measures, threatening bear populations. Some of the respondents in a study conducted by Jamtsho & Wangchuk (2016) felt that killing bears will solve the issue of bear conflict. Moreover, the misinformation and lack of information on bears can make it difficult to communicate the importance of conservation efforts and can lead to unnecessary fear and hostility toward bears. Also, people view bear conservation as a low priority or even a waste of resources.

2.2.4. Livelihood practices and traditional rights

Free-range grazing in the forest is one of the most important fodder sources for cattle in Bhutan (Roder *et al*., 2002). Though livestock enhances the livelihood of the people and its economy in rural areas, the large livestock population and its free-range grazing land located extensively in the forest is a challenge to biodiversity conservation.

Managing much free-grazing livestock inside a forest overlapping bear habitat increases the risk of depredation by bears. Grazing land being located in the heart of the forest, it is always difficult to manage the waste produced by the herder, which is likely to be fed by the bear thereby making bears more food habituated. This can lead to bears becoming more accustomed to easy prey and food which may lead to increased bear-human conflict.

Pursuing non-wood forest products (NWFPs) due to their high market values drives many individuals to venture into bear habitats. Such practices are challenging to regulate, increasing the likelihood of bear-human conflict.

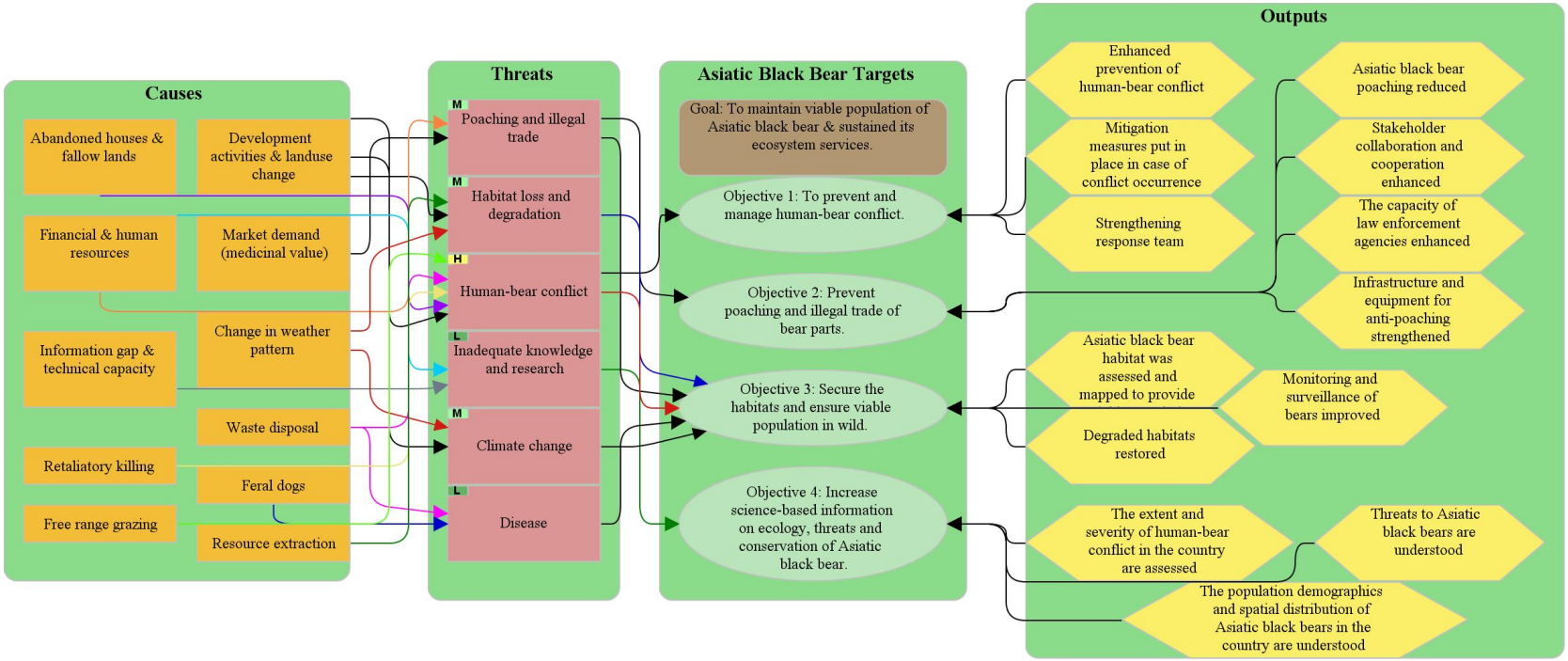

Figure 6: Conceptual model for Asiatic black bear in Bhutan

CHAPTER 03: ACTION PLAN

3.1.Vision, Goal, and Objectives

Vision: "To maintain a viable population of Asiatic black bears in Bhutan and ensure minimal conflict between humans and bears."

Goal: "By 2033, the Asiatic black bear population in Bhutan is stable with improved monitoring, protection, and reduced negative human-bear incidences."

The strategies and actions in the action plan are defined based on the overall conservation goal to protect and conserve species, maintain habitats, and enhance social livelihoods. Four conservation objectives have been identified for the period of 2023-2033 to contribute towards achieving the conservation goal. These will be achieved through the strategic actions grouped under 4 objectives, 13 strategies/outputs, and 46 actions detailed in a logical framework for budget and work plan (Table 2). These strategic actions will be able to address the issues, threats, challenges, and problems to ensure species' survival in the wild.

3.2.Objectives

Objective 1: Prevent and manage human-bear conflict

Rationale

