TIGER ACTION PLAN FOR BHUTAN
2024-2033

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

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FOREWORD

The Tiger Conservation Action Plan 2024-2033 for Bhutan represents a remarkable endeavor that underscores the nation's unwavering dedication to preserving its abundant biodiversity. Bhutan's awe-inspiring terrain, coupled with the remarkable increase in its tiger population from 103 to 131 over just seven years, stands as a truly commendable achievement. The comprehensive and cohesive approach outlined in this action plan, encompassing habitat preservation, anti-poaching measures, conservation education, community involvement, and research and monitoring, stands as the bedrock for the enduring survival of these magnificent creatures. This approach seamlessly aligns with Bhutan's overarching philosophy of Gross National Happiness, for it prioritizes the well-being of both the people and the wildlife, striving for a harmonious coexistence.

Recognizing the invaluable role that local communities play as stewards of the forests and actively engaging them in conservation efforts is a pivotal component of this plan. Such an approach not only safeguards the tiger population but also ensures that the dividends of conservation are equitably shared with those residing in close proximity to these majestic beings. The emphasis on enhancing conservation awareness is of paramount importance, as it nurtures a sense of pride and responsibility among the Bhutanese people toward their natural heritage. By fostering a society that reveres, safeguards, and conserves tigers and their habitats, Bhutan stands as a beacon, illuminating the path for global conservation endeavors.

Lastly, I extend my heartfelt appreciation to the Department of Forests and Park Services, their collaborators, and all the dedicated individuals involved in shaping this Tiger Conservation Action Plan. Their unwavering commitment to environmental stewardship and sustainable development is nothing short of admirable, setting an exemplar for other nations to emulate.

Tashi Delek

Karma Tshering
Secretary

PREFACE

Bhutan's tireless commitment to tiger conservation traces its roots back to 1989, commencing with the first anecdotal survey, which was then followed by the pugmarks survey in 1998. Over the last two decades, monumental breakthroughs in technology have triggered a transformation in the way we safeguard and study these enigmatic creatures. Today, Bhutan proudly stands as the haven for 131 tigers, marking a remarkable 27% increase since 2015, when the count stood at 103.

With immense pleasure, I introduce the third Tiger Action Plan for Bhutan, slated for implementation over the next decade, from 2024 to 2033. It brings me great joy to note that the plan aligns harmoniously with the Global Tiger Recovery Program 2.0 (2023-34), Bhutan's 13th Five-Year Plan, and other crucial national initiatives like "Bhutan for Life." This synchrony presents Bhutan with a significant opportunity to streamline and consolidate our efforts, working collectively towards the shared objective of preserving tigers while enhancing the livelihoods of our communities, who often grapple with limited resources. This tiger action plan underscores Bhutan's unwavering commitment to conservation and tiger recovery initiatives.

In conclusion, I wish to express my profound gratitude and extend heartfelt congratulations to the Department of Forests and Park Services, along with all stakeholders, for their exceptional efforts in nurturing the growth of the tiger population alongside balanced livelihoods. I hold deep respect and admiration for all those who have contributed to the formulation of this comprehensive and holistic third Tiger Action Plan for Bhutan.

Tashi Delek

Lobzang Dorji
Director

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Royal Government of Bhutan
Ministry of Energy and Natural Resources
Department of Forests & Park Services
NATURE CONSERVATION DIVISION
"Managing Bhutan's Natural Heritage"

ACKNOWLEDGEMENT

We extend our deepest gratitude to the benevolent monarchs of Bhutan, whose timeless and farsighted vision for environmental conservation has illuminated the path to a sustainable future for the Kingdom of Bhutan. Their unwavering commitment to preserving Bhutan's natural heritage and fostering coexistence between the people and wildlife inspires us all.

We wish to express our sincere appreciation to the government of Bhutan for its steadfast leadership in championing the cause of tiger conservation. Their dedication to the welfare of these magnificent creatures and protecting our pristine landscapes is a beacon of hope for the world.

We offer our heartfelt thanks to the courageous and dedicated rangers who stand as the frontline defenders of Bhutan's tigers and our invaluable natural heritage. Your unwavering commitment to safeguarding the tigers and their habitats is nothing short of heroic.

We would also like to extend our gratitude to our invaluable conservation partners, including Bhutan for Life, WWF Bhutan, BTFEC, the Bhutan Foundation, UNEP, IUCN, UNDP, and countless others. Your collaboration and support have been instrumental in shaping and implementing the Tiger Action Plan, ensuring its effectiveness and reach.

Last but not least, we would like to thank each and every individual who played a role, large or small, in the drafting of this report. Your collective efforts have culminated in a holistic and comprehensive plan that paves the way for a harmonious future where tigers thrive, nature flourishes, and people live in harmony with their environment.

With heartfelt gratitude,

Sonam Wangdi
Chief Forestry Officer

LIST OF ACRONYMS

BC	Biological corridors
BTC	Bhutan Tiger Centre
BTFEC	Bhutan Trust Fund for Environmental Conservation
CA | TS	Conservation Assured Tiger Standards
CF	Community Forests
DoFPS	Department of Forests and Park Services
FIRMS	Forest Information Reporting and Monitoring System
FMID	Forest Management and Information Division
FNCA	Forest and Nature Conservation Act
FNCRR	Forest and Nature Conservation Rules and Regulations
GTF	Global Tiger Forum
GTRP	Global Tiger Recovery Program
HTC	Human Tiger Conflict
HWC	Human-wildlife conflict
IUCN	International Union of Nature and Natural Resources
M & E	Monitoring and evaluation
m.a.s.l	Metres above sea level
MoAF	Ministry of Agriculture and Forests
MoENR	Ministry of Energy and Natural Resources
NCD	Nature Conservation Division
NGO	Non-Governmental Organisation
NWFP	Non-Wood Forest Products
PA	Protected Areas
PES	Payment for Ecosystem Services
RGoB	Royal Government of Bhutan
SMART	Spatial Monitoring and Reporting Tool
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UWIFoRT	Ugyen Wangchuck Institute for Forest Research and Training

EXECUTIVE SUMMARY

Bhutan, at the forefront of global conservation efforts, presents a comprehensive and strategic Tiger Action Plan to address the multifaceted challenges confronting its tiger population. The intricate threat landscape, spanning poaching, prey depletion, human-tiger conflicts, habitat degradation, diseases, climate change, and inadvertent killings, demands a holistic and integrated approach. The plan, set to unfold over the next ten years, navigates a path through these challenges while seizing opportunities for robust tiger conservation.

Critical Challenges:

Poaching and the illicit wildlife trade, exacerbated by porous borders, stand as immediate threats with the potential for cross-border impacts. Prey depletion, driven by human activities and active poaching, poses a significant survival challenge for tigers. The escalation of human-tiger conflicts and the resulting opposition to conservation efforts necessitate urgent attention.

Habitat degradation, fragmentation, and emerging infectious diseases amplify the threats, requiring comprehensive health surveillance. Climate change further complicates the scenario, altering ecosystems, reducing habitat quality, and increasing human-wildlife conflicts. Inadvertent killings, a consequence of traps set for agricultural pests, add to the urgency, often leading to the illicit trade of tiger parts.

Strategic Vision and Approach:

The Tiger Action Plan confronts these challenges head-on, recognizing the intricacies of inadequate funding, negative local perceptions, conflicts with economic development, insufficient human resources, limited habitat expansion, and porous international borders. Despite these complexities, the plan leverages strategic opportunities for conservation excellence.

Opportunities for Robust Conservation:

Multi-stakeholder engagement emerges as a cornerstone, involving government agencies, local communities, NGOs, and the private sector in coordinated conservation efforts. Community involvement, driven by education, compensation schemes, and alternative livelihoods, stands central in addressing human-tiger conflicts.

Community-based ecotourism presents a promising avenue for both biodiversity conservation and local livelihood improvement. Landscape-level ecosystem management, CA|TS certification, technology adoption, and transboundary cooperation offer strategic avenues for holistic conservation.

Strategic Pillars of the Action Plan:

Bhutan envisions a future where its tiger population thrives sustainably amidst climate-smart conservation efforts, habitat preservation, and coexistence with local communities. The overarching goal for 2034 is to maintain a stable tiger population through heightened protection, improved habitats, and increased community engagement.

Protection and Awareness:

Recognizing the multifaceted threats to tigers and prey species, the Department of Forests and Park Services (DoFPS) spearheads initiatives to safeguard their populations. These encompass the implementation of a Spatial Monitoring and Reporting Tool (SMART) patrol program, strengthening anti-poaching infrastructure, enhancing communication systems, and conducting awareness campaigns. By fortifying law enforcement capacities and fostering transboundary cooperation, Bhutan aims to ensure the security of critical habitats.

Habitat Management:

Bhutan acknowledges the adverse impacts of climate change and habitat degradation on tiger viability. Through a strategic approach, the plan aims to manage critical tiger habitats by adhering to habitat management guidelines, adopting smart-green infrastructure principles, and seeking accreditation for designated areas. The emphasis is on proactive measures such as controlled burning, eradication of invasive species, and sustained improvement of grazing lands.

Human-Tiger Conflict Mitigation:

Addressing the intricate issue of Human-Tiger Conflict (HTC), Bhutan focuses on promoting harmonious coexistence. This involves comprehensive community education, improvements in conflict reporting systems, and the installation of physical deterrents like electric fencing. The plan seeks to not only mitigate conflict but also enhance community livelihoods through innovative measures, such as promoting sustainable livestock management and supporting ecotourism.

Scientific Understanding and Research:

Aiming to bridge knowledge gaps, the plan emphasizes scientific approaches to conservation. Periodic monitoring of tiger and prey populations, coupled with cutting-edge research on tiger ecology and movement, forms a cornerstone. Establishing genetic

databases, assessing climate change impacts, and leveraging scientific insights contribute to evidence-based conservation strategies.

In essence, Bhutan's Tiger Conservation Plan is a holistic, integrated approach addressing the myriad challenges faced by tiger populations. By synergizing protection, habitat management, conflict mitigation, and scientific research, Bhutan strives not only to secure its tiger population but also to fulfil its commitment to biodiversity conservation in harmony with the nation's values and principles.

TABLE OF CONTENTS

01 BACKGROUND

1. GLOBAL DISTRIBUTION AND STATUS

Tiger *Panthera tigris* is a charismatic species and is an effective flagship for biodiversity conservation in many parts of Asia (Dinerstein et al., 2007). However, the species faces the threat of extinction due to habitat loss, prey depletion, poaching and climate change. The historical range of tigers has decreased by 97%, with the population plummeting from approximately 100,000 in the early 20th century to fewer than 4,000 by the year 2000 (Dinerstein et al., 2007; Sanderson et al., 2010). Most remaining individuals currently exist in small and highly structured populations (Kenney et al., 2014). The problem is further exacerbated with a large segment of the tiger's remaining habitat situated in developing countries where changes are occurring at an extraordinary rate (Wang and Macdonald, 2009).

