



Human-Wildlife Conflict Management

Conflict to Coexistence (C2C) Strategy for
Gakiling Gewog, Haa (2026-2030)

JIGME KHESAR STRICT NATURE RESERVE
Department of Forests and Park Services
Ministry of Energy and Natural Resources
Haa, Bhutan



Supported by:



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

based on a decision of
the German Bundestag



Prepared by:

1. Ugyen, Senior Forest Ranger-I, Head NCS

Inputs and Guidance

1. Ugyen Wangchuk, Chief Forestry Officer, JKSNR
2. Ugyen Tshering, Offtg. Chief Forestry Officer, JKSNR
3. Nagdrel Lhamo, WWF-Bhutan, Thimphu
4. Kinley Tenzin, WWF-Bhutan, Thimphu

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:

Gakiling Range, JKSNR Haa. (2026). Human-Wildlife Conflict Management. Conflict to Co-existence (C2C) Strategy for Gakiling Gewog, Haa.

Photo credits: Ugyen, JKSNR

Copyright:

© Jigme Khesar Strict Nature Reserve, Haa, 2026

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

Abbreviations

HWC.....	Human-Wildlife Conflict
C2C	Conflict to Coexistence
WWF.....	World Wildlife Fund
ACAI	Area of Collective Action and Innovative
TAI.....	Tigers Alive Initiative
BCI.....	Big Cat Initiative
%.....	Percentage
BHU	Basic Health Unit
ORC	Outreach Clinics
HHS	Households
NFE	Non-Formal Education
RGoB.....	Royal Government of Bhutan
IKI	International Climate Initiative
QRT	Quick Response Team
AI	Artificial Insemination
NWFPs.....	Non-wood Forest Products
SMART	Spatial Monitoring and Reporting Tool
GIS.....	Geographic Information System
M&E	Monitoring and Evaluation
DoFPS.....	Department of Forests and Park Services
JKSNR	Jigme Khesar Strict Nature Reserve
AMTC.....	Agriculture Machinery and Technology Centre



ནགས་ཚལ་དང་གླིང་ཀ་ཞབས་ཏྲོག་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 Gakiling 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 Gakiling Gewog (2026-2030) 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 Gakiling Gewog and the JKSNR 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 Gakiling Gewog is the result of a collective and dedicated effort by the staff of the Gakiling Range and JKSNR, Haa. The management 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 management 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. The management sincerely expresses its gratitude to the stakeholders, Local Government (Gup, Mangmi, and Tshogpa) for their strong support and key contributions during the focus group discussions, social data collection, co-design process, and strategy consultations. We also extend our heartfelt appreciation to the Dzongkhag Agriculture, Livestock, and Planning sectors, and the Gewog Agriculture and Livestock offices for their valuable support and inputs.

The management would like to extend special appreciation to Mr. Ugyen, Sr. Forest Ranger (Head, Nature Conservation Section) from JKSNR, 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 management 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 Gakiling Gewog in the years to come.

Contents

Foreword	4
Acknowledgement	5
1. Introduction	8
2. Goal and Objectives	9
3. Methodology	9
3.1 Site Description	9
3.2 Methods: C2C Framework	10
3.2.1 C2C Process	11
4. Results and Discussion	17
4.1 Demography and Social Information	17
4.2 Overall Results of Gakiling Gewog	18
4.2.1 Conflict Species of Gewog	18
4.2.2 Status of Outcomes at Gewog level	19
4.2.3 Status of Elements at Gewog level	20
4.3 Status of Outcomes at Chiwog level	22
4.3.1 Rangtse-Youkha Chiwog	22
4.3.2 Ngatsena-Phutsena Chiwog	24
4.3.3 Thangdokha Chiwog	26
4.3.4 Dorithasa-Yangtsena Chiwog	28
4.3.5 Sektena Chiwog	30
5. Conflict to Coexistence Strategy	32
6. Monitoring and Evaluation	38
6.1 Monitoring	38
6.2 Evaluation	38
7. Conclusion	44
Reference	45
Annexure I: C2C Project Assessment Report of Gakiling Gewog	46
Annexure II: List of Respondents of Service Provider	47

Figures

Figure 1:	Gewog map of Gakiling gewog	9
Figure 2:	C2C framework to ensure effective and sustainable HWC management.	11
Figure 3:	Stakeholder Identification result of Gakiling gewog	12
Figure 4:	Conflict species of Gakiling gewog	18
Figure 5:	Result by Outcome with lowest score for livelihoods/assets	20
Figure 6:	Result by six Elements with lowest score for each Outcome	21
Figure 7:	Conflict species recorded under Rangtse-Youkha chiwog.....	23
Figure 8:	Result by Outcome with lowest score for livelihoods/assets for Rangtse-Youkha	23
Figure 9:	Result by elements for Rangtse-Youkha chiwog	24
Figure 10:	Conflict species of Ngatsena-Phutsena chiwog.....	25
Figure 11:	Outcome with lowest score for livelihoods/assets for Ngatsena-Phutsena chiwog	25
Figure 12:	Lowest score elements under Ngatsena-Phutsena chiwog	26
Figure 13:	Record of conflict species for Thangdokha chiwog.....	26
Figure 14:	Outcome with lowest score for livelihoods/assets for Thangdokha chiwog.....	27
Figure 15:	Elements with lowest score under Thangdokha chiwog.....	27
Figure 16:	Record of most conflicting species in the Dorithasa-Yangtsena chiwog	28
Figure 17:	Outcome with lowest score for livelihoods/assets for Dorithasa chiwog.....	29
Figure 18:	Elements with lowest score under Dorithasa-Yangtsena chiwog	30
Figure 19:	Conflict species recorded under Sektena chiwog.....	30
Figure 20:	Lowest score for livelihoods/assets outcome for Sektena chiwog.....	31
Figure 21:	Elements with lowest score under Sektena chiwog	31

Tables

Table 1:	Stakeholder Identification Matrix	13
Table 2:	Household Survey from each Chiwog under Gakiling gewog.....	14
Table 3:	Participants from Chiwog during Co-design consultation	16
Table 4:	Score under each outcome by category of respondents	19
Table 5:	Implementation Plan and Financial Outlay	33
Table 6:	Monitoring and Evaluation Framework	39

1. Introduction

Human-Wildlife Conflict (HWC) is a widespread issue where interactions between humans and wildlife result in negative impacts on both sides (Conover, 2002). While humans and wildlife have coexisted for millennia, the issue is becoming an increasingly pressing concern on a global scale, affecting both conservation and development priorities. These conflicts are particularly prevalent in areas where human and wildlife populations coexist and compete for limited resources. Conflict arises when either humans or wildlife encroach upon the other's territory, disrupting livelihoods. In the current Anthropocene era, characterized by human-dominated landscapes and extensive human-wildlife interfaces, such conflicts are expected to intensify (Caro et al., 2012). The rapid growth of the human population, rapid developmental activities, along with widespread habitat loss and fragmentation, has heightened the likelihood of encounters between people and animals, often resulting in adverse outcomes for both.

Similarly, Gakiling gewog is primarily an agrarian society, with the majority of its population dependent on agriculture and livestock as their main sources of income and livelihood. Most settlements in the gewog are located within or near forests, which cover approximately 94.5% of the area, predominantly broadleaf forests. The community's reliance on forest resources creates a close connection between people and nature, leading to frequent interactions. One of the major challenges faced by the farmers is HWC, where wildlife preys on livestock and damages crops. This persistent issue disrupts farming activities, impacting the peace and well-being of farmers and hindering their efforts to sustain their livelihoods. Unmanaged conflict can devastate wildlife populations and has profound impacts on communities. This underscores the need for continuous innovation and adaptation of strategies to mitigate conflicts and promote peaceful coexistence.

We are confronted with the fundamental challenge of managing HWC while various approaches and strategies have been implemented across the globe. C2C-Approach (Conflict to Coexistence-Approach) offers a framework for an integrated, holistic and inclusive approach to manage HWC on a landscape level and includes a step-wise methodology and tools for implementation, monitoring, and adaptation. It is the revision of the Safe Systems Approach (SSA) to HWC management. The SSA was tested in various project from 2016 to 2022 and with feedback on its approaches, highlighted several challenges including inconsistencies in rapid assessment, methodology and obstacles to effective strategy implementation. WWF HWC Area of Collective Action and Innovation (ACAI), Tigers Alive Initiative (TAI) and Living with Big Cats Initiative (BCI) together with WWF regional and wildlife focal points decided to embark on a thorough revision process to improve the system, scale up on its

strengths and eliminate bias and reduce unintended negative effects. Thus, the C2C: Conflict to Coexistence-Approach was developed and is piloted in 2023. The C2C approach follows a seven-step process to formulate strategy, where step 4 focusing on the Co-design of a HWC management strategy. This step emphasizes collaboration with communities and stakeholders to create effective and sustainable solutions for managing HWC. Co-design is commonly used as a broad term to describe participatory and collaborative development processes that require active engagement of stakeholders. It incorporates adaptive management strategies, enabling community members and other stakeholders to contribute meaningfully to shaping the HWC management design (WWF, 2023).

2. Goal and Objectives

Goal:

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

Objectives:

The objectives of the strategy are to;

- 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

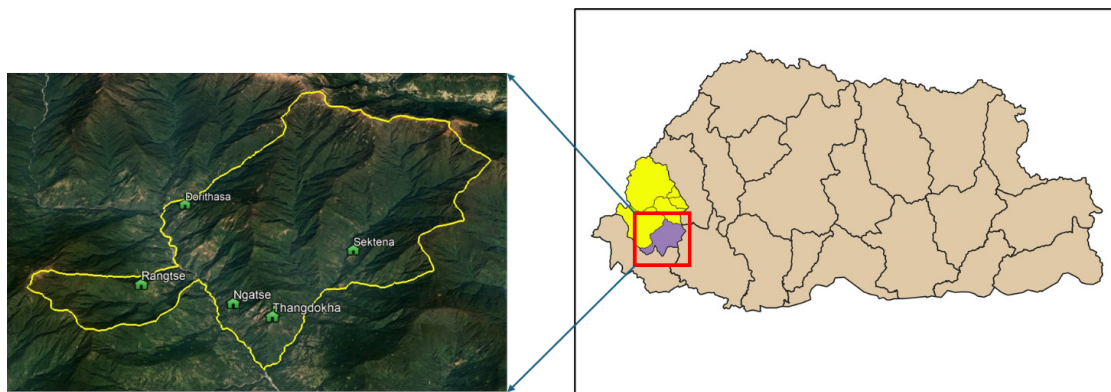


Figure 1: Gewog map of Gakiling gewog

Gakiling gewog is one of the six gewogs located at southern part of Haa under Sangbay Dungkhag, Haa Dzongkhag, which is geographically located at 27.146687o N Latitudes and 89.235489o E Longitudes (Figure 1). The gewog spans a total area of 339.44 square kilometers (36592.33 Hectares) with an elevation ranging from 485 to 3956 meter above sea level. It comprises five chiwogs, 19 villages, and 271 households, with a total population of 2,148, consisting of 1,099 males (51.16%) and 1,049 females (48.83%) according to the 2017 Population and Housing Census of Bhutan.

The gewog is connected with a network of 5km Gewog Center Road (GC road) and 41.20km farm roads, providing access to each chiwog. A Secondary National Highway runs through the gewog, connecting Dorokha and extending to Samtse. Farm roads provide accessibility to chiwogs such as Dorithasa-Kowakha-Yangtse, Rangtse-Tagna-Youkha, Sektena-Fentena, and Ngatsena-Phutsena and Thangdokha. The gewog shares its southern border with Dumtoe and Denchukha gewogs of Samtse Dzongkhag and its northern border with Sangbaykha and Samar gewogs of Haa. The majority of the population relies on agriculture and livestock rearing for their livelihood, with cardamom and orange serving as a primary source of income. Additionally, many residents engage in off-farm activities to support their livelihoods.

Gakiling gewog is home to two schools (Rangtse and Sertena), three Basic Health Units (BHUs) located at the Dungkhag Office, Dorithasa, and Ngatsena, as well as three Outreach Clinics (ORCs). The gewog also has five Lhakhangs and a significant sacred site, Rangtse, Dorjipham and Sektena Guru Ney. The site is believed to be the sacred abode where Guru Rinpoche and Khandro Yeshey Tshogyel meditated and left behind their spiritual attainment. The sacred abode is located below and above Rangtse village and one at Sektena village and visited by numerous spiritual figures, yet the place remains unknown to many people.

The gewog encompasses a diverse range of forest ecosystems, including Fir Forests, Mixed Conifer Forests, and Broadleaved Forests. Broadleaved vegetation dominates the area, covering 26,773.36 hectares (78.88%), followed by Mixed Conifer Forests at 5,019.14 hectares (14.79%), Fir Forests at 278.17 hectares (0.82%), and 237.63 hectares (0.70%) under agricultural land. Only a small portion of the area is occupied with built-up area. The forests are rich in mineral deposits, attracting interest from private firms seeking to extract these resources. Four sites have been allocated for mineral extraction, with one additional site currently under consideration.

