



Human-Wildlife Conflict Management

Conflict to Coexistence (C2C) Strategy for
Metakha Gewog, Chhukha (2025-2029)

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



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Abbreviations

C2C	Conflict to Co-existence:
CF	Community Forests
CFO.....	Chief Forestry Officer
CDA	Chukha Dzongkhag Administration
DFO	Divisional Forest Office
DoFPS	Department of Forests and Park Services
DoA.....	Department of Agriculture
DoL.....	Department of Livestock
FAO	Food and Agriculture Organization
FMID.....	Forest Monitoring and Information Division
HWC.....	Human-Wildlife Conflict
RO.....	Range Officer
SMART	Spatial Monitoring and Tracking Tool
WWF.....	World Wildlife Fund



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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 Metakha 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 Metakha 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 Metakha Gewog and the DFO Gedu 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 Metakha Gewog is the result of collective and dedicated effort by the staff of the Divisional Forest Office, Gedu. 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 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. Singye Wangchuk and Mr. Yeshe Gyeltshen of DFO, Gedu, who played a crucial leadership role in guiding and coordinating the formulation of this strategy. Their 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 Metakha Gewog in the years to come.

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1. Introduction

Bhutan is renowned for its rich and diverse forest ecosystems, which cover approximately. The forests are a crucial part of Bhutan's environmental and cultural identity, supporting a wide range of flora and fauna, including several endangered species such as the Bengal tiger and the red panda. According to the 2023 State of Forest Report (National Forest Inventory), Bhutan's forest cover stands at 69.71% (2.68 million hectares). Chukha Dzongkhag has forest cover of 91%. Chukha is a biodiversity hotspot, hosting a variety of faunal species such as the *Panthera tigris*, *Panthera uncia*, *Moschus chrysogaster*, *Ailurus fulgens*, *Lycaon pictus*, *Rusa unicolor* and *Muntiacus muntjak* etc.

Human Wildlife Conflict (HWC) in Bhutan poses a significant challenge due to increasing overlap between human activities and wildlife habitat caused by habitat loss and fragmentation, expansion of development activities, increasing wild animal population, free range livestock grazing and climate change. As Bhutan continues to develop economically, the interactions between humans and wildlife have increased, leading to various challenges.

Metakha is one of the 11 gewogs in Chukha Dzongkhag, which falls under the jurisdiction of Divisional Forest Office (DFO) Gedu, which hosts a wide range of wildlife species. As the wildlife populations in the gewog increases and resources become scarcer, animals are forced to cross into human territories, further intensifying the conflict. The conflicts include crop raiding and livestock predation by wild animals. Balancing the needs of both people and wildlife in the gewog requires integrated management strategies, including the involvement of the community and relevant stakeholders

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 healthy and resilient wildlife population.

3. Methodology

3.1 Site Description

Metakha Gewog is one of the 11 gewogs under Chukha Dzongkhag Administration (CDA), which is located 5 hours' drive from the Thimphu-Phuntsholing highways. The gewog center is located at Gemba village which is about 80 kilometers away from Gedu town. Spanning over an area of 100 square kilometers, the gewog comprises 118 households with a population of 1036. The altitude of the gewog ranges from 1047-2526 meters above sea level with sub-tropical and temperate climate conditions. Metakha gewog is divided into five sub-blocks known as chiwog- Pangu, Gumina, Eukha, Gemba Toed and Gemba Maed. The gewog has one primary schools, one primary health care center, five Outreach Clinics (ORC), one Lhakhang, and an Extension office for Livestock and Agriculture. The gewog has access to electricity, tele-communications and gewog connectivity (GC) road.



Figure 1: Location Map of Metakha gewog

3.2 Methods: C2C framework

This strategy is entrenched in the principles and methodologies of the Conflict to Coexistence approach, an integrated and structured framework that offers a systematic guide for planning, implementing, and monitoring HWC management. The C2C approach highlights core principles, including holistic planning, resilience-building, shared responsibility, and fostering tolerance,

all aimed at achieving sustainable coexistence between communities and wildlife. Figure 2 depicts the ongoing implementation of measures designed to address current or emerging HWC issues using the C2C approach from step 1 to step 7. This process involves co-developing a long-term HWC management strategy in collaboration with communities and other stakeholders. The approach emphasizes the importance of implementing short-term or sustained interventions to effectively respond to or manage urgent HWC situations. Simultaneously, it prioritizes fostering and maintaining trust among stakeholders throughout the process. By addressing root causes and underlying issues, the C2C approach aims to develop a comprehensive and sustainable HWC management plan for long-term success.

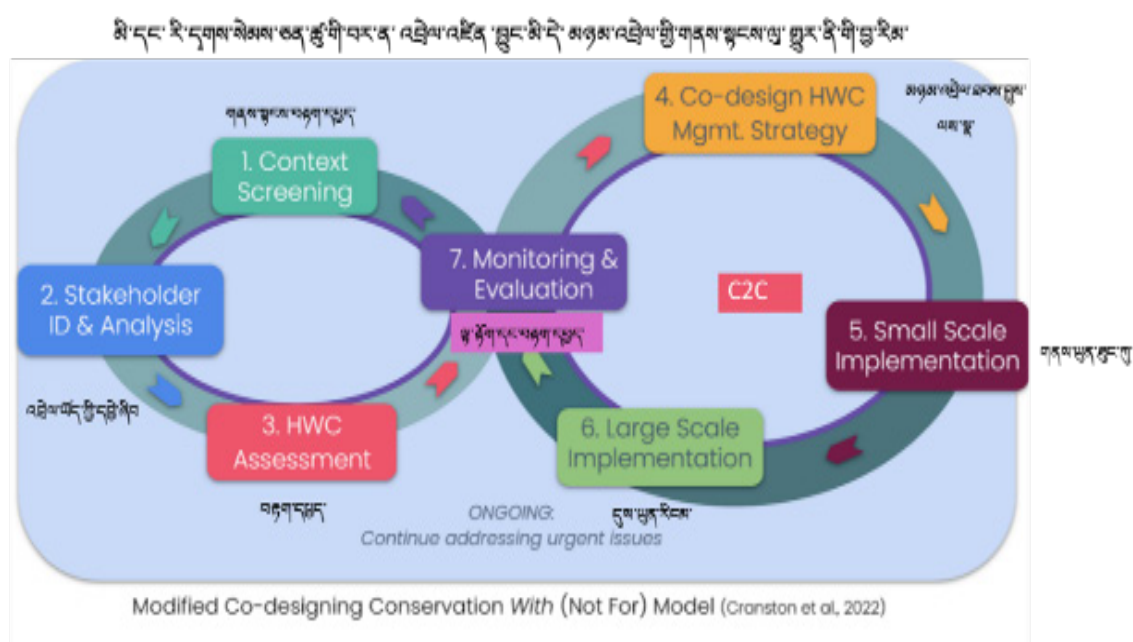


Figure 2: C2C framework

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 human-wildlife conflict (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, the context screening is conducted. This involves 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 and their collaborative potential. Therefore, a core team consisting of the Chief Forestry Officer, relevant forestry officials, local government officials, Gewog Agriculture and Livestock Extension Supervisors, and Tshogpa from five Chiwogs was constituted who carried out the stakeholder identification and analysis matrix using the Stakeholder Analysis Matrix (C2C Tool 5), which involves clustering 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 Metakha 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 Metakha Gewog