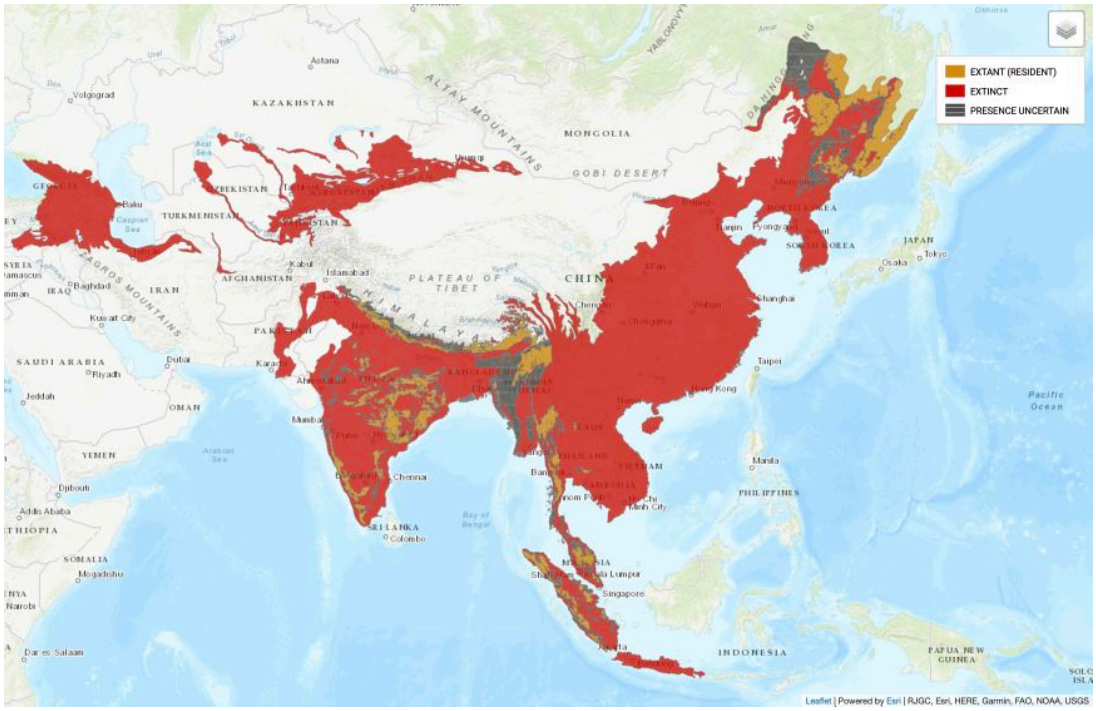


Figure 1. Global distribution of tigers *Panthera tigris* (Reproduced from IUCN Red List 2021)

Tigers are currently found in 13 countries, namely Bangladesh, Bhutan, Cambodia, China, India, Laos, Myanmar, Nepal, Russia, Vietnam, Thailand, Malaysia, and Indonesia; however, tigers are considered functionally extinct in Laos, Vietnam, and Cambodia.

Tigers were listed as endangered in 1969, and since then, tiger range countries (TRCs), international organizations, and civil society have been working tirelessly to save the species from the brink of extinction. Studies show that tigers are resilient and can rebound, provided that adequate habitat and protection, prey, and connectivity between populations are ensured (Karanth et al., 2006; Wang et al., 2016). In 2010, the heads of the 13 TRCs met in St. Petersburg, Russia, for the International Tiger Forum and endorsed a declaration on tiger conservation. A Global Tiger Recovery Program (GTRP) was developed to address the wide spectrum of threats facing the species and to work toward increased financial sustainability. An ambitious goal was set: TX2, doubling the tiger population by 2022—the next Year of the Tiger (Global Tiger Initiative, 2011). In 2023, the new population estimate from the Global Tiger Forum is approximately 5,574 wild tigers, representing a 74% increase since 2010.

2. NATIONAL DISTRIBUTION AND STATUS

2.1 Cultural significance

Tigers occupy a profound and sacred place in the spiritual beliefs and cultural history of Asia, particularly in Bhutan. This majestic cat holds not just ecological significance but is deeply interwoven into the very fabric of Bhutanese life, symbolising strength, ferocity, and a profound connection to the divine.

In Bhutan, the tiger's cultural and religious resonance stretches back centuries. Legend has it that Guru Padmasambhava, an esteemed spiritual figure, embarked on a miraculous journey atop a tigress from Singye Dzong to the iconic Taktshang Monastery, aptly named the "Tiger's Nest." Tigers are esteemed as one of the "four dignities" alongside mythical creatures like the Snow Lion, Garuda, and Dragon, firmly embedding them in Bhutan's spiritual tapestry. Within the Buddhist zodiac, the tiger commands a significant place as the third animal in the twelve-sign cycle.

Culturally, tigers are revered as symbols of strength and guardians against malevolent forces. Murals adorned with tiger paintings are believed to ward off evil spirits, while the belief persists that tigers embody local deities. Bodhisattva Vajrapani, an embodiment of yogic powers, dons the tiger's skin, symbolising the fusion of these powers with Buddhist values of compassion and generosity. Tigers and other power animals are commonly depicted on temple walls, buildings, and prayer flags. This sacred connection extends to

the vocabulary of numerous Bhutanese locales, proudly bearing names inspired by these magnificent creatures.

To the people of Bhutan, tigers are not mere animals; they are sacred beings who sanctify and consecrate their mountains. Beliefs endure that tigers descend to the valleys once a year to drink from the main rivers, and local myths recount their pilgrimage to the peak of the Tiger mountains, as revealed by recent camera-trapping efforts. Tigers from the lowlands to the high mountains, and vice versa, emphasise their vital role in the country's biodiversity and cultural heritage. In preserving tigers, Bhutan safeguards its rich biodiversity and deep-rooted spiritual and cultural traditions, ensuring that these magnificent creatures continue to inspire awe and reverence for generations to come.

2.2 Tiger conservation history

In Bhutan, the conservation initiatives aimed at safeguarding the tiger population have evolved significantly over the years, driven by legislative measures and scientific assessments. The timeline of these efforts is as follows:

1. 1952: The foundation of tiger conservation in Bhutan was laid with the establishment of the Department of Forests.

2. 1969: Bhutan enacted its first Forest Act, which provided legal protection to tigers. Concurrently, the International Union for Conservation of Nature (IUCN) listed tigers as endangered during the same year.
3. 1995: The Forest and Nature Conservation Act of Bhutan was introduced, classifying tigers under Schedule I as "totally protected" species.
4. 1988: Bhutan conducted its inaugural nationwide tiger survey in 1988, utilising social surveys and anecdotes, which estimated the presence of approximately 150 tigers within the country (Dorji & Santiapillai, 1989).
5. 1996-1998: The second nationwide tiger survey utilised sign surveys, specifically pug marks. The results of this survey formed the basis for developing the Tiger Conservation Strategy for the Kingdom of Bhutan in 1998 (McDougal & Tshering, 1998).
6. 2003: The Bhutanese government initiated the Tiger Conservation Fund to compensate for livestock losses from tiger, snow leopard, and common leopard incidents. In the same year, Bhutan ratified the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), reinforcing regulations concerning the illicit trade of endangered species and their derivatives.
7. 2005: The Tiger Action Plan for the Kingdom of Bhutan (2006-2015) was formulated in 2005 (NCD, 2005). This comprehensive plan identified critical threats to tigers, proposed conservation opportunities, and outlined detailed tiger and habitat preservation strategies. Additionally, it addressed tiger-human conflicts through social and educational components.
8. 2008: The Bhutan National Human-Wildlife Conflicts Management Strategy of 2008 introduced specific plans to mitigate conflicts, encompassing livestock intensification, compensation programs, and research on tiger ecology (NCD, 2008).
9. 2014-2015: Bhutan undertook nationwide tiger surveys employing advanced Spatial Capture-Recapture (SCR) methodology using camera traps. The 2014-2015 survey estimated 103 tigers at a density of 0.46 tigers per 100 km2 (DoFPS, 2015).
10. 2018:
    - 10.1. Bhutan implemented the Conservation Assured Tiger Standards (CA|TS) to assess and enhance the management effectiveness in tiger landscapes. Presently, Royal Manas National Park and Jigme Singye Wangchuck National Park have obtained CA|TS accreditation, with additional proposals in the pipeline.
    - 10.2. Gewog Tiger Conservation Tshogpa (GTCT): To address human-tiger conflicts, Bhutan established GTCT, an insurance-based scheme, in tiger conflict hotspots. Currently, there are 13 GTCTs across the country, benefiting approximately 800 households.
    - 10.3. 2018: Bhutan's second tiger action plan was formulated until 2023.
11. 2021-2022: The second nationwide tiger survey using camera traps recorded 131 tigers, signifying a 27% increase in six years. Remarkably, the survey highlighted the

importance of landscapes outside protected areas, with nearly 50% of Bhutan's tiger population residing in territorial divisions (DoFPS 2023).

12. 2023: The revised Forest and Nature Conservation Act enacted in 2023 confers complete protection to tigers. Notably, poaching and illegal trade of tiger parts are classified as fourth-degree felonies.

2.3 Population status and distribution

Bhutan, nestled within the Northern Forest Complex-Namdapha-Royal Manas tiger conservation landscape, boasts an unparalleled expanse of pristine and uninterrupted forest cover across the country, offering an extraordinary opportunity for the conservation of Bengal tigers. This Himalayan kingdom is home to a tiger population of global conservation significance, a commitment it solemnly affirmed by endorsing the declaration on tiger conservation in 2010 in St. Petersburg, Russia, joining hands with fellow tiger range nations in a dedicated pledge to double the wild tiger population by 2022.

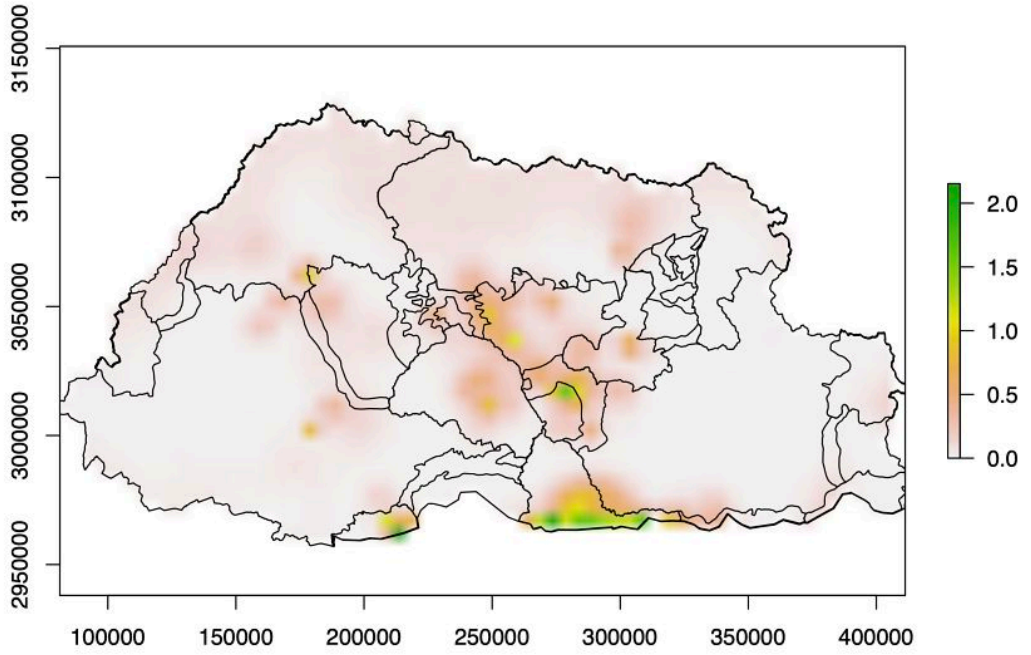


Figure 2. Map showing the tiger density in Bhutan from the nationwide tiger survey of Bhutan 2021-2022 (Source: DoFPS, Bhutan)

Bhutan's commendable strides in tiger conservation have been notable, with specific protected areas like the Royal Manas National Park and Phibsoo Wildlife Sanctuary witnessing a remarkable doubling of their tiger numbers over the past decade. The most

recent national tiger survey, conducted between 2021 and 2022, unveiled an estimated population of 131, signifying a remarkable 27% increase from the 2015 count. Tigers in Bhutan are distributed widely across the nation, inhabiting elevations ranging from as low as 100 meters to soaring heights of 4,500 meters above sea level, with an average density of 0.23 individuals per 100 square kilometres. In regions such as Trongsa and Zhemgang, tiger densities are even more concentrated, with 2-3 individuals inhabiting every 100 square kilometres. Bhutan's success in nurturing its tiger population is attributed to a well-structured network of protected areas covering over 50% of the country, an unbroken forest canopy encompassing 70% of the land, and an unwavering commitment to stringent protection measures.

However, like their counterparts elsewhere, tigers in Bhutan grapple with an array of threats. Human-tiger conflict, prey depletion, habitat degradation, poaching and climate change are significant concerns. The surge in tiger numbers has led to a rise in human-tiger conflicts, primarily manifesting as livestock depredations. Nevertheless, the Bhutanese government, through the Department of Forests and Park Services, has consistently offered support to affected farmers and communities who coexist with these magnificent predators. Initiatives, such as the establishment of Gewog Tiger Conservation Tshogpas, the deployment of electric fencing, the promotion of alternative livelihood options, and the advocacy for energy-efficient practices, have played pivotal roles in mitigating these conflicts.