3.2 Methods: C2C Framework

The design of this strategy is grounded in the principles and methodologies of the Conflict to Coexistence (C2C) approach. This structured and integrated framework provides a systematic guide for planning, implementing, and

monitoring HWC management. The C2C approach emphasizes key principles such as holism, resilience, shared responsibility, and fostering tolerance to ensure sustainable coexistence between communities and wildlife.

Figure 2 illustrates the ongoing implementation of actions required to address current or emerging HWC issues based on C2C approach, while simultaneously co-developing a long-term HWC management strategy with communities and other stakeholders. This approach recognizes the need for short-term or sustained measures to maintain an effective response or manage urgent HWC situations. It emphasizes the importance of building and maintaining trust among stakeholders during the process, while planning to address the root causes and underlying issues that are crucial for developing an effective and sustainable HWC management plan over the long term.

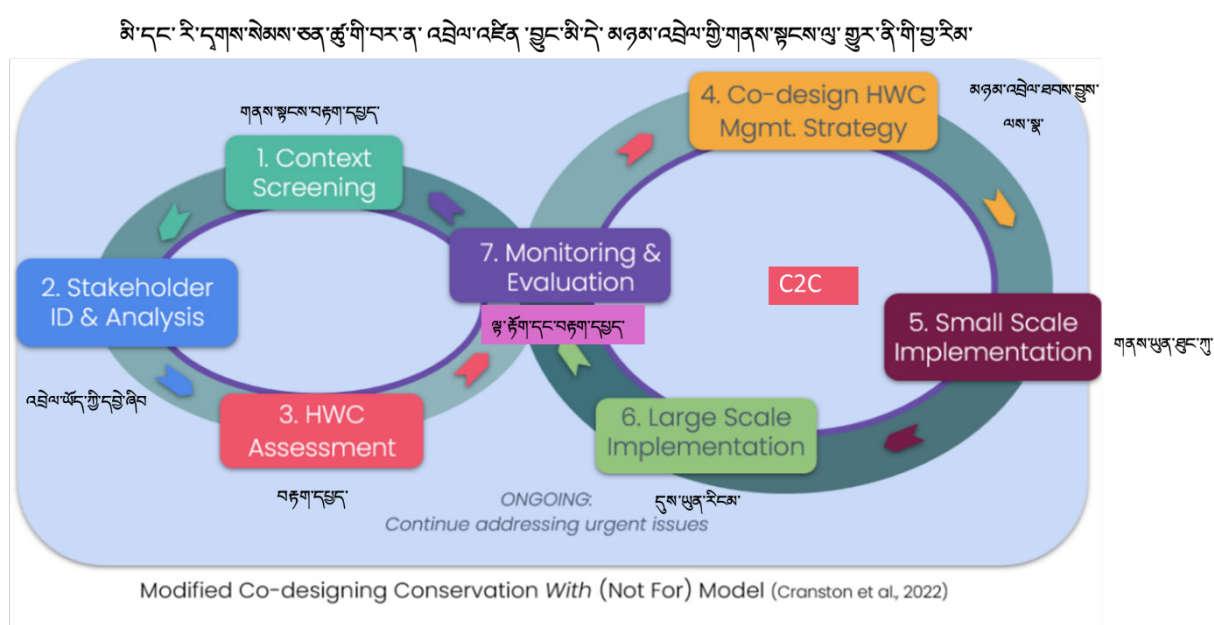


Figure 2: C2C framework to ensure effective and sustainable HWC management.

3.2.1 C2C Process

Step 1: Context Screening

The context screening is the initial step in the assessment process, focusing on identifying and understanding the specific characteristics of a landscape and the existing HWC situation. This step involves a thorough examination of various factors, such as identifying and understanding the details of a particular landscape and the current HWC situation. Prior to completing this step, the C2C project manager compiled all relevant baseline information, including social landscape maps, gewog profile, reports, and other resources. This effort aimed to develop a thorough and comprehensive understanding of the landscape to inform effective planning and decision-making. On April 22, 2024, the C2C Core team was formed, and 20 staff attended the C2C training.

During the training, the context screening was carried out using C2C Format Tool 4, which includes the key categories for analysis like site description of Gakiling gewog (landscape information, demographic & livelihoods), HWC trends (conflict species, frequency, severity & type of conflict), drivers of conflict (human-induced & natural drivers), social dynamics, wildlife dynamics, and relevant policies, governance, and institutions.

Step 2: Stakeholder Identification & Analysis

In the C2C Approach, understanding the stakeholders involved in HWC and their collaborative potential is essential. On April 23, 2024, 20 forestry staff participated in the stakeholder identification and analysis process using C2C Tool 5 Matrix. This effort continued on April 30, 2024, with further analysis conducted at the gewog level through focused group discussion, involving 40 participants from service providers like Officiating Dungpa, Gup/Mangmi, Tshogpa, Gewog Administrative Officer (GAO), Agriculture & Livestock Extension staff, Police, Dungkhag official, Forestry officials (n = 15) who deliver services to the community and/or landscape, as well as local community members from chiwogs (n = 25). During the stakeholder consultation meeting, focused group discussions and participatory resource mapping were also conducted to identify various stakeholders. The stakeholder analysis process begins with identifying duty bearers/service providers using the Stakeholder Analysis Matrix (C2C Tool 5). This matrix requires answering a series of questions on a scale of 1 (low) to 5 (high) to systematically evaluate stakeholders as detailed below:

Interest in HWC and its management in this landscape (Gakiling gewog)

Influence on long-term success of a HWC management strategy

Availability to participate in the co-design of a HWC management strategy



Figure 3: Stakeholder Identification result of Gakiling gewog

Table 1: Stakeholder Identification Matrix

Stakeholders	Tshogpa	Agriculture	Forest	Livestock	Gup	Dungpa	Tarayana	Health	Lam	Teacher
Tshogpa	X									
Agriculture	Tshogpa	X								
Forest	Tshogpa	Forest	X							
Livestock	Tshogpa	Agriculture	Forest	X						
Gup/Mangmi	Tshogpa	Gup	Gup	Gup	X					
Dungpa	Tshogpa	Agriculture	Forest	Livestock	Gup	X				
Tarayana	Tshogpa	Agriculture	Forest	Livestock	Gup	Tarayana	X			
Health	Tshogpa	Agriculture	Forest	Livestock	Gup	Health	Tarayana	X		
Lam	Tshogpa	Agriculture	Forest	Livestock	Gup	Dungpa	Tarayana	Health	X	
Teacher	Tshogpa	Agriculture	Forest	Livestock	Gup	Dungpa	Tarayana	Health	Teacher	X

The stakeholder analysis reveals a wide spectrum of interests and varying levels of influence among the groups involved in the HWC management strategy. The process identified the Chiwog Tshogpa as the most important stakeholder, followed by forestry staff, the Gewog Gup, and agriculture and livestock officials, particularly during challenging times when assistance and services are needed.

Step 3: HWC Assessment

The C2C assessment is structured into three sets of questions tailored to different stakeholder groups:

- C2C Project Manager (Yes/No)
- Duty Bearers/Service Providers (Likert Scale 1=Strongly disagree, 5=Strongly agree)
- Community Members (Likert Scale 1=Strongly disagree, 5=Strongly agree)

This approach ensures a comprehensive understanding of diverse perspectives from different groups and how their opinions align or differ across the different elements and outcomes. Each set of questions addresses the six elements (Policy, Prevention, Response, Understanding the Conflict, Mitigation and Monitoring) under each of the 4 outcomes (People, Livelihoods/Assets, Habitat and Wildlife). The C2C Project Manager questions consist of a series of Yes/No questions aimed at understanding the context of HWC situations in the landscape. The Duty bearer/Service provider questions are focused on assessing the effectiveness of and compliance with policies and programs designed to reduce HWC. And the Community Member questions explore the community's perspective on HWC within the landscape, their awareness and their opinions on the effectiveness and usefulness of various policies and programs in addressing conflicts.

The HWC assessment was conducted through survey questionnaires, based on Yamane's (1967) method at 95% Confidence Interval. Following a training session and pre-testing of the household survey, data collection took place from May 18 to June 8, 2024. One-to-one household surveys was carried out across all chiwogs, engaging 1 project manager, all 17 service providers/duty bearers, and 161 community members from five chiwogs through random selection (Table 2). The following explains how the sample size for a gewog is determined.

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

Where n = Sample size; N = Total Population/HHs in the gewog; e = level of precision (e.g. margin of error, commonly 5% or 0.05 for 95% confidence level). The total household in the study area from 5 chiwog is about 274 households for Gakiling (sampling frame). Therefore, the sample size for the survey was 161 households for Gakiling Gewog, which was further determined for every chiwog for the survey. Efforts were undertaken to alternate between male and female respondents to reduce gender bias in the sampling process.

Table 2: Household Survey from each Chiwog under Gakiling gewog

Sl/No.	Name of Chiwog	Total HHs	No. of HHs interviewed	Sample Size
1	Dorithasa-Yangtsena	51	30	161
2	Rangtse-Youkha	125	73	
3	Ngatsena-Phutsena	40	24	
4	Thangthokha	23	14	
5	Sektena-Fentena	35	21	
Total HHs		274	161	

Chiwog level Sample size selection

After determining the total sample size for the gewog, the sample is proportionally distributed among chiwogs based on their household size. This ensures fair representation.

The proportional allocation formula for Chiwog is:

$$n_i = \frac{N_i}{N} \times n$$

Where:

n_i = Sample size for a specific chiwog

N_i = Population of that chiwog

N = Total gewog households

n = total calculated sample size for the gewog

This approach ensures statistically reliable and proportionally representative sampling at both gewog and chiwog levels.

Selection of Households for Interview

In each chiwog, a complete list of households (sampling unit) is prepared and numbered sequentially (e.g., 1 to N). From this list, interview households are selected using systematic random sampling combined with random number generation to ensure fairness and to avoid bias and cluster selection. First, generate a random starting number using the Random Number Generator; this random number becomes the first selected household. For the remaining household selections, subsequent households are selected by adding the sampling interval (x) to the starting number.

This process continues until the required sample size (n) is reached.

This method ensures that every household has an equal and independent chance of selection, thereby minimizing selection bias and cluster effects while maintaining statistical reliability.

Step 4: Co-design

To co-design the C2C Strategy, a consultation workshop was conducted in every Chiwog from 7th – 9th November, 2024 involving key stakeholders such as local government representatives (Gup and Tshogpa), RNR officials (Livestock and Agriculture), forestry officials, and community members. The development of the HWC management strategy is adopted through a participatory approach. This inclusive process ensured that the strategies were closely aligned with the needs and perspectives of the local communities.

A total of 149 households participated in the consultation process for the Co-design of the C2C strategy development for Gakiling gewog, with 74% of participants being male ($n = 110$) and 26% female ($n = 39$) (Table 3). The significant disparity in male and female participation reflects prevailing gender roles and societal dynamics, where men often represent households in decision-making forums. Efforts should be made in future consultations to address this imbalance by actively encouraging and empowering greater female participation, ensuring more inclusive perspectives in the strategy development process.

During the workshop, the results of the C2C assessment were shared with stakeholders through a comprehensive presentation and a visual report detailing the overall gewog status, C2C framework, C2C process, outcome result, elements results, conflict species and specific conditions in each chiwog allowing participants to validate the results. Group activities were organized to identify various management intervention strategies aimed at managing HWC, categorized into short-term and long-term actions, implementation sites and description of each action. Following the group work, participants presented their findings, which were then discussed to validate and refine the proposed actions based on the HWC scenario in the Chiwog. The compiled actions from the workshop were used to prepare the C2C strategy for effective HWC management for the Gakiling gewog for over five years.

Table 3: Participants from Chiwog during Co-design consultation

Sl/No.	Chiwog	Nos. of Participants	Male	Female
1	Ngatsena-Phutsena	19	16	3
2	Thangdokha	18	15	3
3	Rangtse-Youkha	55	44	11
4	Sektena-Phentena	57	35	22
Total		149	110	39
Male: Female %			74%	26%

Step 5: Small Scale Implementation

The small-scale implementation focuses on intervention actions proposed by the communities and relevant stakeholders, designed to be executed within a short time frame, depending on available funding. These activities are practical and manageable, enabling affected communities to take immediate action to address pressing human-wildlife conflict (HWC) challenges. In Gakiling gewog, 37 such actions have been identified as part of the small-scale implementation and 8 actions as large-scale implementation programs. These actions aim to provide quick, tangible solutions to mitigate the impact of HWC while building momentum for longer-term strategies. Examples include installing physical deterrents, crop rotation, or conducting awareness campaigns, which can be carried out efficiently by local communities with minimal resources and external support.