Stakeholder	Interest	Influence	Category
Business man/women	5	2	High Interest, Low Influence
Dairy Group	5	2	High interest, Low Influence
Farmers	5	2	High interest, Medium Influence
Gewog Livestock Extension Officer	5	5	High Interest, High Influence
Gewog Agriculture Extension Officer	5	5	High Interest, High influence
Teachers	2	4	Low Interest, Medium influence
Community Forest Chairperson	5	4	High Interest, Medium Influence
Tarayana Foundation	5	4	High Interest, Medium Influence
Metakha Gup	5	5	High Interest, High Influence
Pangu Tshogpa	5	5	
Eukha Tshogpa	5	5	
Gumina Tshogpa	5	5	
Gemba Toed Tshogpa	5	5	
Gemba Maed Tshogpa	5	5	
Metakha Mangmi	5	5	

The stakeholder analysis shows a diverse range of interests and influence levels across groups involved in the HWC management. Stakeholders with both high interest and high influence (local leaders) can significantly impact the success of the strategy. Stakeholders having medium influence are the Teachers, Tarayana Foundation and farmers. The CF chairperson helps in information dissemination and resource management and stakeholders having low influence are the businessmen/women and dairy groups) who may contribute at the ground-level implementation.

3.2.3 HWC Assessment

The C2C HWC assessment is organized into three sets of questions, each designed for 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 stakeholder groups and how their opinions align or differ across various elements and outcomes. Each set of questions addresses the six key elements – Policy, Prevention, Response, Understanding the Conflict, Mitigation, and Monitoring – under each of the four outcomes: People, Livelihoods/Assets, Habitat, and Wildlife. The questions for the C2C Project Manager consist of a series of Yes/No inquiries aimed at understanding the context of the HWC situation within the landscape. The questions for Duty Bearers/Service Providers focus on assessing the effectiveness and compliance with policies and programs designed to reduce HWC. These are evaluated using a Likert scale between 1(strongly disagree) – 5 (strongly agree), allowing for an understanding of differences in opinions within and among stakeholder sub-groups. The questions for Community Members explore their perspective on HWC within the landscape, their awareness on its impacts, and their opinions on the effectiveness and usefulness of various policies and programs in addressing the conflict. These are also rated on a Likert scale between 1(strongly disagree) – 5 (strongly agree) gauge agreement with the statements.

From May 23 to June 5, 2024, following training and a pre-test of the household survey, one-to-one enumerations (household interview) were conducted in each chiwog. The survey included one project manager, 10 service providers/ duty bearers and 96 community, based on sample size determined by Yamane's (1967) method at 95% Confidence Interval.

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

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 five chiwog is about 118 households for Metakha (sampling frame). Therefore, the sampling size for the survey was 96 households for Metakha 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.

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 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.

3.2.4 Co-design

In Metakhagewog, the co-design process for developing the 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 14 to 16, 2024, included systematic public consultations across all five Chiwogs in the gewog. A total of 116 community members participated in the consultation meetings, with 60.34% (n = 70) female and 39.7% (n = 46) 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.

Table 2. Participants from each chiwog during the consultation meeting

Chiwog	Female	Male	Total participants
Pangu	18	13	31
Gumina	19	10	29
Eukha	10	9	19
Gemba Toed	18	12	30
Gemba Maed	5	2	7
Grand Total	70	46	116
%	60%	40%	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 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 by each chiwog.

4. Results and Discussions

4.1 Demographic Information of Survey Respondents

HWC assessment was conducted through survey questionnaires, based on Yamane's (1967) sampling method. Following a training session and pre-testing of the household survey format, data collection took place from May 23 to June 5, 2024. One-to-one household surveys were carried out across all chiwogs, engaging 1 project manager, 10 service providers/duty bearers, and 116 community members from five chiwogs.

Understanding the demographic profile of community members was essential to capture perspectives from diverse group 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 30% male respondents (n = 29) and 70% female respondents (n = 67), indicating higher female representation. In terms of age distribution, the majority of respondents 52%, (n =50) fell within the 19–40 age group, followed by 27% (n =26) in the 41–60 age group, and 19.7% (n = 19) over age 60 plus and 1% were aged 15–18 (n=1). Regarding educational background, over 53% (n = 51) of the respondents were illiterate, while 17.7% (n = 17) had completed primary education, 11.45% (n=11) had completed secondary, 8% (n = 8) had attended Non-Formal Education (NFE) programs and 7 %(n=7) had attended other education while 2% (n=2) had tertiary qualifications. 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 are mostly subsistence farmers, dependent on agriculture and livestock farming as means of their livelihoods and main source of income.

4.2. Overall Results for Metakha Gewog

4.2.1. Gewog level Conflict Species

In Metakha gewog, the C2C Project Manager, Service Providers/Duty Bearers and Community Members identified a set of conflict-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 damage to property and threats to human lives.

The conflict species identified in the communities include barking deer, Himalayan black bear, birds, eagle, elephants, guar, leopard, macaque,

marten, porcupine, rodents, sambar, 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, and bears as the primary conflicting species. Both groups agreed on birds, barking deer, and wild pigs as major sources of conflict. A graphical representation of conflict species and their impact is illustrated in Figure 3.