3. REVIEW OF THE PREVIOUS ACTION PLAN (2018-2023)

The second tiger action plan was implemented from 2018-2023, and 75 activities were proposed in the action plan under four objectives. About 65% of the proposed activities were achieved, while 24% were partially completed. Only 10% were not implemented. The activities yet to be implemented are listed as follows:

3.1. Assess the effects of road and infrastructural developments on the habitat connectivity for tiger and prey
3.2. Develop a national policy for ex-gratia payment in the event of loss of human life
3.3. Conduct economic valuation of tiger habitats in Bhutan
3.4. Conduct a study to assess habitat conditions for tiger and prey
3.5. Perform population viability assessment of tiger and prey populations using statistical and mathematical models (population projection and carrying capacity)
3.6. Establish a genetic lab to perform genetic analysis of tigers and their co-predators
3.7. Establish and strengthen the genetic database of tigers and prey
3.8. Assess the impacts of climate change on tiger and prey habitats and develop an adaptation plan

3.9. Assess disease threat to tigers or their prey from livestock and feral animals and monitor where necessary

Some of the activities which were important and relevant to this day were carried forward to the present action plan.

4. RATIONALE FOR THE ACTION PLAN REVISION

The expiration of the second tiger action plan in 2023 has brought to light the need for a comprehensive and holistic strategy, considering significant developments in tiger conservation both globally and at the national level. This new plan aims to be inclusive and sustainable. Furthermore, the Global Tiger Recovery Program, endorsed during the Tiger Summit in 2010, has also expired, paving the way for implementing GTRP 2.0, a renewed global initiative designed to guide tiger conservation efforts over the next decade.

In addition, Bhutan has recently completed its second nationwide tiger survey, revealing a noteworthy increase in the Bhutanese tiger population. This encouraging finding emphasizes the importance of continued and effective conservation measures.

Finally, the upcoming Conference on Sustainable Finance for Tiger Landscapes scheduled for 2024 in Bhutan holds promise for establishing a sustainable financing mechanism to support tiger conservation. These developments collectively underscore the urgency and opportunity for renewed commitment and action in tiger conservation. Therefore, the revision of the Tiger Action Plan for Bhutan 2024-2033 is imperative for several key reasons:

4.1. Updated Data and Research: Over the past decade, there have been significant advancements in the understanding of tiger populations, their habitats, and conservation strategies. By revising the plan, we can incorporate the latest scientific findings, enabling us to implement more effective and evidence-based conservation efforts.

4.2. Changing Environmental Dynamics: Climate change and other environmental factors constantly alter tiger habitats. A revised plan should consider these evolving dynamics and propose strategies to mitigate their impact and help on tiger populations adapt to a changing climate.

4.3. Emerging Threats: New threats to tigers, such as poaching techniques, habitat destruction, and wildlife trafficking, have occurred since the last plan was developed. To address these threats effectively, the revised plan must include updated countermeasures and enforcement strategies.

4.4. Community Engagement: Community involvement is crucial for the success of tiger conservation efforts. The revision should focus on strengthening community

engagement and livelihood improvement and alternative livelihood programs to ensure the local population is a partner in conservation rather than a threat to tigers.

4.5. Global Commitments: Bhutan is a signatory to international agreements like the Global Tiger Recovery Program, now the GTRP 2.0 (2023-2034). The revised plan should align with these global commitments and demonstrate Bhutan's dedication to tiger conservation worldwide.

4.6. Monitoring and Evaluation: The new plan should include robust monitoring and evaluation mechanisms to assess the effectiveness of conservation efforts, allowing for adaptive management and continuous improvement.

4.7. Increased Stakeholder Participation: As tiger conservation involves multiple stakeholders, including government agencies, civil society organizations, non-governmental organisations (NGO), and local communities, the revised plan should facilitate better coordination and collaboration among these entities.

4.8. Resource Allocation: The allocation of resources is a critical aspect of any conservation plan. A revised plan should identify the necessary resources, both financial and human, required for successful implementation.

A team of officials from all the field divisions of the Department of Forests and Park Services met in Bumthang in September 2023 for a consultative workshop to revise the tiger action plan for Bhutan for the next 10 years. By considering the latest research, emerging threats, and global commitments, we developed a comprehensive and effective plan to safeguard the tigers for future generations.

02 THREATS, CHALLENGES & OPPORTUNITIES

1. THREATS

Numerous threats to tigers in Bhutan have been meticulously identified. These threats encompass poaching and the illicit trade of tiger parts and derivatives, prey depletion, human-tiger conflicts, habitat degradation, fragmentation and loss, diseases, climate change, and inadvertent killings. The assessment of these threats was conducted following the Miradi principle and was categorized based on a scoring system that considers three vital dimensions: scope, severity, and irreversibility. These scores are then aggregated to generate the final assessment score, as shown in Table 1. Final scores falling within the range of 11-16 are classified as very high, while scores between 7-11 are deemed high. Scores ranging from 4-6 are categorized as medium, and scores below 4 are characterized as low. Notably, human-tiger conflict, habitat degradation, fragmentation and loss, and inadvertent killings were rated as high-level threats.

Table 1 Direct threats to tigers and threat ranking as per Miradi threat ranking principle

SI #	Direct threats	Scope	Severity	Irreversibility	Total	Overall Threat Rating
1	Poaching and the illegal trade of tiger parts and derivatives	3	1	1	9	Medium
2	Prey depletion	2	2	1	9	Medium
3	Human-Tiger Conflict	3	2	1	11	High
4	Habitat degradation, fragmentation, and loss	3	2	1	11	High
5	Diseases	1	2	2	8	Medium
6	Climate change	2	1	4	10	Medium
7	Inadvertent Killing	3	2	1	11	High

The details of the direct threats are as follows:

1.1 Poaching and the illegal trade of tiger parts and derivatives

Poaching and the illegal trade of tiger parts and derivatives pose a significant threat to the survival of the species. Tigers are poached across all the tiger range countries for their bones, skins, teeth and genitals, which are believed to possess medicinal properties. In Bhutan, wildlife poaching, in general, is not perceived as a significant threat to conservation due to strong Buddhist ethos and spiritual beliefs. However, poaching and illegal wildlife trade is an emerging threat to tigers and wildlife in general. Data available from the Department of Forests and Park Services on tiger poaching indicate that although not very frequent, tiger poaching is present. From 2013-2017, 17 cases involving poaching and illegal trade of tigers were recorded and prosecuted. This is almost 20% of the total tiger population in Bhutan. Additionally, the recent National Tiger Survey Report 2021-2022 further revealed that every year, a tiger or two is killed by poachers (DoFPS, 2023).

Figure 3. A ranger on patrol in Royal Manas National Park (Photo by Tashi Dhendup)

Since Bhutan has a porous border with the neighbouring countries, tigers along the borders are prone to cross-border poaching. With limited surveillance and inadequate border control measures, poachers find it easier to traffic tiger parts across the border undetected. This not only increases the threats to the tigers of Bhutan but also to the neighbouring countries. Moreover, tigers are highly territorial animals; poaching of one dominant tiger means wiping out the whole family of that tiger.

1.2 Prey depletion

As an obligate carnivore, tigers inevitably rely on the availability of prey species for their survival. In Bhutan, the primary prey species for tigers are sambar deer (*Rusa unicolor*) and wild pig (*Sus scrofa*), with livestock contributing significantly to their diet in the mid-temperate regions of the country (Wang & Macdonald, 2006). These prey assemblages, encompassing both wild and domestic animals, are further supplemented by smaller prey like serow (*Capricornis sumatraensis*), muntjac (*Muntiacus muntjac*), and goral (*Naemorhedus goral*), enabling tigers to breed and reproduce even at high elevations.

However, the reduction in the number of transhumans (seasonal nomadic herders) in tiger habitats and the consequent decline in prey availability pose a growing challenge. Additionally, the transformation of grazing grounds into shrub- and tree-covered areas reduces the prime habitat for wild herbivores. Notably, wild pigs, sambar deer, and barking deer, considered as pests by farmers, are often targeted and killed. While not widespread, this practice poses a significant threat that requires immediate attention.

Figure 4. A herd of Spotted Deer *Axis axis* in Phibsoo Wildlife Sanctuary (Photo by Tashi Dhendup)

Another major concern is the poaching of prey species such as sambar, gaur, and wild pigs from across the border, contributing to the decline in prey populations. It is important to emphasize that there is currently no assessment regarding the extent of prey depletion. However, in remote areas, poaching for bushmeat remains prevalent.

1.3 Human-Tiger conflict

Human–Tiger Conflicts (HTC), manifested primarily as attacks on people and domestic livestock, exacerbate at least two major threats to tigers, such as mortality or removal of tigers from the wild and result in negative attitudes towards tigers by local people, thereby reducing support for tiger conservation (Goodrich, 2015). Reducing human-caused mortality is critical to successful tiger conservation because it is usually the primary mortality agent of tigers. Large carnivores such as tigers have undergone striking declines in population size and geographic range, with 61 % of the world's large carnivore species being threatened with extinction (Ripple et al., 2014). This decline in population and home range is mainly attributed to real or perceived threats to human life and livestock by tigers (Dalerum et al., 2009).

In Bhutan, with several current tiger conservation initiatives and 51.32% of the country under a protected area, 131 tigers exist (DoFPS,2023). An estimated 5325 households reside inside the park, and an additional 1662 households live within the buffer of 500 meters from the parks. About 3425 households fall inside the biological corridors, and a further 2748 households within the buffer 500 meters from biological corridors (NCD, 2018). These households depend on forests for timber, fodder, fuel and non-wood forest products—this increased tiger number, coupled with communities living in protected areas, results in HTC. In Trongsa district alone, between July 2019 and July 2021, the tiger reportedly killed a total of 560 livestock (BTC, 2022). These often lead to political and social opposition to tiger conservation (DoFPS, 2023).

1.4 Habitat degradation, fragmentation, and loss

Habitat degradation and fragmentation are the biggest threats to the survival of many species. Bhutan is a growing economy; developmental activities are taking a heavy toll on natural resources and are expected to accelerate in the coming years. As population and development grow, natural habitat is being destroyed or fragmented. These will have a direct negative effect on tigers as it requires an extensive home range. Over the 15 years (2000-2015), 64,111ha of forest have been deforested, and 67,680ha of the forest has been degraded (WMD 2017). Bhutan's forest coverage also decreased to 69.71 per cent in 2022 compared to 71.13 per cent in 2016 (NFI, 2023).

Tiger, being a wide-ranging species, requires a large tract of connected landscapes with minimal human interference. Habitat degradation and fragmentation due to infrastructure development can limit the dispersal of new individuals, thereby causing bottlenecks in gene flow and low survival (Mills, 2012). The destruction and fragmentation of tiger habitat by roads and other developmental activities will create easier access to poachers

and increase conflict as they come into contact with people and livestock. Thus, securing the critical habitats for tigers and their prey is instrumental in saving the wild tigers.

1.5 Diseases

Although there is limited available data on the health of the tiger population in Bhutan, there has been a concern over the emergence of infectious zoonotic diseases within the population, presenting a new and additional threat alongside existing ones like habitat loss, poaching and retaliatory killings. There is a need to establish comprehensive, long-term wildlife monitoring and health surveillance programs to identify and address emerging threats.

Canine distemper virus (CDV) is an infectious disease common in domestic dogs and wild carnivores. The disease is known to be the second most common cause of death amongst the dog population. As a common infectious viral disease, it is a threat of global importance, affecting both common and endangered wild carnivores. Recently, CDV has been identified in wild tiger populations in Russia and India, posing a substantial threat to small, isolated tiger groups. This also necessitates research on infectious diseases related to large carnivores such as tigers to be conducted regularly. A death case of a tiger at a wildlife rescue and rehabilitation centre, Taba, on the 6th of April 2018, discovered tapeworm cysts in the brain as the cause of the death (Phuentshok et al., 2021).

