



Human-Wildlife Conflict Management

Conflict to Coexistence (C2C) Strategy for
Lhamoizingkha Gewog, Dagana (2025–2029)

Divisional Forest Office, Dagana
Department of Forests and Park Services
Ministry of Energy and Natural Resources



Supported by:



Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

based on a decision of
the German Bundestag

IKI
INTERNATIONAL
CLIMATE INITIATIVE



Prepared by:

1. Jigme Wangchuk, Forestry Officer, DFO, Dagana
2. Wangchuk Blon, Forestry Officer, DFO, Dagana

Inputs and Guidance:

1. Ugyen Tshering, Chief Forestry Officer, DFO, Dagana
2. Ugyen Tenzin, Sr. Forestry Officer, Lhamoizingkha Range, DFO, Dagana
3. Tenzinla, Forest Ranger I, Lhamoizingkha Range, DFO, Dagana
4. Jamyang Tshering, Asst. Forester, Lhamoizingkha Range, DFO, Dagana
5. Tshering Zam, Dy. Chief Forestry Officer, NCD, DoFPS
6. Kinga Norbu, Dy. Chief Forestry Officer, NCD, DoFPS
7. Phub Dorji, Sr. Forestry Officer, NCD, DoFPS
8. Nagdrel Lhamo, WWF-Bhutan, Thimphu
9. Kinley Tenzin, WWF-Bhutan, Thimphu

Data collectors:

1. Ugyen Tenzin, Sr Forestry Officer, Lhamoizingkha Range
2. Moni Kumar Neopany, Forest Ranger I, Lhamoizingkha Range
3. Chandra Singh Subba, Forest Ranger II, Lhamoizingkha Range
4. Jamyang Tshering, Asst. Forester, Lhamoizingkha Range
5. Dawa Tshering, Asst. Forester, Lhamoizingkha Range
6. Sancha Maya Moktan, Asst. Forester, Lhamoizingkha Range

Reviewers:

1. Kinley Dem, Chief Forestry Officer, FMID, DoFPS
2. Tashi Norbu Waiba, Principal Forestry Officer, FRPMD, DoFPS
3. Rinchen Namgay, Dy. Chief Forestry Officer, UWIFoRT, DoFPS
4. Kinga Norbu, Dy. Chief Forestry Officer, FMID, DoFPS
5. Tshering Zam, Dy. Chief Forestry Officer, NCD, DoFPS
6. Phub Dorji, Sr. Forestry Officer, NCD, DoFPS

Citation:

DFO Dagana. (2025). Human-Wildlife Conflict Management: Conflict to Co-existence (C2C) Strategy for Lhamoizingkha Gewog, Dagana.

Reviewed and endorsed by the 78th session of the TAC meeting held on 16th-17th February 2026

Photo credits:

Copyright: © Divisional Forest Office, Dagana, 2025

Abbreviations

BPC	Bhutan Power Corporation Limited
C2C	Conflict to Co-existence
CF	Community Forests
CFO.....	Chief Forestry Officer
DDA.....	Dagana Dzongkhag Administration
DFO	Divisional Forest Office
DoFPS	Department of Forests and Park Services
DoST.....	Department of Surface Transport
ECCD	Early Childhood Care and Development
ECR.....	Extended Class Room
FAO	Food and Agriculture Organization
FMID:	Forest Monitoring and Information Division
GMC	Gelephu Mindfulness City
HWC.....	Human-wildlife Conflict
NC.....	National Council
NWFPG.....	Non-Wood Forest Product Group
ORC	Outreach Clinic
QRT	Quick Response Team
RO.....	Range Officer
RNR	Renewable Natural Resources
SMART	Spatial Monitoring and Tracking Tool
RSPN.....	Royal Society for Protection of Nature
BTFEC.....	Bhutan Trust Fund for Environmental Conservation



ནགས་ཚལ་དང་གླིང་ཀ་ཞབས་ཏྲུག་ལས་ཁུངས།

Royal Government of Bhutan
Ministry of Energy and Natural Resources
Department of Forests and Park Services
Thimphu: Bhutan



Foreword



Human-Wildlife Conflict (HWC) remains a major challenge for conservation and rural livelihoods in Bhutan, particularly in forest-dependent communities like Lhamoizingkha Gewog. As pressures from climate change and development increase, promoting coexistence between people and wildlife has become more urgent than ever.

The Conflict to Coexistence (C2C) Strategy for Lhamoizingkha Gewog (2025-2029) is a timely, community-driven response developed

through field assessments and consultations across all chiwogs. It focuses on reducing conflict with key species while strengthening livelihoods, protecting habitats, and enabling wildlife to thrive alongside communities through prevention, mitigation, and strong local participation.

With the support of the IKI-WWF Project, "Living Landscapes: Securing High Conservation Values in South-Western Bhutan," and close collaboration with local governments and partners, this Strategy provides a practical roadmap for sustainable coexistence. I extend my sincere appreciation to the communities of Lhamoizingkha Gewog and the DFO Dagana team for their dedication and stewardship in driving this important initiative forward. The Department of Forests and Park Services remains fully committed to its implementation to safeguard both biodiversity and community well-being for generations to come.

(Karma Tenzin)
Director

Acknowledgement

The C2C strategy for Lhamoizingkha gewog is the result of a collective and dedicated effort by the staff of the Divisional Forest Office, Dagana. The Division sincerely acknowledges the commitment, professionalism, and teamwork demonstrated by all officers and staff who contributed their time, experience, and technical inputs toward the successful formulation of this strategy. Their sustained engagement throughout the process ensured that the document is comprehensive, practical, and grounded in field realities.

The formulation of this strategy was made possible through the unwavering support and guidance of the Department and WWF, Bhutan. The Division is deeply grateful for their strategic direction, technical advice, and continuous encouragement. The Division further expresses its sincere gratitude to the IKI Project, “Living Landscapes: Securing High Conservation Values in South-Western Bhutan,” for its generous financial support, which enabled the conduct of comprehensive socio-economic and field surveys. The data generated through these assessments formed a critical foundation for evidence-based planning and significantly informed the management interventions contained in this strategy. WWF–Bhutan, together with the Project Coordination Unit, played a pivotal role in facilitating the timely procurement of essential equipment and field gear, and in delivering capacity-building programs. These interventions greatly strengthened the technical capacity of the field teams involved in the assessment.

The Division would like to extend special appreciation to Mr. Jigme Wangchuk of DFO Dagana, who played a crucial leadership role in guiding and coordinating the formulation of this strategy. His dedication, technical oversight, and leadership were instrumental in bringing the C2C planning process to completion. Finally, the Division extends its heartfelt thanks to all individuals, institutions, and stakeholders who, in various capacities, contributed to the development of this strategy. Their collective efforts have resulted in a key milestone that will guide Human Wildlife Conflict management and their co-existence in Lhamoizingkha Gewog in the years to come.

Contents

Foreword	IV
Acknowledgement	V
1. Introduction	1
2. Goal and Objectives	2
3. Methodology	2
3.1. Site Description	2
3.2. Methods	3
3.2.1 Context Screening	4
3.2.2 Stakeholder Identification and Analysis	4
3.2.3 HWC Assessment	6
3.2.4 Co-design	6
4. Results and Discussions	7
4.1. Demography and Social information	7
4.2. Overall results for Lhamoizingkha Gewog	8
4.2.1 Conflict Species	8
4.2.2 Results by Outcomes	9
4.2.3 Results by Elements	10
4.3. Chiwog-wise Results	12
4.3.1 Lhamoizingkha Chiwog	12
4.3.2. Loongsilsa Chiwog	15
4.3.3 Tshamzhigosa Chiwog	17
4.3.4 Kuendrelthang Chiwog	18
4.3.5 Chongsamling Chiwog	21
5. Conflict to Coexistence strategy	23
6. Monitoring and Evaluation	25
6.1. Monitoring	25
6.2. Evaluation	25
7. Conclusion	27
References	28
Annexure : C2C Tool 4: Context Screening Form for C2C: Conflict to Coexistence-Approach	30

Figures

Figure 1.	Location map of Lhamoizingkha gewog	2
Figure 2.	C2C: Conflict to Co-existence Framework.....	3
Figure 3.	Primary Conflict species in Lhamoizingkha gewog	8
Figure 4.	Result by Outcome for Lhamoizingkha gewog	10
Figure 5.	Result by Element for Lhamoizingkha Gewog	12
Figure 6.	Result of human-wildlife conflict species.....	13
Figure 7.	Result by outcome for Lhamoizingkha chiwog	13
Figure 8.	Priority needs across people, wildlife, livelihoods/assets, and habitat response areas	14
Figure 9.	Primary Conflict species in Loongsilsa chiwog	15
Figure 10.	Result by Outcome for Loongsilsa chiwog.....	16
Figure 11.	Results by elements for Loongsilsa chiwog	16
Figure 12.	Primary Conflict species in Tshamzhigosa chiwog	17
Figure 13.	Result by outcome for Tshamzhigosa chiwog	18
Figure 14.	Results by elements for Tshamzhigosa chiwog	19
Figure 15.	Primary Conflict Species in Kuendrelthang chiwog.....	19
Figure 16.	Result by Outcomes for Kuendrelthang chiwog.....	20
Figure 17.	Result by Elements for Kuendrelthang chiwog.....	20
Figure 18.	Primary Conflict species in Chongsamling chiwog	21
Figure 19.	Result by Outcomes for Chongsamling chiwog.....	22
Figure 20.	Result Elements for Chongsamling chiwog.....	22

Tables

Table 1.	Stakeholder analysis matrix for Lhamoizingkha gewog	5
Table 2.	Participants from each chiwog during the consultation meeting.....	7
Table 3.	Results by Outcome	9
Table 4.	Implementation Plan and Financial Outlay	24
Table 5.	Monitoring and Evaluation Framework	26

1. Introduction

Human–Wildlife Conflict (HWC), has emerged as a critical global issue in increasingly shared landscape conservationists, agriculturalists, policymakers, and the communities (Wangchuk et al., 2023). According to Mekonen (2019), humans and wildlife have coexisted for centuries through domestication and habitat protection. However, an increasing competition between humans and wildlife over finite natural resources has exacerbated the conflict worldwide (Kiogora and Gathoni, 2021). This conflict arises when human–wildlife interactions result in mutual negative impacts such as wildlife raiding crops, livestock depredation, human casualties, or damaging property, often leading to the loss of livelihoods and exacerbation of poverty (World Bank, 2023; Tobgay et al., 2019). According to the Food and Agriculture Organization (FAO, 2023), HWC is defined as any interaction between humans and wildlife that results in negative effects on human social, economic, or cultural life, on wildlife conservation, or on the environment. These conflicts occur when wildlife damages crop, predated on livestock, or threatens human safety. On the contrary, humans may negatively impact wildlife through habitat destruction or retaliatory actions.

As a part of the Eastern Himalayas, one of the world's 34 biodiversity hotspots, Bhutan is a home to biologically diverse landscapes (Wangchuk, 2019). As per the Forest Monitoring and Information Division (FMID, 2023), 69.71% of the country is under forest coverage, which serves as a home to globally threatened large carnivores – Bengal tiger, snow leopard, Himalayan black bear, common leopard, dhole, and clouded leopard (Letro, 2021). Additionally, prey species such as sambar, wild boar, deer, Assamese macaque, and Asian elephant thrive in Bhutan's ecosystems. However, Bhutan's predominantly agrarian society (Bhutan Foundation, 2023), with the majority of the population residing in rural areas and relying on agriculture for livelihoods, faces considerable challenges from HWC. The communities' dependence on forest resources heightens the frequency of human–wildlife interactions, often with detrimental outcomes (Yeshey et al., 2023).

According to Letro et al. (2021), an assessment of hotspots for HWC in Bhutan identified Dagana as the sixth hotspot for crop and property loss and 13th hotspot for livestock depredation. The HWC data (2016–2020) with Dagana Divisional Forest Office (DFO) since its institutionalization revealed the highest occurrence of HWC at Lhamoizingkha, Tashiding, and Lajab Gewog. Similarly, the survey conducted on HWC (2021–2023) by the Division noted 1,389 HWC incidences, with crop damage (1,119 cases) being the most prevalent impact of HWC, followed by livestock predation (200 cases), property damage (64 cases), and human casualties (six cases) – including two deaths.

Given these challenges, effective management of HWC requires a multidisciplinary, holistic, and comprehensive approach (Gross et al., 2021; Leslie et al., 2019; Wangdi et al., 2018). Thus, the Conflict to Coexistence (C2C) is one such approach to enable systematic HWC management planning, implementation and monitoring with a stepwise approach (WWF, 2023).

2. Goal and Objectives

Goal: “To ensure harmonious co-existence between wildlife and people through holistic approach”.

Objectives:

- Safeguard people and their livelihood/assets alongside wildlife presence.
- Secure wildlife and its habitat to sustain a healthy and resilient wildlife population.

3. Methodology

3.1. Site Description

Lhamoizingkha gewog is one of the fourteen gewogs in Dagana and is part of the Lhamoizingkha Dungkhag, along with Karmaling and Nichula gewogs. The gewog spans over an area of 103 square kilometers and has 540 households, with a total population of 3,490, comprising 1,778 males and 1,712 females (Dagana Dzongkhag Administration [DDA], 2018). In 2007, Lhamoizingkha Dungkhag was separated from Sarpang Dzongkhag to merged with Dagana Dzongkhag, resulting in a significant administrative change. This shift made Lhamoizingkha, Karmaling, and Nichula part of the southernmost region of Dagana (DDA, 2018).