4. Results and Discussion

4.1 Demography and Social Information

Understanding the demographic profile of community members was essential to capture perspectives from diverse groups within the community, providing a more inclusive and accurate representation of their experience and needs, and efforts were made to ensure gender-balanced participation in the survey. Despite these efforts, the final sample comprised 60% male respondents ($n = 97$) and 40% female respondents ($n = 66$), indicating slightly higher male representation. In terms of age distribution, the majority of respondents (46%, $n = 75$) fell within the 19–40 age group, followed by 34% ($n = 56$) in the 41–60 age group, and 20% ($n = 32$) were aged over 60 years. Regarding educational background, over 64% ($n = 105$) of the respondents were illiterate, while 12% ($n = 19$) had completed primary education, and 11% ($n = 18$) had attended Non-Formal Education (NFE) programs. This demographic factor aims to generate a comprehensive understanding of the community's dynamics, which is essential for designing effective, targeted interventions for managing HWC. The communities were subsistence farmers, dependent on agriculture and livestock farming as means of their livelihoods and main source of income.

4.2 Overall Results of Gakiling Gewog

4.2.1 Conflict Species of Gewog

In Gakiling gewog, both service providers and community members identified a variety of wildlife species as sources of human-wildlife conflict. Since agriculture and livestock farming are the primary livelihoods in the gewog, crop depredation and livestock predation by wild animals were reported as the most pressing challenges. The key conflict species highlighted include barking deer, bears, birds, wild pigs, monkeys, rodents, sambar, wild dogs, porcupines, leopards, gaurs, and tigers. Among these, service providers identified primates, ungulates and dhole/wild dog as the most problematic species, while community members emphasized barking deer, birds and bear as the most significant conflict animals. Interestingly, snakes were reported as the least problematic species by both groups. A graphical representation of the conflict species and their impact is illustrated in Figure 4.

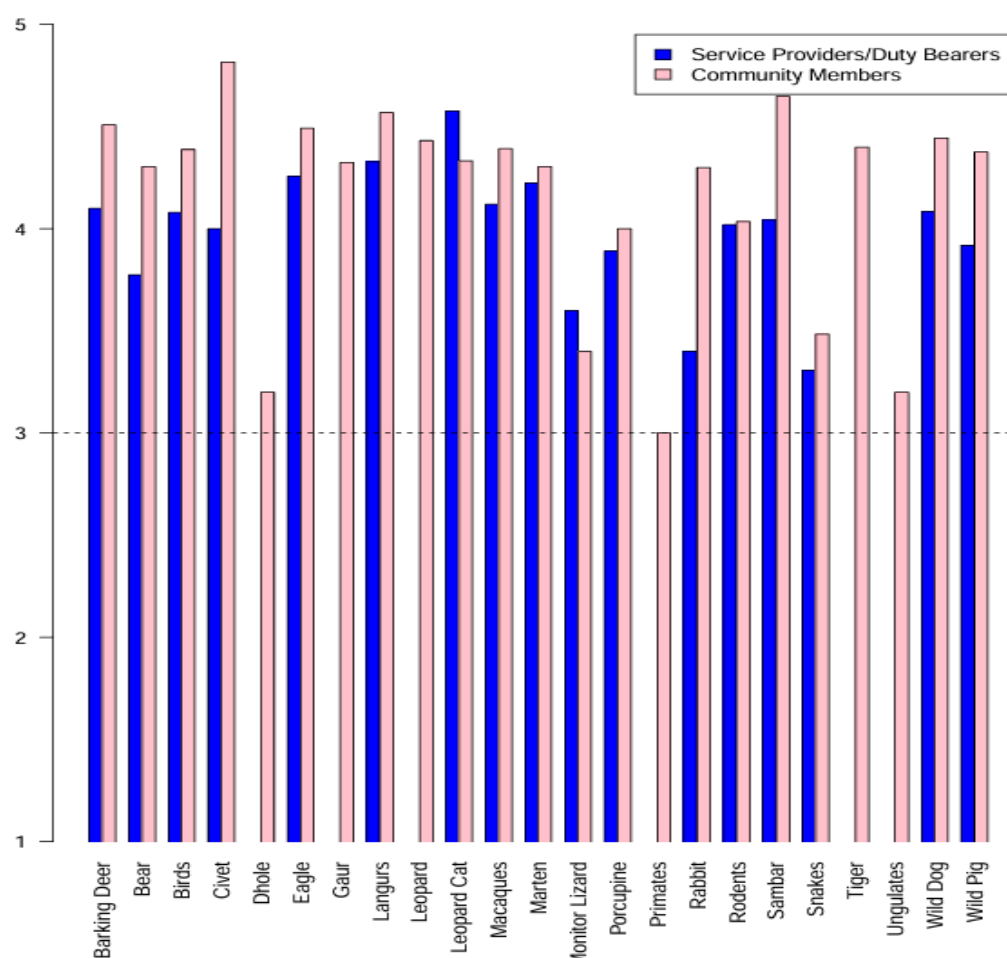


Figure 4: Conflict species of Gakiling gewog

The community members from the five chiwogs in Gakiling gewog identified barking deer, bears, birds, wild pigs, porcupines, wild dogs, leopards, and tigers as the primary conflict species due to their significant impact on livelihoods, economic losses, human safety, and have requested targeted interventions to mitigate these challenges.

Following are the conflict species recorded according to:

- C2C Project Manager: Barking Deer, Bear, Leopard, Sambar, Wild Dog, Wild Pig
- Service Providers/Duty Bearers: Bear, Barking Deer, Birds, Langurs, Leopard Cat, Macaques, Porcupine, Rodents, Sambar, Snakes, Wild Dog, Wild Pig, Eagle, Marten, Monitor Lizard, Rabbit, and Civet.
- Community Members: Barking Deer, Bear, Birds, Eagle, Gaur, Langurs, Leopard Cat, Macaques, Sambar, Snakes, Wild Dog, Wild Pig, Rodents, Porcupine, Marten, Leopard, Dhole, Primates, Ungulates, Rabbit, Civet, Tiger, and Monitor Lizard.

4.2.2 Status of Outcomes at Gewog level

The C2C approach for managing HWC has to have positive outcomes across multiple dimensions where, people are able and willing to live alongside wildlife which will foster a more harmonious relationship between people and wildlife. The implementation of interventions will minimize losses from crop damage and livestock predation, securing livelihoods and assets. As a result, retaliatory killing, poaching and tolerance level will be high, allowing wildlife to thrive alongside people and human settlements. Furthermore, ensured sufficient natural habitats are secured to support sustainable healthy wildlife populations. The outcomes by addressing these interconnected aspects (people, livelihoods, wildlife, habitat) demonstrated that when people's livelihoods are protected and wildlife is given space to thrive, a sustainable coexistence between humans and wildlife becomes possible, benefiting both communities and ecosystems in the long run.

People- *Able and Willing to Live Alongside Wildlife*

Livelihoods/Assets- *Secured Against Presence of Wildlife*

Wildlife- *Thrives Alongside People*

Habitat- *Sufficient to Ensure Sustainable Wildlife Population*

Table 4: Score under each outcome by category of respondents

Outcome	Project Manager	Service Providers	Community Members
People	0.54	3.94	4.10
Livelihoods/Assets	0.61	2.66	3.15
Wildlife	0.72	3.73	4.15
Habitat	0.83	3.90	3.88

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 Agreeing.

The outcome with the lowest score for the C2C approach was in the People category, with a score of 0.54 for the Project Manager, 2.66 for Service Providers, and 3.15 for Community Members, specifically under Livelihoods/Assets (Table 4). Figure 5 shows that Livelihoods/Assets received the lowest score across all outcomes, as reported by both service providers and community members in Gakiling Gewog. As a result, interventions aimed at reducing human-wildlife conflict and enhancing coexistence should prioritize for the Livelihoods/Assets outcome, followed by Habitat, People, and Wildlife.

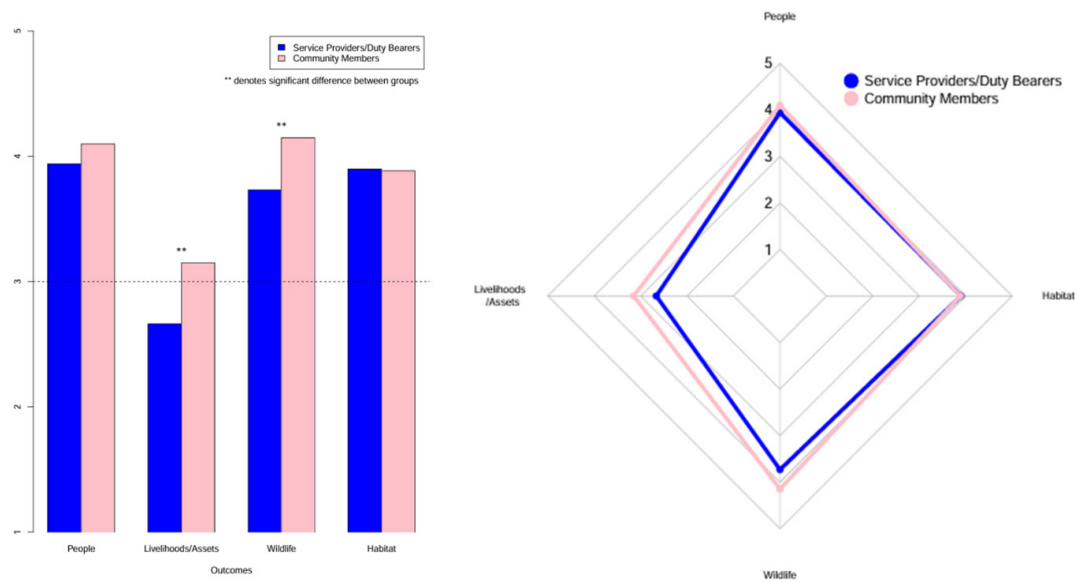


Figure 5: Result by Outcome with lowest score for livelihoods/assets

4.2.3 Status of Elements at Gewog level

In order to achieve the four outcome, six elements are essential to take into consideration and these elements were assessed under each outcome (Figure 6).

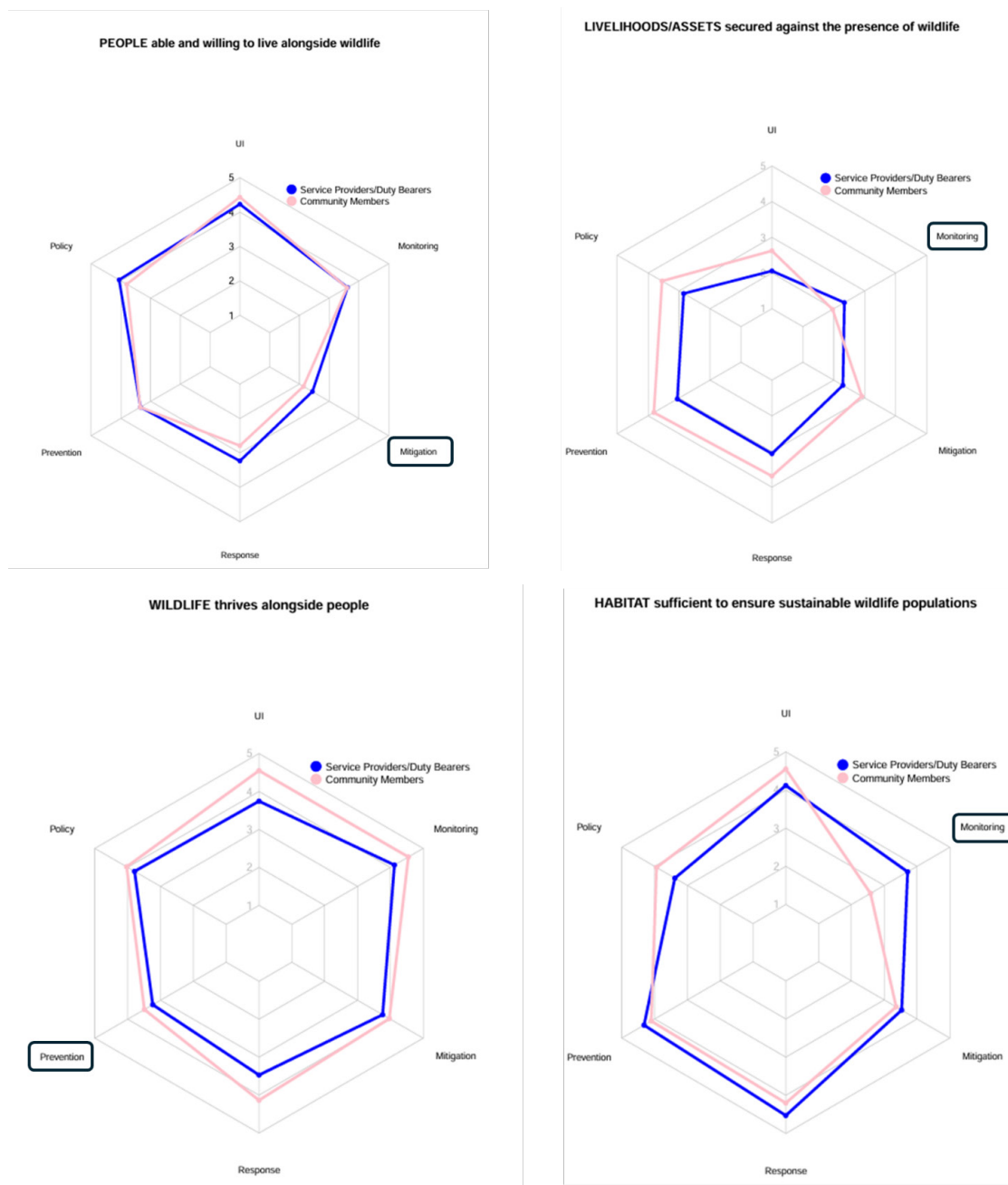


Figure 6: Result by six Elements with lowest score for each Outcome

The assessment revealed six critical elements that must be considered under each outcome to effectively manage human-wildlife coexistence. The findings are as follows:

1. People Able and Willing to Live Alongside Wildlife:

The lowest score was observed in the **mitigation** element, highlighting the

absence of financial schemes to compensate for losses incurred due to human-wildlife conflict (HWC), particularly the loss of livestock and human life. Nothing much has been done on mitigation measures in the gewog, which will reduce community tolerance and willingness to live alongside wildlife. This indicates a significant gap in ensuring community resilience and willingness to coexist with wildlife, leading to increased conflict.