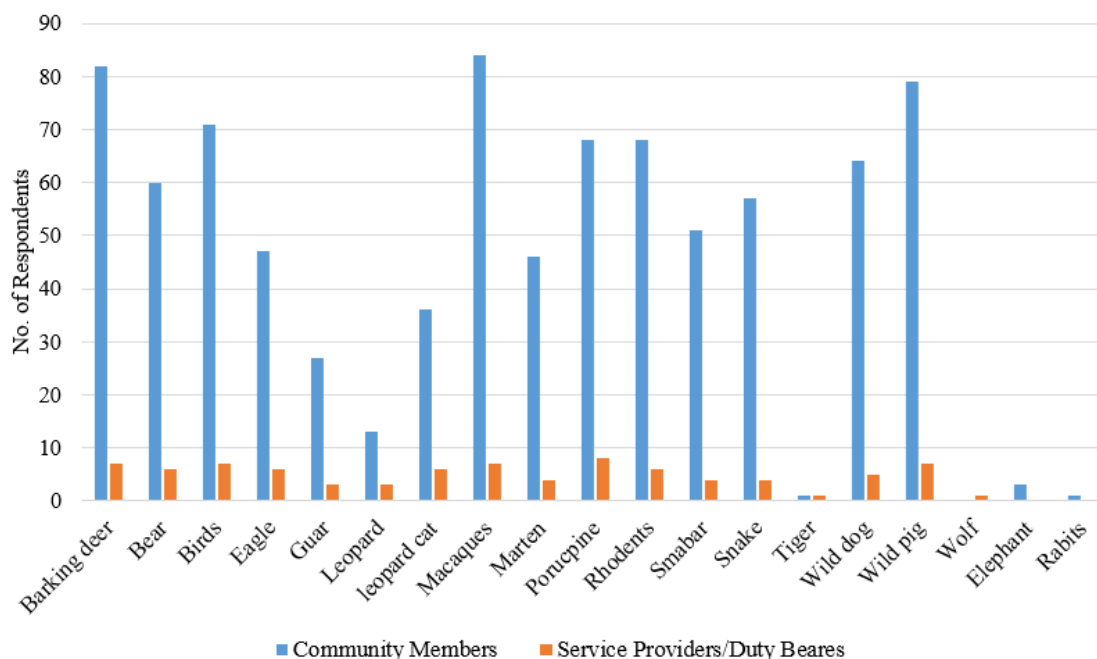


Figure 3: Conflict species in Metakha gewog

4.2.2 Results by Outcome

The C2C approach for managing HWC must yield positive outcomes across four outcomes: People, Livelihoods/assets, Wildlife, and Habitat. The mitigation of human-wildlife conflict (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

Outcome	C2C Project Manager	Service Providers/Duty Bearers	Community Members
People	0.33	3.33	3.42
Livelihoods/Assets	0.00	2.09	2.51
Wildlife	0.68	3.31	3.49
Habitat	0.42	3.19	3.13

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 (0.00), service providers/duty bearers (2.09), and community members (2.51), all of whom identified challenges in securing livelihoods and assets as the most critical issue (Table 2). 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 Metakha 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.

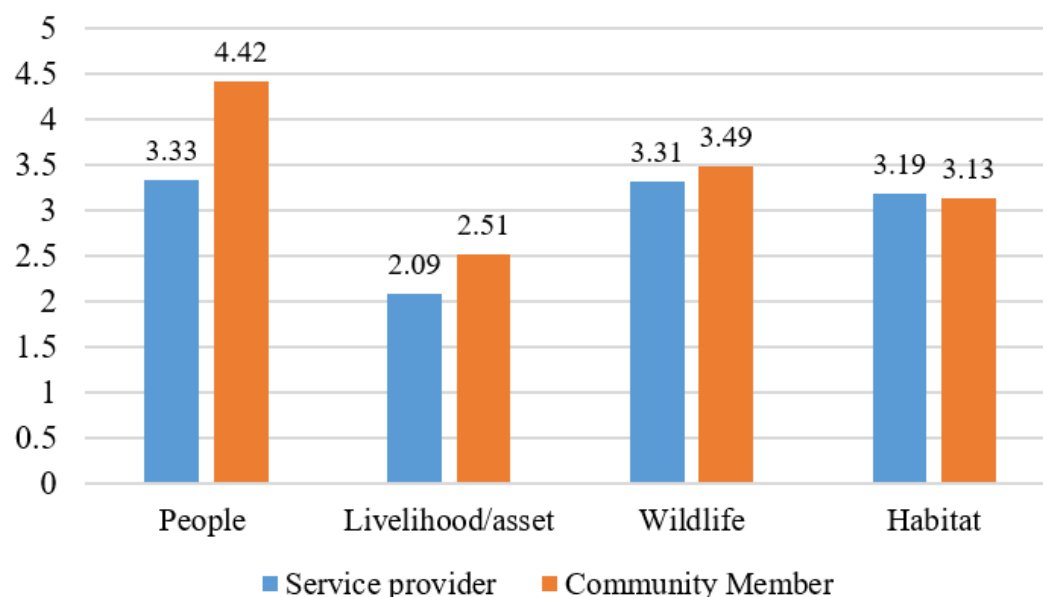


Figure 4: Results by Outcomes

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 suggests that there may be shared challenges or limitations in implementing effective strategies, which should be addressed through 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.