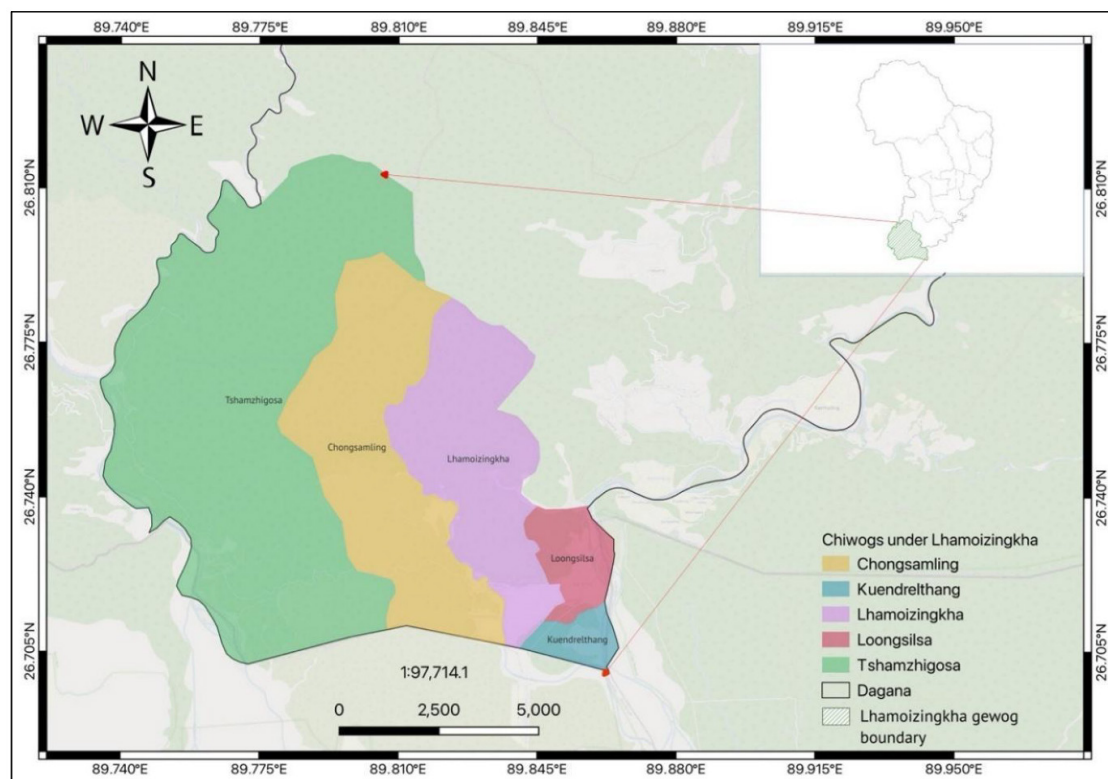


Figure 1. Location map of Lhamoizingkha gewog

The gewog has access to all necessary amenities, including the Dungkhag administration, court, hospital, Outreach Clinic (ORC), schools (up to class 12), Extended Classroom (ECR)/Early Childhood Care and Development (ECCD) centers, banking institutes, Lhakhang, driving center, and various regional offices and government institutes including the renewable natural resources (RNR) extension office and the forest office, providing various services to the local communities of Karmaling Gewog, Nichula gewog, and the five chiwogs – Tshamzhigosa, Lhamoizingkha, Chongsamling, Loongsilsa, and Kuendrelthang within Lhamoizingkha gewog.

Strategically located on the border with Assam and West Bengal, the gewog offers significant geopolitical and economic potential. Being part of the Gelephu Mindfulness City (GMC) project, Lhamoizingkha gewog has opportunities for development in energy generation and local employment. Additionally, the gewog has high tourism potential due to its natural beauty and cultural significance. Notable sites include the salt lick area (Lama Lamini) and Khurul lake (Pelden Lhamoi-Lhatsho), from which the gewog derives its name.

3.2. Methods

This strategy is developed based on the approaches and principles of the Conflict to Co-existence (C2C) approach. The C2C approach is a structured, integrated framework designed to guide systematic planning, implementation, and monitoring of human-wildlife conflict (HWC) management with principles of holism, resilience, shared responsibility and tolerance. The approach operates on key assumptions: all four primary outcomes must be achieved to manage HWC effectively. The approach provides clear, stepwise guidance for effective management, promoting integrated and holistic strategies that balance long-term solutions with short and intermediate-term interventions (figure 2).

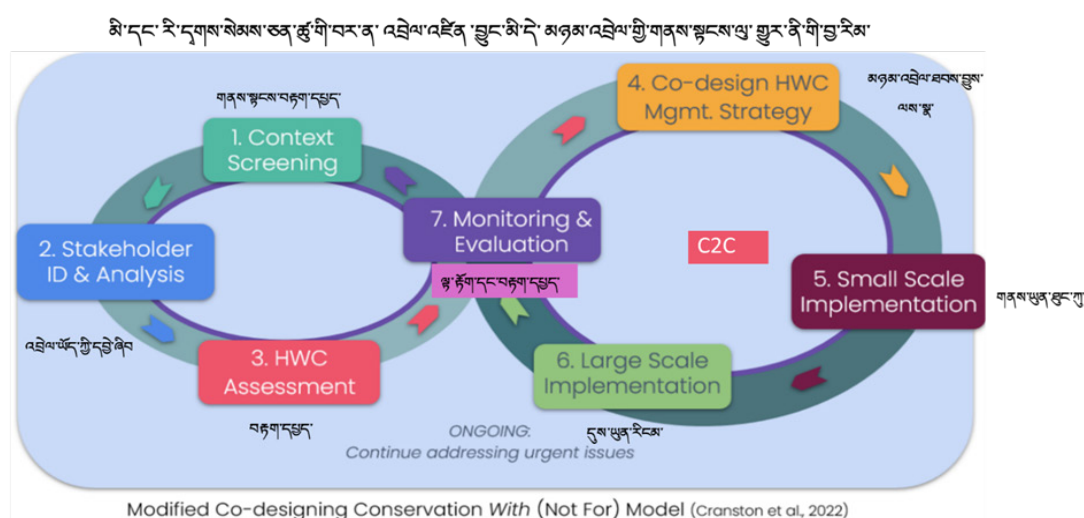


Figure 2. C2C: Conflict to Co-existence Framework

3.2.1 Context Screening

Context screening is the initial phase of the assessment process, aimed at identifying and analyzing the specific characteristics of a landscape and its prevailing HWC dynamics. Before completing this step, the C2C project manager gathers all relevant baseline information, such as social landscape mapping, government census records, and other pertinent resources, to achieve a comprehensive understanding of the landscape. In consultation with forestry colleagues and stakeholders, including local government officials, context screening was conducted using C2C Tool 4: annexure. This involved detailing the site (e.g., landscape information, human demographics, and livelihoods), trends in HWC (e.g., records of conflict species, frequency/severity and types of conflict, and management interventions), drivers of HWC (both human-induced and natural drivers), wildlife dynamics (trends in conflict and prey species, movement of species through the landscape, and conflict drivers), and relevant policies.

3.2.2 Stakeholder Identification and Analysis

Stakeholders are individuals or groups of individuals who have an interest, or “stake,” in the subject under consideration in this case the HWC situation. Typically, multiple stakeholder groups are involved in HWC scenarios. Some groups are directly impacted by HWC, while others are involved in its management. Additionally, some stakeholders are not directly affected but are highly influential. For the C2C approach, it is crucial to understand the stakeholders involved in human-wildlife conflict (HWC) and their collaborative potential. Therefore, a core team consisting of the Chief Forestry Officer, IKI Project focal, Range Officer, LG officials, Gewog Agriculture and Livestock Extension Supervisors, and Tshogpas from five Chiwogs was constituted. Together, stakeholder identification and analysis matrix using the Stakeholder Analysis Matrix (C2C Tool 5) was carried out, which involves clustering of the various stakeholders (Table 1). This matrix employs a systematic evaluation process by answering a series of questions on a scale of 1 to 5, focusing on the following aspects:

- Stakeholders’ interest in HWC and its management in the Lhamoizingkha Gewog.
- Their influence on the long-term success of an HWC management strategy.
- Their availability to participate in the co-design of the HWC management strategy.

Table 1. Stakeholder analysis matrix for Lhamoizingkha gewog

Stakeholders	INTEREST in HWC and its management in this landscape (1 - 5)	INFLUENCE on long-term success of a HWC management strategy (1 - 5)	AVAILABILITY to participate in the co-design of a HWC management strategy (1 - 5)	Category
Diary Group	5	2	4	High interest and availability, low influence
Farmers	5	2	5	
Gewog Livestock Extension Officer	5	3	5	High interest and availability, medium influence
Gewog Agriculture Extension Officer	5	3	5	
NWFPGs	4	3	5	
Dagana DFO (CFO)	5	3	5	
Assistant Dzongkhag Agriculture Officer	5	3	3	High interest and medium influence and availability
Assistant Dzongkhag livestock officer	5	3	3	
Lhamoizingkha Gup	5	5	4	High interest, influence and availability
Kuendrelthang Tshogpa	5	5	5	
Loongsilsa Tshogpa	5	5	5	
Chongsamling Tshogpa	5	5	5	
Tshamzhigosa Tshogpa	5	5	5	
Lhamoizingkha Tshogpa	5	5	5	
Mangmi- representative of villagers	5	5	3	
NWFPG chairperson	4	4	5	
Dungkhag Administration	5	5	4	
RO (Lhamoizingkha)	5	5	5	
Tarayana	5	4	4	High interest, medium influence and medium availability
QRT chair persons	5	5	4	
NC	5	5	3	High interest, medium influence and medium availability
Lhamoizingkha Lam	1	4	4	Low interest and high influence and availability
Apiculture	2	2	5	Low interest and influence, high availability
RBP (Lhamoizingkha)	1	1	3	Low interest and influence, medium availability
RSTA	1	1	3	
ORC	2	2	2	Low interest, influence and availability
BPC	1	2	2	
Teachers	2	4	2	Low interest, medium influence and low availability
Dasho Dungpa	3	4	1	Medium interest, high influence and low availability
Media	3	3	3	Medium interest, influence and availability
Business man	3	2	2	Medium interest, low influence and availability
DoST	3	2	1	

The stakeholder analysis shows a diverse range of interest and influence levels across groups involved in the HWC management. As illustrated in table 1, stakeholders with both high interest, high influence, and high availability (Gup, Tshogpa, concerned Range Officer, NWFPG Chairperson, Tarayana, Dungkhag Administration and QRT Chairperson) can significantly impact the success of the strategy. Stakeholders having medium influence such as extension officers, the CF chairperson, and media can also aid in information dissemination and resource management. Stakeholders having low influence (farmers, dairy groups, and apiculture practitioners) can also actively contribute at ground-level implementation. On the contrary, stakeholders with low interest and influence such as Bhutan Power Cooperation (BPC) and ORC have minimal direct impact on the initiative.

3.2.3 HWC Assessment

The C2C assessment in Lhamoizingkha was conducted over a period from June 3 – 20, 2024. Lhamoizingkha Gewog comprises five Chiwogs: Lhamoizingkha, Kuendrelthang, Loongsilsa, Chongsamling, and Tshamzhigosa. To determine an appropriate sample size from the total household population, Yamane's formula with 95% Confidence interval was applied:

$$n = \frac{N}{1 + Ne^2},$$

where n represents the sample size, N is the total population size, and e is the margin of error (0.05). Based on this calculation, 189 households were selected and interviewed out of a total of 540 households across the five Chiwogs in Gewog. For the sample representing service providers, 44 respondents were included, with at least two representatives from each institution or agency operating within Lhamoizingkha Gewog's jurisdiction. Efforts were made to alternate between male and female respondents to minimize gender bias within the sample.

3.2.4 Co-design

In Lhamoizingkha gewog, the co-design process for developing HWC management strategy adopted a participatory approach, ensuring that the strategies closely reflected the needs and perspectives of the local communities. The process, conducted from October 21 to November 5, 2024, included systematic public consultations across all five chiwogs in the gewog: Lhamoizingkha, Kuendrelthang, Loongsilsa, Chongsamling, and Tshamzhigosa. A total of 189 community members participated in the consultation meetings, with 47.6% ($n = 90$) female and 52.4% ($n = 99$) male participants (Table 2). Consultations were held in each chiwog to actively engage local communities in the strategy development process.

This inclusive approach allowed participants from mixed genders to voice their concerns, priorities, and insights on human-wildlife conflict in their respective chiwogs. The community members shared their experiences and challenges, providing a grassroots perspective on the situation. Apart from the communities, 48 duty bearers/service providers (Male: 48 and Female: 4) attended the consultation meeting arranged at two venues – Lhamoizingkha Dungkhag hall and Dagana Dzongkhag Tshogdu Hall.

Table 2. Participants from each chiwog during the consultation meeting

Chiwog	Female	Male	Total participants
Chongsamling	1	10	11
Kuendrelthang	18	22	40
Lhamoizingkha	28	17	45
Loongsilsa	18	25	43
Tshamzhigosa	25	25	50
Grand Total	90	99	189
%	47.6%	52.4%	100.0%

The results of the C2C assessment were also presented during the consultation. Sharing these findings with community members facilitated a transparent dialogue, allowing participants to validate the data with their live experiences and gain a deeper understanding of the scale and nature of the issues they face. Using the insights from the C2C assessment and feedback from the public consultations, the community members and project manager worked collaboratively to co-design targeted strategies to mitigate HWC. This collaborative approach ensured that strategies were both locally appropriate and co-owned by the community. The co-designing process led to the development of comprehensive strategies that will address specific challenges identified in each chiwog.

4. Results and Discussions

4.1. Demography and Social information

Understanding the demographic profile of community members was crucial to capture diverse perspectives within the community, providing a more inclusive and accurate representation. The sample comprises 52.4% male respondents ($n = 99$) and 47.6% female respondents ($n = 90$), indicating almost equal gender representation. Within the age group, the majority of respondents (47.1%, $n = 89$) were in the age group of 41–60, followed by 27% ($n = 51$) over 60 years old, 20.1% ($n = 38$) in between the age group of 19–40 and 5.8% ($n = 11$) in between the age group of 15–18.