2. Livelihoods/Assets Secured Against the Presence of Wildlife:

The **monitoring** element scored lowest, reflecting the lack of a proper monitoring protocol to protect community livelihoods and assets. Without effective monitoring, it is difficult to assess risks or implement timely interventions to safeguard assets from wildlife-related threats. It is also difficult to track and respond to threats to both human livelihoods and wildlife habitats, increasing vulnerability.

3. Wildlife Thrives Alongside People:

The **prevention** element received the lowest score, underscoring the absence of preventive measures aimed at minimizing conflicts before they escalate. This suggests a reactive rather than proactive approach, need for forward-thinking strategies, limiting the potential for harmonious coexistence between humans and wildlife.

4. Habitat Sufficient to Ensure Sustainable Wildlife Populations:

The lowest score in this outcome was attributed to the **monitoring** element. It indicates that natural resources in the landscape are degrading, compromising habitat quality for wildlife to thrive, affecting wildlife populations and increasing the likelihood of conflict as wildlife encroaches on human settlements. And there is no comprehensive study on wildlife population dynamics, which limit the ability to make informed decisions for conservation and resource management. This lack of data hinders the ability to manage and sustain wildlife populations effectively.

4.3 Status of Outcomes at Chiwog level

4.3.1 Rangtse-Youkha Chiwog

According to Figure 7, community members have identified barking deer, wild pigs, bears, and birds as the primary conflict species in the chiwog. Whereas, the service providers ranked bears and rodents as the most problematic species, followed by birds, porcupines, sambar, and langurs. Based on the identified conflict species, it is crucial to implement and enhance appropriate mitigation measures. For community members, priority should be given to managing conflicts with barking deer, wild pigs, bears, and birds, with continuous monitoring and adaptive management, which are essential to minimize human-wildlife conflicts and promote coexistence.

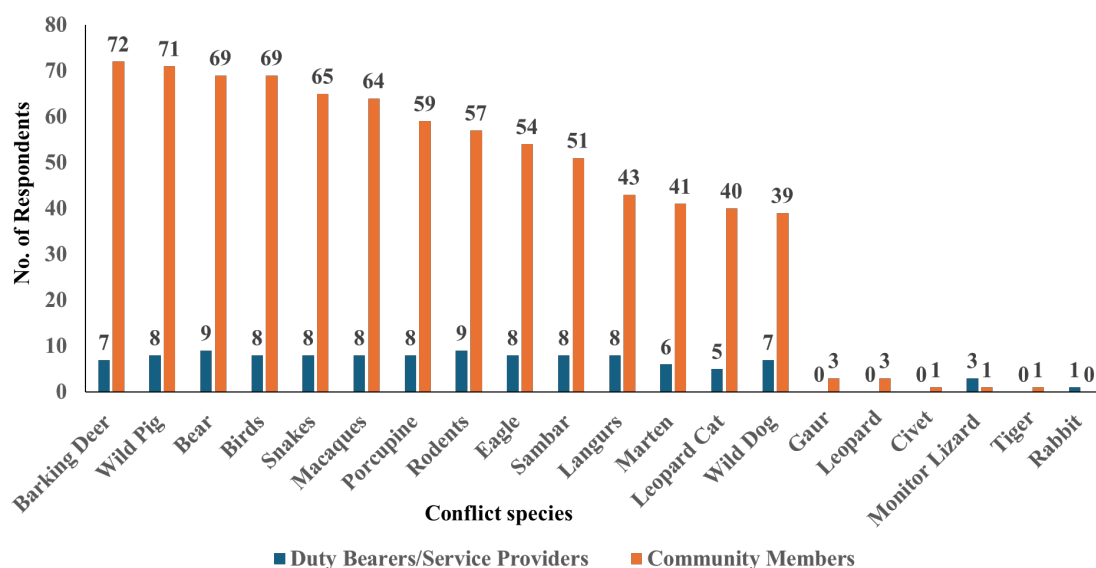


Figure 7: Conflict species recorded under Rangtse-Youkha chiwog

Figure 8 highlights that, livelihoods/assets received the lowest score among all outcomes identified by both service providers and community members in the Rangtse-Youkha chiwog. Therefore, to enhance the livelihoods of communities affected by human-wildlife conflict, it is essential to implement targeted, sustainable interventions that address both the immediate and long-term impacts where communities can build resilience to HWC, improve their economic stability, and foster a harmonious coexistence with wildlife.

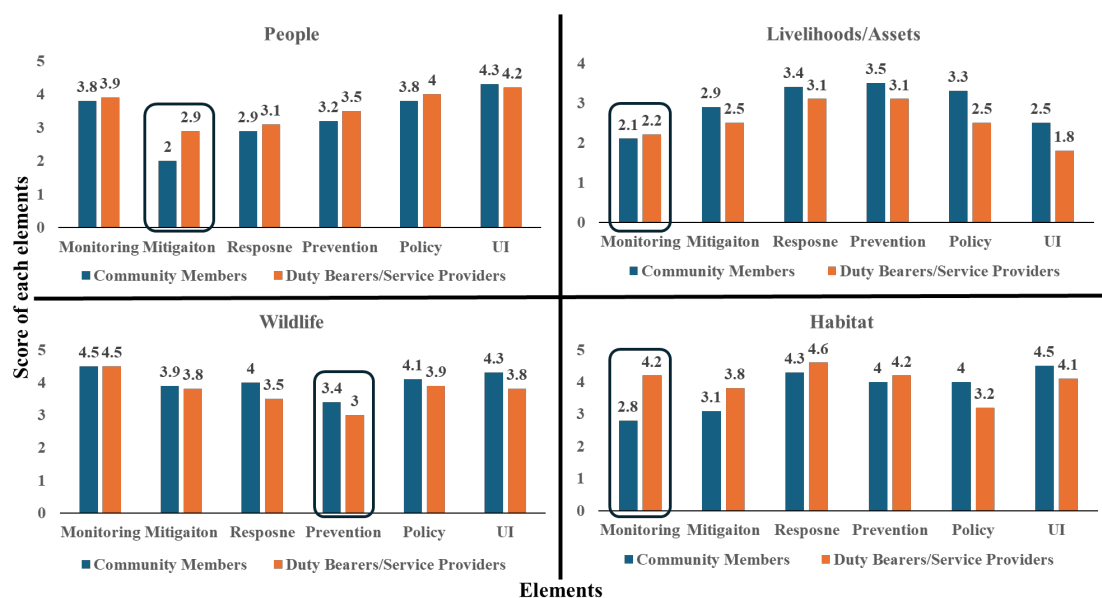


Figure 8: Result by Outcome with lowest score for livelihoods/assets for Rangtse-Youkha

In the Rangtse-Youkha chiwog, **mitigation** received the lowest score under the people outcome, while monitoring was the lowest-ranked element under the livelihoods/assets outcome. Similarly, **prevention** scored the lowest under the wildlife outcome, and **monitoring** was identified as the weakest element under the habitat outcome, as shown in Figure 9.

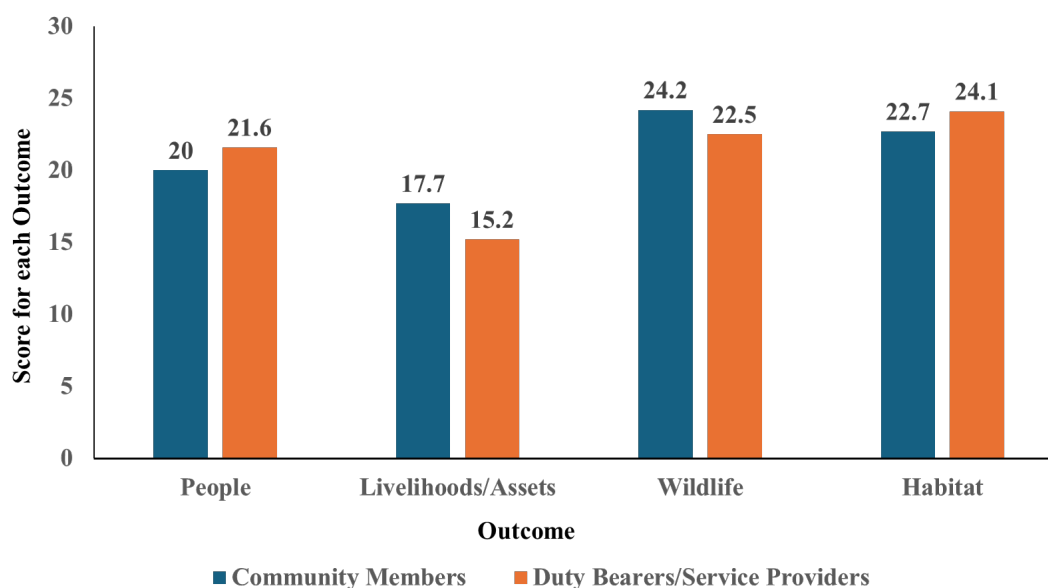


Figure 9: Result by elements for Rangtse-Youkha chiwog

4.3.2 Ngatsena-Phutsena Chiwog

According to Figure 10, community members identified barking deer, birds, macaques, and wild pigs as the most conflicting species in the chiwog. Similarly, service providers considered primates and ungulates as the primary conflict species, followed by bears, birds, and rodents. This chiwog is also renowned for its thriving orange orchards which serve as primary source of income, but faces significant challenges and threats due to frequent incursions by monkeys. Therefore, to protect their crops, farmers are compelled to spend considerable time and effort guarding their orchards, often at the expense of other productive activities. This constant vigilance not only adds to their workload but also increases stress and limits opportunities for diversifying their income sources.

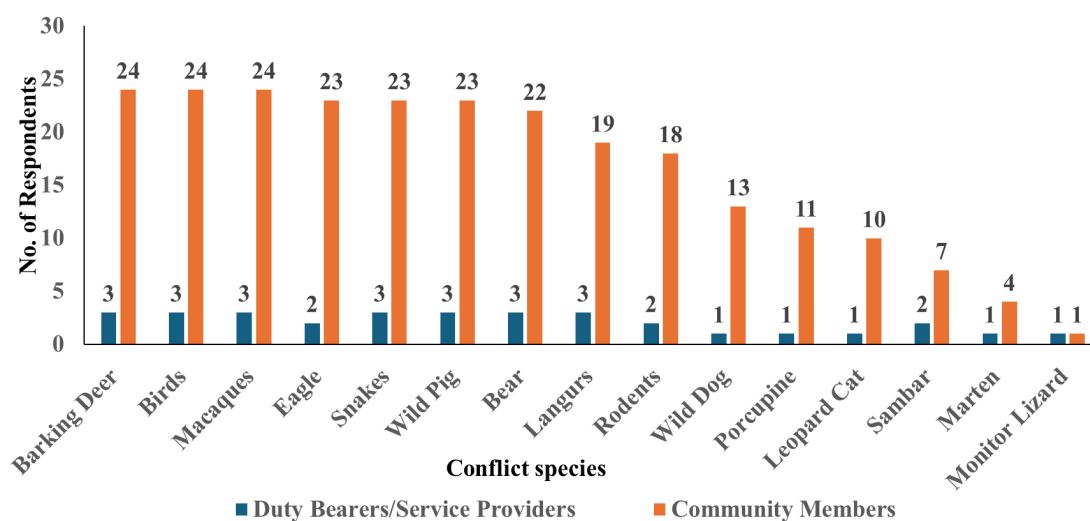


Figure 10: Conflict species of Ngatsena-Phutsena chiwog

Figure 11 shows that **livelihoods/assets** received the lowest score among all outcomes as reported by both community members and service providers/duty bearers in the Ngatsena-Phutsena chiwog. Therefore, addressing this challenge requires interventions which can help and mitigate the impacts while safeguarding the livelihoods of the community and promoting coexistence which should prioritize improving livelihoods in the chiwog.