1.6 Climate change

Climate change and anthropogenic activities drive the loss of biodiversity (Penjor et al., 2021). The impact of climate change intensifies the rate of deterioration and decline in the population of wildlife species (Hoffmann et al., 2010). Some of the effects attributed to climate change include loss and alteration of habitats, heat stress and natural disasters.

In Bhutan, the tiger habitats primarily consist of montane ecosystems stretching broad elevation ranges with records of the species captured over 4000 masl (Dendup et al., 2023). Climate change causes gradual shifts in the ecoregions over the period with alteration of the habitats and species ranges from the existing boundaries (Johnson et al., 2022). The direct effect is felt through physiological stress organisms face due to surpassing their tolerance levels caused by elevated summer temperature, and it leads to a shift from productive prime lowland habitats to less productive uplands for keystone species such as tigers.

Climatic and environmental changes can affect the ecosystem by altering the vegetation composition and structure. For example, increasingly across Bhutan, it is being observed that grasslands are disappearing gradually and is overtaken by woody vegetation. With

less grazing space, livestock and wildlife compete for the remaining resources. The decrease in habitat quality is often exacerbated by anthropogenic activities. As a result, a gradual reduction in prey population is expected. This affects tigers and they may turn to livestock for prey thereby escalating human-wildlife conflict.

Unpredictable monsoons and extreme weather patterns can fail crops, potentially exacerbating poverty among rural farming communities and raising the likelihood of tiger poaching. Poverty, poaching, and the illegal wildlife trade are interconnected (Challender & MacMillan, 2014).

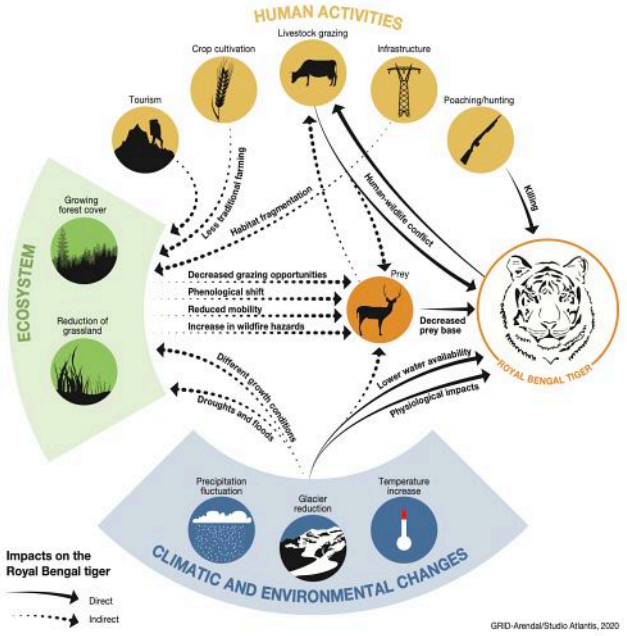


Figure 5. The impacts of climate change and human activities on the Royal Bengal Tiger in Bhutan (Source: UNEP & GRID-A 2020)

1.7 Inadvertent killing

The inadvertent killing of tigers poses a significant threat to conservation efforts in Bhutan. Wild ungulates such as sambar deer, barking deer and wild pigs are considered pests for agricultural land, which are important tiger prey species. To protect crops from these angulates, farmers set traps and snares around their agrarian landscape, while tigers are also indiscriminately caught and trapped in the snares intended to trap other species. There have been several cases from Zhemgang Forest Division and in Trongsa under Bumthang Forest Division. Unfortunately, quite often, after the farmers find the tigers dead in the traps and snares, few often resort to selling the skins and bones to make quick money. Few individuals have been prosecuted in the past.

Figure 6. Skin of a tiger killed in a snare set up for wild pigs in Trongsa (Photo by Tashi Dhendup)

2. CHALLENGES

2.1 Inadequate funding

The lack of financial resources hinders the implementation of effective conservation strategies as outlined in the tiger action plan for Bhutan. Activities such as anti-poaching patrolling, habitat restoration and community engagement programs are the main activities that require funding for effective implementation in tiger landscape areas (NCD, 2018). In Bhutan, with the change in national focus on rural livelihood improvement and self-sufficiency, sustainable funding support from the government is declining every year. With insufficient funds, conservation and protection activities are unable to continue, leaving the tiger population vulnerable to poaching and habitat loss.

The assessment report by MoAF, 2016 revealed that the protected areas of Bhutan are well managed. However, the assessment found that effectiveness is limited by inadequate resources (both financial and technical) and also due to an information gap which limits the ability to understand the impact of conservation intervention, response to changing conditions, and undertake adaptive management to improve efficiency and effectiveness. Addressing these challenges requires increased financial support from government and donor agencies to safeguard the future of this species.

2.2 Negative perception of local communities towards tiger conservation

Although conservationists rejoice in the conservation of majestic tigers across the tiger landscape area, Bhutanese farmers are less thrilled about conservation. There is a perception that local communities bear the brunt of tiger conservation, as increasing tiger numbers have led to livestock depredation and serious economic losses to local communities. Such financial losses are of particular concern when carnivores cause severe economic damage. Aside from grazing land, collecting non-wood forest produce and other bonafide benefits, local communities believe conservation limits their traditional rights and do not earn direct benefits of tiger conservation. Thus, farmers view tiger conservation as threatening their daily livelihood subsistence. Such negative perception requires a holistic approach that involves local communities by providing alternative livelihoods and compensating for losses.

2.3 Need for economic development

Economic development and biological conservation are interrelated and interdependent; balancing them is one of the fundamental problems in natural resource management. Bhutan has always strived to take careful measures to pursue development that is best suited for people's livelihoods and conservation; however, with development, there is a conflict between conservation and livelihoods. Mega projects such as hydropower development, mining and other national need activities are some of the direct disturbance regimes affecting tiger habitats and movement. However, as a small developing country with limited resources, the country is taking significant steps to strengthen its economy.

For now, the assessment report on the protected areas of Bhutan shows that the protected areas are managed well, however, the effectiveness is limited by low financial resources toward conservation (Dechen et al., 2019; GTRP, 2023).

2.4 Inadequate human resources

A global study on the management effectiveness in protected areas found that 65 per cent of the assessed protected areas had significant management deficiencies attributed mainly to inadequate human resources expertise (GTIS, 2010). These HRs are required to balance conservation and development with scientific research and knowledge while keeping the communities and leaders in the loop. The Department of Forest and Park Services has currently over 1300 staff but owing to the large area of jurisdiction and rugged topography of the country, there is still a shortage in some places. In terms of training, only a few are well-trained and equipped to effectively carry out tiger conservation works.

2.5 Limited scope for tiger habitat expansion

Bhutan has made significant conservation efforts to conserve tiger populations since establishing the Department of Forest in 1952 (DoFPS 2015). Bhutan is currently home to 131 tigers (DoFPS 2023). However, the scope for its habitat expansion is limited, considering Bhutan's rugged and mountainous terrain, limiting the potential for habitat expansion. Tigers are currently distributed over 16,000 km^2 of the country and there is an estimated 742 km^2 area with a scope for expansion (Meijer et al. 2018). However, 69% of the Bhutanese population relies on agriculture and livestock for livelihood (DoFPS 2015); therefore, expanding tiger habitat would require careful consideration of human settlements and land use, which can be challenging in a country with limited arable land. Moreover, Bhutan shares a porous border with neighbouring countries, and tigers can potentially move across these borders. Therefore, coordinating conservation efforts and habitat expansion with these neighbouring countries can be complex due to political and logistical challenges.

2.6 Porous international border

Bhutan plays a critical role in tiger conservation due to its extensive forest cover and the presence of tigers in its mountainous terrain (Tempa et al., 2013). Porous borders have a multifaceted impact on tiger conservation. The open boundaries create an ideal environment for poaching and illegal wildlife trade, with high accessibility for criminals to transport tiger parts across the border. The intricacies of porous borders also hinder effective cross-border collaboration. In addition, comprehensive data on the tiger population and their movement are vital for successful tiger conservation. However, the porous border makes data collection and monitoring a formidable task with concerns over border security.

3. OPPORTUNITIES

3.1 Institutionalizing multi-stakeholder engagement for eliciting public support and factoring tiger concerns in other sectors

Tiger conservation in Bhutan requires coordinated efforts from various stakeholders and agencies. Joint efforts by multi-stakeholder engagement are crucial to tiger conservation success in the country. The DoFPS should lead in convening stakeholders, including government agencies, local government, civil society organisations, non-government organisations, local communities and private sector representatives. There are opportunities to bring together a regular platform for dialogue and cooperation related to tiger conservation in the country. Strengthening awareness campaigns to educate the general public about the importance and benefits of tiger conservation in the country is important.

Moreover, workshops on key legislation, such as the Forest and Nature Conservation Act (FNCA) 2023 and Forest and Nature Conservation Rules and Regulations (FNCRR) 2023, will ensure that relevant stakeholders understand their key responsibilities and the legal framework for tiger conservation. The DoFPS should work collaboratively with different law enforcement agencies such as the Royal Bhutan Police (RBP), Bhutan Food and Drug Authority (BFDA) and the Department of Revenue and Customs (DRC) in further enhancing their capacity to detect and combat illegal wildlife trafficking using the latest technology to curb wildlife trade. The Royal Bhutan Army (RBA) is also a crucial partner for supporting surveillance, joint patrolling, and apprehending wildlife poachers and smugglers, especially in Bhutan's northern and southern landscapes.

3.2 Community engagement for addressing human-tiger conflicts

Human-tiger conflict occurs when either the need or behaviour of wildlife impacts negatively on human livelihoods or when humans pursue goals that negatively impact the needs of wildlife. When such conflicts compromise the people's livelihoods and solutions to conflicts are inadequate, it is difficult to gain local support for conservation efforts. In this way, tigers are often killed in retaliation. To reduce and manage human-wildlife conflicts and provide long-term solutions, it is essential to engage the local community in addressing the human-tiger conflict. Changing the attitudes of the local communities toward wildlife and conservation institutions can be achieved through educational programmes, institutionalising compensation schemes, providing alternative livelihood options, and diversifying the income source of the local communities.

In addition, providing training and workshops empowers communities to participate actively in tiger conservation efforts. This includes training on sustainable land use management, conflict resolution skills, as well as climate change and conservation awareness. This can enhance their ability to manage conflicts and conservation activities.

Offering incentives or rewards to communities actively engaged in tiger conservation and effectively managing conflicts can be a powerful motivator, recognising their exemplary coexistence efforts and conservation initiatives. This strategy can significantly bolster tiger conservation endeavours.

3.3 Livelihood improvement through ecotourism

Community-based ecotourism can improve the livelihoods of local communities in Bhutan while promoting biodiversity conservation and sustainable development. Bhutan offers a unique opportunity due to its beautiful landscapes, diverse culture and rich biodiversity. However, as most of our population resides in remote places, it is equally important to explore the rural parts of the country to experience rural lifestyles.

Strengthening farmhouses or homestays, enhancing and forming NWFP groups with value-added local products, and establishing Eco-trails, local Nature guides, and trekking are potential programs that can engage local communities and improve their livelihood.

The Nabji Trail in Jigme Singye Wangchuck National Park is a successful example of community-based ecotourism in Bhutan. The local community manages the trail, and community members host tourists in homestays (Namgyel, 2011).

3.4 Address management of ecosystem at landscape level

Tiger conservation is an important international priority but is also characterised by complexities and challenges as conservation efforts overlap with development and livelihood goals within the same spatial context (Vasudeva et al., 2022). In Bhutan, with its rising population and development, the historic tiger range is under pressure from anthropogenic activities as human settlement exists within the tiger landscape. There is a need for a holistic approach that balances sustainable management with conservation.

Tigers signify the health of the ecosystem and are also known for their maintenance. There is a need for an integrated approach towards planning and management through proper consideration of benefiting both the local communities and promoting conservation. As the home range of tigers is wide, landscape connectivity between the habitats is essential for ensuring healthy interaction that provides dispersion, finding mates, and maintaining genetic diversity. While considering the connectivity of their habitat range, there is a need to adopt conservation plans for other taxa (Vasudeva et al., 2022).