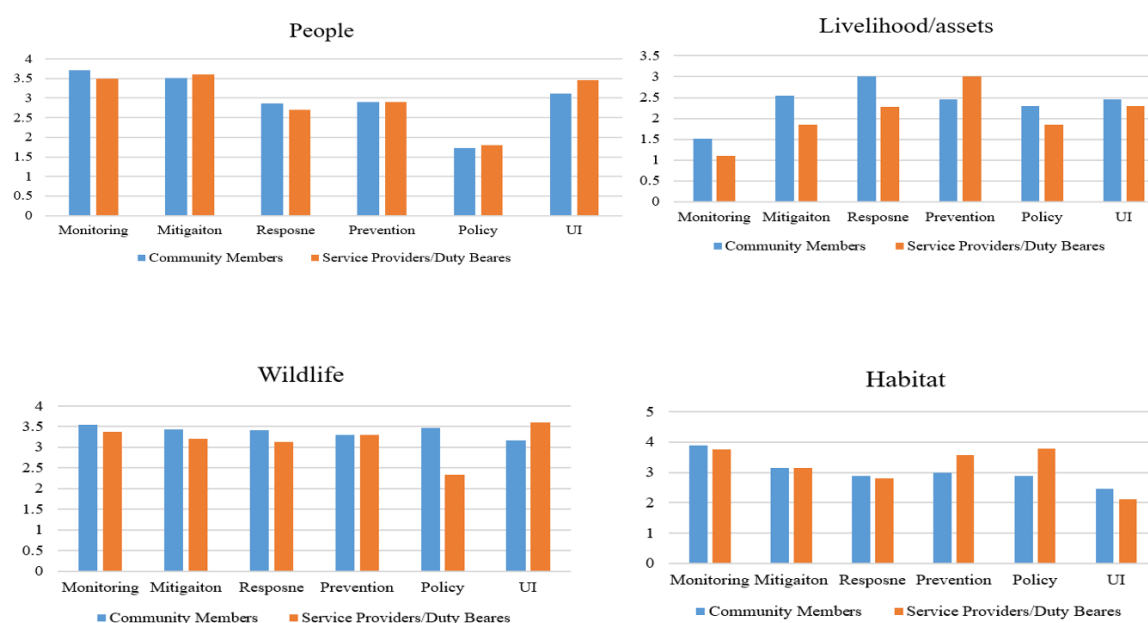


Figure 5: Results by Elements

4.3 Chiwog-wise Results

4.3.1. Pangu Chiwog

In Pangu chiwog, human-wildlife conflict (HWC) is primarily driven by macaques, wild pigs, barking deer and rodents. Both service providers and community members acknowledge that these conflict species, along with birds, gaur, leopards, porcupines, 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.

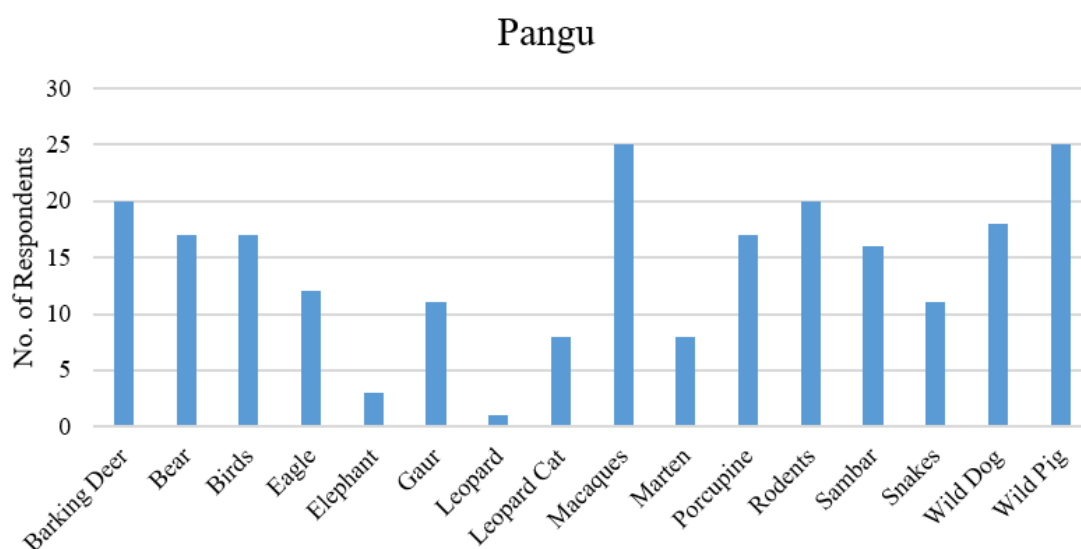


Figure 6: Conflict species in Pangu chiwog

Livelihoods and Assets Outcome 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 Macaques.

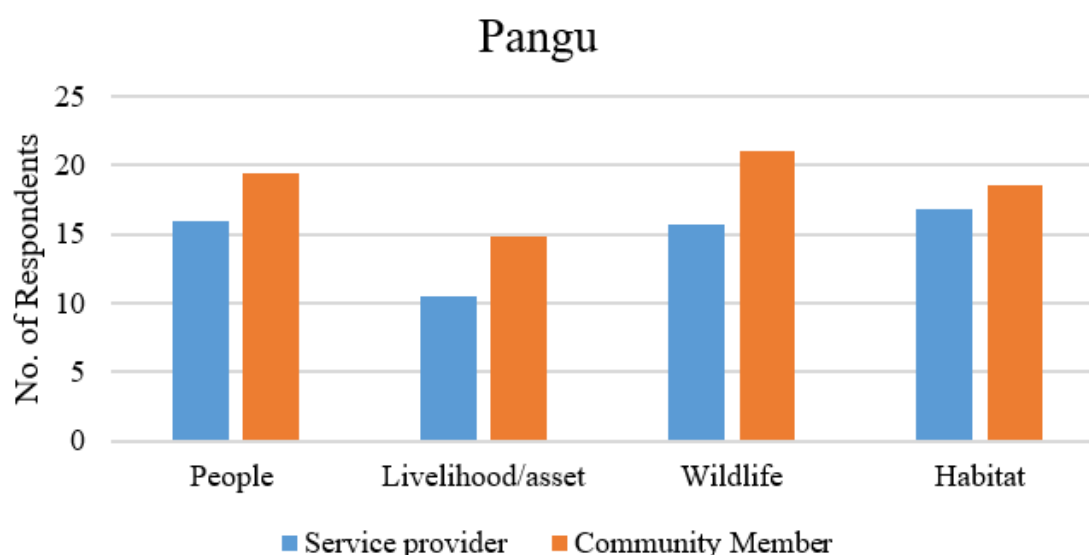


Figure 7: Result by Outcome for Pangu chiwog

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, Monitoring 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 monitoring measures must be put in place, alongside efforts to prevent habitat loss in order to preserve critical wildlife habitats.