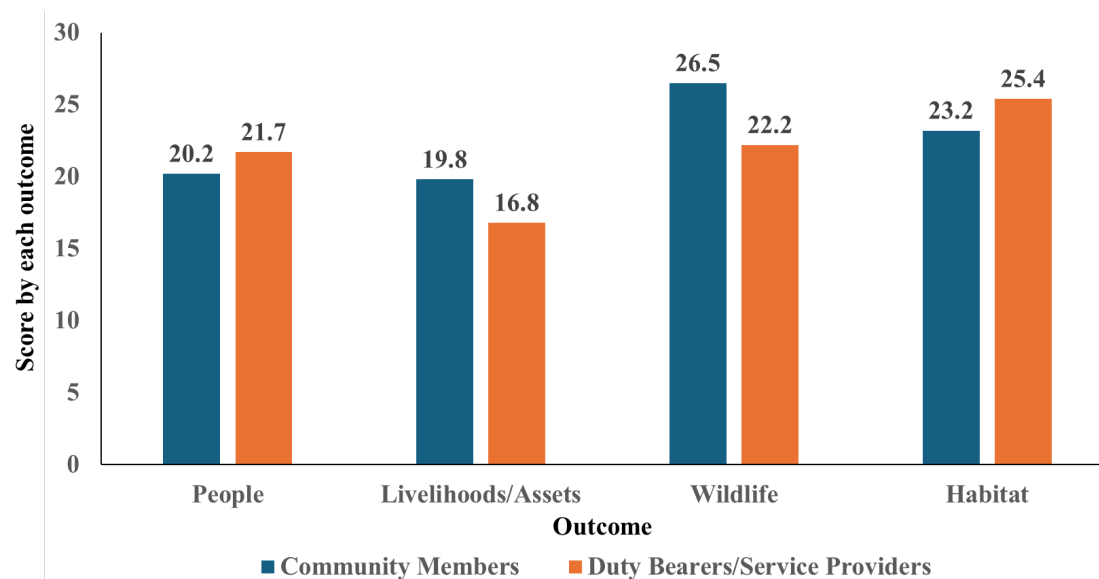


Figure 11: Outcome with lowest score for livelihoods/assets for Ngatsena-Phutsena chiwog

In the Ngatsena-Phutsena chiwog, the element of **mitigation** received the lowest score under the people outcome, while **monitoring** was the lowest-ranked element under the livelihoods/assets outcome. Additionally, **policy** was identified as the weakest element under the wildlife outcome, and **monitoring** was also highlighted as the key area which needs attention under the habitat outcome. These elements should be prioritized to address coexistence and reduce human-wildlife conflict in the chiwog.

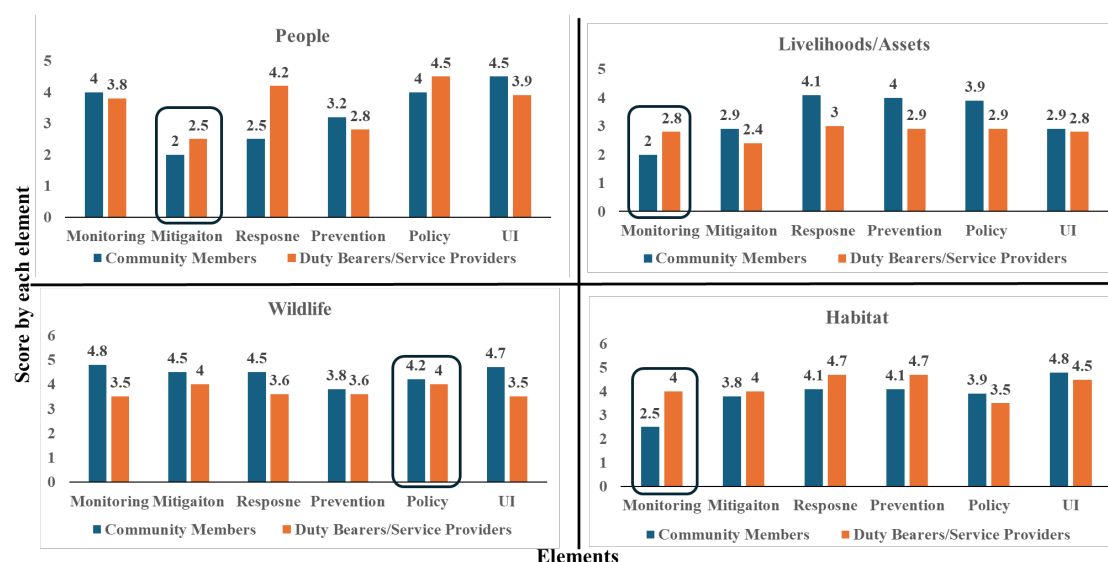


Figure 12: Lowest score elements under Ngatsena-Phutsena chiwog

4.3.3 Thangdokha Chiwog

In Thangdokha chiwog, both community members and service providers identified bear, barking deer, birds, macaques, and rodents as the most conflicting species, as shown in Figure 13.

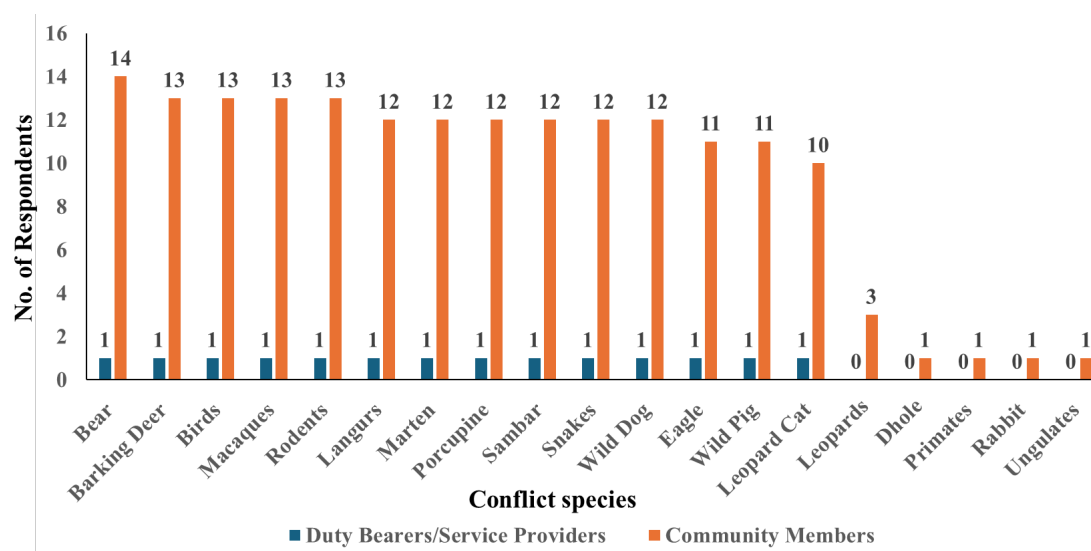


Figure 13: Record of conflict species for Thangdokha chiwog

Livelihoods/assets received the lowest score among all outcomes as reported by both community members and service providers/duty bearers in the Thangdokha chiwog as shown in Figure 14.

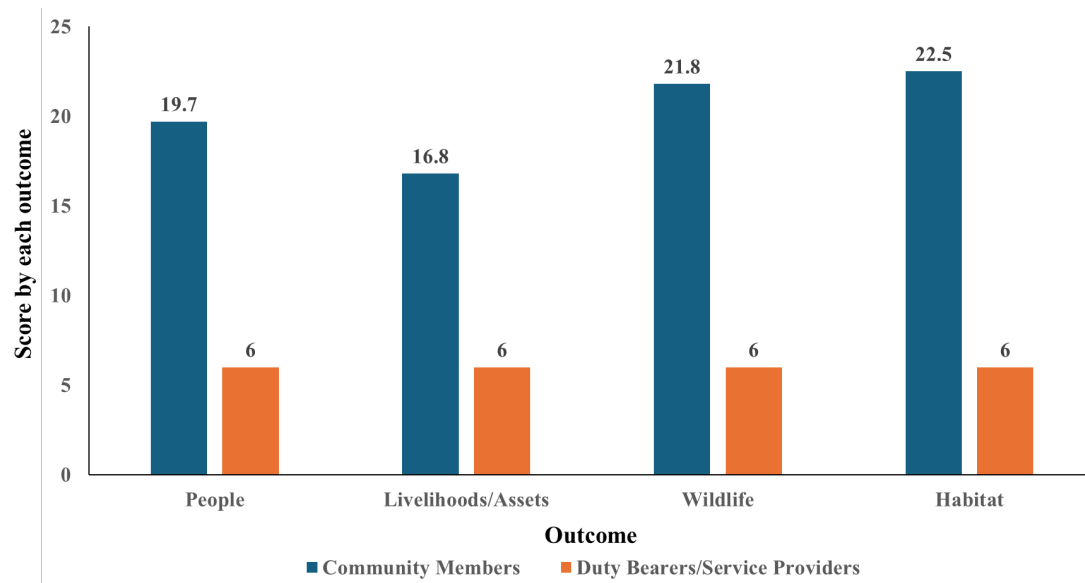


Figure 14: Outcome with lowest score for livelihoods/assets for Thangdokha chiwog

In Thangdokha chiwog, the element **mitigation** has the lowest score for people and **UI** under livelihoods/assets outcome, and **mitigation** under wildlife and habitat outcome (Figure 15).

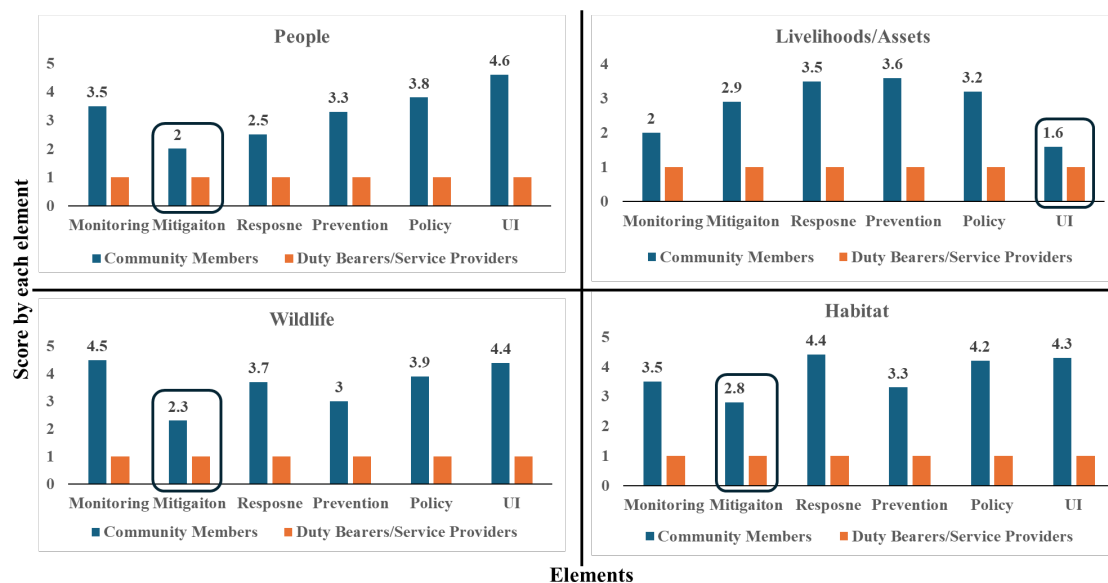


Figure 15: Elements with lowest score under Thangdokha chiwog

4.3.4 Dorithasa-Yangtsena Chiwog

Dorithasa-Yangtsena chiwog has long been a hotspot for human-wildlife conflicts, with several notable incidents highlighting the challenges faced by the local communities. The primary conflict species identified were barking deer, bears, birds, macaques, rodents, snakes, wild dogs, wild pigs, and sambar (Figure 16). Approximately seven years ago, a significant incident occurred at Dorithasa village when a bear broke into a household, causing considerable fear and disruption. More recently, on November 22, 2024, a pair of leopards was sighted near the roadside at Yangtsena. This sighting has raised concerns among the community due to the potential risks these predators pose to both humans and livestock. Such incidents underscore the growing challenges of coexisting with wildlife in the village, necessitating urgent and strategic interventions to mitigate conflicts while ensuring the safety and well-being of both wildlife and local communities.