Human-bear conflict is a major threat to the conservation of Asiatic black bears in Bhutan. Bears frequently conflict with people and are seen as a threat to the local livelihood. Bears kill livestock, raid crops, damage property, and attack people. Quite often, they are killed in retaliation and, at other times, poached to earn cash. To ensure that people do not resort to retaliation or think of bears as a means to earn income, interventions that promote resilience among affected communities and those that prevent conflict must be strategized and implemented.

Output 1: Enhanced prevention of human-bear conflict

Activity 1.1: Conduct mass education and awareness on the conflict scenario and preventive measures, policy, strategy, and science of human-bear conflict in Bhutan.

Activity 1.2: Support rural people on proper storage and guarding of food stocks, crops, and properties.

Activity 1.3: Conduct awareness on waste management and development of signs and signages.

Activity 1.4: Advocate and support monks and hermits on proper storage and disposal of ritual cakes, butter, flour, and other items.

Activity 1.5: Pilot innovative measures and up-scaling to minimize crop loss, livestock, and properties.

Activity 1.6: Support existing community NWFP group members on capacity building.

Activity 1.7: Support the construction of bear-proof sheds for poultry, juvenile yaks, cattle, and sheep.

Activity 1.8: Promote pasture development in privately registered land and SRF land on lease through the supply of fodder grass.

Output 2: Mitigation measures put in place in case of conflict occurrence

Activity 2.1: Explore and institutionalize the insurance and compensation schemes in case of damage to properties and livestock.

Activity 2.2: Rehabilitation and translocation of conflicted bears based on the severity of the case.

Activity 2.3: Develop a national policy for ex-gratia payment in the event of loss of human life or injury.

Output 3: Strengthening response team

Activity 3.1: Capacity building of response team in all the field offices

Activity 3.2: Procure basic equipment for a rapid response team to rescue wildlife.

Objective 2: To prevent poaching and illegal trade of bear parts

Rationale

Preventing the poaching and illegal trade of bear parts is crucial as it can lead to a decline in bear populations, disrupt the balance of ecosystems, and pose a threat to the survival of other species. The Asiatic black bear is already at risk, and further endangerment could drive them toward extinction. Therefore, the focus of conservation efforts in Bhutan should be on

preventing poaching by conserving biodiversity, protecting threatened species, preserving cultural heritage, and promoting sustainable development. To achieve this, conservation efforts should include enforcing laws, raising awareness through education campaigns, building the capacity of frontline staff and other law enforcement agencies, providing necessary equipment, and engaging communities to discourage poaching and illegal trade of the bear parts.