There is also a need to continue with various approaches, such as restoring and enriching tiger habitats and managing their ecosystems. Human-tiger conflicts must be mitigated through improved community engagement and livelihood enhancement, while poaching and illegal wildlife trade need to be controlled through strict law enforcement and international cooperation. There is also a need for continuous research and monitoring for informed conservation decisions, while at the same time, regular public awareness campaigns need to be provided to garner support.

3.5 Certification and registration of tiger landscapes under CA|TS

Conservation Assured Tiger Standards (CA|TS) is an accreditation tool and provides incentives to those responsible for tiger conservation areas in the tiger range countries. Being CA|TS accredited means a particular tiger conservation landscape meets the standards required for the effective conservation of tigers. Two protected areas, namely Royal Manas National Park and Jigme Singye Wangchuck National Park, have already been accredited, and a few additional tiger sites, including territorial divisions, are being

proposed for accreditation. Supporting CA|TS accredited sites means funds are being utilized in an area with previous successes in governance and overall park management.

3.6 Use of technology for preventing human-wildlife conflicts

The number of conflicts between people and wild animals, such as tigers, elephants, and bears, is growing in Bhutan. Technology such as SMART, drones, communication and electric/solar fencing has positively reduced the HWC, improving the outlook of conservation by communities. Although these measures and tools minimised HWC, they proved inadequate to prevent interactions between humans and wildlife.

With advances in science and technology, Bhutan has the opportunity to explore and implement new and innovative science-based solutions, such as using a Poacher cam, audio-visual deterrence, and other potential emerging technologies in HWC.

3.7 Strengthening transboundary cooperation

Tiger Range Countries are custodians of the last remaining tigers in the wild, and strengthening collaboration among Tiger Range Countries is crucial for stabilising the wild tiger population and its prey species. There is an opportunity to ensure and prevent habitat degradation, undertake regular country-level monitoring and assessment of wild tigers and their habitat, collaborate and share intelligence information among law enforcement agencies across Tiger Range Countries, promote and strengthen community stewardship and address emerging human-wildlife interface issues. These are some of the areas where Tiger Range Countries can cooperate to conserve tigers.

03 ACTION PLAN

VISION

To secure a thriving and sustainable tiger population in Bhutan by fostering robust climate-smart conservation efforts, safeguarding their natural habitats, and promoting coexistence with local communities.

GOAL

By 2034, Bhutan aims to maintain a stable tiger population through enhanced protection, improved habitat and community engagement.

OBJECTIVES AND ACTIONS

Objective I: Safeguard tiger and prey populations through protection and awareness

Today, tigers and their vital prey species are threatened by several factors, such as habitat loss, illegal wildlife trade, poaching, climate change, and inadvertent killings. To address these challenges, the DoFPS plays a crucial role in protecting some critically important habitats and ecosystems by conserving their wild homes with biological corridors connected to every corner, ensuring the safe refuge of tigers and their prey species. It is also imperative that systematic SMART patrolling for tigers and their prey species be carried out across all field divisions and protected areas to help detect poaching activities (NCD, 2018). This will not only help in curbing poaching activities but also provide information on conservation status. In addition, science-based information on the status of their populations, ecology, and distribution could help wildlife managers implement safe refuge activities for both the tiger and its prey species (Karanth et al., 2003). Thus, safeguarding tigers in any region will ultimately lead to the conservation of each species in those areas.

Output 1.1: Implement the Spatial Monitoring and Reporting Tool (SMART) patrol program in all field offices.

Action 1.1.1: Finalize the SMART data model and reporting requirements for Bhutan.

Action 1.1.2: Train data officers on SMART software and analysis tools for tactical patrolling.

Action 1.1.3: Conduct regular SMART patrolling in all field divisions.

Action 1.1.4: Develop mechanisms to share intelligence reports among field offices.

Action 1.1.5: Provide refresher courses and capacity building to forestry staff on SMART patrolling.

Output 1.2: Strengthen infrastructure and equipment support for anti-poaching activities.

Action 1.2.1: Strengthen the Forest Monitoring and Information section in field offices through training and equipment.

Action 1.2.2: Establish camp sites/transit camps in strategic locations and maintain existing guard posts.

Action 1.2.3: Support frontline staff with field gear.

Output 1.3: Improve communication systems for protection in field offices.

Action 1.3.1: Gather information through the use of poacher cameras.

Action 1.3.2: Set up new repeater stations for wireless communication in strategic locations and maintain existing ones.

Output 1.4: Conduct awareness campaigns on the significance of tiger conservation, including how climate change is an impacting factor.

Action 1.4.1: Conduct religious discourses for communities with a focus on conservation.

Action 1.4.2: Identify and support nature clubs in schools as ambassadors of conservation.

Action 1.4.3: Sensitize stakeholders about critical tiger habitats to harmonize with developmental master plans.

Output 1.5: Strengthen the capacities of law enforcement agencies.

Action 1.5.1: Conduct awareness workshops on Forest and Nature Conservation Rules and Regulations 2023 and other important legislation for relevant agencies (e.g., RBP, Customs).

Action 1.5.2: Provide training to field officials on basic enforcement skills, including wildlife crime detection and prosecution.

Action 1.5.3: Provide training to field staff on fundamental anatomical skills of wild animals, with a focus on the identification of bones and skeletal parts.

Output 1.6: Enhance cooperation and coordination among law enforcement agencies.

Action 1.6.1: Conduct workshops on combating illegal wildlife trade and involve other law enforcement agencies.

Action 1.6.2: Strengthen inter-agency intelligence coordination and information sharing at the national level.

Action 1.6.3: Strengthen intelligence-reporting mechanisms at the field level.

Output 1.7: Strengthen transboundary cooperation on tiger conservation.

Action 1.7.1: Conduct meetings and workshops at the transboundary level to discuss issues, challenges, and best practices.

Action 1.7.2: Arrange exchange visits for forestry officials.

Action 1.7.3: Coordinate synchronized anti-poaching patrols, tiger monitoring, and other activities with Indian counterparts.

Objective II: Manage tiger habitats for a healthy population of tigers

Climate change, habitat degradation and fragmentation threaten maintaining viable populations of tigers and their prey in the country. Our natural habitats are being systematically eroded as the human population continues to expand, coupled with ongoing developmental activities. In recent years, the forest cover has declined from 71% in 2016 to 69.71% in 2023, shrinking habitat quality and size.

Thick, unpalatable shrubs and trees are now overrunning the available grazing and habitat areas for primary prey species. Additionally, invasive species such as *Lantana* sp., *Eupatorium* sp., *Chromolaena* sp., and others further exacerbate the challenge of maintaining quality grasslands for prey species.

To address this critical issue, habitat and grassland management initiatives have been robustly undertaken in Royal Manas National Park, Phibsoo Wildlife Sanctuary, and other protected areas. Furthermore, habitat restoration activities have been implemented in select Territorial Divisions. Between 2018 and 2023, the Department has successfully initiated and executed habitat improvement, restoration, and management activities covering an impressive 656.85 hectares. Therefore, continuing and enhancing critical habitat management paired with ecosystem-based adaptation measures within tiger landscapes will greatly benefit ungulate species and other large tiger prey. Consequently, this will contribute to the growth of the tiger population in Bhutan by improving the critical and other vital habitats necessary for both the prey and the predator.

Output 2.1: Manage critical tiger habitats according to habitat management guidelines.

Action 2.1.1: Manage grasslands, including controlled burning and eradication of invasive species.

Action 2.1.2: Improve forested lands through enrichment plantation of native palatable species and removal of invasive species.

Action 2.1.3: Support the improvement of grazing lands (tshamdos).

Action 2.1.4: Carry out the sanitisation and improvement of high forests/plantations.

Action 2.1.5: Maintain existing salt licks and water holes.

Output 2.2: Adopt and implement principles of smart-green infrastructure for infrastructure development in critical tiger habitats.

Action 2.2.1: Organize sensitization workshops on smart-green infrastructure with relevant stakeholders.

Action 2.2.2: Enforce and monitor smart-green features in infrastructure development in tiger habitats.

Output 2.3: Manage at least 5 tiger sites (PAs and forest divisions) as per CA|TS standards.

Action 2.3.1: Register field divisions and protected areas for CA|TS accreditation.

Action 2.3.2: Perform self-assessment of field offices for CA|TS accreditation.

Objective III: Mitigate and reduce human-tiger conflict through a holistic approach

Like other regions in the Hindu Kush Himalaya, Bhutan has emerged as a hotspot for Human-Wildlife Conflict, resulting in the loss of human lives, animal populations, crops, and property (Sharma et al., 2021). The conflict between humans and felids, particularly, poses an urgent global conservation challenge with solutions yet to be devised for mutual benefit. The severity of these conflicts escalates in relation to the body size of the felid species, emphasizing the significance of larger felids (Inskip & Zimmermann, 2009).

Factors such as lax livestock management, especially during the summer and autumn seasons when free movement and reduced guarding are allowed, contribute significantly to the high incidence of Human-Tiger Conflict (Sangay & Vernes, 2008). Furthermore, there has been a decline in the Buddhist ethic of tolerance towards predators, leading to retaliatory killings, including those of tigers. The practice of land-sharing within Protected Areas, which permits activities such as grazing, farming, and non-timber forest resource collection, further exacerbates these conflicts (Wang, 2010). Consequently, unless the socio-economic impacts of livestock predation are effectively addressed and mitigated, there is a substantial risk to the cultural and spiritual connection that binds people to the conservation of nature in Bhutan.

Output 3.1: Promote harmonious coexistence between people and tigers through holistic approaches.

Action 3.1.1: Conduct mass education and awareness on the conflict scenario and preventive measures, wildlife-poaching, policy, strategy, and science of human-tiger conflict in Bhutan.

Action 3.1.2: Improve the existing conflict reporting system for Bhutan.

Action 3.1.3: Establish and strengthen visitor information facilities at field offices, such as brochures, reports, posters, etc.

Action 3.1.4: Install and maintain low-voltage electric fencing, chain link fencing, alarm fencing, and bio-fencing to minimize crop and cattle loss to wildlife.

Output 3.2: Enhance community livelihood by adopting innovative mitigation measures.

Action 3.2.1: Promote upscaling of livestock management practices through improved breeds and enhanced guarding practices.

Action 3.2.2: Provide small-scale biogas digesters in HWC-affected areas.

Action 3.2.3: Establish ex-gratia payments in the event of loss of human life or injury.

Action 3.2.4: Strengthen and support livestock insurance and compensation schemes.

Action 3.2.5: Explore, initiate, and strengthen community-based ecotourism in tiger landscapes.

Action 3.2.6: Facilitate Community Forest (CF)/NWFP product diversification and marketing.

Output 3.3: Build community and ecosystem resilience and adaptive capacity to climate-induced threats.

Action 3.3.1: Assess and establish Payment for Ecosystem Services (PES) schemes at feasible sites in the tiger landscapes.

Action 3.3.2: Support NWFP & CF management groups, management of private forests, improvement of degraded watersheds, and the supply of safe drinking water for the improvement of community livelihood.

Objective IV: Increase scientific understanding of tiger, prey and their habitat to inform evidence-based conservation strategies

Science-based knowledge and management are fundamental approaches to effective conservation and wildlife management. Information generated through scientific research must be applied in various formats to support thriving wildlife populations and the creation of suitable habitats. Monitoring both the population and its habitat using cutting-edge technology is a cornerstone of management programs. This practice assists managers

and decision-makers in detecting changes in wildlife populations and their habitats (Karanth et al., 2003).

However, Bhutan's conservation measures often commence with limited data and incomplete knowledge. These gaps have the potential to be addressed through the integration of advancing scientific knowledge into conservation practices. The utilization of potential and emerging scientific insights will not only help identify trends in wildlife and habitat but will also guide managers and policymakers to undertake appropriate management actions.

Output 4.1: Periodically monitor tiger and prey populations and publish reports.