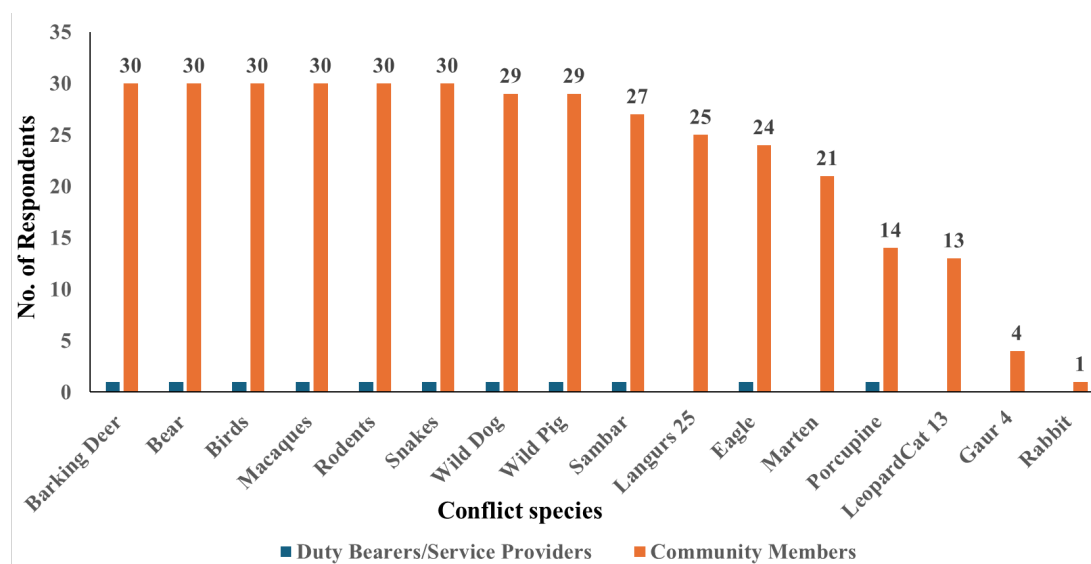


Figure 16: Record of most conflicting species in the Dorithasa-Yangtsena chiwog

As shown in Figure 17, Livelihoods/Assets outcome received the lowest score among all outcomes, according to both community members and service providers/duty bearers in the Dorithasa–Yangtsena chiwog.

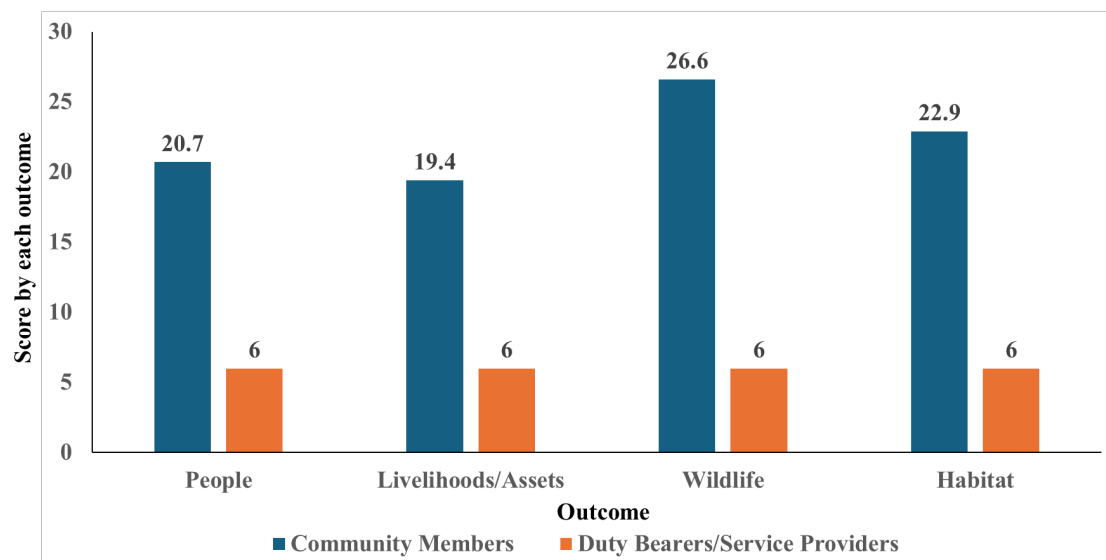


Figure 17: Outcome with lowest score for livelihoods/assets for Dorithasa chiwog

In Dorithasa–Yangtsena chiwog, the **mitigation** element recorded the lowest score under the people outcome, indicating relatively weaker performance in measures aimed at reducing human–wildlife interactions affecting communities. For both livelihoods/assets and habitat outcomes, **monitoring** was ranked the lowest, suggesting gaps in systematic data collection, tracking, and adaptive management. Under the wildlife outcome, **prevention** received the lowest score, reflecting limited effectiveness of proactive measures to deter conflicts (Figure 18). The repeated low ranking of monitoring, particularly in livelihoods/assets and habitat, highlights it as a critical area requiring strengthened capacity and investment. Prioritizing improvements in monitoring, mitigation, and prevention is essential to enhance evidence-based decision-making, promote human–wildlife coexistence, and effectively reduce conflict risks in the chiwog.

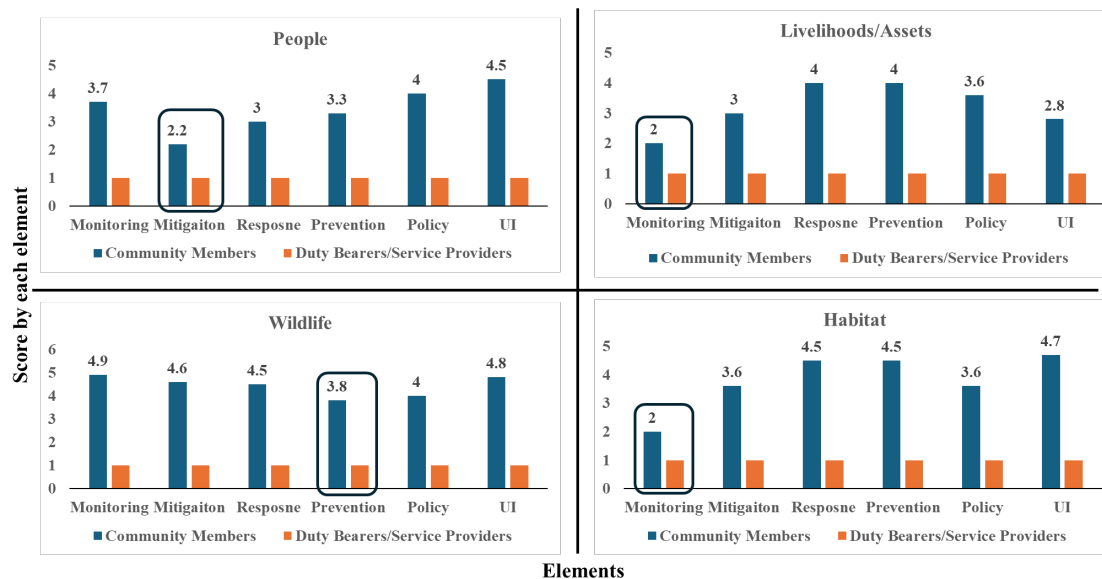


Figure 18: Elements with lowest score under Dorithasa–Yangtsena chiwog

4.3.5 Sektena Chiwog

Similar to other chiwogs, Sektena has also identified barking deer, birds, wild pigs, bears, and macaques as the most conflicting species in the chiwog, as shown in Figure 19.

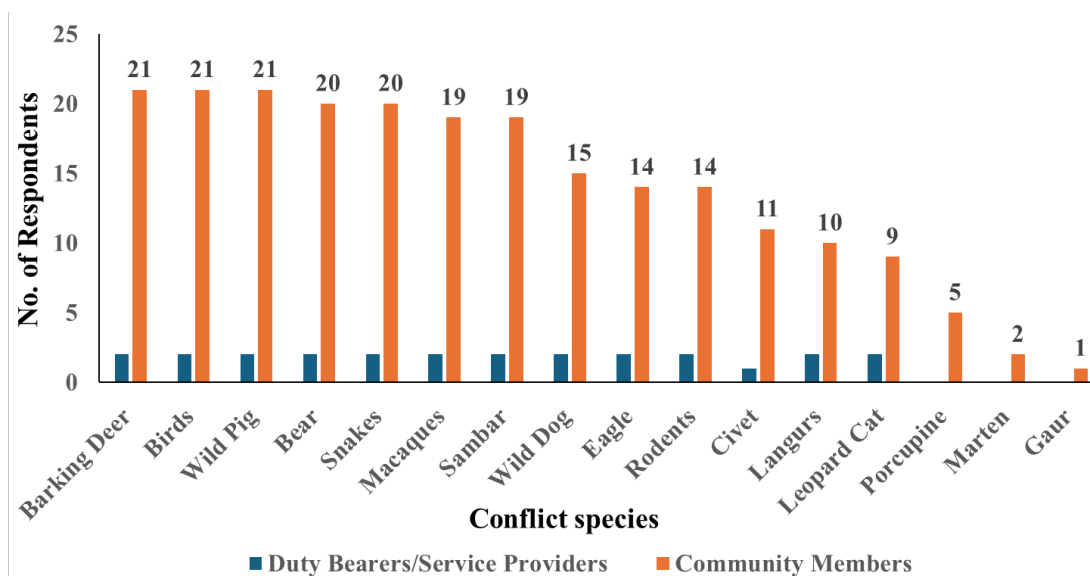


Figure 19: Conflict species recorded under Sektena chiwog

As shown in Figure 20, livelihoods/assets received the lowest score among all outcomes in the Sektena chiwog, as reported by both community members and service providers/duty bearers.

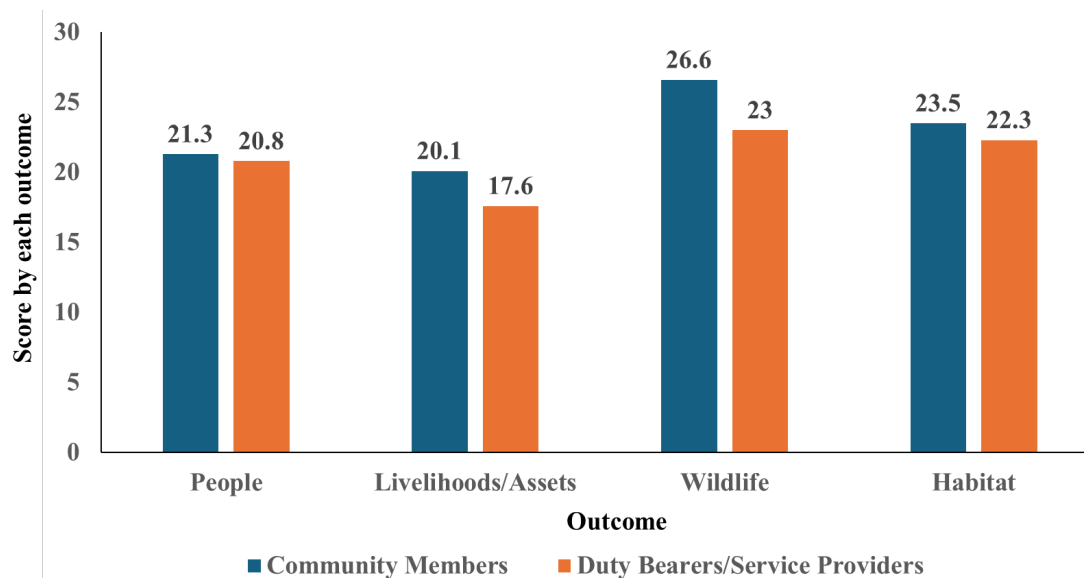


Figure 20: Lowest score for livelihoods/assets outcome for Sektena chiwog

The element **mitigation** has the lowest score for people, **Monitoring** element under livelihoods/assets and habitat outcome, and **prevention** under wildlife outcome for Sektena chiwog (Figure 21).

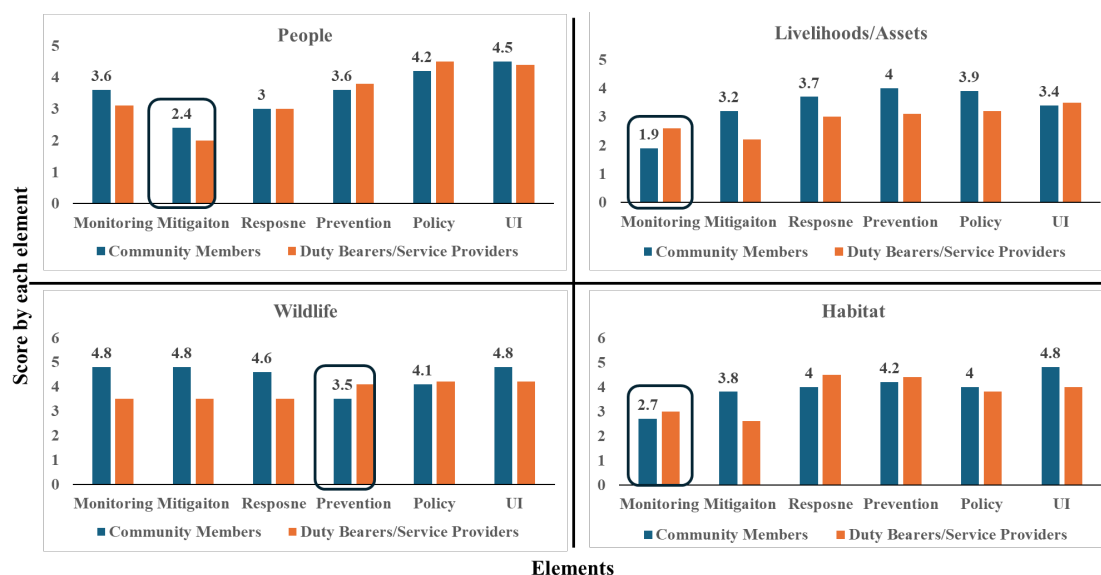


Figure 21: Elements with lowest score under Sektena chiwog

5. Conflict to Coexistence Strategy

The C2C Management Strategy for Gakiling 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 barking deer, bears, macaques, birds, wild pigs, wild dog, tiger, leopards, 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 stewardship programs. Effective mitigation and prevention measures, such as physical barriers, schemes, early warning systems, and sustainable agricultural and livestock practices, which 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 Conflict to Coexistence (C2C) challenges and issues faced by the communities of Gakiling gewog. The strategy is structured around two primary objectives, four core strategies, and 45 specific actions detailed in the logical framework. Of these actions, 37 are designated as short-term initiatives, while 8 are planned as long-term interventions.