Output 1: Asiatic black bear poaching reduced

Action 1.1: Strengthen law enforcement and policies on poaching and illegal trade of bear parts

Action 1.2: Enhance SMART patrolling and conduct joint and synchronised patrolling among the field divisions

Action 1.3: Gather information on bear poaching and illegal trade through intelligence networks, online reports and forensic evidence

Output 2: Stakeholder collaboration and cooperation enhanced

Action 2.1: Conduct annual coordination meeting among the law enforcement agencies (RBP, RBA, Customs, and BFDA)

Action 2.2: Provide awareness of the ecological, social, and cultural significance of black bear to the stakeholders and general public

Output 3: The capacity of law enforcement agencies enhanced

Action 3.1: Build the capacity of forestry staff and law enforcement agencies in the identification of bear bile and body parts

Action 3.2: Arrange a south-south learning program for forestry staff and law enforcement agencies

Action 3.3: Train forestry staff and other law enforcement agencies on wildlife crime detection, investigation, and prosecution

Output 4: Infrastructure and equipment for anti-poaching strengthened

Action 4.1: Equipped the frontline staff with Pool Bikes and vehicles, communication equipment, and others for effective patrolling

Action 4.2: Support frontline staff with basic field gear to conduct effective patrolling

Action 4.3: Explore, procure, and use advanced technologies for the detection and analysis of poaching and illegal trade

Action 4.4: Construct/renovate patrol camps, guard posts, and patrol routes for effective patrolling.

Objective 3: Secure habitats to ensure a viable population of Asiatic black bears

Rationale

Besides poaching and HWC, bears also suffer from habitat loss and degradation. The habitat loss and degradation are triggered by the rampant and unsustainable collection of Non-Wood Forest Produce, forest fire, land use change, and developmental activities that fragment the habitat. The accelerating impact of climate change will further exacerbate habitat loss across its distribution range. The bears depend on forest vegetation for food, which means the location of suitable habitats will change due to the impact of climate change. This, along with land development, agriculture, and deforestation, could result in habitat fragmentation, forcing the bears into isolated subpopulations and making them vulnerable to population decline (Zahoor *et al*., 2021). Therefore, securing native habitats is vital for any species to persist.

Output 1: Asiatic black bear habitat assessed and mapped to ensure a viable population in the wild.

Action 1.1: Identify, assess, and map habitat range for protection and management intervention.

Action 1.2: Conduct consultation with relevant stakeholders to minimise habitat destruction.

Output 2: Revival and restoration of degraded habitat.

Action 2.1: Carry out habitat enrichment plantation in identified degraded habitat.

Action 2.2: Revival and restoration of waterholes and saltlicks.

Action 2.3: Initiate and promote domestication of NWFPs.

Output 3: Monitoring and surveillance improved

Action 3.1: Strengthen/form community wildlife conservation groups to maintain viable bear populations by reducing retaliatory killing.

Action 3.2: Build the capacity of conservationists on zoonotic diseases, particularly on bears.

Action 3.3: Conduct periodic surveillance and monitoring of zoonotic diseases.

Objective 4: Increase science-based information on ecology, threats, and conservation of Asiatic black bears

Rationale

Although Asiatic black bears are widespread and frequently interact with people, bears are one of the least scientifically known species in Bhutan. With increasing human-bear conflicts across the country, it is suspected that bear populations have increased dramatically over the years to the extent that people consider them pests and suggest culling as a possible mitigation measure (Jamtsho & Wangchuk 2016). It is also unknown if the problem bears are repeated intruders. Decisions regarding bear conflict management will require a detailed understanding of the population abundance, trends, diet, and other aspects of bear ecology. Otherwise, interventions based on speculation or assumptions and not backed by scientific findings could prove detrimental to the persistence of the species in Bhutan.