Regarding educational background, about 55.6% ($n = 105$) of the respondents were illiterate, followed by Non-Formal Education (NFE, 10.6%, $n = 20$), primary education (19.0%, $n = 36$), secondary education (12.1%, $n = 22$), tertiary education (2.1%, $n = 4$) and others (1.1%, $n = 2$). This demographic data provides a comprehensive understanding of the community's dynamics, which is essential for designing effective, targeted interventions for managing HWC. The communities are mainly dependent on agriculture, livestock, and forest for their livelihood.

4.2. Overall results for Lhamoizingkha Gewog

4.2.1 Conflict Species

In Lhamoizingkha Gewog, the C2C Project Manager, Service Providers/Duty Bearers and Community Members identified a set of conflicts causing species that pose significant challenges to the communities. As an agrarian society, primarily dependent on agriculture, crop damage by wildlife emerged as the most pressing issue, alongside damages to property and threats to human lives.

The conflict species identified in the communities includes barking deer, Himalayan black bear, birds, eagle, elephants, guar, leopard, macaque, marten, porcupine, rodents, rabbit, sambar, snake, wild dog, and wild pig. Among these, the Service Providers/Duty Bearers reported rodents, barking deer, and birds as the most significant conflict species, while the Community Members identified birds, wild pigs, macaques, elephants, and bears as the primary conflicting species. Both groups agreed on birds, barking deer, elephants, and wild pigs as major sources of conflict. A graphical representation of conflict species and their impact is illustrated in figure 3.

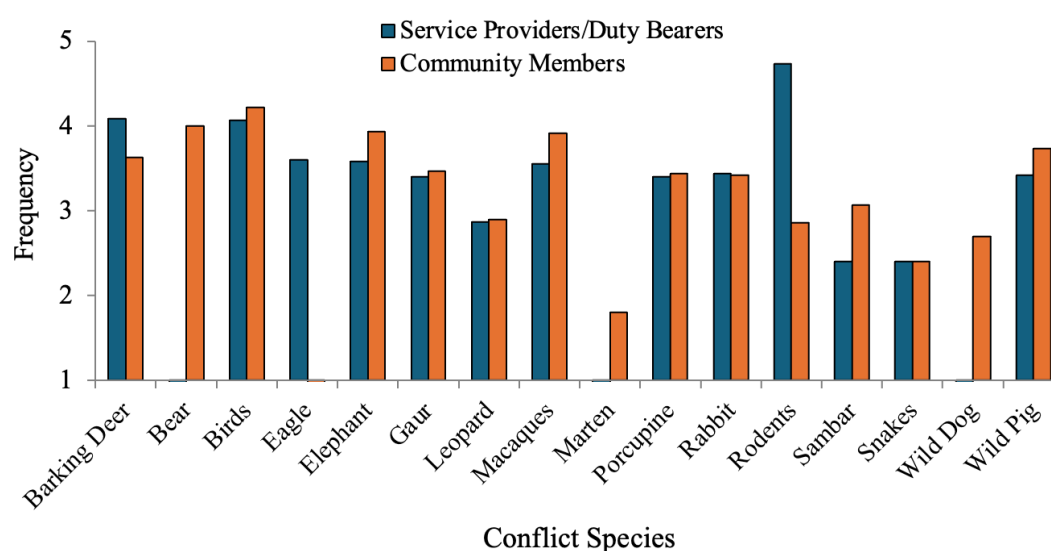


Figure 3. Primary Conflict species in Lhamoizingkha gewog

4.2.2 Results by Outcomes

The C2C approach for managing HWC must yield positive outcomes across four outcomes – People, Livelihoods/assets, Wildlife, and Habitat. The mitigation of HWC aims to foster a balanced coexistence in which both human and wildlife populations can sustainably thrive. Cultivating an understanding of, and willingness to, coexist with wildlife is important, as it promotes a positive human-wildlife relationship. Safeguarding livelihoods and assets through interventions such as compensation mechanisms, protective barriers, and enhanced resource management mitigates economic losses and reduces human antagonism towards wildlife, fostering a more collaborative dynamic. Ensuring the conservation of wildlife populations requires integrated measures, including anti-poaching initiatives, habitat connectivity, and the promotion of sustainable tourism. Furthermore, the preservation and restoration of adequate natural habitats are essential to alleviate resource competition, reduce conflict, and sustain wildlife populations within ecologically appropriate boundaries, thereby advancing long-term sustainability and harmonious coexistence between humans and wildlife.

Table 3. Results by Outcome

Outcomes	C2C Project Manager	Service Providers/Duty Bearers	Community members
People	0.43	3.4	3.46
Livelihoods/Assets	0.39	2.89	2.77
Wildlife	0.44	3.71	3.52
Habitat	0.75	3.29	3.41

Note: C2C Project Manager scores are between 0 and 1, while Service Providers and Community Members scores are between 1 and 5, with 1 being Strongly Disagree and 5 being Strongly Agree.

The outcome with the lowest score across all stakeholder groups is related to Livelihoods/Assets. This includes the C2C Project Manager (0.39), service providers/duty bearers (2.89), and community members (2.77), all of whom identified challenges in securing livelihoods and assets as the most critical issue (Table 3). Figure 4 presents that the livelihoods/assets appear to be the most impacted outcome, as it has the lowest ratings from both service providers/duty bearers and community members in Lhamoizingkha Gewog. As a result, interventions designed to mitigate human-wildlife conflict and promote coexistence should prioritize addressing challenges related to Livelihoods/Assets as the primary focus, followed by Habitat, People, and Wildlife.

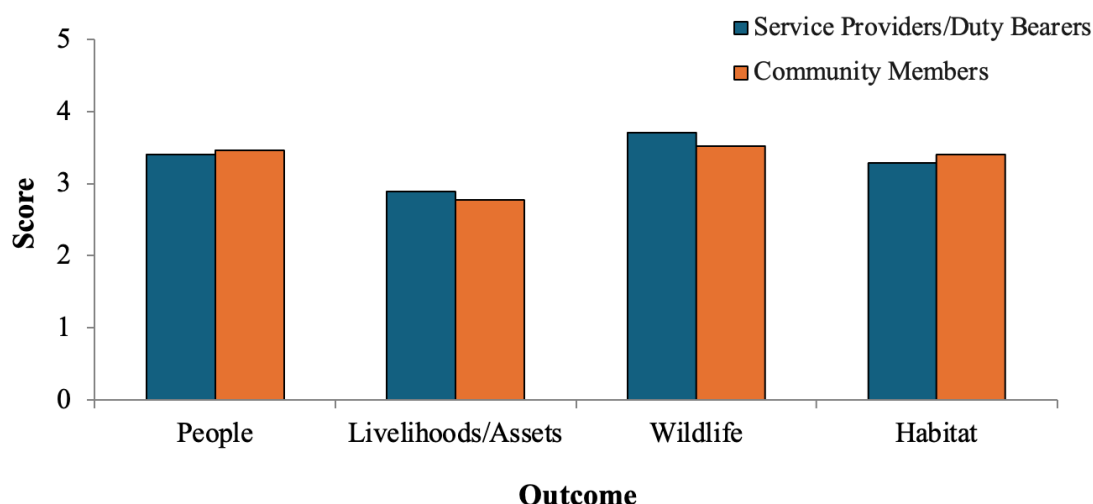


Figure 4. Result by Outcome for Lhamoizingkha gewog

4.2.3 Results by Elements

To achieve the four outcomes, six essential elements must be taken into consideration, each of which was assessed under the respective outcomes. The radar charts illustrate the perception of service providers/duty bearers and community members for different outcomes against six different elements of the co-existence framework (Figure 5).

a) People Able and Willing to Live Alongside Wildlife

There is a shared level of understanding between both the groups regarding the dynamics of human-wildlife interactions and relevant policies. Service Providers/Duty Bearers exhibited a more optimistic view of their capabilities in preventing, mitigating, and responding to human-wildlife conflicts, possibly reflecting their access to resources, training, or authority to implement strategies. On the contrary, Community Members express greater confidence in monitoring wildlife activity. However, their lowest rating for mitigation suggests significant dissatisfaction with the effectiveness of current strategies to address conflicts. Addressing these disparities by improving mitigation efforts and fostering collaboration between these groups could enhance the overall effectiveness of coexistence strategies.

b) Livelihoods/Assets Secured Against the Presence of Wildlife

Service Providers/Duty Bearers demonstrated a higher rating for their understanding of interactions and their ability to monitor related issues, likely reflecting their institutional knowledge and technical expertise. However, both groups share a similar perspective on key areas policy, prevention, response, and mitigation. This suggest that there may be shared challenges or limitations in implementing effective strategies, which should be addressed though concerted effort to enhance resources, coordination, and capacity-building to improve outcomes for all stakeholders.

c) Wildlife Thrives Alongside People

Community Members hold a very high regard for their understanding of interactions likely due to their close proximity to wildlife and personal experiences in their daily lives. However, their lowest rating for mitigation suggests that the current strategies to reduce wildlife related conflicts may be perceived as ineffective or insufficient in addressing their needs. Both groups share similar views on policy and monitoring, which suggests a mutual understanding of the importance of these aspects in managing conflict. However, this shared perspective also points to potential challenges in the actual implementation of policies and monitoring systems, highlighting the need for improvements in both areas to address the concerns of both groups effectively.

d) Habitat Sufficient to Ensure Sustainable Wildlife Population

Community Members understand the interactions, likely due to their direct involvement with and observation of local environments. Both groups share similar perspectives on mitigation, policy, response, and prevention, indicating that both groups recognize the importance of these areas in managing habitat-related issues. Despite both groups rating these almost equally, monitoring is rated higher by Service Providers/Duty Bearers, which may be due to their greater capacity or systems in place for monitoring habitats and wildlife movements. This discrepancy underscores the need to empower Community Members with more tools and training for effective habitat monitoring, while also ensuring that response efforts are robust and well supported across both groups.

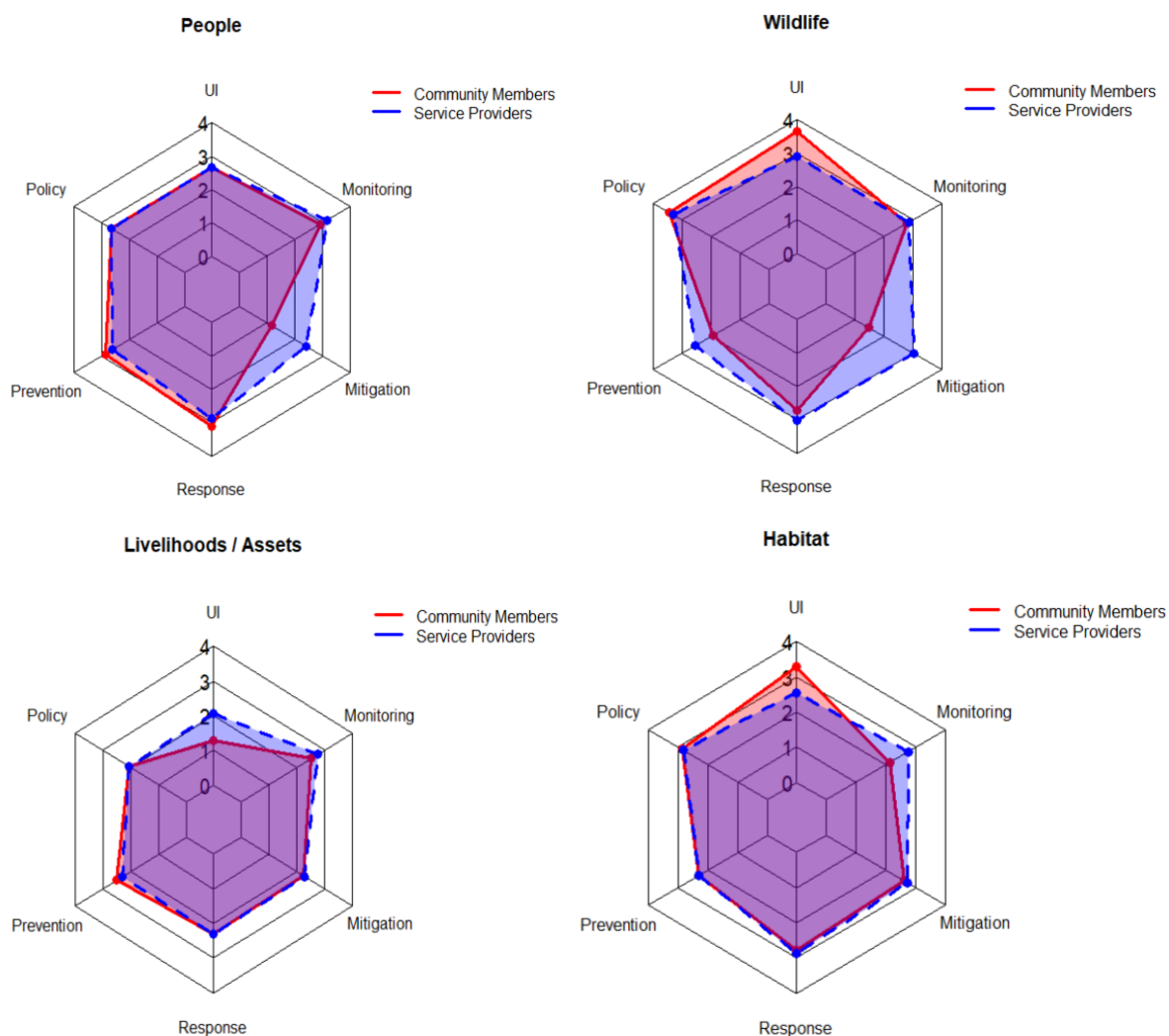


Figure 5: Result by Element for Lhamodzingkha Gewog

4.3. Chiwog-wise Results

4.3.1 Lhamoizingkha Chiwog

In Lhamoizingkha chiwog, HWC is primarily driven by elephants, wild pigs, macaques, and barking deer. Both service providers and community members acknowledge that these conflict species along with birds, gaur, leopards, porcupines, rabbits, rodents, sambar, and martens significantly contribute to negative interactions between humans and wildlife. These animals cause extensive damage to crops and properties, and casualties have also been reported within the chiwog.