The total budget outlay for the 5-year C2C Strategy (2026-2030) for Gakiling gewog is projected at Nu. 35.25 million. Of this, confirmed funding includes Nu. 10.60 million from the WWF-IKI Project, Nu. 0.80 million from BFL, and Nu. 13.40 million from the Royal Government of Bhutan (RGoB), resulting in a funding gap of Nu. 10.45 million (Table 5). To bridge this deficit and ensure the successful implementation of the strategy's actions and achievement of its targets, additional funding must be secured from other donors or through supplementary contributions from the RGoB.

Table 5: Implementation Plan and Financial Outlay

Outcome	Actions/Activities	Location	Category	Responsibility		Budget	Source of fund	Timeline
				Lead	Collaborator			
People- able and willing to live alongside wildlife	1.1: Outreach program; conduct awareness and educational programs in gewogs to educate communities on HWC and Coexistences.	All chiwog	Short Term	JKSNR	Gewog	0.25	Potential Donors	2026-2031
	1.2: Provide training on conflict mitigation techniques, such as identifying wildlife signs, using non-lethal deterrents, and understanding wildlife behavior to reduce unintentional conflicts.	All chiwog	Short Term	JKSNR	Gewog/NCD	0.20	Potential Donors	2026-2027
	1.3: Stewardship program; establish a community-led wildlife management group like QRT and Citizen Scientist to involve local people in monitoring wildlife, reporting conflicts, and implementing mitigation measures.	All chiwog	Short Term	JKSNR	Gewog/QRT	0.25	Potential Donors	2026-2027
	1.4: Provide safety field gear to forest rangers and the QRT/ Citizen Scientist group.	All chiwog	Short Term	JKSNR	NCD/QRT	0.50	Potential Donors	2026-2028
	1.5: Promote eco-tourism initiatives that generate income for communities from wildlife conservation, such as local guides, promote farmhouses, and cultural experiences.	Dorithasa & Rangtse	Short Term	JKSNR	Gewog/NCD	0.70	Explore Fund	2027-2029
	1.6: Coordination meeting with relevant stakeholders	Gewog	Short Term	JKSNR	Gewog/RNR	0.25	Potential Donors	2026-2031
	1.7: Conduct a survey to assess the benefits derived from the strategy's implementation plan.	All chiwog	Short Term	JKSNR	Gewog/NCD	0.20	Potential Donors	2031

Livelihoods/ Assets- secured against the presence of wildlife	2.1: Implement crop protection strategies, such as wildlife-proof fencing, bio-fencing (using plants that deter wildlife), and scare devices to reduce crop damage from species like deer, wild pigs, and bears, as listed below:							
	2.1.1 Provide integrated chain-link fencing	All chiwog	Long Term	JKSNR	DoA	4.50	RGoB	2029-2031
	2.1.2 Provide solar or electric fencing with poly post and poly wire	Thangdokha, Youkha, Tanga & Dorithasa	Short Term	DoA	JKSNR/NCD	0.70	Potential Donors	2027-2029
	2.1.3 Install (Bio-acoustic) AMTC-designed timer-based animal repellents mechanism to deter wild animals at two pilot sites.	Sektena & Youkha	Short Term	JKSNR	DoA/NCD	0.80	Potential Donors	2026-2028
	2.1.4 Introduce wildlife-resistant crop varieties (seeds) that are less attractive to conflict-prone species.	All chiwog	Short Term	DoA	JKSNR	0.25	Explore Fund	2027-2029
	2.1.5 Supply of green nets for vegetable farming	All chiwog	Short Term	DoA	JKSNR	1.00	Potential Donors	2026-2027
	2.1.6 Support a protected structure like green house	All chiwog	Long Term	DoA	JKSNR	0.50	Explore Fund	2029-2031
	2.1.7 Farm mechanization through the supply of machineries	All chiwog	Long Term	DoA	JKSNR	0.70	Potential Donors	2029-2031
	2.1.8 Support agricultural land development	All chiwog	Short Term	DoA	JKSNR	5.00	Explore Fund	2027-2028
	2.1.9 Support irrigation and safe drinking water	Sektena & Ngatsena	Short Term	DoA	JKSNR	5.00	RGoB	2027-2029
	2.1.10 Facilitate the adoption of bio-based and climate-resilient pest and weed management practices to safeguard crops from pests and diseases.	Thangdokha & Dorithasa	Short Term	DoA	JKSNR	0.50	RGoB	2027-2028
	2.1.11 Adopt crop varieties that are less palatable to wildlife or incorporate wildlife-friendly practices in farming (e.g., organic farming, agroforestry).	All chiwog	Short Term	DoA	JKSNR	0.50	Potential Donors	2026-2030
	2.1.12 Exposure tour and skill development training for agriculture	All chiwog	Short Term	DoA	JKSNR	0.50	Explore Fund	2026-2029
	2.1.13 Support and supply of water sprinklers for gardening	All chiwog	Short Term	DoA	JKSNR	0.50	RGoB	2026-2028

2.2 Support & promote the diversification of livestock farming systems as listed below:							
2.2.1 Supply improved cattle breed (Jersey) with the construction of shed-cost sharing	All chiwog	Short Term	DoL	JKSNR	0.40	RGoB	2027-2029
2.2.2 Support improving and extending existing poultry farms	Rangtse, Ngatsena	Short Term	DoL	JKSNR	0.50	Potential Donors	2027-2029
2.2.3 Support piggery farming	Sektena	Short Term	DoL	JKSNR	0.30	Potential Donors	2026-2028
2.2.4 Supply Jersey Breeding Bull/AI	Youkha, Sektena	Long Term	DoL	JKSNR	0.50	Explore Fund	2028-2031
2.2.5 Supply pasture seeds and fodder for pasture development	All chiwog	Short Term	DoL	JKSNR	0.70	Potential Donors	2027-2029
2.2.6 Exposure tour and skill development training for livestock farming	All chiwog	Short Term	DoL	JKSNR	0.30	Explore Fund	2026-2028
2.2.7 Provide financial support for communities affected by wildlife damage, including insurance schemes and compensation programs to reduce economic losses from wildlife conflicts.	Ngatsena & Youkha	Long Term	DoL	JKSNR	1.00	Explore Fund	2028-2031
2.2.8 Create community savings and credit groups to provide emergency funds and reduce vulnerability to wildlife-related economic shocks.	Youkha & Dorithasa	Long Term	DoL	JKSNR	0.40	Explore Fund	2027-2029
2.2.9 Diversify livelihoods by encouraging alternative income-generating activities like beekeeping, handicrafts, NWFPs, and eco-tourism to reduce dependency on vulnerable agriculture and livestock sectors.	All chiwog	Short Term	DoL	JKSNR	0.50	Potential Donors	2026-2029
2.2.10 Initiate awareness, educational, capacity development, and training programs to stakeholders and communities.	All chiwog	Short Term	DoL	JKSNR	0.30	Potential Donors	2027-2030
2.2.11 Enhance and support agriculture and livestock marketing and farm outlets.	All chiwog	Short Term	MoAL	JKSNR	2.50	RGoB	2027-2029

Wildlife- thrives alongside people	3.1 Organize wildlife appreciation events such as festivals, wildlife events, exhibitions, and storytelling sessions that celebrate local biodiversity and its cultural significance in schools and in gewogs.	All chiwog	Short Term	JKSNR	Gewog/NCD	0.20	Potential Donors	2026-2030
	3.2 Provide training and capacity building on coexistence strategies, wildlife conservation, and conflict mitigation techniques, including safe human-wildlife interaction practices.	All chiwog	Short Term	JKSNR	Gewog/NCD	0.25	Potential Donors	2027-2031
	3.3 Develop eco-tourism initiatives like trekking, high-end fishing, and birding that generate revenue for communities from wildlife conservation.	Dorithasa & Rangtse	Short Term	JKSNR	NCD/Gewog	0.30	Explore Fund	2026-2029
	3.4 Implement species population monitoring using tools like camera traps and drone surveys to track wildlife movements and population dynamics.	All chiwog	Short Term	JKSNR	NCD	0.25	Potential Donors	2026-2029
	3.5 Collaborate with local schools and youth groups to integrate wildlife conservation into education, fostering a conservation ethic among younger generations.	All chiwog	Short Term	JKSNR	Gewog/School	0.15	Potential Donors	2026-2028
	3.6 Strengthen and enhance SMART (Spatial Monitoring and Reporting Tool) patrolling.	All chiwog	Short Term	JKSNR	DoFPS	0.30	Potential Donors	2026-2031
	3.7 Conduct periodic biodiversity assessments to identify key species, critical habitats, and potential conflict hotspots.	All chiwog	Short Term	JKSNR	NCD	0.50	Potential Donors	2027-2031
	3.8 Conduct field studies and research on the most problematic species like wild pig, wild dog, and bears for population management.	Rangtse	Short Term	JKSNR	NCD	0.50	Explore Fund	2027-2028

Habitat- sufficient to ensure a sustainable wildlife population	4.1 Implement soil and water conservation measures such as check dams, erosion control structures, and initiate watershed management.	All chiwog	Long Term	JKSNR	Gewog/ DoA	0.60	Potential Donors	2028-2031
	4.2 Restore degraded habitats by replanting native fruit trees, improving the salt lick, and reintroducing natural water holes.	All chiwog	Short Term	JKSNR	NCD	0.80	Potential Donors	2026-2029
	4.3 Provide training on herding techniques and safe grazing management systems.	All chiwog	Short Term	JKSNR	DoL	0.15	Potential Donors	2027-2029
	4.4 Construct and maintain wildlife overpasses, underpasses, and green bridges to facilitate safe wildlife crossings.	Dorithisa	Long Term	JKSNR	NCD	0.50	Explore Fund	2029-2031
	4.5 Conduct regular habitat quality assessments using remote sensing, GIS, and field surveys.	All chiwog	Short Term	JKSNR	NCD	0.30	Potential Donors	2027-2029
	4.6 Provide training and capacity-building programs on habitat restoration and sustainable resource management.	All chiwog	Short Term	JKSNR	NCD/Gewog	0.25	Potential Donors	2026-2028
Total Nu. in million						35.25		

6. Monitoring and Evaluation

Timely monitoring and evaluation of planned programs are critical to ensuring 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, was developed to align seamlessly with the Implementation Framework. The action will include 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 4, 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, Gakiling Range & JKSNR team 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 plan 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 JKSNR and external representatives, including members from functional divisions, DoFPS, ensuring a comprehensive and impartial assessment of the plan's implementation and outcomes.

Table 6: Monitoring and Evaluation Framework

Outcome	Actions/Activities	Action Indicator	Baseline	Unit	Yearly Target				
					I	II	III	IV	V
People- able and willing to live alongside wildlife	1.1 Outreach program; conduct awareness and educational programs in gewogs to educate communities on HWC and Coexistences.	Number of awareness and educational programs conducted & prepared a report	3	Report	1	1	1	1	1
	1.2 Provide training on conflict mitigation techniques, such as identifying wildlife signs, using non-lethal deterrents, and understanding wildlife behavior to reduce unintentional conflicts.	Number of trainings conducted and percentage of participants applying conflict mitigation techniques effectively.	1	Report	1	1	0	0	0
	1.3 Stewardship program; establish a community-led wildlife management group like QRT and Citizen Scientist to involve local people in monitoring wildlife, reporting conflicts, and implementing mitigation measures.	Number of community-led wildlife management groups established and percentage of members actively involved in monitoring wildlife, reporting conflicts, and implementing measures.	2	Report	1	1	1	0	0
	1.4 Provide safety field gear to forest rangers and the QRT/Citizen Scientist group.	Number of forest rangers and QRT/ Citizen Scientist group members provided with safety field gear.	13	Nos.	5	5	5	0	0
	1.5: Promote eco-tourism initiatives that generate income for communities from wildlife conservation, such as local guides, promote farmhouses, and cultural experiences.	The number of eco-tourism initiatives launched and the community income generated from wildlife conservation activities.	2	Nos.	2	2	2	0	0
	1.6: Coordination meeting with relevant stakeholders	Number of coordination meetings held with relevant stakeholders and record minutes/report.	3	Times	1	1	1	1	1
	1.7: Conduct a survey to assess the benefits derived from the strategy's implementation plan.	Survey conducted and percentage of respondents reporting positive benefits from the strategy's implementation, and prepare a report.	0	Report	0	0	0	0	1