Output 1: The extent and severity of human-bear conflict in the country are assessed

Action 1.1: Conduct studies on the scope, extent, and patterns of human-bear interaction in the country every three years

Action 1.2: Monitor rehabilitated bears using satellite telemetry to assess conflict potential

Action 1.3: Carry out diet studies to understand bear food preference

Action 1.4: Maintain a database on human-bear conflict

Action 1.5: Carry out annual conflict hotspot mapping with a focus on spatiotemporal characteristics

Output 2: The population demographics and spatial distribution of Asiatic black bears in the country are understood

Action 2.1: Carry out population monitoring of Asiatic black bears every ten years

Action 2.2: Collate by-catch data from the field to produce current distribution and potential habitats for the Asiatic black bears in the country

Action 2.3: Assess genetic diversity, population structure and gene flow of Asiatic black bears across Bhutan

Action 2.4: Investigate the determinants and patterns of habitat use by Asiatic black bears

Output 3: Threats to Asiatic black bears are understood

Action 3.1: Assess the extent, pattern and intensity of bear poaching in Bhutan

Action 3.2: Carry out an analysis of the illegal bear trade in Bhutan

Action 3.3: Assess local perceptions towards Asiatic black bears in Bhutan

Table 2. Logical Framework/Implementation Framework for budget and work plan

Vision: To maintain a viable population of Asiatic black bears in Bhutan and ensure minimal conflict between humans and bears											
Goal: By 2033, the Asiatic black bear population in Bhutan is stable with improved monitoring, protection, and reduced human-bear incidences											
Activities	**Year along with budget in (Nu. Million)**										**Total**
	Y 1	**Y 2**	**Y 3**	**Y 4**	**Y 5**	**Y 6**	**Y 7**	**Y 8**	**Y 9**	**Y10**	
Objective 1: Prevent and Manage Human-Bear Conflict											
Output 1. Enhanced prevention of human-bear conflict											
Action 1.1: Conduct mass education and awareness on the conflict scenario and preventive measures, policy, strategy and science of human-bear conflict in Bhutan.		4.80				4.80					9.60
Action 1.2: Diversification of rural livelihood options to reduce their dependence on natural resources		3.00		3.00		3.00		3.00		3.00	15.00
Action 1.3: Development of signs and signages for waste management		3.00						1.00			4.00
Action 1.4: Advocate and support monks and hermits on proper storage and disposal of ritual cakes, butter, flour and other items			1.66		1.66		1.66				4.98
Action 1.5: Pilot innovative measures and upscaling to minimize loss of crop, livestock and properties		2.00					3.00	3.00	3.00	3.00	14.00

Action 1.6: Support existing community NWFP group members on capacity building			2.40					2.40			4.80
Action 1.7: Support the construction of bear-proof sheds for poultry, juvenile yaks, cattle and sheep		0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	6.93
Action 1.8: Promote pasture development in private registered land and SRF land on lease through supply of fodder grass			0.80	0.80	0.80						2.40
Action 1.9. Develop innovative technologies to address human-bear conflict		1.00	0.50	0.50	0.50	0.50					3.00
Output 2. Mitigation measures put in place in case of conflict occurrence											
Action 2.1: Explore and institutionalize the insurance and compensation schemes in case of damage to properties and livestock.		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	18.00
Action 2.2: Rehabilitation and translocation of conflicted bears based on severity of case		1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	9.90
Action 2.3: Develop national policy for ex-gratia payment in the event of loss of human life or injury			0.50								
Output 3: Strengthening response team											
Action 3.1: Capacity building of response team in all the field offices	1.00			1.00			1.00				3.00