Action 4.1.1: Conduct nationwide tiger population revalidation surveys every five years.

Action 4.1.2: Determine the distribution and abundance of prey species in tiger range field offices.

Action 4.1.3: Establish a database of tigers and other wild animals at department and field offices.

Action 4.1.4: Train and equip rangers on tiger research and monitoring teams.

Action 4.1.5: Conduct economic valuation of tigers in Bhutan.

Output 4.2: Enhance information on tiger ecology and movement.

Action 4.2.1: Conduct studies to assess habitat conditions for tigers and prey.

Action 4.2.2: Conduct radio collaring of tigers to determine ecology and movement.

Action 4.2.3: Determine the population viability of Tigers in Bhutan through assessments (Carrying capacity of tigers in Bhutan).

Action 4.2.4: Map critical tiger habitats for protection and management interventions.

Action 4.2.5: Conduct dietary selection studies by tiger and prey species.

Output 4.3: Establish a genetic database of tigers in Bhutan.

Action 4.3.1: Establish a genetic lab to perform genetic analysis of wildlife in Bhutan.

Action 4.3.2: Conduct training on tiger genetic analysis and DNA profiling.

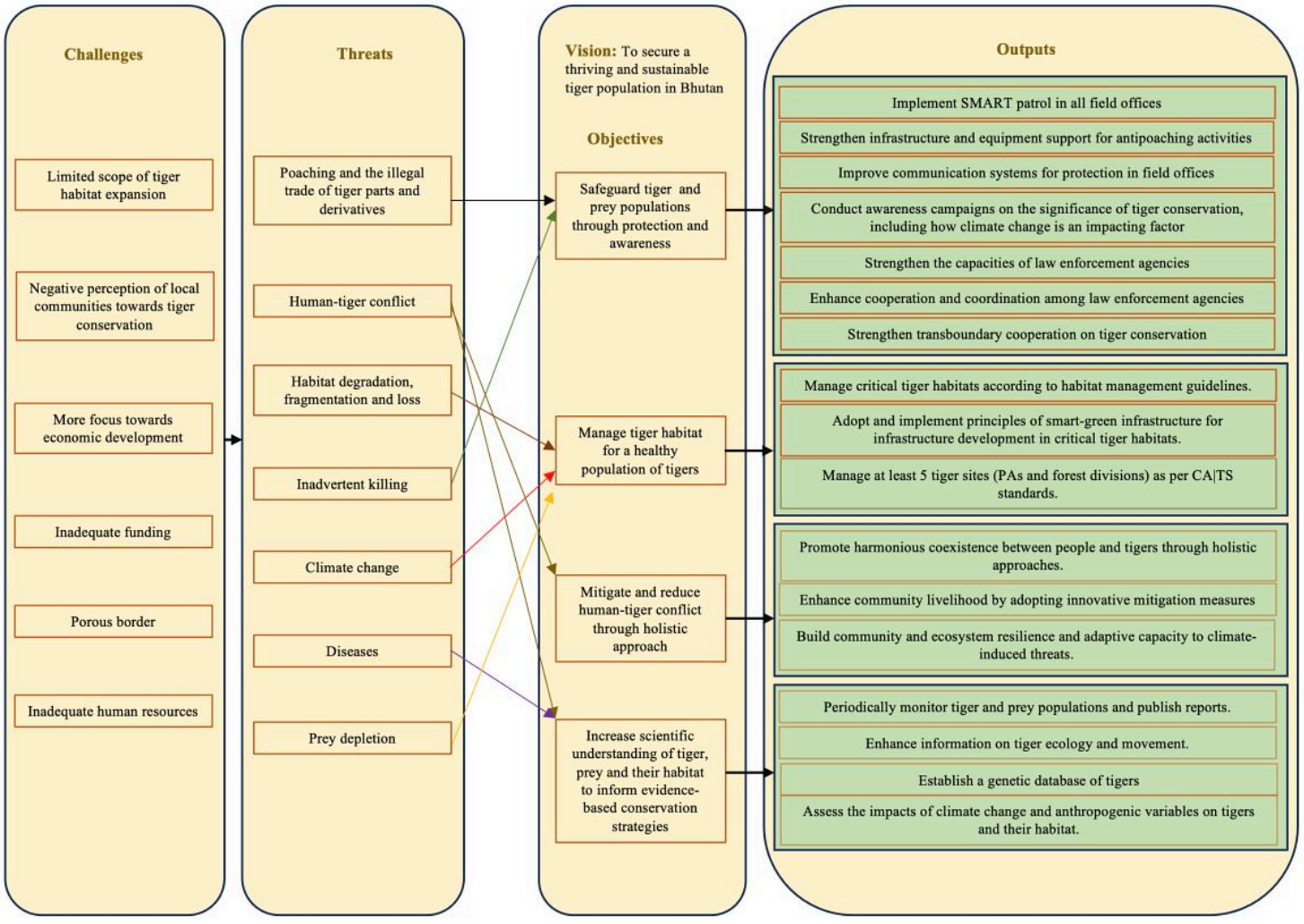
Action 4.3.3: Establish a genetic database of tigers.

Action 4.3.4: Maintain a database of genetic profiles of tigers in Bhutan.

Output 4.4: Assess the impacts of climate change and anthropogenic variables on tigers and their habitat.

Action 4.4.1: Monitor disease threats to tigers or prey species.
Action 4.4.2: Monitor the impact of feral dogs on wildlife populations.
Action 4.4.3: Assess the extent and severity of human-tiger conflicts at the national and field office levels.
Action 4.4.4: Strengthen the HWC Database with Forest Management and Information Division (FMID) through Forest Information Reporting and Monitoring System (FIRMS).
Action 4.4.5: Assess the impact of climate change on the livelihood of communities in tiger landscapes.
Action 4.4.6: Develop a comprehensive poaching hotspot map within tiger landscapes.
Action 4.4.7: Assess the impact of current and future climate changes on the habitat of tigers and their prey species.
Action 4.4.8: Assess the effects of road and infrastructural developments on habitat connectivity for tigers and prey.
Action 4.4.9: Periodically update hotspot mapping to capture spatio-temporal characteristics of conflicts.
Action 4.4.10: Assess social dynamics and tolerance levels to understand the severity and impacts of emerging conflicts.

Figure 1: Conceptual model of the tiger action plan for Bhutan



04 PLAN IMPLEMENTATION & MONITORING

Institutional arrangements

The implementation of the 10-year tiger action plan will be coordinated by the Nature Conservation Division and monitored by the Forest Management and Information Division under the Department of Forests and Park Services. Ugyen Wangchuck Institute for Forestry Research and Training will lead training and capacity-building activities outlined under the action plan. The field offices will implement the activities.

Work plan and budget

The major portion of funding for this ten-year tiger action plan is expected to be supported by the Royal Government of Bhutan and Bhutan for Life, as most of the conservation goals and milestones are aligned (table 1). Support is also expected from our long-time conservation partners like the WWF, Bhutan Trust Fund for Environmental Conservation, United Nations Development Program, and Bhutan Foundation, among others, in addition to funds sourced through grant proposals.

The total budget required for the implementation of the tiger action plan for the next ten years is Nu.750 million.

Monitoring and evaluation

Annual Monitoring of the action plan as per the M&E result framework should be mandated by the Forest Monitoring and information Division (FMID) in consultation with field offices and maintain records for each year's achievement. The cumulative achievement result shall be made available at the end of the plan period. An annual progress report of the plan implementation will be submitted by the respective protected area and forest division to DoFPS (FMID). Plan evaluation will be done at mid-term and at the end of the plan period by DoFPS. Plan monitoring and evaluation will be carried out as per the results framework table (table 2).

Table 2: Workplan and budget

Vision: To secure a thriving and sustainable tiger population in Bhutan by fostering robust conservation efforts, safeguarding their natural habitats, and promoting coexistence with local communities.											
Goal: By 2034, Bhutan aims to maintain a stable tiger population through enhanced protection, improved habitat and community engagement.											
	Budget in millions (in Ngultrums)										**Total Budget**
Activities	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	
Objective I: Safeguard Tiger and Prey Populations through Increased Protection and Awareness											
Output 1.1: Implement the SMART patrol program in all field offices.											
Action 1.1.1: Finalize the SMART data model and reporting requirements for Bhutan.											
Action 1.1.2: Train data officers on SMART software and analysis tools for tactical patrolling.	0.5	0.5									1
Action 1.1.3: Conduct regular SMART patrolling in all field divisions.	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	18
Action 1.1.4: Develop mechanisms to share intelligence reports among field offices.											
Action 1.1.5: Provide refresher courses and capacity building for SMART patrolling.	2				2			2			6
Output 1.2: Strengthen infrastructure and equipment support for anti-poaching activities.											
Action 1.2.1: Strengthen the Forest Monitoring and Information section in field offices through training and equipment.			2						2		4
Action 1.2.2: Establish camp sites/transit camps in strategic locations and maintain existing guard posts.	3	3					3	3			12

Action 1.2.3: Support frontline staff with field gear.	1.8			1.8		1.8					5.4
Output 1.3: Improve communication systems for protection in field offices.											
Action 1.3.1: Gather information through the use of poacher cameras.	1	1									2
Action 1.3.2: Set up new repeater stations for wireless communication in strategic locations and maintain existing ones.	3	3						1.5	1.5		9
Output 1.4: Conduct awareness campaigns on the significance of tiger conservation, including how climate change is an impacting factor.											
Action 1.4.1: Conduct religious discourses for communities with a focus on conservation and climate change.		2.5		2.5		2.5		2.5		2.5	12.5
Action 1.4.2: Identify and support nature clubs in schools as ambassadors of conservation.	1			1			1			1	4
Action 1.4.3: Sensitize stakeholders about critical tiger habitats to harmonize with developmental master plans.	1					1					2
Output 1.5: Strengthen the capacities of law enforcement agencies.											
Action 1.5.1: Conduct awareness workshops on Forest and Nature Conservation Rules and Regulations 2023 and other important legislation for relevant agencies (e.g., RBP, Customs).	1				1			1			3
Action 1.5.2: Provide training to field officials on basic enforcement skills, including wildlife crime detection and prosecution.	1.5			1.5			1.5				4.5
Action 1.5.3: Provide training to field staff on fundamental anatomical skills of wild animals, with a focus on identification of bones and skeletal parts.	1.5			1.5			1.5				4.5
Output 1.6: Enhance cooperation and coordination among law enforcement agencies.											
Action 1.6.1: Conduct workshops on combating illegal wildlife trade and involve other law enforcement agencies.	1				1				1		3

Action 1.6.2: Strengthen inter-agency intelligence coordination and information sharing at the national level.											
Action 1.6.3: Strengthen intelligence-reporting mechanisms at the field level.											
Output 1.7: Strengthen transboundary cooperation on tiger conservation.											
Action 1.7.1: Conduct meetings and workshops at the transboundary level to discuss issues, challenges, and best practices.	0.5				0.5			0.5			1.5
Action 1.7.2: Arrange exchange visits for forestry officials.			3				3				6
Action 1.7.3: Coordinate synchronized anti-poaching patrols, tiger monitoring, and other activities with Indian counterparts.							1.5	1.5	1.5		4.5
Objective II: Manage Tiger Habitats for a Healthy Population of Tigers and Prey Species											
Output 2.1: Manage critical tiger habitats according to habitat management guidelines.											
Action 2.1.1: Manage grasslands, including controlled burning and eradication of invasive species.		5	5	5	5	5	5	5	5	5	45
Action 2.1.2: Improve forested lands through enrichment plantation of native palatable species and removal of invasive species.		5		5	5	5	5	5	5	5	40
Action 2.1.3: Support the improvement of grazing lands (*tsamdos*).		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	40.5
Action 2.1.4 Carry out the sanitisation and improvement of high forests/plantations				4	4	4	4	4	4	4	28
Action 2.1.5: Maintain existing salt licks and water holes.		5	5	5	5	5	5	5	5	5	45
Output 2.2: Adopt and implement principles of smart-green infrastructure for infrastructure development in critical tiger habitats.											
Action 2.2.1: Organize sensitization workshops on smart-green infrastructure with relevant stakeholders.		1	1								2