Livelihoods/ Assets- secured against the presence of wildlife	2.1: Implement crop protection strategies, such as wildlife-proof fencing, bio-fencing (using plants that deter wildlife), and scare devices to reduce crop damage from species like deer, wild pigs, and bears, as listed below:								
	2.1.1 Provide integrated chain-link fencing	Length of integrated chain-link fencing installed and the reduction in wildlife conflicts in fenced areas.	5	KM	0	0	10	10	10
	2.1.2 Provide solar or electric fencing with poly post and poly wire	Number of solar or electric fences with poly posts and poly wire installed and HHs benefited.	5	HHs	10	20	10	0	0
	2.1.3 Install (Bio-acoustic) AMTC-designed timer-based animal repellents mechanism to deter wild animals at two pilot sites.	Number of (Bio-acoustic) deterrent systems installed at pilot sites	0	Nos.	1	1	1	0	0
	2.1.4 Introduce wildlife-resistant crop varieties (seeds) that are less attractive to conflict-prone species.	Number of wildlife-resistant crop varieties introduced & supplied.	200	Pkts	335	335	335	0	0
	2.1.5 Supply of green nets for vegetable farming	Set of green nets supplied to HHs	50	Set	125	125	0	0	0
	2.1.6 Support a protected structure like green house	The number of greenhouses supported and the percentage of reduction in crop damage due to wildlife.	10	Nos.	0	0	30	30	30
	2.1.7 Farm mechanization through the supply of machineries	Number of farm machineries supplied and the increase in efficiency.	5	Nos.	0	0	2	2	2
	2.1.8 Support agricultural land development	Area of agricultural land developed	10	Acres	0	0	15	15	15
	2.1.9 Support irrigation and safe drinking water	Number of irrigation systems and safe drinking water sources established, and increase water access for agricultural and domestic use.	2	KM	5	5	0	0	0
	2.1.10 Facilitate the adoption of bio-based and climate-resilient pest and weed management practices to safeguard crops from pests and diseases.	Household initiated for bio-pest and disease-management.	5	HHs	0	10	20	0	0
	2.1.11 Adopt crop varieties that are less palatable to wildlife or incorporate wildlife-friendly practices in farming (e.g., organic farming, agroforestry).	Household-initiated organic farming or agroforestry.	20	HHs	5	5	5	5	5
	2.1.12 Exposure tour and skill development training for agriculture	Number of exposure tours and skill development trainings conducted	40	Nos.	50	50	50	50	0
	2.1.13 Support and supply of water sprinklers for gardening	Number of water sprinklers supplied for agricultural gardening.	50	Nos.	65	65	65	0	0

2.2 Support & promote the diversification of livestock farming systems as listed below:								
2.2.1 Supply improved cattle breed (Jersey) with the construction of shed-cost sharing	Number of improved cattle breeds (Jersey) supplied.	5	Nos.	0	2	2	2	0
2.2.2 Support improving and extending existing poultry farms	Number of poultry farms established.	5	Nos.	0	2	2	2	0
2.2.3 Support piggy farming	Number of piggy farms established.	0	Nos.	1	1	1	0	0
2.2.4 Supply Jersey Breeding Bull/AI	Number of Jersey breeding bulls supplied or AI services provided.	0	Nos.	0	0	1	1	1
2.2.5 Supply pasture seeds and fodder for pasture development	Quantity of pasture seeds and fodder supplied and fodder availability for livestock.	100	Kg	0	100	100	100	0
2.2.6 Organized exposure tour or skill development training for livestock farming	Number of exposure tours/skill development training conducted for livestock farming.	100	Nos.	100	100	100	0	0
2.2.7 Provide financial support for communities affected by wildlife damage, including insurance schemes, and compensation programs to reduce economic losses from wildlife conflicts.	Number of HHs established insurance/compensation scheme group as pilot.	0	Group	0	0	1	1	1
2.2.8 Create community savings and credit groups to provide emergency funds and reduce vulnerability to wildlife-related economic shocks.	Number of community savings and credit groups established as pilots.	0	Group	1	1	1	0	0
2.2.9 Diversify livelihoods by encouraging alternative income-generating activities like beekeeping, handicrafts, NWFPs, and eco-tourism to reduce dependency on vulnerable agriculture and livestock sectors.	Number of alternative income-generating activities introduced.	0	Nos.	1	1	1	1	0
2.2.10 Initiate awareness, educational, capacity development, and training programs to stakeholders and communities.	Number of awareness, educational, and training programs conducted.	250	HHs	0	100	100	100	100
2.2.11 Enhance and support agriculture and livestock marketing and farm outlets.	Number of agricultural and livestock marketing outlets established	1	Nos.	0	2	2	1	0

Wildlife- thrives alongside people	3.1 Organize wildlife appreciation events such as festivals, wildlife events, exhibitions, and storytelling sessions that celebrate local biodiversity and its cultural significance in schools and in gewogs.	Number of wildlife conservation events organized in the school & community.	0	Events	1	1	1	1	1
	3.2 Provide training and capacity building on coexistence strategies, wildlife conservation, and conflict mitigation techniques, including safe human-wildlife interaction practices.	Number of trainings conducted to participants for conflict mitigation techniques.	5	Nos.	50	50	50	50	50
	3.3 Develop eco-tourism initiatives like trekking, high-end fishing, and birding that generate revenue for communities from wildlife conservation.	Number of eco-tourism programs developed.	0	Nos.	1	1	1	1	0
	3.4 Implement species population monitoring using tools like camera traps and drone surveys to track wildlife movements and population dynamics.	Number of monitoring conducted & prepared reports.	1	Report	1	1	1	1	0
	3.5 Collaborate with local schools and youth groups to integrate wildlife conservation into education, fostering a conservation ethic among younger generations.	Number of events with schools and youth groups for wildlife conservation education organized.	2	Events	1	1	1	0	0
	3.6 Strengthen and enhance SMART (Spatial Monitoring and Reporting Tool) patrolling.	Number of SMART patrolling conducted for wildlife monitoring coverage & incident reporting.	4	Quarterly	4	4	4	4	4
	3.7 Conduct periodic biodiversity assessments to identify key species, critical habitats, and potential conflict hotspots.	Number of biodiversity assessments conducted and the identification of key species, critical habitats, and conflict hotspots completed.	1	Report	1	1	1	1	1
	3.8 Conduct field studies and research on most problematic species like wild pig, wild dog, bears & ungulates for population management.	Number of field studies conducted on problematic species and the development of population management strategies based on research findings.	0	Report	1	1	0	0	0

Habitat-sufficient to ensure sustainable wildlife population	4.1 Implement soil and water conservation measures such as check dams, erosion control structures, and initiate watershed management.	Area brought under conservation measures through bio-engineering work.	0	Report	1	1	0	0	0
	4.2 Restore degraded habitats by replanting native fruit trees, improving salt lick, and reintroducing natural water holes.	Area of degraded habitat restored, number of native fruit trees planted, and the improvement in availability of salt licks and natural water holes.	0	Report	1	1	1	1	0
	4.3 Provide training on herding techniques and safe grazing management systems.	Training conducted on herding techniques and safe grazing management, and participants adopted improved practices.	0	Report	0	1	1	1	0
	4.4 Construct and maintain wildlife overpasses, underpasses, and green bridges to facilitate safe wildlife crossings.	Number of wildlife overpasses/underpasses/green bridges constructed for safe crossings.	0	Nos.	0	1	1	1	0
	4.5 Conduct regular habitat quality assessments using remote sensing, GIS, and field surveys.	Habitat quality assessments conducted through available technology and produced reports.	0	Report	0	1	1	1	0
	4.6 Provide training and capacity-building programs on habitat restoration and sustainable resource management.	Training and capacity-building programs conducted on habitat restoration and sustainable resource management practices.	2	Report	1	1	1	0	0

7. Conclusion

The Conflict to Coexistence (C2C) Strategy developed for Gakiling gewog represents a comprehensive and community-driven approach to mitigating human-wildlife conflict (HWC) and fostering coexistence between people and wildlife. Grounded in extensive consultation meetings, participatory HWC assessments, and co-design sessions with key stakeholders, the strategy outlines targeted intervention actions across four critical outcomes—People, Livelihoods/Assets, Wildlife, and Habitat, addressing six interconnected elements: Policy, Prevention, Response, Understanding the Conflict, Mitigation and Monitoring.

By ensuring sufficient habitat to sustain wildlife populations, safeguarding community livelihoods and assets, promoting coexistence through capacity-building and stewardship, and fostering a thriving environment for wildlife alongside human settlements, this strategy aims to balance conservation with sustainable development. The success of this strategy will rely on collaborative efforts between local communities, government agencies, conservation organizations, and other stakeholders, underpinned by adaptive management, robust monitoring, and community engagement.

With the active participation and ownership of the Gakiling community, the C2C strategy will enhance ecological resilience, secure livelihoods, and contribute to the long-term coexistence of people and wildlife, making the gewog a model for sustainable human-wildlife interactions. Through continuous collaboration, innovation, and shared commitment, Gakiling Gewog can achieve a harmonious balance where both human and wildlife populations thrive.

Reference

- Caro, T., J. Darwin, T. Forrester, C. Ledoux-Bloom, and C. Wells. (2012). Conservation in the Anthropocene. *Conservation Biology* 26:185–188.
- Conover, M. R. (2002). *Resolving Human-Wildlife Conflicts: The Science of Wildlife Damage Management*. Lewis Publishers, New York, USA.
- JKSNR. (2024). C2C Project Assessment Report for Gakiling Gewog under Haa Dzongkhag, JKSNR, DoFPS, Haa.
- JKSNR. (2021). *Conservation Management Plan of JKSNR (2021–2031)*. Department of Forests and Park Services, MoAF, RGoB. Bhutan.
- MoAF. (2021). *Managing Human-Wildlife Conflict: A National Implementation Framework*. Nature Conservation Division, DoFPS, Thimphu.
- MED. (2014). *Human-Wildlife Conflict in the Mountains of SARRC Region. Compilation of Successful Management Strategies and Practices*. Mountain Ecology Division, SAARC Forestry Centre, Thimphu, Bhutan.
- Namgay, W. (2018). *Assessment of Human-wildlife Conflict in the Buffer Zone of Jigme Khesar Strict Nature Reserve (JKSNR), Haa, Bhutan*. Master of Science (Tropical Forestry), Major Field: Tropical Forestry, Faculty of Forestry. Kasetsart University, Thailand.
- NCD. (2018). *National Human-Wildlife Conflict Management Strategy of Bhutan (2018–2028)*. 2nd Edition. Nature Conservation Division, Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu, Bhutan.
- SFD. (2017). *Human-Elephant Conflict Management Report*. Divisional Forest Office, Sarpang. Department of Forests and Park Services, MoAF.
- WWF. (2023). *C2C: Conflict to Coexistence-Approach. Managing HWC for coexistence. Step-by-step guide for pilots*.
- Wang, S. W. and Macdonald, D. W. (2006). Predation losses by carnivores in Jigme Singye Wangchuk National Park, Bhutan. *Biological Conservation*, 129:558–565.
- Yamane, T. (1967). *Statistics: An Introductory Analysis*, 2nd Ed, New York: Harper Collins Publishers Inc. UK.

Annexure I: C2C Project Assessment Report of Gakiling Gewog

Age:

Age	Frequency
19-40	75
41-60	56
over 60	32

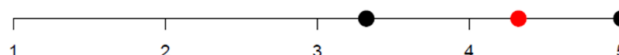
Gender:

Gender	Frequency
Female	66
Male	97

Education:

Education	Frequency
Non-formal education	18
None	105
Other	7
Primary school	19
Secondary school	14

The average tolerance score for community members across all questions is 4.32. The standard deviation above and below this mean is 3.32 - 5.



What is your livelihood (main source of income)?

Livelihood	Frequency
Business/trade	11
Day/Casual labourer	35
Farming - Agriculture	159
Farming - Livestock	128
Mining	1
Other	5
Paid employment	5
Transport provider	8

Annexure II: List of Respondents of Service Provider

List of Respondents (Service Provider)

Sl No	Name	Gender	Agency	Designation
1	Kezang Jamtsho	Male	Sangbay Dungkhag Adm	Offtg. Dungpa
2	Lop Thuji	Male	Royal Bhutan Police	Drimpoen
3	Dechen Dema	Female	Sangbay Dungkhag Sub-Post	HA
4	Chimmi Dorji	Male	Ngatse BHU	HA
5	Chimmi Dema	Female	Ngatse BHU	Maenpa
6	Sangay Tempa	Male	Local Government	Tshogpa
7	Som Dhan Rai	Male	Local Government	Tshogpa
8	Ugyen Dorji	Male	Local Government	Tshogpa
9	Passang Dorji	Male	Local Government	Tshogpa
10	Migma Dawa Dukpa	Male	Local Government	Tshogpa
11	Tashi Wangchuk	Male	Government Service	ADAO
12	Kezang Wangchuk	Male	Government Service	GLEO
13	Nima Tshering	Male	Government Service	Principal (RPS)
14	Wang Tshering	Male	Local Government	Gup
15	Nima Lhaki Sherpa	Female	Local Government	Geog Adm Officer
16	Binu Gurung	Female	Government Service	Offtg. Principal (SPS)