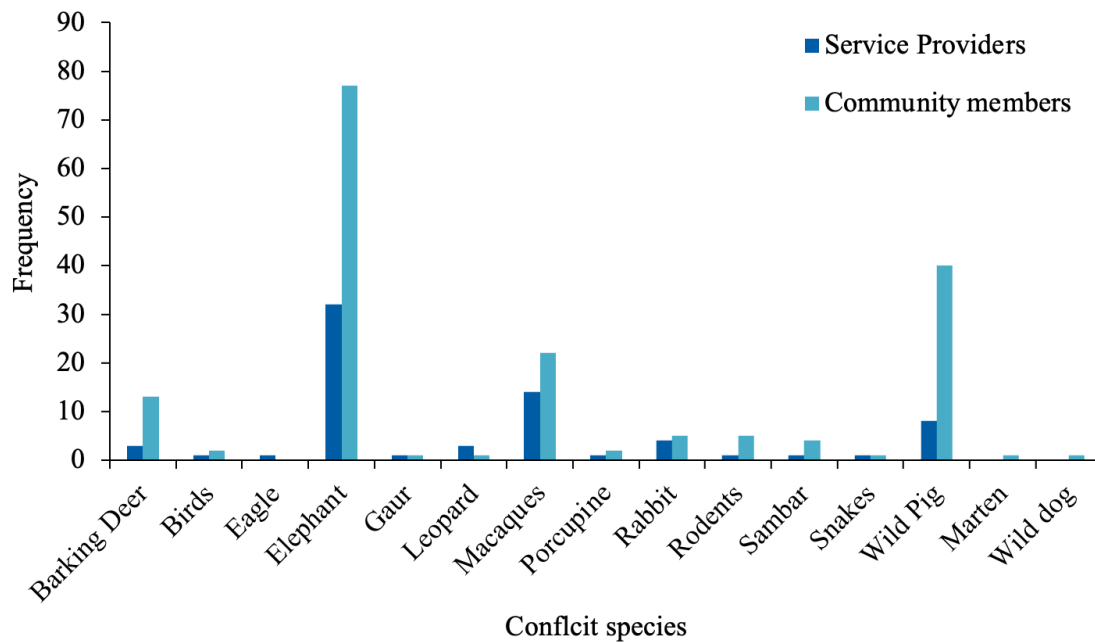


Figure 6. Result of human–wildlife conflict species

Livelihoods and assets are the most significantly impacted outcomes as a result of negative human–wildlife interactions, as reported by both service providers and community members (Figure 7). This impact is primarily attributed to crop damage caused by species such as barking deer, rodents, porcupines, wild pigs, and elephants. Additionally, elephants are frequently responsible for damaging property, further exacerbating the effects on livelihoods and assets.

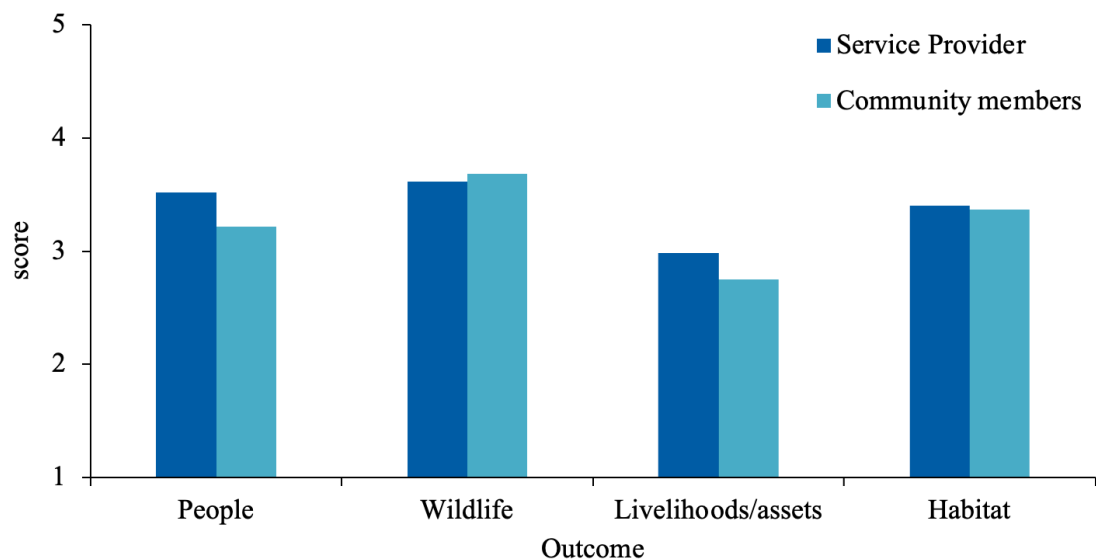


Figure 7. Result by outcome for Lhamoizingkha chiwog

As illustrated in Figure 8, the communities assigned the lowest scores to mitigation for two outcomes People and Wildlife, while the lowest scores for Livelihoods/Assets were attributed to understanding interactions (UI). Additionally, Prevention received the lowest scores in the Habitat outcome. To achieve the outcome of enabling people to coexist with wildlife, it is imperative to prioritize mitigation measures. Securing livelihoods and assets against wildlife requires a deeper understanding of the interactions between humans and wildlife. Furthermore, to support the flourishing of wildlife alongside human populations, effective mitigation measures must be put in place, alongside efforts to prevent habitat loss in order to preserve critical wildlife habitats.

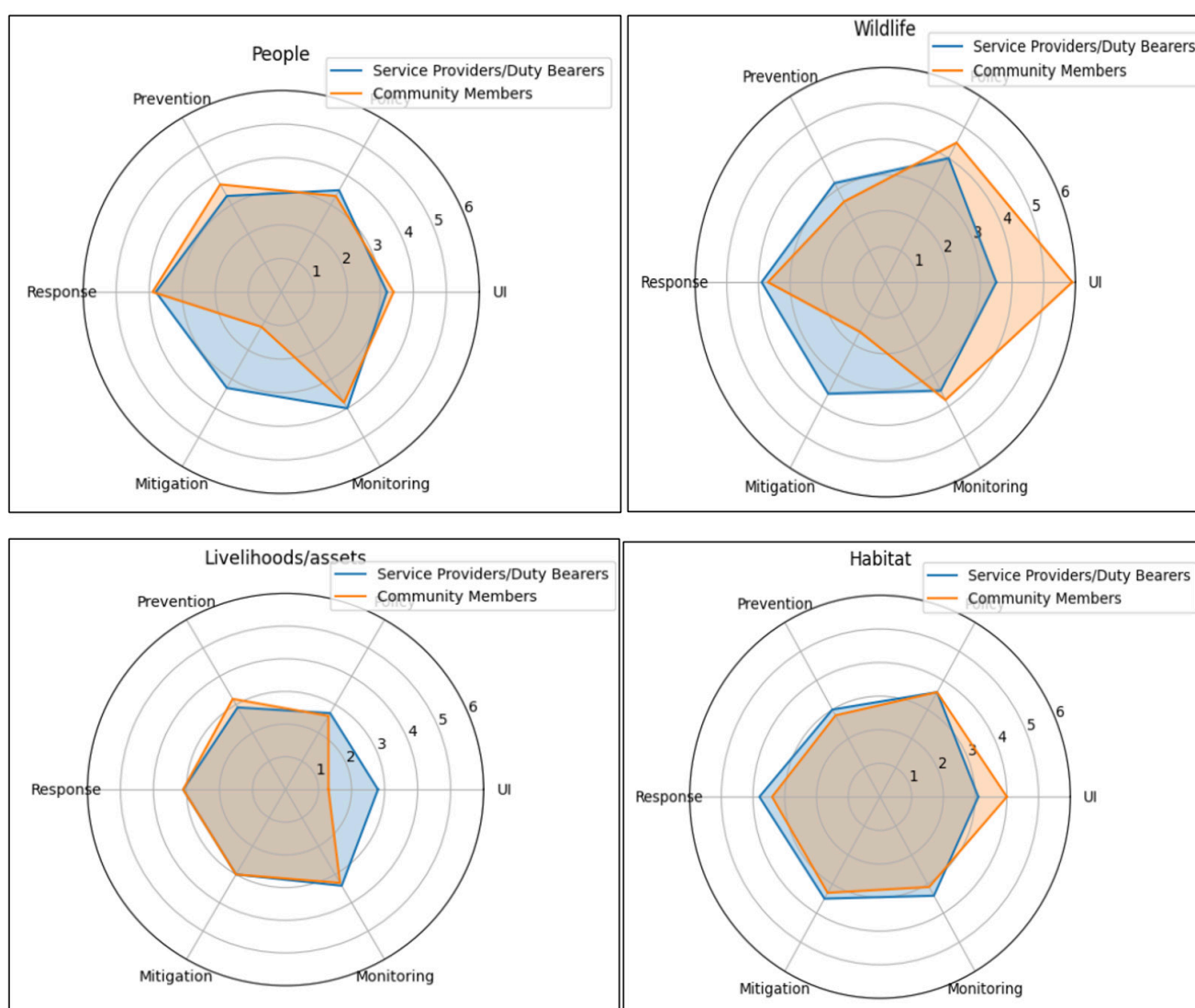


Figure 8. Priority needs across people, wildlife, livelihoods/assets, and habitat response areas

4.3.2. Loongsilsa Chiwog

In Loongsilsa chiwog, both service providers/duty bearers and community members identified elephants and wild pigs as the most significant threats to local residents (Figure 9). This agreement from both groups determines elephants as a major challenge, likely due to their destructive impact on crops, property, and potential risks on human safety. Similarly, wild pigs, known for raiding crops, are also regarded as a substantial threat by both groups, emphasizing their detrimental effect on agricultural livelihoods. However, community members, who are native to the area and have more knowledge on UI, reported conflicts with wild dogs and macaques. This suggests that their proximity to the land and their daily agricultural activities expose them to a wider variety of wildlife-related challenges that may not be as apparent to service providers.

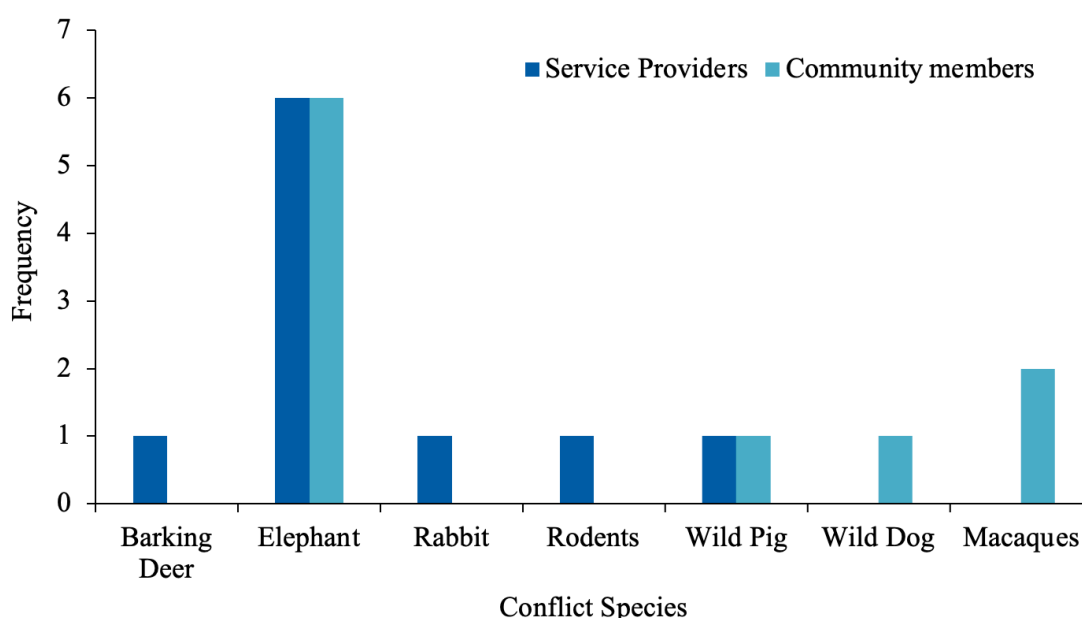


Figure 9. Primary Conflict species in Loongsilsa chiwog

According to service providers/duty bearers, the livelihoods and assets received the lowest scores, as depicted in figure 10, suggesting that they perceive economic losses as the most significant consequence of interactions. In contrast, the people received the lowest scores as per the community members. This difference in perception highlights how community members experience a more holistic and multifaceted impact of wildlife conflicts compared to the more narrowly focused view of service providers, emphasizing the need for comprehensive solutions that address diverse community concerns.