Action 2.2.2: Enforce and monitor smart-green features in infrastructure development in tiger habitats.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5
Output 2.3: Manage at least 5 tiger sites (PAs and forest divisions) as per Conservation Assured Tiger Standards (CA|TS).											
Action 2.3.1: Register field divisions and protected areas for CA|TS accreditation.											
Action 2.3.2: Perform self-assessment of field offices for CA|TS accreditation.					1	1	1	1	1	1	6
Objective III: Mitigate and Reduce Human-Tiger Conflict through a Holistic Approach											
Output 3.1: Promote harmonious coexistence between people and tigers through holistic approaches.											
Action 3.1.1: Conduct mass education and awareness on the conflict scenario and preventive measures, wildlife-poaching, policy, strategy, and science of human-tiger conflict in Bhutan.		1			1			1			3
Action 3.1.2: Improve the existing conflict reporting system for Bhutan.	1										1
Action 3.1.4: Establish and strengthen visitor information facilities at field offices, such as brochures, reports, posters, etc.	1		1		1		1		1		5
Action 3.1.3: Install and maintain low-voltage electric fencing, chain link fencing, alarm fencing, and bio-fencing to minimize crop and cattle loss to wildlife.			15		15		15			15	60
Output 3.2: Enhance community livelihood by adopting innovative mitigation measures.											
Action 3.2.1: Promote upscaling of livestock management practices through improved breeds and enhanced guarding practices.		10	10	10							30
Action 3.2.2: Provide small-scale biogas digesters in HWC affected areas.			3.5	3.5	3.5						10.5

Action 3.2.3: Establish ex-gratia payments in the event of loss of human life or injury.	2					2					4
Action 3.2.4: Strengthen and support livestock insurance and compensation schemes.		10		10				10			30
Action 3.2.5: Explore, initiate, and strengthen community-based ecotourism in tiger landscapes.		10	10			10					30
Action 3.2.6: Facilitate CF/NWFP product diversification and marketing.		3			3					3	9
Output 3.3: Build community and ecosystem resilience and adaptive capacity to climate-induced threats.											
Action 3.3.1: Assess and establish PES schemes at feasible sites in the tiger landscapes.					2				2		4
Action 3.3.2: Support NWFP & CF management groups, Management of Private forests, Improvement of degraded watersheds, and the supply of safe drinking water for the improvement of community livelihood.	1	1	1	1	1	1	1	1	1	1	10
Objective IV: Increase Scientific Understanding of Tigers, Prey, and Their Habitat to Inform Evidence-Based Conservation Strategies											
Output 4.1: Periodically monitor tiger and prey populations and publish reports.											
Action 4.1.1: Conduct nationwide tiger population revalidation surveys every five years.				35					40		75
Action 4.1.2: Determine the distribution and abundance of prey species in tiger range field offices.		5			11.5					13	29.5
Action 4.1.3: Establish a database of tigers and other wild animals at department and field offices.	1					2					3
Action 4.1.4: Train and equip rangers on tiger research and monitoring teams.	1			1				1			3

Action 4.1.5: Conduct economic valuation of tigers in Bhutan.			10								10
Output 4.2: Enhance information on tiger ecology and movement.											
Action 4.2.1: Conduct studies to assess habitat conditions for tigers and prey.		1	1								2
Action 4.2.2: Conduct radio collaring of tigers to determine ecology and movement.		2			2			2			6
Action 4.2.3: Determine the population viability of tigers in Bhutan through assessments (Carrying capacity of tigers in Bhutan).	2										2
Action 4.2.4: Map critical tiger habitats for protection and management interventions.	0.5										0.5
Action 4.2.5: Conduct dietary selection studies by tiger and prey species.		1									1
Output 4.3: Establish a genetic database of tigers in Bhutan.											
Action 4.3.1: Establish a genetic lab to perform genetic analysis of wildlife in Bhutan.				20	20						40
Action 4.3.2: Conduct training on tiger genetic analysis and DNA profiling.			1			1				1	3
Action 4.3.3: Establish a genetic database of tigers.					1.5				1		2.5
Action 4.3.4: Maintain a database of genetic profiles of tigers in Bhutan.							1.5				1.5
Output 4.4: Assess the impacts of climate change and anthropogenic variables on tigers and their habitat.											
Action 4.4.1: Monitor disease threats to tigers or prey species.	1			1			1			1	4
Action 4.4.2: Monitor the impact of feral dogs on wildlife populations.		1						1			2

Action 4.4.3: Assess the extent and severity of human-tiger conflicts at national and field offices level.	1									1	2
Action 4.4.4: Strengthen the HWC Database with FMID through FIRMS.	1										1
Action 4.4.5: Assess the impact of climate change on the livelihood of communities in tiger landscapes.	2									2	4
Action 4.4.6: Develop a comprehensive poaching hotspot map within tiger landscapes.					0.1						0.1
Action 4.4.7: Assess the impact of current and future climate changes on the habitat of Tigers and its prey species.	4				2					2	8
Action 4.4.8: Assess the effects of road and infrastructural developments on habitat connectivity for tigers and prey.				5	5	5	5	5	5	5	35
Action 4.4.9: Periodically update hotspot mapping to capture spatial-temporal characteristics of conflicts.	1					1					2
Action 4.4.10: Assess social dynamics and tolerance levels to understand the severity and impacts of emerging conflicts.	1					1					2
TOTAL	**41.6**	**77.8**	**75.3**	**120.6**	**99.9**	**55.1**	**62.8**	**59.8**	**82.8**	**74.3**	**750**

Table 3: Results Framework

Vision: To secure a thriving and sustainable tiger population in Bhutan by fostering robust climate-smart conservation efforts, safeguarding their natural habitats, and promoting coexistence with local communities.			
Goal: By 2034, Bhutan aims to maintain a stable tiger population through enhanced protection, improved habitat and community engagement.			
Activities	**Objectively verifiable Output Indicators**	**Means of Verification**	**Lead Implementing Agency**
Objective I: Safeguard Tiger and Prey Populations through Increased Protection and Awareness			
Output 1.1: Implement the SMART patrol program in all field offices.			
Action 1.1.1: Finalize the SMART data model and reporting requirements for Bhutan.	Improved SMART data model developed	Issuance of data model latest SMART software	DoFPS
Action 1.1.2: Train data officers on SMART software and analysis tools for tactical patrolling.	Training of data officers on SMART software for tactical patrolling successfully conducted.	Training completion records, data officer certification, and training evaluation reports.	DoFPS
Action 1.1.3: Conduct regular SMART patrolling in all field divisions.	Systematic SMART patrolling conducted across all field divisions and protected areas.	Patrolling records, patrol logs, and reports of completed SMART patrolling.	All field offices
Action 1.1.4: Develop mechanisms to share intelligence reports among field offices.	Mechanisms to share intelligence reports compiled by FMID with all field divisions and protected areas developed.	Documentation of intelligence sharing mechanisms, communication logs, and reports of implementation.	DoFPS
Action 1.1.5: Provide refresher courses and capacity building for SMART patrolling.	Refresher courses and capacity-building sessions on SMART patrolling conducted.	Training records, participant feedback, and course evaluation reports.	DoFPS

Output 1.2: Strengthen infrastructure and equipment support for anti-poaching activities.			
Action 1.2.1: Strengthen the Forest Monitoring and Information section in field offices through training and equipment.	Forest Monitoring and Information sections in each forest division and protected area through the provision of necessary equipment strengthened.	Equipment inventory records, documentation of equipment distribution, and reports of strengthened sections.	NCD
Action 1.2.2: Establish camp sites/transit camps in strategic locations and maintain existing guard posts.	Establishment of camp sites/transit camps in strategic locations and improvement and equipping of existing guard posts.	Records of campsite setup and guard post improvements, inventory of camp equipment, and reports of enhanced facilities.	All Field Offices & NCD
Action 1.2.3: Support frontline staff with field gear.	Frontline staff in remote areas supported with field gear for patrolling.	Field gear distribution records, feedback from frontline staff, and reports of gear provision for patrolling.	NCD & Field offices
Output 1.3: Improve communication systems for protection in field offices.			
Action 1.3.1: Gather information through the use of poacher cameras.	Information gathering through the use of PoacherCams-AI camera systems initiated across all field offices	Documentation of PoacherCams setup, camera deployment records, and initial data collection.	DoFPS
Action 1.3.2: Set up new repeater stations for wireless communication in strategic locations and maintain existing ones.	Improved existing repeater stations for wireless communication and the setup of new stations in strategic locations.	Records of repeater station upgrades and new station installations, communication network coverage reports, and functional repeater stations.	DoFPS
Output 1.4: Conduct awareness campaigns on the significance of tiger conservation, including how climate change is an impacting factor.			

Action 1.4.1: Conduct religious discourses for communities with a focus on conservation and climate change.	Implemented Successful replication of religious discourses emphasizing the spiritual connection between conservation and human well-being, e.g., Hunter-Hermit.	Documentation of replicated discourses, event records, and reports highlighting the spiritual link to conservation.	Field Offices
Action 1.4.2: Identify and support nature clubs in schools as ambassadors of conservation.	Nature clubs in schools identified and supported as conservation ambassadors.	Records of identified nature clubs, support provided, and documentation of their conservation activities.	Field Offices
Action 1.4.3: Sensitize stakeholders about critical tiger habitats to harmonize with developmental master plans.	Stakeholders sensitized on critical tiger habitats to harmonize with developmental master plans.	Records of stakeholder sensitization efforts, meeting minutes, and reports demonstrating alignment with developmental master plans.	DoFPS/Field Offices
Output 1.5: Strengthen the capacities of law enforcement agencies.			
Action 1.5.1: Conduct awareness workshops on Forest and Nature Conservation Rules and Regulations 2023 and other important legislation for relevant agencies (e.g., RBP, Customs).	Successfully conducted of awareness workshops on FNCRR and relevant legislations for all relevant agencies, e.g., RBP, Customs.	Workshop documentation, attendance records, and reports demonstrating enhanced awareness of relevant legislations.	DoFPS/Field Offices
Action 1.5.2: Provide training to field officials on basic enforcement skills, including wildlife crime detection and prosecution.	Field staff trained in basic enforcement skills, including wildlife crime detection and prosecution, through refresher courses	Training records, refresher course completion records, and assessments of improved enforcement skills.	DoFPS/Field Offices

Action 1.5.3: Provide training to field staff on fundamental anatomical skills of wild animals, with a focus on identification of bones and skeletal parts.	Field staff provided with comprehensive training in fundamental anatomical skills, including bone and skeletal part identification.	Training completion records, skills assessment results, and documentation of anatomical training provided.	DoFPS
Output 1.6: Enhance cooperation and coordination among law enforcement agencies.			
Action 1.6.1: Conduct workshops on combating illegal wildlife trade and involve other law enforcement agencies.	Workshops on the detection of illegal wildlife trade with law enforcement agencies successfully conducted	Workshop documentation, attendance records, and reports demonstrating enhanced detection skills.	DoFPS/Field Offices
Action 1.6.2: Strengthen inter-agency intelligence coordination and information sharing at the national level.	Strengthened inter-agency intelligence enforcement at the national level.	Records of inter-agency cooperation, collaboration agreements, and improved intelligence sharing among agencies.	DoFPS
Action 1.6.3: Strengthen intelligence-reporting mechanisms at the field level.	Strengthened intelligence-reporting mechanisms at the field level.	Documentation of improved reporting protocols, field-level intelligence reports, and feedback on enhanced mechanisms.	Field Offices
Output 1.7: Strengthen transboundary cooperation on tiger conservation.			
Action 1.7.1: Conduct meetings and workshops at the transboundary level to discuss issues, challenges, and best practices.	Meetings and workshops organized at the transboundary level to discuss issues, challenges, and best practices.	Meeting/workshop records, attendance logs, and reports showcasing discussions and outcomes.	DoFPS/Field Offices

Action 1.7.2: Arrange exchange visits for forestry officials.	Successfully arranged exchange visits for forestry officials.	Records of exchange visits, itineraries, and feedback from participating officials.	DoFPS/Field Offices
Action 1.7.3: Coordinate synchronized anti-poaching patrols, tiger monitoring, and other activities with Indian counterparts.	Collaboration with Indian counter parts on anti-poaching patrols, tiger monitoring, and other activities coordinated.	Reports on synchronized anti-poaching patrol, tiger monitoring and other activities.	Field Offices
Objective II: Manage Tiger Habitats for a Healthy Population of Tigers and Prey Species			
Output 2.1: Manage critical tiger habitats according to habitat management guidelines.			
Action 2.1.1: Manage grasslands, including controlled burning and eradication of invasive species.	Managed grassland area, reduced invasive species presence, increased native plant diversity, grassland health improvement.	Total area of grassland brought under management.	Field Offices
Action 2.1.2: Improve forested lands through enrichment plantation of native palatable species and removal of invasive species.	The area brought under native species enrichment plantation and reduced presence of invasive species.	Area mapping for native species enrichment, Area under enrichment (Ha)	Field Offices
Action 2.1.3: Support the improvement of grazing lands (tsamdro).	Improved quality and productivity of grazing lands (tsamdros).	Area and No. of tsamdro improved.	Field Offices
Action 2.1.4 Carry out the sanitisation and improvement of high forests/plantations	Improved overall condition of high forest/plantation by sanitation.	Area of forest/plantation improved	Field Offices
Action 2.1.5: Maintain existing salt licks and water holes.	Existing saltlicks and waterholes restored	Number of restored and maintained saltlicks and water holes.	Field Offices
Output 2.2: Adopt and implement principles of smart-green infrastructure for infrastructure development in critical tiger habitats.			