Action 3.2: Procure basic equipment for a rapid response team to rescue wildlife		2.00			2.00			2.00			6.00
Objective 2: Prevent poaching and illegal trade of bear parts											
Output 1: Asiatic black bear poaching reduced											
Action 1.1: Strengthen law enforcement and policies on poaching and illegal trade of bear parts	0.50					0.70					1.20
Action 1.2: Enhance SMART patrolling, conduct joint and synchronize patrolling among the field divisions	5.00	5.00	5.00	5.00	5.00	5.50	5.50	5.50	5.50	5.50	52.50
Action 1.3: Gather information on bear poaching and illegal trade through intelligence network, online reports and forensic evidences		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	2.70
Output 2: Stakeholder collaboration and cooperation enhanced											
Action 2.1: Conduct annual coordination meeting among the law enforcement agencies (RBP, RBA, Customs, and BFDA)	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.60	0.60	0.60	5.50
Action 2.2: Provide awareness on the ecological, social and cultural significance of black bear to the stakeholders and general public		2.40		2.40		2.64		2.64		2.64	12.72
Output 3: The capacity of the law enforcement agencies enhanced											

Action 3.1: Build capacity of forestry staff and law enforcement agencies in identification of bear bile and body parts		1.00					1.10				2.10
Action 3.2: Arrange south-south learning program for forestry staff and law enforcement agencies		3.00						3.30			6.30
Action 3.3: Train forestry staff and other law enforcement agencies on wildlife crime detection, investigation and prosecution.	1.00					1.10					2.10
Output 4: Infrastructure and equipment for anti-poaching strengthened											
Action 4.1: Equipped the frontline staff with Pool Bike and vehicle, communication equipment and others for effective patrolling		20.00						1.00			21.00
Action 4.2: Support frontline staff with basic field gears to conduct effective patrolling	6.50					1.30					7.80
Action 4.3: Explore, procure and use advanced technologies for detection and analysis of poaching and illegal trade	2.50				2.50						5.00
Action 4.4: Construct/renovate patrol camps, guard posts and patrol routes for effective patrolling		20.00							5.00		25.00
Objective 3. Secure habitats to ensure viable population of Asiatic black bears											
Output 1: Asiatic black bear habitat assessed and mapped to ensure a viable population in the wild											

Action 1.1. Identify, assess and map habitat range for protection and management intervention.	2.40	2.40									4.80
Action 1.2. Conduct consultation with relevant stakeholders to minimize habitat destruction.			0.15			0.15				0.15	0.45
Output 2: Revival and restoration of degraded habitat.											
Action 2.1: Carry out habitat enrichment plantation in identified degraded habitat.			3.00		3.00			3.00			9.00
Action 2.2: Revival and restoration of waterholes and saltlicks.				0.50	0.50						1.00
Action 2.3: Initiate and promote domestication of NWFPs.				1.70	1.70	1.70					5.10
Output 3: Monitoring and surveillance improved											
Action 3.1: Strengthen/form community wildlife conservation group to maintain viable bear population by reducing retaliatory killing.							1.00	1.00			2.00
Action 3.2: Build the capacity of conservationists on communicable diseases particularly on bears.		1.20					1.20		1.20		3.60
Action 3.3: Conduct periodic surveillance and monitoring of communicable diseases.	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	24.00
Objective 4: Increase science-based information on ecology, threats, and conservation of Asiatic black bears											
Output 1: The extent and severity of human-bear conflict in the country are assessed											

Action 1.1: Conduct studies on the scope, extent and patterns of human-bear interaction in the country every 3 years	2.00			2.00			2.00			2.00	8.00
Action 1.2: Monitor rehabilitated bears using satellite telemetry to assess conflict potential		2.00	0.20	0.20	0.20	1.00	0.20	0.20	0.20	1.00	5.20
Action 1.3: Carry out diet studies to understand bear food preference			3.00								3.00
Action 1.4: Maintain a database on human-bear conflict	0.50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	1.40
Action 1.5: Carry out annual conflict hotspot mapping with a focus on spatiotemporal characteristics	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	1.00
Output 2: The population demographics and spatial distribution of Asiatic black bears in the country are understood											
Action 2.1: Carry out population monitoring of Asiatic black bears every 10 years	3.00									3.00	6.00
Action 2.2: Collate by-catch data from the field to produce current distribution and potential habitats for the Asiatic black bears in the country		0.50					0.50			0.50	1.50
Action 2.3: Carry out an assessment of genetic diversity, population structure and gene flow of Asiatic black bears across Bhutan	0.20	0.20	0.20	0.20	0.20	4.00	0.20	0.20	0.20	2.00	7.60
Action 2.4: Investigate the determinants and patterns of habitat use by Asiatic black bears			2.00								2.00