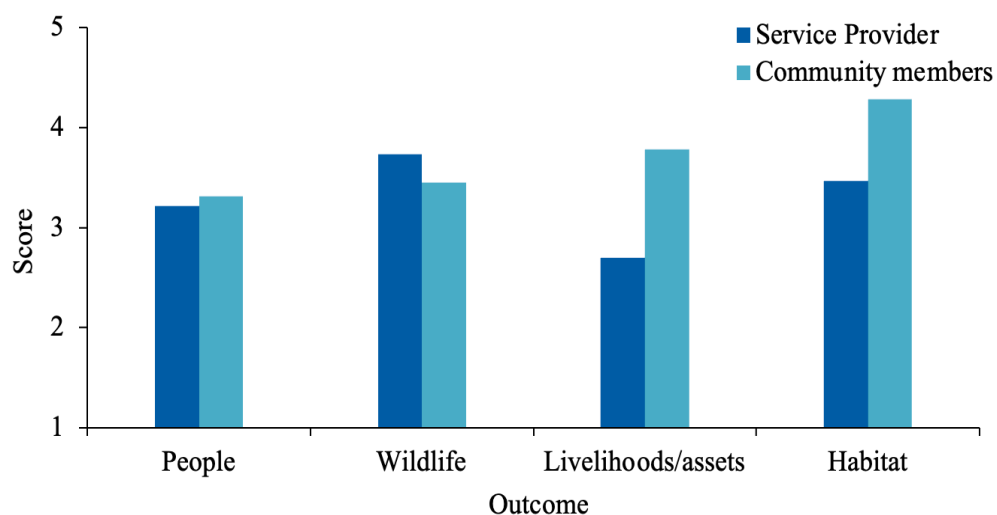


Figure 10. Result by Outcome for Loongsilsa chiwog

Figure 11 shows the result by elements for Loongsilsa chiwog, where mitigation was rated the lowest scores for People, indicating the communities' vulnerabilities to the impacts of wildlife encounters. For wildlife and habitats, there is a significant shortfall in preventive measures to combat HWC. Additionally, a critical gap exists in understanding the interactions between humans and wildlife, which directly affects the security of livelihoods and assets.

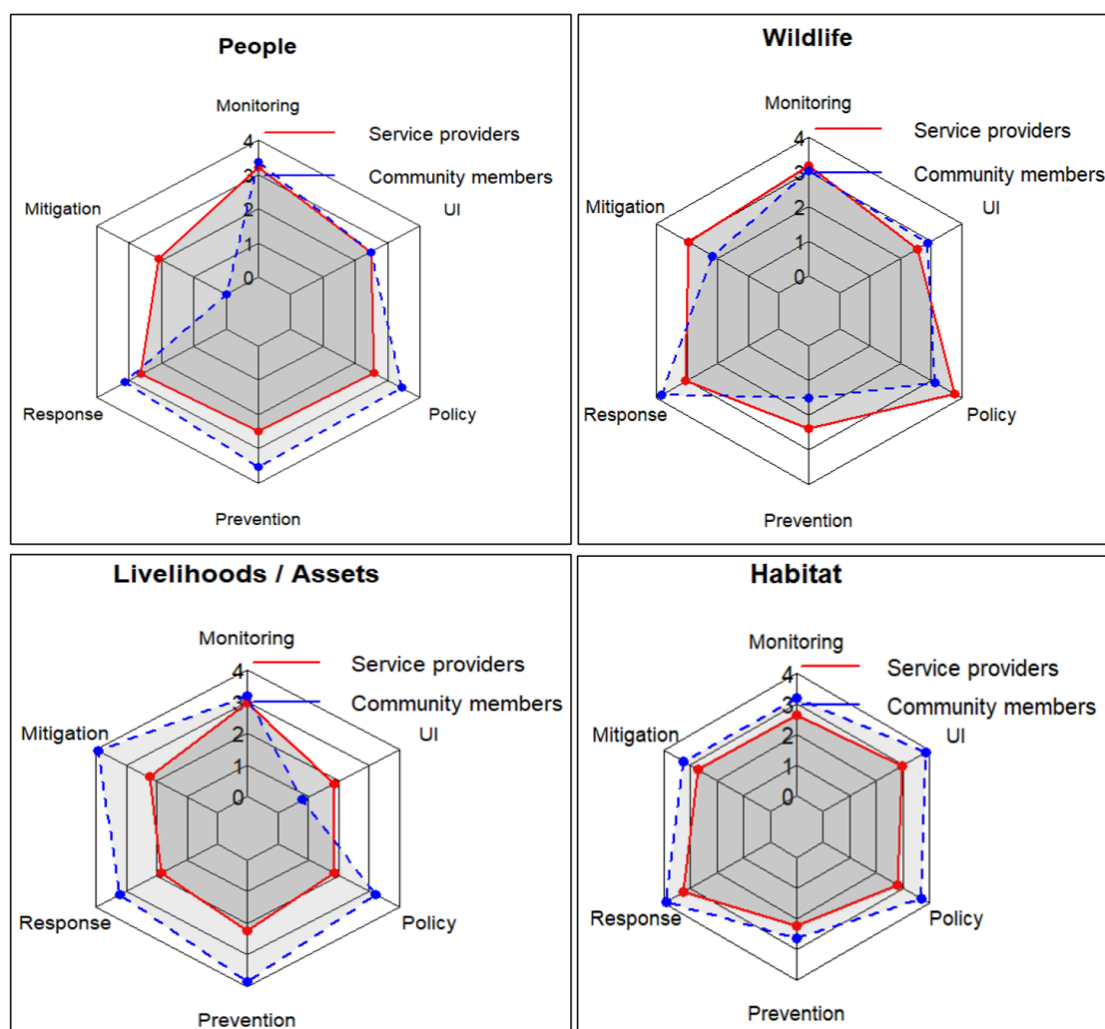


Figure 11. Results by elements for Loongsilsa chiwog

4.3.3 Tshamzhigosa Chiwog

In Tshamzhigosa chiwog, elephants, birds, macaques, wild pigs, barking deer, leopards, and rabbits are identified as the conflict species causing issues in their communities (Figure 12). Among these, elephants are reported as the most problematic species, causing the greatest level of conflict. This is followed by macaques, birds, and wild pigs, which are also seen as significant threats.

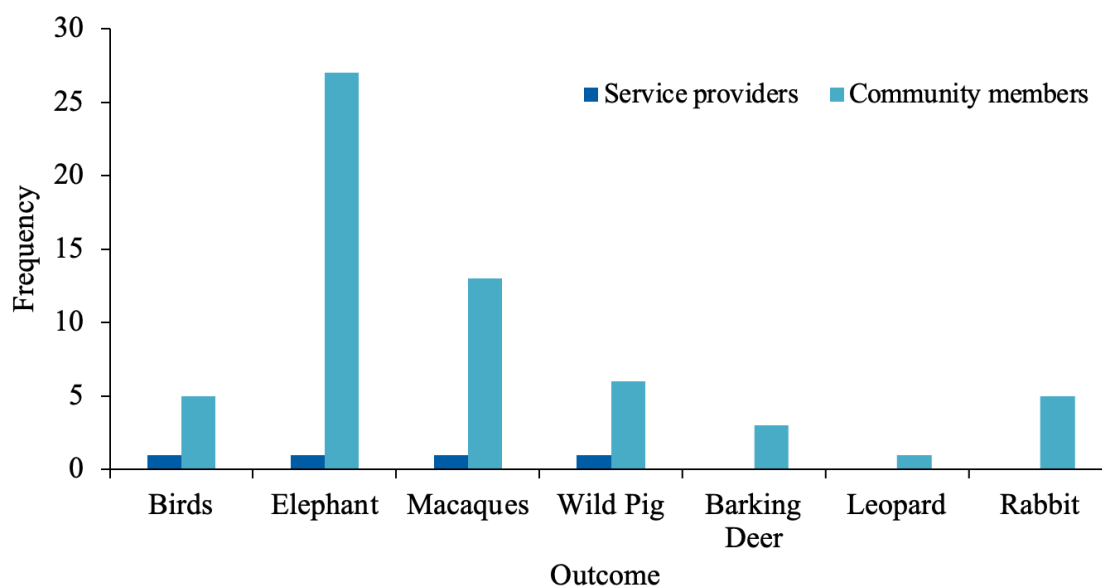


Figure 12. Primary Conflict species in Tshamzhigosa chiwog

At the outcome level, community members identified livelihoods and assets as the most significantly impacted by HWC, while service providers/duty bearers highlighted a greater impact on wildlife (Figure 13). This divergence emphasizes a disconnect between the community's focus on mitigating immediate economic losses and the service providers' emphasis on broader environmental conservation and wildlife protection objectives. Bridging this gap is essential for developing balanced and mutually beneficial strategies that address both the economic concerns of the community and the conservation priorities of service providers.

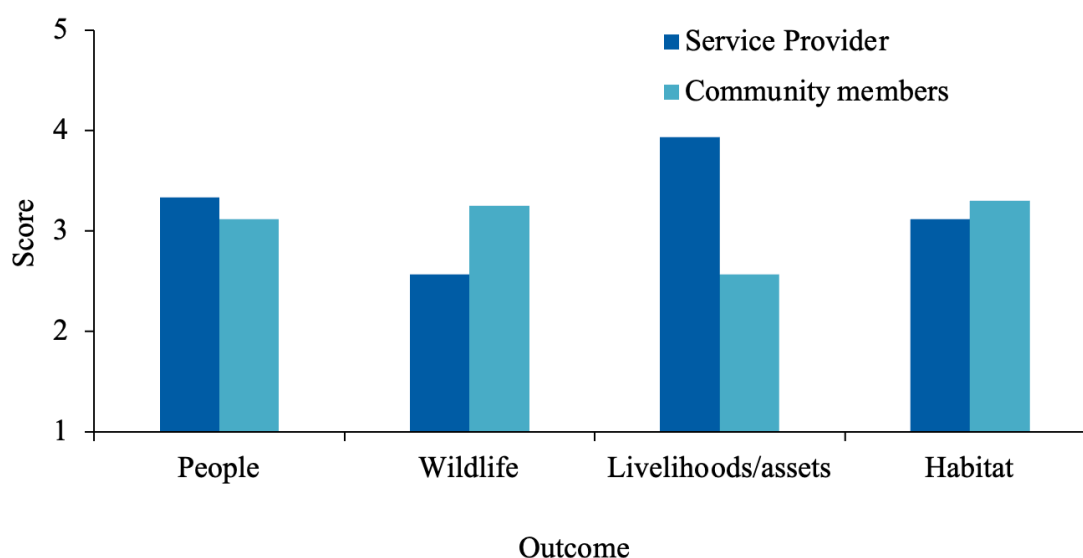


Figure 13. Result by outcome for Tshamzhigosa chiwog

In Figure 14, critical gaps in managing HWC are evident across four outcomes. The most pressing concern is the lack of effective mitigation measures to safeguard both people and wildlife. Additionally, there is a significant deficit in monitoring systems for protecting livelihoods/assets and habitats. These shortcomings leave communities vulnerable to wildlife encounters while failing to protect wildlife from retaliatory actions. The absence of robust monitoring mechanisms indicates inadequacy in tracking the extent of damage or identify conflict patterns that could inform proactive measures. Addressing these gaps requires targeted improvements in mitigation efforts and the establishment of comprehensive monitoring systems.

4.3.4 Kuendrelthang Chiwog

Kuendrelthang chiwog experiences similar human-wildlife conflicts as other chiwogs within Lhamoizingkha gewog. The elephant is identified as the primary threat, contributing to the conflict, followed by macaques, wild pigs, rabbits, barking deer, and various bird species (Figure 15). In rare instances, leopards are also regarded as a source of conflict for local communities.