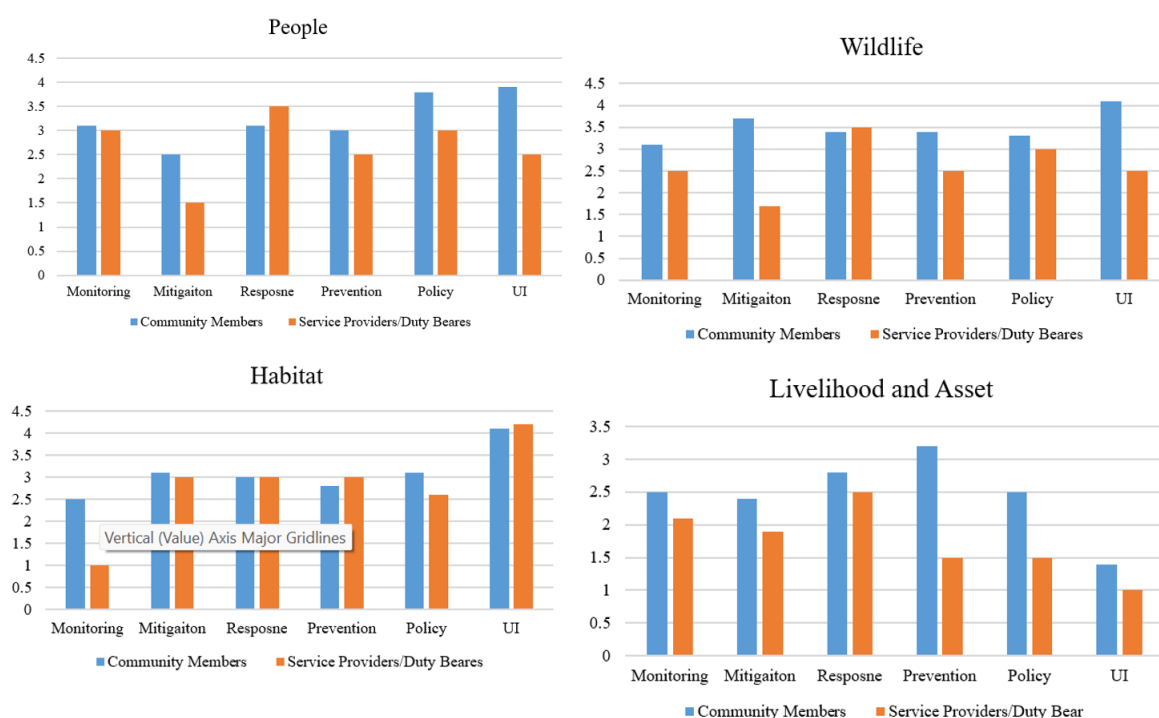


Figure 8: Results by Elements for Pangu chiwog

4.3.2 Gumina Chiwog

In Gumina Chiwog, community members identified bears and wild pigs as the most significant threats to local residents (Figure 9). This agreement from the community determines wild pigs and bear as a major challenge, likely due to their destructive impact on crops, and potential risks to human safety. Similarly, barking deer and macaques, known for raiding crops, are also regarded as a substantial threat by the community, emphasizing their detrimental effect on agricultural livelihoods. However, community members, who are native to the area and have more knowledge of UI, reported conflicts with wild dogs and macaques.

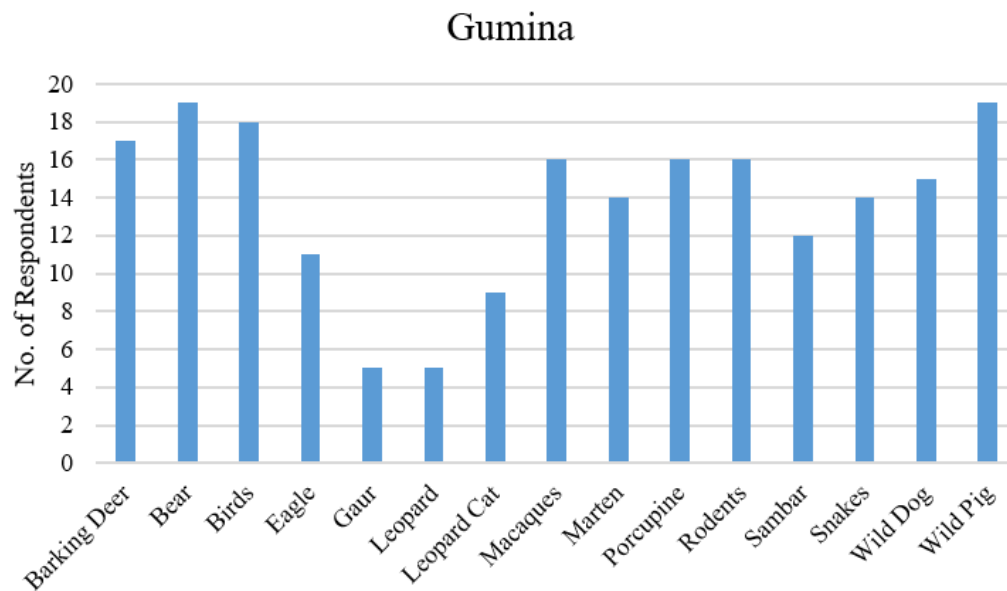


Figure 9: Conflicting species in Gumina chiwog

The Livelihoods and Assets Outcome 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 according to 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.

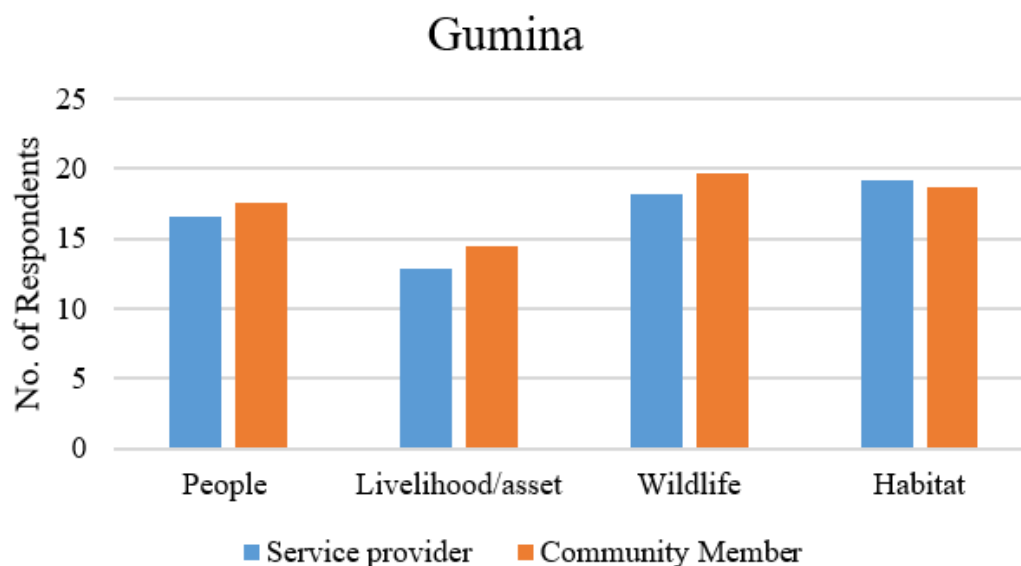


Figure 10: Result by Outcome for Gumina chiwog

Figure 11 shows the result by elements for Gumina 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 monitoring 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.