Output 3: Threats to Asiatic black bears are understood											
Action 3.1: Assess the extent, pattern and intensity of bear poaching in Bhutan		2.00				2.00				2.00	6.00
Action 3.2: Carry out an analysis of the illegal bear trade in Bhutan			2.00				2.00			2.00	6.00
Action 3.3: Assess local perceptions towards Asiatic black bears in Bhutan				4.00							4.00
	27.60	**82.77**	**28.68**	**28.57**	**25.33**	**35.76**	**26.73**	**35.61**	**22.47**	**34.16**	**347.18**

CHAPTER 04: MONITORING AND EVALUATION

The total budget required for implementing the Asiatic black bear action plan for the next ten years is Nu. 347.18 million. The plan implementation will start from July 2023 and end by June 2033. The major portion of funding for this ten-year Asiatic black bear conservation action plan will be from the RGoB and Bhutan for Life.

Timely monitoring and evaluating the conservation programs is essential to ensure that the objectives are fulfilled within a given work plan. The monitoring and evaluation plan would be part of the action plan, and based on the plan, the activities will be monitored and reported on their progress timely. A mid-term plan review will be carried out towards the end of the five years of plan implementation. Progress will be monitored from periodic reports submitted by the focal persons from the field offices and reviewed by the NCD. The logical framework (Table 3) will be used for the monitoring and evaluation using the indicators provided.

Table 3. Monitoring and Evaluation Framework

Vision: To maintain a viable population of Asiatic black bears in Bhutan and ensure minimal conflict between humans and bears														
Goal: By 2033, the Asiatic black bear population in Bhutan is stable with improved monitoring, protection, and reduced human-bear incidences														
Activities	**Indicator**	**Baseline**	**Unit**	**Yearly Target**										**Implementing Agency**
				Y1	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**	**Y7**	**Y8**	**Y9**	**Y10**	
Objective 1: Prevent and Manage Human-Bear Conflict														
Output 1. Enhanced prevention of human-bear conflict														
Action 1.1: Conduct mass education and awareness on the conflict scenario and preventive measures, policy, strategy and science of human-bear conflict in Bhutan.	Report on awareness conducted	0	Reports		24				24					Field offices
Action 1.2: Diversification of rural livelihood options to reduce their dependence on natural resources	No. of communities benefited	0	Nos		3		3		3		3		3	Field offices
Action 1.3: Development of signs and signages for waste management	No. of signages installed	0	Nos		200						100			Field offices
Action 1.4: Advocate and support monks and hermits on proper storage and disposal of ritual cakes, butter, flour and other items	No. of support and advocacy program conducted	0	Nos			50		50		50				Field offices

Action 1.5: Pilot innovative measures and upscaling to minimize loss of crop, livestock and properties	No. of communities benefited	0	HHs		2					4	4	4	4	Field offices
Action 1.6: Support existing community NWFP group members on capacity building	Activity implementation in existing group	0	Reports			48					48			Field offices
Action 1.7: Support the construction of bear-proof sheds for poultry, juvenile yaks, cattle and sheep	No. of beneficiaries	0	Nos		10	10	10	10	10	10	10	10	10	Field offices
Action 1.8: Promote pasture development in private registered land and SRF land on lease through supply of fodder grass	Area brought under development	0	Acre		20	20	20							Field offices
Action 1.9. Develop innovative technologies to address human-bear conflict	Product developed	0	Nos.						1					Field offices
Output 2. Mitigation measures put in place in case of conflict occurrence														
Action 2.1: Explore and institutionalize the insurance and compensation schemes in case of damage to properties and livestock.	No. of beneficiaries and guidelines	0	HHs		24	24	24	24	24	24	24	24	24	Field offices
Action 2.2: Rehabilitation and translocation of conflicted bears based on severity of case	No. of cases attended	0	Nos		24	24	24	24	24	24	24	24	24	Field offices