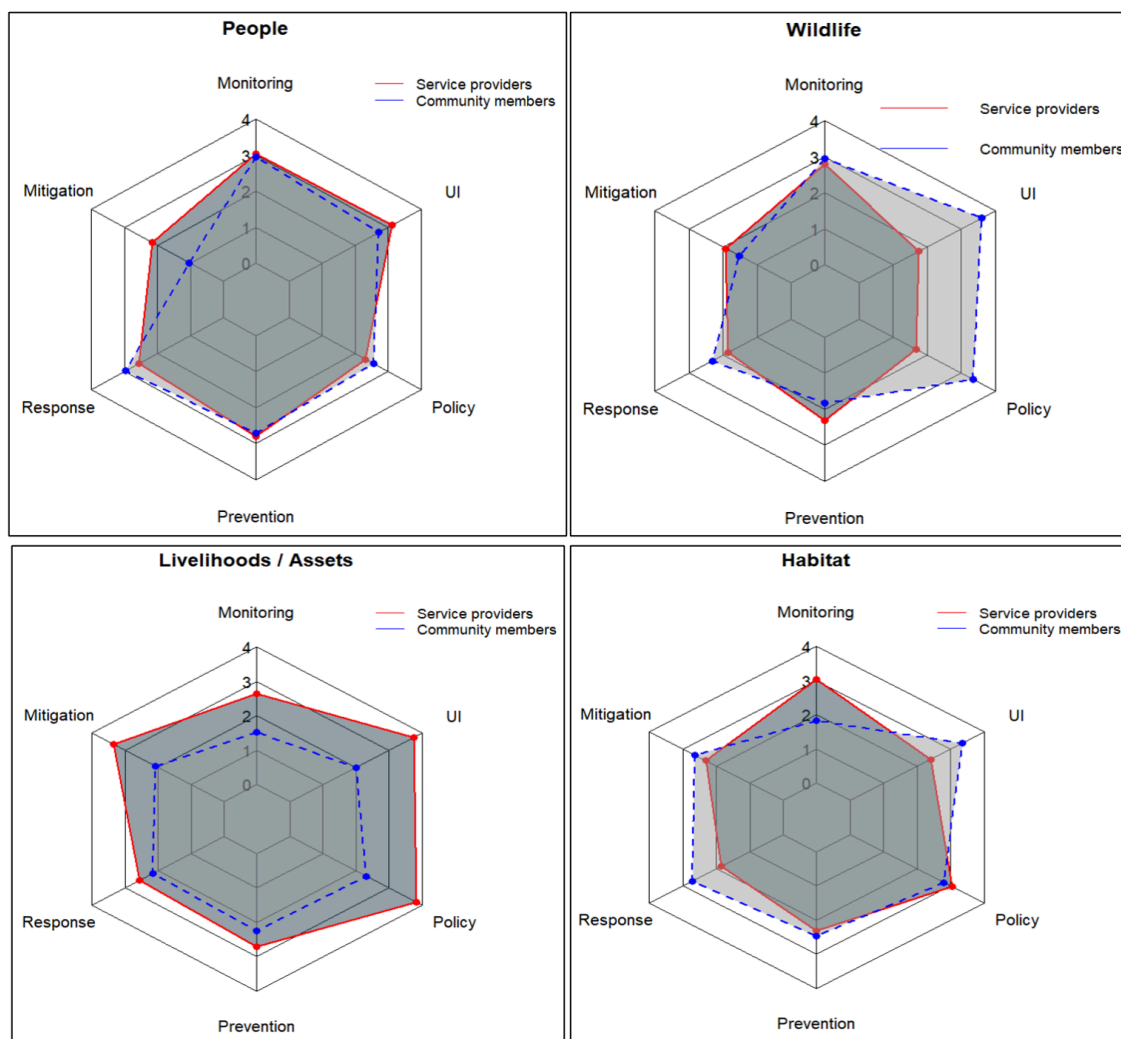


Figure 14. Results by elements for Tshamzhigosa chiwog

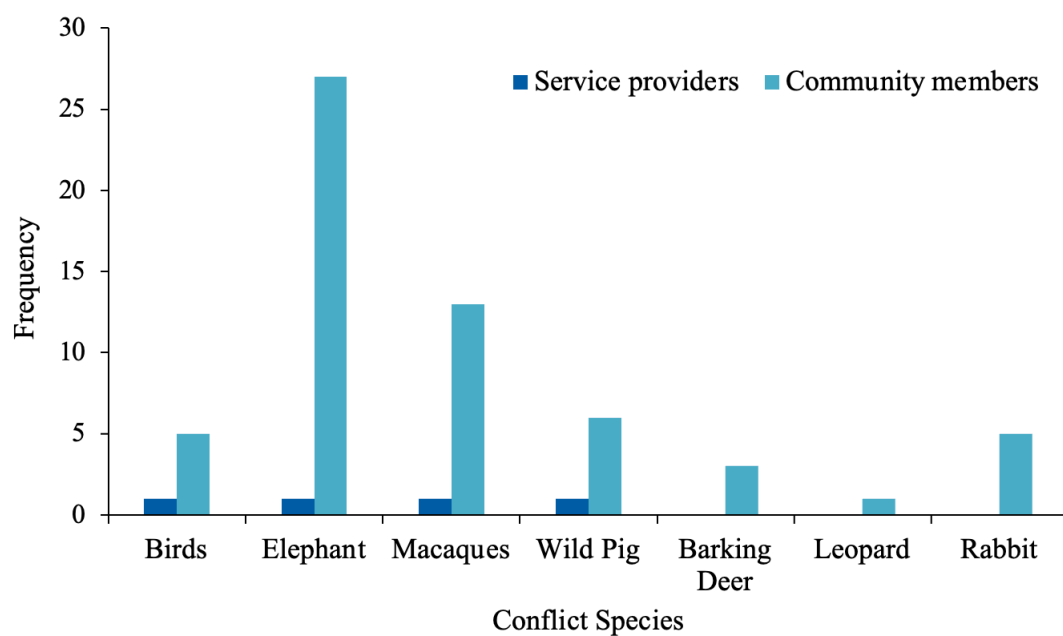


Figure 15. Primary Conflict Species in Kuendrelthang chiwog

The service providers and duty bearers reported experiencing uniform impacts of HWC across all four outcomes of the C2C framework as depicted in figure 16. In contrast, the communities reported experiencing the greatest impact on livelihoods and assets compared to the other three outcomes.

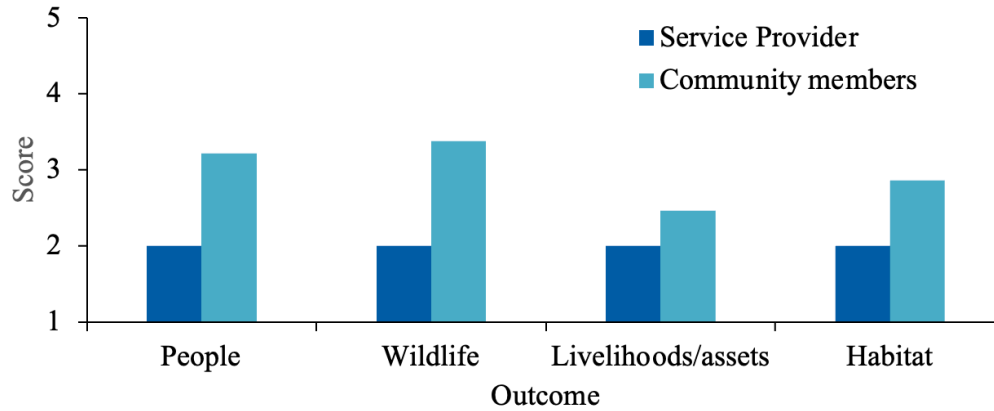


Figure 16. Result by Outcomes for Kuendrelthang chiwog

In Kuendrelthang chiwog, people able to live alongside wildlife and wildlife thriving alongside people lack mitigation, while livelihoods/assets lack understanding of interactions and habitat lacks monitoring (Figure 17).

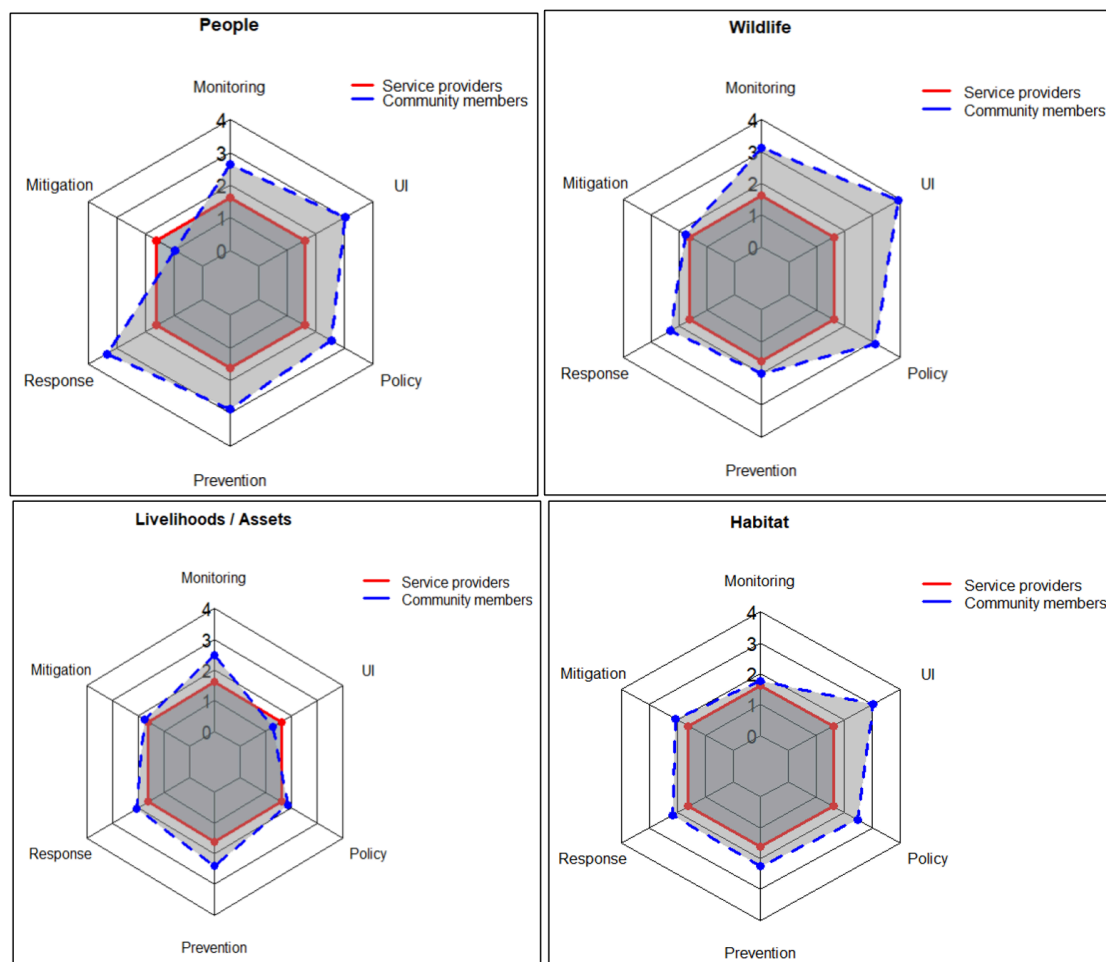


Figure 17. Result by Elements for Kuendrelthang chiwog

4.3.5 Chongsamling Chiwog

In Chongsamling chiwog, HWC is also predominantly driven by elephants known to cause significant damage to crops and property due to their large size and extensive foraging behavior followed by wild pigs (Figure 18). Additionally, barking deer, macaques, and sambar are implicated in crop damage and predation, while rabbits and rodents may affect vegetation and stored food resources. Gaur, leopards, wild dogs, and porcupines contribute to conflict at lower levels, with leopards and wild dogs posing a potential threat to livestock depredation, and gaur often disrupting farming activities.

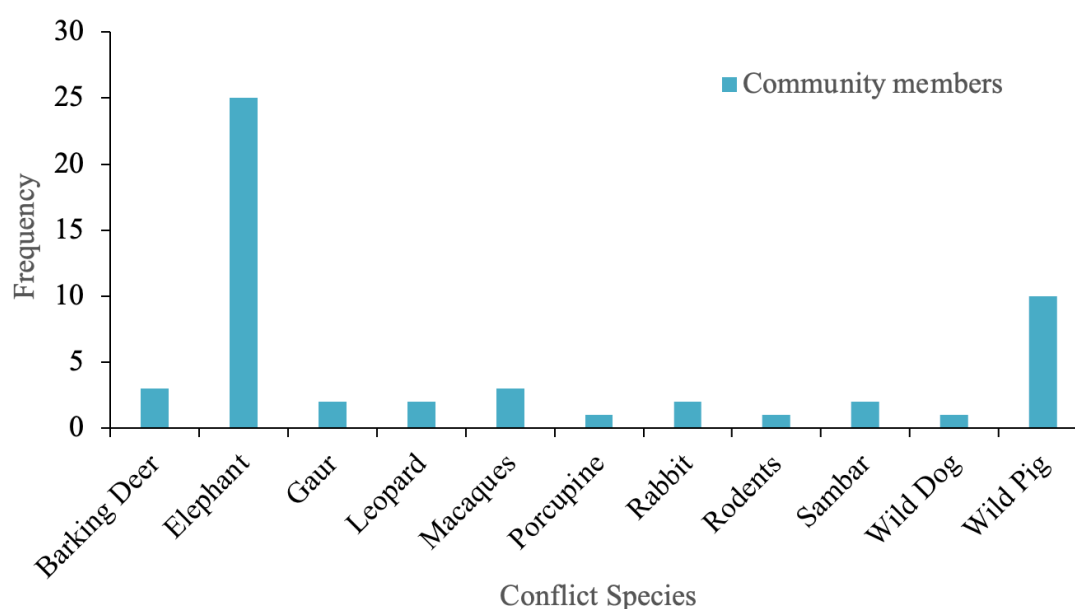


Figure 18. Primary Conflict species in Chongsamling chiwog

These species have a uniform impact across all outcomes; however, the greatest impacts are observed on livelihoods and assets, followed by wildlife, with slightly lesser impacts on people and habitats (Figure 19). While all outcomes are affected, the disruption to livelihoods and the direct consequences for wildlife populations appear to be more pronounced than the effects on human well-being and habitat integrity.

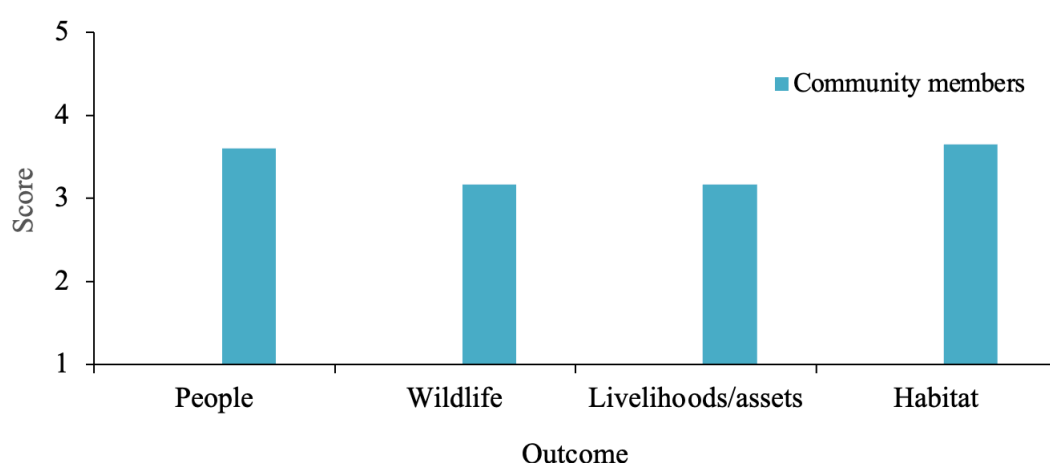


Figure 19. Result by Outcomes for Chongsamling chiwog

Among the key elements, lack of effective mitigation measures for both people and wildlife, insufficient understanding of the interactions impacting livelihoods and assets, and inadequate monitoring of habitats were identified as significant issues reported in the chiwog (Figure 20). These gaps highlight the need for improved strategies in addressing HWC and safeguarding both human and environmental interests.