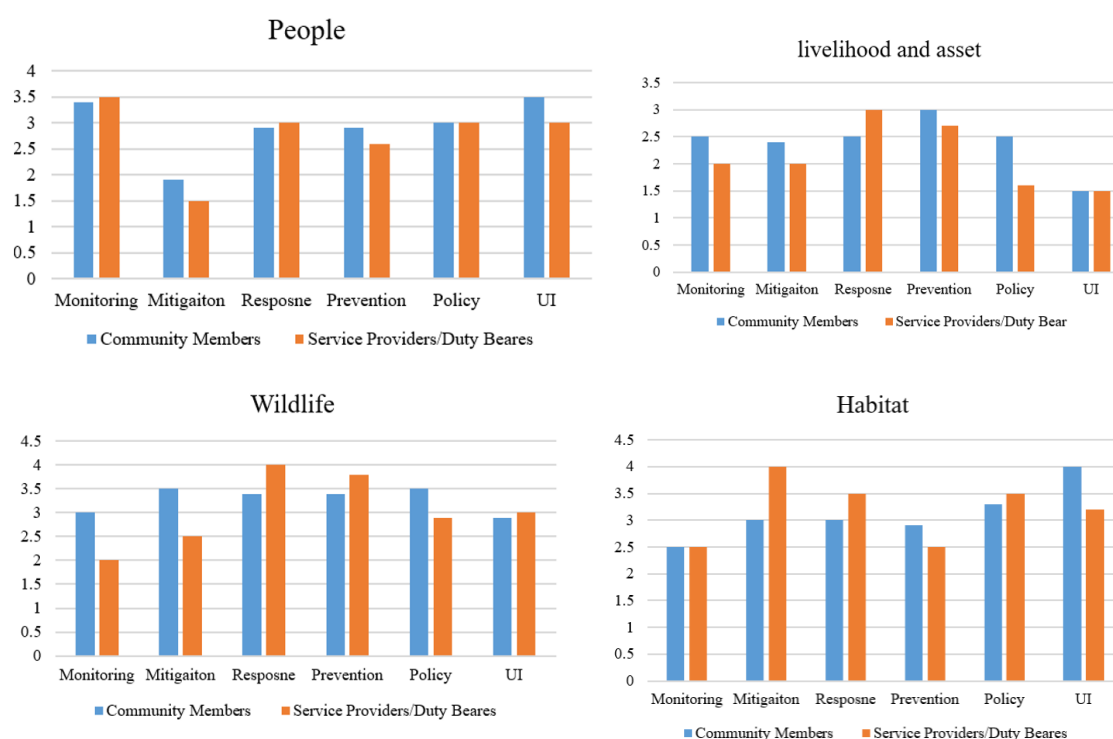


Figure 11: Result by Elements for Gumina chiwog

4.3.3 Eukha Chiwog

In Eukha chiwog, barking deer, macaques, birds, porcupine, rodents, wild dog and wild pigs are identified as the conflict species causing issues in their communities (Figure 12). Among these, bears 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.

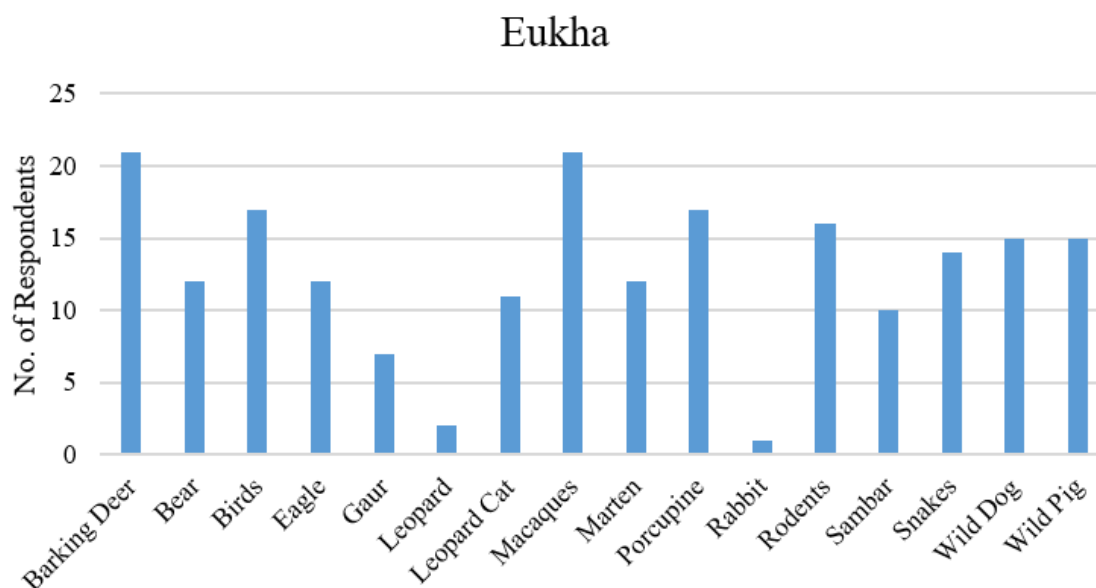


Figure 12: Conflicting species Eukha chiwog

At the outcome level, community members and service providers/duty bearers identified livelihoods and assets as the most significantly impacted by HWC (Figure 13). This divergence emphasizes a disconnection between the community's focus on mitigating immediate economic losses. 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.