Action 2.3: Develop national policy for ex-gratia payment in the event of loss of human life or injury	Meeting resolutions, committee by-laws, and guidelines developed	0	Nos			1								Field offices
Output 3: Strengthening response team														
Action 3.1: Capacity building of response team in all the field offices	Staffs trained and QRT formed	0	Nos	24			24			24				NCD & Field offices
Action 3.2: Procure basic equipment for a rapid response team to rescue wildlife	Nos. of rescue equipment purchased	0	Nos.		24			24			24			NCD & Field offices
Objective 2: Prevent poaching and illegal trade of bear parts														
Output 1: Asiatic black bear poaching reduced														
Action 1.1: Strengthen law enforcement and policies on poaching and illegal trade of bear parts	Number of meetings on laws and policies conducted	0	Numbe r	24					24					Field offices
Action 1.2: Enhance SMART patrolling, conduct joint and synchronize patrolling among the field divisions	Number of patrol and surveillance report produced	0	Numbe r	24		24		24		24		24		Field offices

Action 1.3: Gather information on bear poaching and illegal trade through intelligence network, online reports and forensic evidences	Annual report (Facts and figure) produced	0	Number		1	1	1	1	1	1	1	1	1	Field offices
Output 2: Stakeholder collaboration and cooperation enhanced														
Action 2.1: Conduct annual coordination meeting among the law enforcement agencies (RBP, RBA, Customs, and BFDA)	Minutes of meeting/report produced	0	Number	24	24	24	24	24	24	24	24	24	24	Field offices
Action 2.2: Provide awareness on the ecological, social and cultural significance of black bear to the stakeholders and general public	Number of awareness conducted	0	Number		24		24		24		24		24	Field offices
Output 3: The capacity of the law enforcement agencies enhanced														
Action 3.1: Build capacity of forestry staff and law enforcement agencies in identification of bear bile and body parts	Number of individuals trained	0	Number		30				30					NCD & Field offices
Action 3.2: Arrange south-south learning program for forestry staff and law enforcement agencies	Number of individuals trained	0	Number		35						35			NCD & Field offices
Action 3.3: Train forestry staff and other law enforcement agencies on wildlife crime detection, investigation and prosecution.	Number of individuals trained	0	Number	30					30					NCD & Field offices

Output 4: Infrastructure and equipment for anti-poaching strengthened														
Action 4.1: Equipped the frontline staff with Pool Bike and vehicle, communication equipment and others for effective patrolling	Number of equipment and vehicle procured and issued	0	Number		24						24			NCD & Field offices
Action 4.2: Support frontline staff with basic field gears to conduct effective patrolling	Field gears procured and issued to the individual	0	Number	24					24					NCD & Field offices
Action 4.3: Explore, procure and use advanced technologies for detection and analysis of poaching and illegal trade	Procured and issued equipment to the field offices	0	Number	24				24						NCD & Field offices
Action 4.4: Construct/renovate patrol camps, guard posts and patrol routes for effective patrolling	Structures constructed and renovated	0	Number		10							10		NCD & Field offices
Objective 3. Secure habitats to ensure viable population of Asiatic black bears														
Output 1: Asiatic black bear habitat assessed and mapped to ensure a viable population in the wild														
Action 1.1: Identify, assess and map habitat range for protection and management intervention.	Identified, surveyed and habitat range mapped produced by every field office	0	Map/ Report	1	1									NCD & Field offices