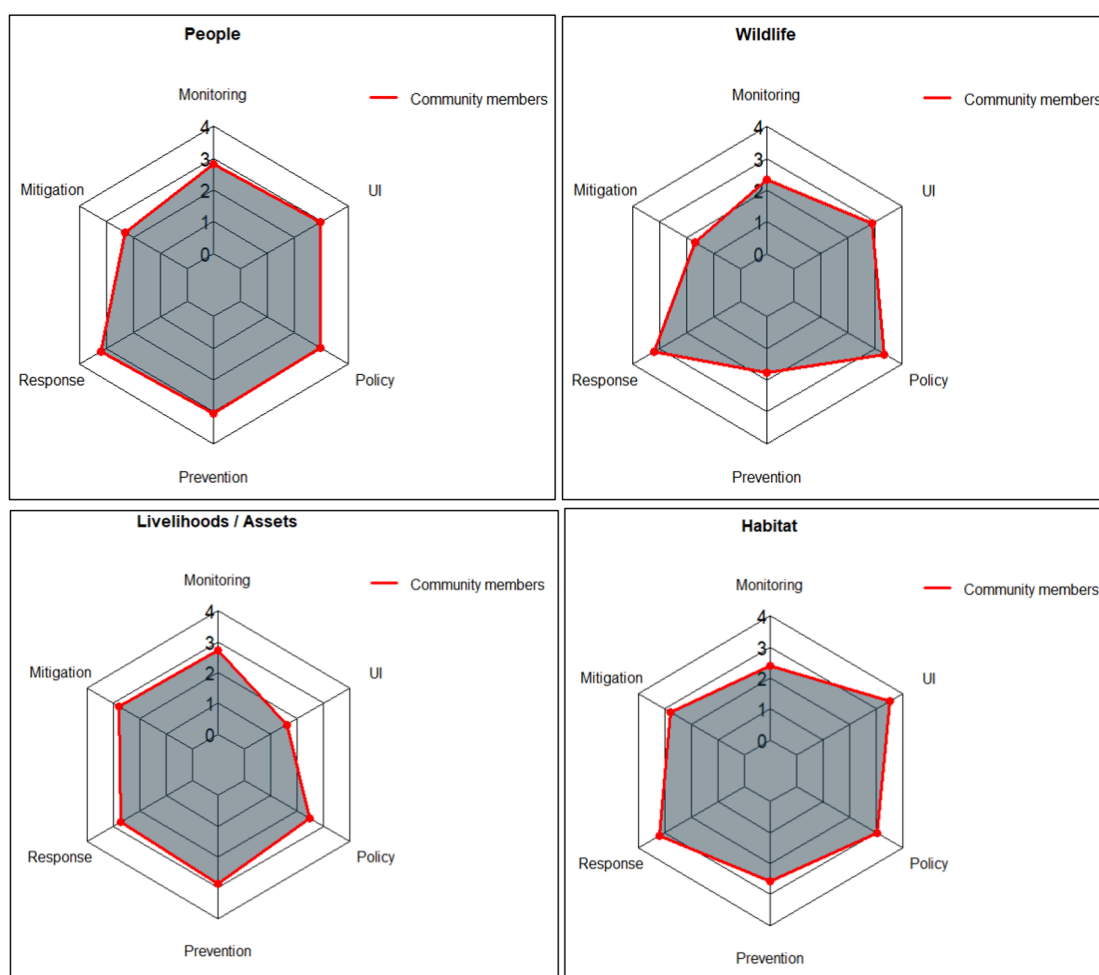


Figure 20. Result Elements for Chomsamling chiwog

5. Conflict to Coexistence strategy

The C2C Management Strategy for Lhamoizingkha gewog aims to transform human-wildlife conflict into a model of coexistence by addressing the root causes of conflict, enhancing community resilience, and promoting sustainable management practices. Based on the results from HWC-focused group discussions, HWC assessment results, and chiwog consultation for co-design, the strategy prioritizes addressing the most conflicting species identified by both community members and service providers, such as elephants, barking deer, bears, macaques, birds, wild pigs, wild dogs, leopards, rabbits, and rodents.

Interventions will focus on safeguarding livelihoods and assets by strengthening crop protection, improving livestock management, and promoting alternative livelihoods. Community engagement is central, with programs designed to empower local communities to manage wildlife interactions and implement stewardship programs. Effective mitigation and prevention measures, such as physical barriers, schemes, early warning systems, and sustainable agricultural and livestock practices, will reduce the impact of wildlife on community livelihoods.

Policy integration will support the creation and enforcement of wildlife conservation and conflict resolution, while regular monitoring will track wildlife populations and the effectiveness of interventions. Habitat management will reduce human-wildlife encounters, and collaboration between communities, service providers, government agencies, and NGOs will ensure long-term success. This adaptive, integrated approach aims to create a sustainable coexistence between wildlife and communities, fostering a harmonious balance for both. This section presents the strategic recommendations to address the C2C challenges and issues faced by the communities of Lhamoizingkha Gewog. The strategy is structured around two primary objectives, four outcomes, and 15 specific actions detailed in the logical framework. Of these actions, six are designated as short-term initiatives, while eight are planned as long-term interventions.

The total budget outlay for the 5-year C2C Strategy (2025–2029) for Lhamoizingkha Gewog is projected at Nu. 40.85 million. The budget first year will be sourced from ongoing WWF Bhutan through IKI Project or Tarayana Foundation. The budget gaps in the coming years shall be explored from RGoB and other potential donors.

Table 4. Implementation Plan and Financial Outlay

S.N.	Outcomes	Activities	Location	Category	Responsibility		Budget Estimate (Nu millions)	Source of Fund	Timeline
					Lead	Collaborators			
1	Livelihood/ Asset	1.1 Installation of electric fence	Loongsilsa (Lotamari, Hawajhori), Devitar	Long-term	DoFPS	Community	4	WWF & RGoB	2026 - 2029
		1.2 Procurement of equipment for QRT members (raincoats, gum boots, quality torches)	Loongsilsa, Lhamoizingkha	Short-term	DoFPS	community	1.3	WWF	2025-2026
		1.3 Construction of trenches with electric fencing	Kuendrelthang, Chongsamling, Lhamoizingkha	Short-term	LG & DoFPS	Community	12.8	RGoB	2027-2028
		1.4 Installation of Chain link fencing	Kuendrelthang, Lhamoizingkha	Long-term	LG & DoFPS	Community	10	RGoB	2026-2028
		1.5 Capacity building for QRT members	Kuendrelthang	Short-term	LG & DoFPS	Community	0.2	RGoB	2025 - 2026
		1.6 Installation of streetlights	Devitar	Short-term	Dungkhag	Gewog & Community	1	RGoB	2025 - 2027
		1.7 Provide materials for establishment livestock farm	L/kha Gewog	Short-term	DoL/DDA	Public and LG	3	RGoB	2025-2026
2	Habitat	2.1 Plantation of fruit trees in the nearby SRFL	Kuendrelthang, Devitar (Khurul, Kopchey)	Long-term	DoFPS and LG	Community	3.2	Tarayana	2025 - 2029
		2.2 Restoration and monitoring of waterholes in SRFL	Whole L/kha Geog	Long term	DoFPS	LG & Community	0.5	WWF & RGoB	2025-2029
		2.3 Habitat enrichment plantation in SRFL	L/kha Gewog	Long term	DoFPS	Public and LG	2	WWF & RGoB	2025-2029
3	Wildlife	3.1 Enhance SMART Patrolling	L/kha Gewog	Short-term	DoFPS	NA	0.25	RGoB	2025 - 2028
		3.2 Conduct camera trapping exercise within Lhamoizingkha Gewog to understand the behavior of elephant	L/kha Gewog	Long-term	DoFPS	NA	1	RGoB	2025 - 2029
4	People	4.1 Awareness program on importance of wildlife from religious point of view	L/kha Gewog	Short-term	Zhung Dratshang	LG	0.3	Zhung Dratshang	2025-2027
		4.2 Collaboration with Indian counterpart on HWC issue	L/kha Gewog	Long-term	DoFPS & LG	India & DoFPS	0.3	RGoB	2025-2029
		4.3 Awareness program on HWC	L/kha Gewog	Short-term	DoFPS	Public and LG	1	RGoB	2025-2026

6. Monitoring and Evaluation

Timely monitoring and evaluation of planned programs are essential to ensure the effective delivery of intended outcomes. This section outlines the approach to monitoring and evaluating the implementation of the strategy actions. A comprehensive Monitoring and Evaluation (M&E) plan, detailed in Table 6: Monitoring & Evaluation Framework, has been developed to align seamlessly with the Implementation Framework. The plan includes specific indicators to measure the performance of the strategy, providing a clear basis for assessing progress. Output indicators will primarily track the achievements of the actions identified in Section 5, ensuring accountability and fostering continuous improvement throughout the implementation process.

6.1. Monitoring

Monitoring is an ongoing assessment process aimed at providing stakeholders with timely and detailed updates on the progress or delays of activities, ensuring transparency and clarity regarding their implementation status. For the 5-year strategy plan, the Division will conduct annual monitoring to evaluate progress, identify challenges, and ensure that the planned actions are on track to achieve the intended outcomes.

6.2. Evaluation

The evaluation of the Strategy will take place twice during the plan period to ensure its effectiveness and alignment with objectives. A midterm review will be conducted in the last quarter of the second year, followed by a final review in the last quarter of the fifth year. These evaluations will be carried out by a combined team of internal members from Division and external representatives, including members from concerned Functional Division, ensuring a comprehensive and impartial assessment of the plan's implementation and outcomes.

Table 5. Monitoring and Evaluation Framework

S.N.	Outcomes	Activities	Action indicator	Baseline	Unit	Yearly Target				
						I	II	III	IV	V
1	Livelihood/ Asset	1.1 Installation of electric fence	Farm fenced	NA	Area		2	2		
		1.2 Procurement of equipment for QRT members (raincoats, gum boots, quality torches)	No. of equipment provided to QRT members	200	No	200				
		1.3 Construction of trenches with electric fencing	No. of trenches constructed with electric fence	NA	No			35		
		1.4 Installation of Chain link fencing	Length of chain-link fencing installed	4.7	Km					
		1.5 Capacity building for QRT members	No. of QRT members trained	60	No	60				
		1.6 Installation of streetlights	No. of streetlights installed in the community	NA	No	5	5			
		1.7 Provide materials for establishment livestock farm	No. of livestock infrastructure material supplied	17	No	1		1		1
2	Habitat	2.1 Plantation of fruit trees in the nearby SRFL	Area brought under plantation of fruit trees	2	Ha		2		2	
		2.2 Restoration and monitoring of waterholes in SRFL	Number of Waterholes restored and monitored	4	No		2		3	
		2.3 Habitat enrichment plantation in SRFL	Area of enrichment plantation carried out	NA	Ha			1	1	
3	Wildlife	3.1 Enhance SMART Patrolling	No. of patrolling conducted	12	Report	11	11	11	11	11
		3.2 Conduct camera trapping exercise within Lhamoizingkha Gewog to understand the behavior of elephant.	No. of camera station	2	Report	7		7		7
4	People	4.1 Awareness program on importance of wildlife from religious point of view	No. of programme conducted	NA	No	1				
		4.2 Collaboration with Indian counterpart on HWC issue	Series of talks with Indian counterpart to reduce HWC	NA	No		1		1	
		4.3 Awareness program on HWC	No. of awareness conducted on HWC	2	No	1				

7. Conclusion

The C2C strategy developed for Lhamoizingkha gewog offers a comprehensive, community-driven framework to address HWC and foster sustainable coexistence. This strategy emerged from extensive consultation meetings, participatory HWC assessments, and co-design sessions with key stakeholders, ensuring that it reflects the needs and aspirations of the community. It focuses on achieving four critical outcomes – People, Livelihoods/Assets, Wildlife, and Habitat – through six interconnected elements: Policy, Prevention, Response, Conflict Understanding, Mitigation, and Monitoring.

The key components of this strategy include maintaining adequate habitats to support wildlife populations, safeguarding community livelihoods and assets, building capacity for coexistence through education and stewardship programs, and promoting an environment where human and wildlife populations can coexist harmoniously. Success of this strategy will depend on strong collaboration among local communities, government agencies, conservation organizations, and other stakeholders, supported by adaptive management practices, robust monitoring, and active community engagement.

With active participation and ownership by the communities of Lhamoizingkha gewog, the C2C strategy aims to enhance ecological resilience, secure sustainable livelihoods, and establish the gewog as a model for effective HWC management. By fostering innovation, continuous collaboration, and shared commitment, this initiative aspires to achieve a harmonious balance where both human and wildlife populations thrive alongside.