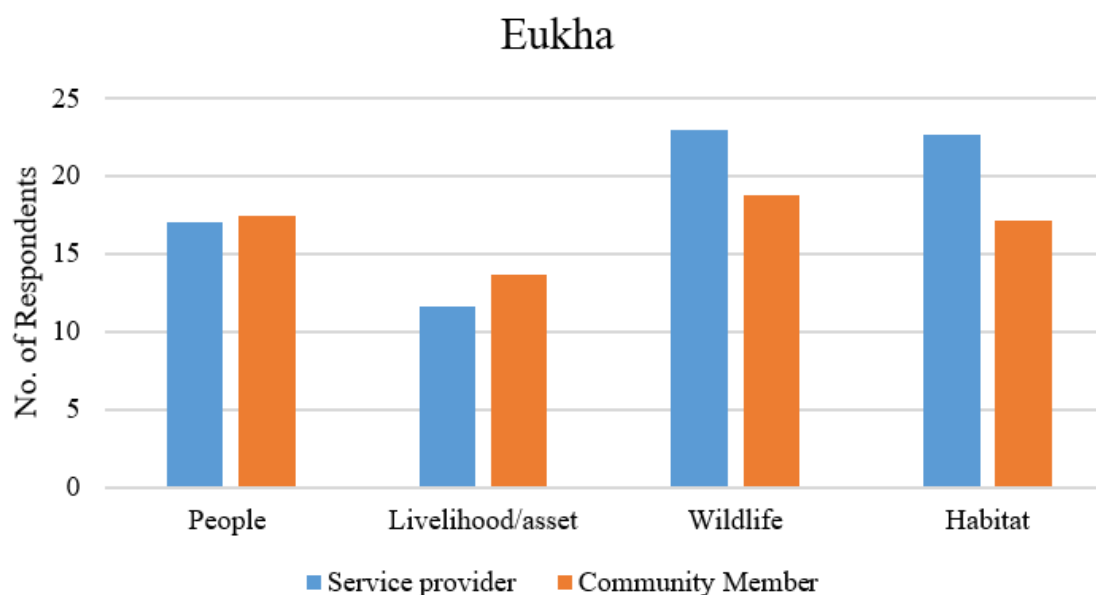


Figure 13: Result by Outcome for Eukha chiwog

Figure 14 depicts critical gaps in managing HWC that 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 habitats. The absence of monitoring mechanisms indicates inadequacy in tracking the extent of damage or identifying conflict patterns that could inform proactive measures. Addressing these gaps requires targeted improvements in mitigation efforts and the establishment of comprehensive monitoring systems.

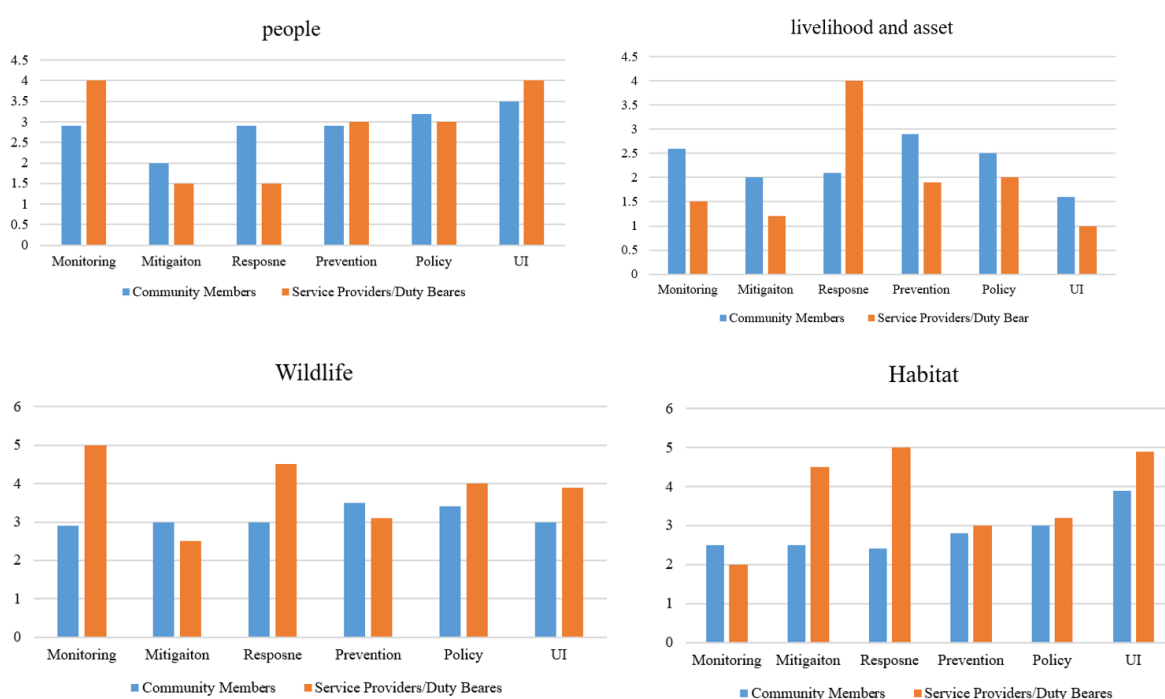


Figure 14: Results by Elements for Eukha chiwog

4.3.4 Gemba Toed Chiwog

Gemba Toed chiwog experiences similar human-wildlife conflicts as other chiwogs within Metakha Gewog. The barking deer is identified as the primary threat, contributing to the major conflict, followed by macaques, wild pigs, porcupines, and various bird species (Figure 15). In rare instances, bear is also regarded as a source of conflict for local communities.

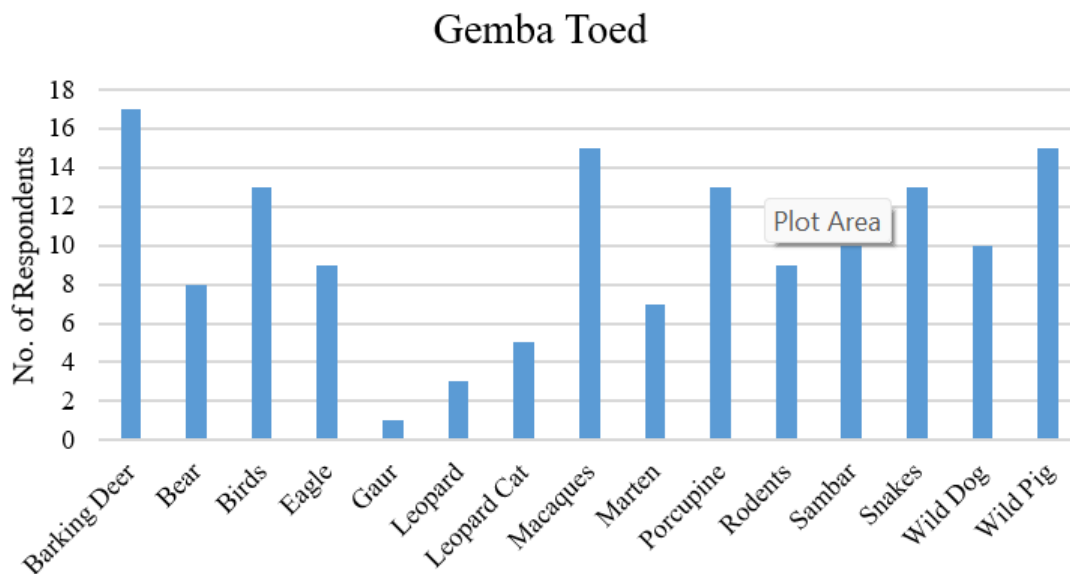


Figure 15: Conflicting species in Gemba Toed chiwog

Livelihoods/assets category has received the lowest score among all outcomes as reported by community members in the Gemba Toed chiwog as shown in Figure 16. This is primarily due to significant crop and livestock predation, as well as the risks posed to assets and human lives. These challenges have severely impacted the livelihoods of the communities, making it a critical area that requires serious and immediate attention. Effective interventions are necessary to mitigate these risks and protect both the assets and the well-being of the affected communities.