Action 2.2.1: Organize sensitization workshops on smart-green infrastructure with relevant stakeholders.	Number of sensitization workshops conducted with relevant stakeholders.	Workshop attendance records, workshop agendas, and stakeholder feedback surveys.	DoFPS
Action 2.2.2: Enforce and monitor smart-green features in infrastructure development in tiger habitats.	Number of infrastructural developments in tiger habitats complying with smart-green features	Inspection reports, compliance records, and smart-green feature checklist assessments for infrastructure projects in tiger habitats.	Field Offices
Output 2.3: Manage at least 5 tiger sites (PAs and forest divisions) as per CA|TS standards.			
Action 2.3.1: Register field divisions and protected areas for CA|TS accreditation.	Number of tiger sites registered with CA|TS (Conservation Assured | Tiger Standards).	CA|TS registration records and documentation for each registered tiger site.	DoFPS & field Offices
Action 2.3.2: Perform self-assessment of field offices for CA|TS accreditation.	Number of tiger sites assessed and proposed for CA|TS accreditation.	Assessment reports, accreditation proposals, and CA|TS accreditation status documentation for each tiger site.	Field Offices
Objective III: Mitigate and Reduce Human-Tiger Conflict through a Holistic Approach			
Output 3.1: Promote harmonious coexistence between people and tigers through holistic approaches.			
Action 3.1.1: Conduct mass education and awareness on the conflict scenario and preventive measures, wildlife-poaching, policy, strategy, and science of human-tiger conflict in Bhutan.	Number of mass education and awareness events conducted on human-tiger conflict and preventive measures.	Event documentation, attendance records, and feedback surveys.	Field Offices

Action 3.1.2: Improve the existing conflict reporting system for Bhutan.	Improved implementation of the standard conflict reporting system in Bhutan.	Evaluation reports, updated conflict reporting records, and system utilization statistics.	DoFPS/Field Offices
Action 3.1.4: Establish and strengthen visitor information facilities at field offices, such as brochures, reports, posters, etc.	Established and enhanced visitor information facilities at field offices.	Facility inspection reports (No of facilities available at each office)	Field Offices
Action 3.1.3: Install and maintain low-voltage electric fencing, chain link fencing, alarm fencing, and bio-fencing to minimize crop and cattle loss to wildlife.	Installation and maintenance of wildlife-friendly fencing measures implemented	Fencing installation records (Length in Km) and No of beneficiaries	Field Offices & Relevant agencies
Output 3.2: Enhance community livelihood by adopting innovative mitigation measures.			
Action 3.2.1: Promote upscaling of livestock management practices through improved breeds and enhanced guarding practices.	Increased adoption of improved livestock breeds to reduce unproductive breeds	No. of improved breeds supplied	Field Offices, LG & Livestock sector
Action 3.2.2: Provide small-scale biogas digesters in HWC affected areas.	Number of small-scale biogas digesters provided in human-wildlife conflict (HWC) affected areas.	Distribution records, installation reports	Field Offices, LG & Livestock sector
Action 3.2.3: Establish ex-gratia payments in the event of loss of human life or injury.	SOP developed for Ex-gratia payment system. Ex-gratia payment implemented in cases of loss of human life or injury due to Human Tiger conflicts.	Records of ex-gratia payments made, incident reports, and beneficiary acknowledgments.	DoFPS & Other relevant agencies

Action 3.2.4: Strengthen and support livestock insurance and compensation schemes.	Strengthened and supported livestock insurance schemes.	Increased participation, and payout records for livestock losses, no of new schemes established.	Field Offices, LG & Livestock sector
Action 3.2.5: Explore, initiate, and strengthen community-based ecotourism in tiger landscapes.	Community-based ecotourism initiatives established (new) and strengthened (existing) in tiger landscapes.	Records of initiated or improved ecotourism programs, visitor statistics, and community income reports.	DoFPS & Other relevant agencies
Action 3.2.6: Facilitate CF/NWFP product diversification and marketing.	Diversified CF/NWFP (Community Forest/Non-Wood Forest Products) products and improved marketing.	Inventory of diversified products, sales records, and market analysis reports.	Field offices & Other relevant agencies
Output 3.3: Build community and ecosystem resilience to climate-induced threats.			
Action 3.3.1: Assess and establish PES schemes at feasible sites in the tiger landscapes.	Assessed and established Payment for Ecosystem Services (PES) schemes at feasible sites in tiger landscapes.	PES scheme feasibility reports, documentation of established PES agreements	DoFPS & other relevant agencies
Action 3.3.2: Support NWFP & CF management groups, Management of Private forests, Improvement of degraded watersheds, and the supply of safe drinking water for the improvement of community livelihood.	Support provided to NWFP & CF management groups, private forest management, watershed improvement, and safe drinking water supply for community livelihood enhancement.	Records of support provided and project reports	DoFPS & other relevant agencies
Objective IV: Increase Scientific Understanding of Tigers, Prey, and Their Habitat to Inform Evidence-Based Conservation Strategies			
Output 4.1: Periodically monitor tiger and prey populations and publish reports.			
Action 4.1.1: Conduct nationwide tiger population revalidation surveys every five years.	Nationwide tiger population revalidation survey conducted.	Survey reports & publication records	DoFPS & Field Offices

Action 4.1.2: Determine the distribution and abundance of prey species in tiger range field offices.	Prey species distribution and abundance within tiger range field offices completed	Prey species survey reports, distribution maps, and abundance estimates produced by field offices.	DoFPS & Field Offices
Action 4.1.3: Establish a database of tigers and other wild animals at department and field offices.	Comprehensive database of tigers and other wild animals established at department and field offices.	Database documentation, data collection records, and database accessibility for relevant personnel.	DoFPS & Field Offices
Action 4.1.4: Train and equip rangers on tiger research and monitoring teams.	Tiger research and monitoring teams trained and equipped	Training records & equipment distribution records	DoFPS & Field Offices
Action 4.1.5: Conduct economic valuation of tigers in Bhutan.	Economic valuation of tigers in Bhutan studied.	Economic valuation report and study documentation.	DoFPS & Field Offices
Output 4.2: Enhance information on tiger ecology and movement.			
Action 4.2.1: Conduct studies to assess habitat conditions for tigers and prey.	Habitat condition assessment study for tigers and prey species assessed	Study report, field data collection records, and assessment findings.	DoFPS & field Offices
Action 4.2.2: Conduct radio collaring of tigers to determine ecology and movement.	Radio collaring of tigers for ecology and movement studies conducted.	Radio collar deployment records, tracking data, and study reports on tiger ecology and movement	DoFPS & field Offices
Action 4.2.3: Determine the population viability of Tigers in Bhutan through assessments (Carrying capacity of tigers in Bhutan).	Population viability of tigers in Bhutan, including determining the carrying capacity of tigers assessed	Viability assessment report	DoFPS & field Offices
Action 4.2.4: Map critical tiger habitats for protection and management interventions.	Critical tiger habitats for protection and management interventions mapped.	Habitat maps, GIS data, and intervention plans based on habitat maps.	DoFPS & field Offices

Action 4.2.5: Conduct dietary selection studies by tiger and prey species.	Dietary selection for tigers and prey species studied	Study reports.	DoFPS & field Offices
Output 4.3: Establish a genetic database of tigers in Bhutan.			
Action 4.3.1: Establish a genetic lab to perform genetic analysis of wildlife in Bhutan.	Genetic lab for wildlife genetic analysis in Bhutan established.	Lab setup records, equipment inventory, and genetic analysis reports conducted in the lab.	DoFPS
Action 4.3.2: Conduct training on tiger genetic analysis and DNA profiling.	Genetic analyst trained and appointed for tiger genetic analysis and profiling.	Training and appointment orders	DoFPS
Action 4.3.3: Establish a genetic database of tigers.	Genetic database of tigers established	Database setup records, genetic data collection, and accessibility of the tiger genetic database for authorized personnel.	DoFPS
Action 4.3.4: Maintain a database of genetic profiles of tigers in Bhutan.	Published report on the genetic profiles of tigers in Bhutan.	Report, dissemination records, and access to the genetic profiles report.	DoFPS
Output 4.4: Assess the impacts of climate change and anthropogenic variables on tigers and their habitat.			
Action 4.4.1: Monitor disease threats to tigers or prey species.	Disease threats to tigers and prey species monitored	Disease monitoring reports and any relevant research findings on disease threats to tigers and prey species.	DoFPS & DoL

Action 4.4.2: Monitor the impact of feral dogs on wildlife populations.	Impact of feral dogs on wildlife population monitored.	Monitoring reports, research findings, and population assessments related to the impact of feral dogs on wildlife.	DoFPS & DoL
Action 4.4.3: Assess the extent and severity of human-tiger conflicts at national and field offices level.	Extent and severity of human-tiger conflicts at national and field office levels assessed.	Conflict assessment reports on the extent and severity of human-tiger conflicts.	DoFPS & Field Offices
Action 4.4.4: Strengthen the HWC Database with FMID through FIRMS.	The Human-Wildlife Conflict (HWC) Database strengthened	Functional database records, and data-sharing reports.	DoFPS & Field Offices
Action 4.4.5: Assess the impact of climate change on the livelihood of communities in tiger landscapes.	Impact of climate change on the livelihood of communities in the tiger landscape assessed	Climate change impact assessment reports and documented findings on climate change effects on livelihoods.	DoFPS & Field Offices
Action 4.4.6: Develop a comprehensive poaching hotspot map within tiger landscapes.	Comprehensive poaching hotspot mapped.	Poaching hotspot map documentation.	DoFPS & Field Offices
Action 4.4.7: Assess the impact of current and future climate changes on the habitat of tigers and its prey species.	Climate change on the habitat of tigers and their prey species assessed	Climate change impact assessment report, habitat data analysis, and documented findings on climate change effects on tiger and prey habitat.	DoFPS & Field Offices
Action 4.4.8: Assess the effects of road and infrastructural developments on habitat connectivity for tigers and prey.	Effects of road and infrastructural developments on habitat connectivity for tigers and prey assessed.	Assessment reports	DoFPS & Field Offices

Action 4.4.9: Periodically update hotspot mapping to capture spatio-temporal characteristics of conflicts.	Periodical conflict hotspot mapped	Hotspot maps	DoFPS & Field Offices
Action 4.4.10: Assess social dynamics and tolerance levels to understand the severity and impacts of emerging conflicts.	Social dynamics and tolerance levels studied	Social dynamics and tolerance assessment reports	DoFPS & Field Offices

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