References

- Bhutan Foundation. (2023, June 16). Ensuring food security in rural Bhutan. Retrieved December 9, 2024, from <https://www.bhutanfound.org/ensuring-food-security-in-rural-bhutan/>
- Dagana Dzongkhag Administration. (2018). Dzongkhag disaster management and contingency plan. Royal Government of Bhutan. <https://www.dlgdm.gov.bt/storage/upload-documents/2023/7/26/NftO6lvFyi.pdf>
- Food and Agriculture Organization of the United Nations (FAO). (2023, July 25). Wildlife and forestry. Retrieved December 9, 2024, from <https://www.fao.org/forestry-fao/wildlife/67288/en/>
- Gross, E., Jayasinghe, N., Brooks, A., Polet, G., Wadhwa, R., & Hilderink-Koopmans, F. (2021). A future for all: The need for human-wildlife coexistence. WWF, Gland, Switzerland.
- Kiogora, D. K., & Gathoni, F. (2021). Influence of resource competition on human-wildlife conflicts among the community of Kithoka area in Meru County, Kenya. *International Journal of Research and Innovation in Social Science (IJRISS)*, 5(9), 526. Retrieved from www.rsisinternational.org
- Leslie, S., Brooks, A., Jayasinghe, N., & Koopmans, F. (2019). Human-wildlife conflict mitigation: Lessons learned from global compensation and insurance schemes. HWC SAFE Series. WWF Tigers Alive.
- Letro, L., Wangchuk, N., & Wangdi, S. (2021). Identifying human-wildlife conflict hotspots in Bhutan: Implications for prioritizing sites for conflict management. Nature Conservation Division, Department of Forests and Park Services, Thimphu.
- Mekonen, S. (2020). Coexistence between human and wildlife: The nature, causes and mitigations of human-wildlife conflict around Bale Mountains National Park, Southeast Ethiopia. *BMC Ecology*, 20(51). <https://doi.org/10.1186/s12898-020-00319-1>
- Wangchuk, S. (2019, July 13). Bhutan and global top 10 biodiversity hotspots: A fact check. Kuensel. Retrieved December 9, 2024, from <https://kuenselonline.com/bhutan-and-global-top-10-biodiversity-hotspots-a-fact-check/>
- Tobgay, S., Wangyel, S., Dorji, K., & Wangdi, T. (2019). Impacts of crop raiding by wildlife on communities in the buffer zone of Sakteng Wildlife Sanctuary, Bhutan. *International Journal of Scientific Research and Management (IJSRM)*, 7(4), FE-2019-129-135. <https://doi.org/10.18535/ijssrm/v7i4.fe01>
- Wangchuk, S., Bond, J., Thwaites, R., & Finlayson, M. (2023). Exploring Human-Wildlife Conflict and Implications for Food Self-Sufficiency in Bhutan. *Sustainability*, 15(5), 4175. <https://doi.org/10.3390/su15054175>

World Bank. (2023, November 9). Human-wildlife conflict: Global policy and perception insights. Retrieved December 9, 2024, from <https://www.worldbank.org/en/programs/global-wildlife-program/brief/human-wildlife-conflict-global-policy-and-perception-insights>

Yeshey, R. J., Keenan, R. J., Ford, R. M., & Nitschke, C. R. (2023). How does conservation land tenure affect economic impacts of wildlife: An analysis of subsistence farmers and herders in Bhutan. *Trees, Forests and People*, 11, 100378. <https://doi.org/10.1016/j.tfp.2023.100378>.

Annexure : C2C Tool 4: Context Screening Form for C2C: Conflict to Coexistence-Approach

Overview of Categories:			
1. Landscape / Site description: demographics, geography, threats, stakeholders,			
2. Human-wildlife conflict trends: type of conflict, frequency, conflict species			
3. Drivers of conflict: Anthropogenic drivers, natural drivers			
4. Social dynamics: social carrying capacity, community heterogeneity			
5. Wildlife dynamics: species population, movements, behaviors			
6. Policy: legal instruments, management mechanisms			
Screening:			
Before completing this screening format, collect all baseline information on the landscape/site (previous assessments, reports, published literature, social landscape mapping if completed, etc.).			
** All information below might not be known/available/collected – fill out all available information. In case information is not available mark “NN”			
<i>1. Landscape/Site description for the area C2C: Conflict to Coexistence-Approach will be implemented in...</i>			
Category	Example	Information/Details	Reference (Source of information)
1.1 Name of landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., Ruvuma; Terai Arc Landscape; Tawau, KAZA TFCA	Lhamoizingkha	
1.2 Country	e.g., Nepal; Gabon; Tanzania	Dagana, Bhutan	
1.3 Administrative division (Province, State, District etc.)	Chitwan District; Province de l'Ogooué-Maritime; Namtumbo and Tunduru districts	Dagana DFO	
1.4 Area/size of the landscape or site (km ²)	e.g., 100 km ²	106.1333 km ²	
1.5 Name/Proportion protected area (include type of PA/OECM) within the landscape	e.g., Nyungwe National Park (25% of landscape), Volcanoes National Park (10% of landscape), etc.	NN	
1.6 Dominant land use type within site or landscape	e.g., National Park; Villages; Rangelands; Agroforestry	Dryland and wetland	
1.7 Human population (number of residents and density) in the landscape or site - and population trend	e.g., 5000 residents in village Xy, 50 per sq km, increasing population; 2500 residents in village Xy, 50 per sq km, decreasing population		
1.8 Location of Communities within the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., One community within national park, one community outside of national park	Clustered settlement	

1.9 Community demography (age, gender, education, income) in landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., any available census data - 52% female, 48% male - 10% over 50, 40% 30-50, 50% under 30 - 85% of residents have primary level education, 50% secondary level - mean income level, etc. etc.		
1.10 Ethnic groups/castes resident in landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	Orang Asli, Brahmins, Adivasi, etc	Gurung, Rai, Tamang, Ngalops, Khengpa and Tshangla.	
1.11 Proportion of people living in poverty landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., 30% of residents live below poverty line (as defined for the region)	NN	
1.12 Faiths/Religions of people living in poverty landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	Buddhist, Islam, etc	Hinduism and Buddhism	
1.13 Main community livelihood activities in the landscape (including livestock type, crop type, etc.)	e.g., livestock production (cattle, sheep), crops (corn, soybeans),	Agriculture & Livestock	
1.14 Non-consumptive tourism activities	e.g., photo tourism, visiting NP, hiking, rafting, camping	NN	
1.15 Consumptive tourism activities	e.g., trophy hunting, fishing, mushroom collection	NN	
1.16 Other important site information		NN	

2. Human-wildlife conflict trends

Category	Example	Information/Details	Reference (Source of information)
2.1 Which wildlife species cause negative interactions with people in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented (conflict species)	e.g., elephant, lion, wild boar	Elephant, Deer Primates & Wild pigs	

2.2 Conflict animal characteristics (sex, age, hierarchy, etc., if known) in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., if there is problem animal or animals could list their characteristics here: bachelor young male elephant	Pack & Nocturnal	
2.3 Description of physical damage (crops, livestock, other property) caused by wildlife species in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., elephants damage maize and vegetable gardens lions kill livestock at pastures wild boars damage vegetable gardens	Elephants damage maize, paddy, vegetable gardens & properties. Wild boars damage vegetable gardens.	
2.4 Severity of conflict (number of lethal conflicts for wildlife and people)	e.g., 1 lethal conflict resulting in death of human in year 2022, 1 retaliatory killing of lion in 2023	3 human casualty cases reported due to Elephant-Human conflict.	
2.5 Frequency of conflict (number of conflict incidents* over 12 months)	e.g., 12 incidents of livestock predation and 30 crop damage incidents over past year	In an average more than 10 times of HWC cases reported.	
2.6 What HWC-related data is available for the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented and how is it gathered?	e.g. Monitoring data by forest department, based on reports/claims of farmers	HWC data in SMART & FIRMS	
2.7 Is HWC increasing, stable or decreasing in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g. Increasing crop damage by elephant and wild boar reported from villages in area xx, but overall decreasing number of human fatalities.	HWC is slightly increasing considering the number of human casualties reported and frequency of QRTs and Forestry Officials engaged for chasing Elephant.	
2.8 Which HWC hotspots have been identified in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g. 3 villages (name1, name2, name3) in district xx, have been identified based on frequency and severity of HWC	Kuendrelthang, Loongsilsa and Chomsamling	
2.9 Description of intangible costs caused by wildlife in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g. behavioral adjustments; heavy workload through guarding practices; exposure to other risks; fear	Exposure to other risks & fear. People switched to alternative livelihood. For instance, they planted araca nuts where they initially do the paddy cultivation.	
2.10 Level of tolerance of communities towards wildlife (e.g., attitudes or behaviors) in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., high tolerance for herbivores, low tolerance for lions	High tolerance for primates, herbivores & Elephants. Low tolerance for wild pigs.	Interviews & field observations
2.11 HWC management methods implemented in the past or currently being implemented (e.g. technical, financial or social strategies to prevent, reduce or mitigate HWC) in the landscape or site.	e.g., fences around rangelands, guard donkeys/dogs used, deterrents in use, guarding, conservation performance payments, awareness Programmes, community HWC response teams, early warning systems	Awareness programs, community HWC response teams and electric fencing.	
2.12 Have any of the HWC management methods listed above failed in the past? If yes, please elaborate on the barriers to success.	e.g. the electrical fence constructed 5 years ago was damaged, due to low buy-in of community and insufficient maintenance	Chain-link fencing constructed a year was damaged by elephant in Nawtale village and there is no budget for long term maintenance.	
2.13 Other important information on HWC trends.			

3. Drivers of conflict

Category	Example	Information/Details	Reference (Source of information)
Anthropogenic drivers			
3.1 Which changes in land cover/use have been observed in the past years in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., in the past 10 years (from 2012) 30% of the natural forest in the buffer zone of xx NP has been cleared for rangeland; in 2020 a palm oil plantation has been converted into a forest corridor between NP1 and NP2	Development activities such as installing stone crusher plants, construction of approach roads, Macro-nursery and dredging of sands.	
3.2 Which developments have impact on connectivity for wildlife in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., settlements or development in corridors, infrastructure fragmenting habitat	Construction of roads leading to stiff road edges for the animals to cross.	
3.3 What attractants are found for wildlife on community-lands?	e.g., food (fruit trees, crops), light, heat, garbage dumps	Fruit trees, paddy, maize and millets.	
3.4 How is hunting regulated in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented and which local hunting practices exist?	e.g., hunting is not permitted in landscape	Hunting is not permitted in landscape as it is against the rules and regulation of the country.	
3.5 Illegal hunting trends	e.g., illegal hunting of small prey species common	NN	
3.6 What types of land rights are found in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g. legal land rights, illegal land use, traditional land rights, etc.	NN	
3.7 Other anthropogenic drivers	e.g., any other anthropogenic drivers not listed here?	NN	
Natural drivers			
3.8 How does or could climate change impact on HWC?	e.g., longer dry season leading to drought conditions	Longer dry season leading to drought conditions leading to limited food resources in the forest.	
3.9 Which landscape features (topography) of the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented influence behaviors, movement and dispersal of wildlife (and people)?	e.g., river along part of national park border (dry conditions make this river crossable)	Presence of Sunkosh river along the border area of Lhamodzingkha Geog which attracts wild animals for water.	
3.10 Are natural food and water sources sufficient for the wildlife species in conflict in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., river in national park provides sufficient water year-round, prey abundance sufficient for tiger population	Sufficient water for the wildlife for whole year. However, regarding the palatable food resources for them is questionable.	
3.11 How do forest fires impact on wildlife and what are fire trends in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., annual bush fires are natural but number and severity of fires has been increasing in past 5 years.	NN	
3.12 Other natural drivers	e.g., any other natural drivers not listed here?		

4. Social dynamics

Category	Example	Information/Details	Reference (Source of information)
4.1 Which surveys/research to capture social aspects related to HWI have been conducted in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g. social dynamic study; community knowledge and perceptions; media study; stakeholder assessments, social landscape map	CVCA/HWC survey in 2021	
4.2 Which power dynamics between stakeholders are observed in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g. Conflict of interests between stakeholder groups, Stakeholder groups influencing/polarizing, rivalry between stakeholder groups, high level of escalation	NN	
4.3 Any other information/observation regarding social dynamics in the area?		NN	

5. Wildlife dynamics

Category	Example	Information/Details	Reference (Source of information)
5.1 Conflict species relative abundance/density in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., estimated abundance of 55 elephants in national park and 30 lions	NN	
5.2 Population trends of conflict species in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., increasing population of elephants, decreasing population of lions (could include specific population numbers if known)	NN	
5.2 Population trends of prey species (in case carnivore conflicts are observed)	e.g., decrease in small ungulate species (could include specific population numbers if known)	NN	
5.3 Which wildlife movements through the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented, are observed	e.g. elephant migrate through community land between national parks in the dry season; crocodiles gather in specific waterhole during months xx-xx; baboons pass xx fields in morning hours	Elephant migrate through community during dry season. They stay nearby waterholes.	
5.5 Has any type of behaviors by specific wildlife species or individuals been observed that may point at learned behaviors or that might be specifically challenging? Please provide details.	e.g., Individuals of elephants use tusks to lift up electric fence wires; wolf jumps over specific fences; hyena follows wild boar under barrier; primates learned to unlock doors	Elephant fear to the torch lights in light but gets used to when used the same next time.	
3.9 Which changes of wildlife behaviors, movement or dispersal have been observed in the past years in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., troops of primates found close to NP boundary more often; elephants moving out of NP in evening and returning during day, stronger activity of deer at night	Primates are more familiar to humans and even gets into kitchen for foods and noodle wrappers.	
5.6 Other important wildlife-related information that impacts on human-wildlife relationship		NN	

6. Policy, governance and institutions

Category	Example	Information/Details	Reference (Source of information)
6.1 List of policies related to HWC or HWC management relevant for the landscape	e.g., Law 153B no killing of protected species (elephant, lion), Policy #453 land use policies within community land, etc. etc.	FNCRR 2023/FNCA 2023	
6.2 List of SOPs or other operational regulations/ documents relevant for managing the interaction of wildlife and people	e.g., SOP on rapid HWC response; decision support system for problem animal control	SOP on QRT	
6.3 Which administrative and other governance structures are in place in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented that relate to HWC and coexistence?	e.g. district level HWC reporting scheme; natural resource boards operating fence maintenance; conservancy board involved in HWC monitoring; landscape level platform/ forum on HW coexistence	QRTs report to the LGs and Forestry officials if HWC cases as and when it occurs.	
6.4 Which governmental, non-governmental and private institutions are active in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?		DoFPS	
6.5 Which funding sources for managing HWC and developing HW coexistence strategies are currently available in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., WWF, local government, etc.	WWF/RGoB	
6.6 Which staff capacity is available to be engaged in HWC management and human dimensions of conservation work?	e.g. HWC focal person, staff with background in social sciences	DoFPS/LG/Dungkhag	
6.7 Which lead group is expected to manage HWC in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?		Public/DoFPS/LG	