Action 1.2: Conduct consultation with relevant stakeholders to minimize habitat destruction.	Number of reports produced	1	Report			1			1				1	Field offices
Output 2: Revival and restoration of degraded habitat.														
Action 2.1: Carry out habitat enrichment plantation in identified degraded habitat.	Area brought under restoration and improvements	0	Ha			3		3			3			Field offices
Action 2.2: Revival and restoration of waterholes and saltlicks.	Number of waterholes & saltlicks restored/revived.	40	Nos.					40	100					Field offices
Action 2.3: Initiate and promote domestication of NWFPs.	Domestication of NWFP carried out in pilot area	0	Nos./hhs				20	20	20					Field offices
Output 3: Monitoring and surveillance improved														
Action 3.1: Strengthen/form community wildlife conservation group to maintain viable bear population by reducing retaliatory killing.	Number of citizen science group formed	9	Group							12	12			Field offices
Action 3.2: Build the capacity of conservationists on communicable diseases particularly on bears.	Number of frontliner staff trained	0	Nos.		40					40		40		Field offices

Action 3.3: Conduct periodic surveillance and monitoring of communicable diseases.	Number of periodic surveillance report generated	0	Report	24	24	24	24	24	24	24	24	24	24	Field offices
Objective 4: Increase science-based information on ecology, threats, and conservation of Asiatic black bears														
Output 1: The extent and severity of human-bear conflict in the country are assessed														
Action 1.1: Conduct studies on the scope, extent and patterns of human-bear interaction in the country every 3 years	Status of human-bear conflict in Bhutan understood	0	Report	1			1			1			1	UWIFoRT, NCD & Field Offices
Action 1.2: Monitor rehabilitated bears using satellite telemetry to assess conflict potential	Conflict bears tagged with radio collars	0	Nos		6	4	4	4	4	4	4	4	4	UWIFoRT, NCD & Field Offices
Action 1.3: Carry out diet studies to understand bear food preference	Diet composition of Asiatic black bear is understood	0	Report											UWIFoRT, NCD & Field Offices
Action 1.4: Maintain a database on human-bear conflict	Database of human-bear conflict established and maintained	0	Report				1							UWIFoRT, NCD & Field Offices

Action 1.5: Carry out annual conflict hotspot mapping with a focus on spatiotemporal characteristics	Map showing human-bear conflict hotspots	0	Report	1	1	1	1	1	1	1	1	1	1	UWIFoRT, NCD & Field Offices
Ouput 2: The population demographics and spatial distribution of Asiatic black bears in the country are understood														
Action 2.1: Carry out population monitoring of Asiatic black bears every 10 years	Abundance of Asiatic black bear estimated	0	Report	1									1	UWIFoRT, NCD & Field Offices
Action 2.2: Collate by-catch data from the field to produce current distribution and potential habitats for the Asiatic black bears in the country	Map showing current and potential habitats for Asiatic black bears in Bhutan	0	Report		1					1			1	UWIFoRT, NCD & Field Offices
Action 2.3: Carry out an assessment of genetic diversity, population structure and gene flow of Asiatic black bears across Bhutan	The status of genetic diversity and gene flow of Asiatic black bears in Bhutan is known	0	Report						1				1	UWIFoRT, NCD & Field Offices
Action 2.4: Investigate the determinants and patterns of habitat use by Asiatic black bears	Determinants and patterns of black bear habitat use understood	0	Report			1								UWIFoRT, NCD & Field Offices

Output 3: Threats to Asiatic black bears are understood														
Action 3.1: Assess the extent, pattern and intensity of bear poaching in Bhutan	Extent of bear poaching understood	0	Report		1				1				1	UWIFoRT, NCD & Field Offices
Action 3.2: Carry out an analysis of the illegal bear trade in Bhutan	Extent of illegal bear trade understood	0	Report			1				1			1	UWIFoRT, NCD & Field Offices
Action 3.3: Assess local perceptions towards Asiatic black bears in Bhutan	Local perceptions towards bears understood	1	Report				1							UWIFoRT, NCD & Field Offices

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