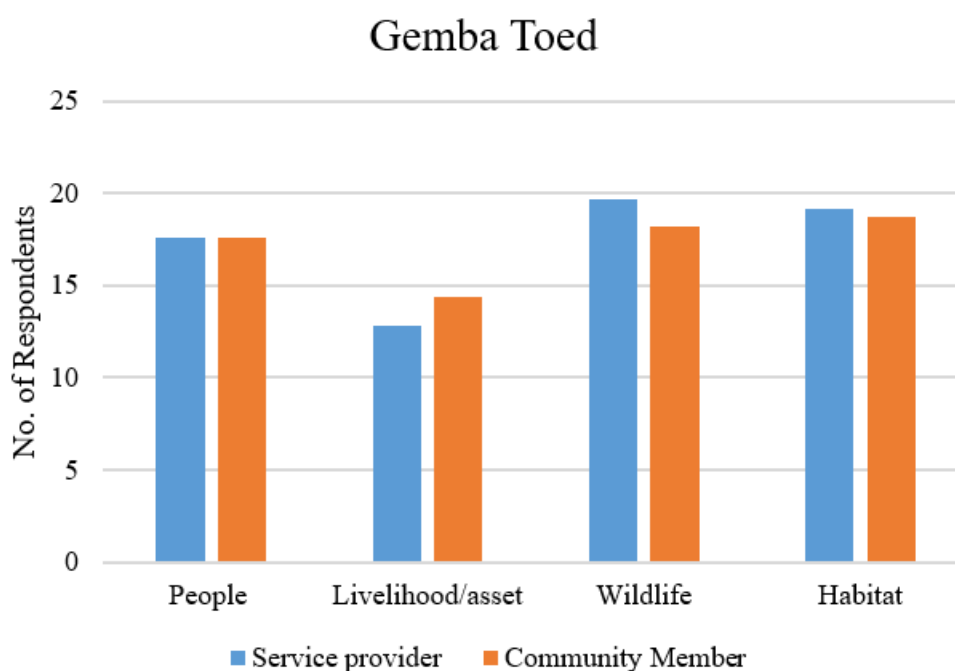


Figure 16: Result by Outcomes for Gemba Toed chiwog

The provided charts reveal critical gaps in human-wildlife conflict management, particularly regarding Mitigation which received the lowest scores under the People outcome. While Response also scored poorly for People, Prevention was identified as the lowest-ranked element for Livelihood and Asset. Significant deficits in Monitoring are evident in the Wildlife and Habitat outcome, where service provider ratings drop as low as 2.0, indicating an inability to track damage or conflict patterns effectively. Furthermore, a notable perception gap exists in Policy and UI, suggesting that community members and duty bearers are not aligned on the effectiveness of current frameworks. Addressing these systemic weaknesses requires a shift toward proactive monitoring and more robust mitigation measures to bridge the gap between service delivery and community experience.

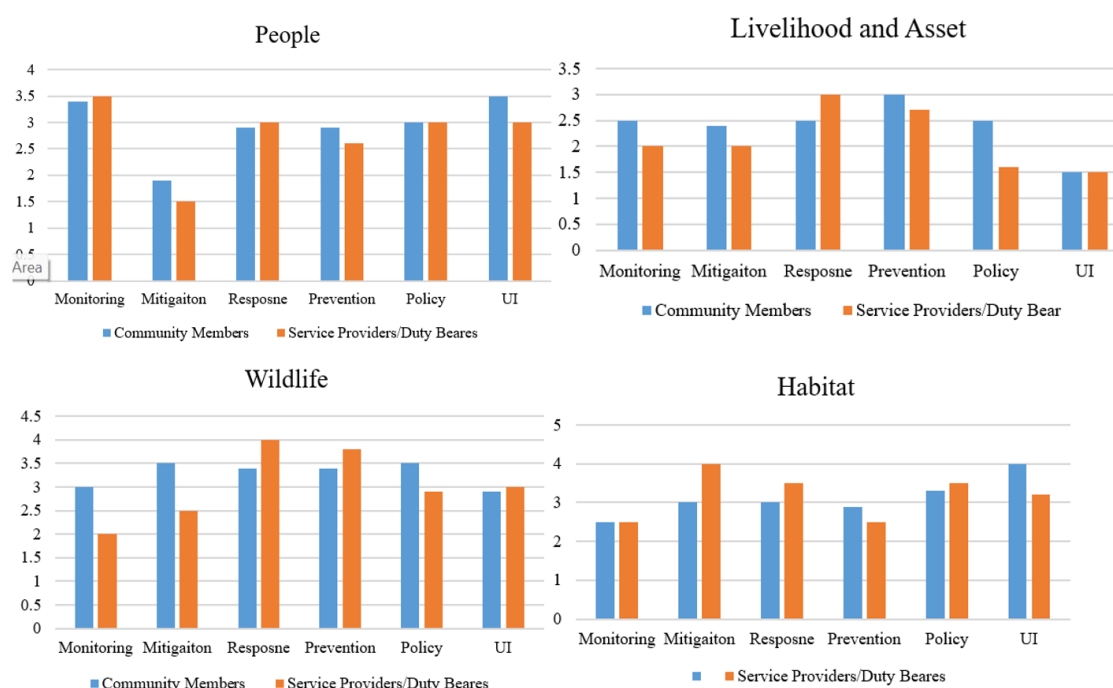


Figure 17: Results by Elements for Gemba Toed chiwog

4.3.5 Gemba Maed Chiwog

In Gemba Maed chiwog, HWC is also predominantly driven by macaques, barking deer, and rodents—known to cause significant damage to crops, followed by birds and wild dogs (Figure 18). Additionally, wild pig, snakes, porcupines and martens are implicated in crop damage and predation. Gaur, leopards contribute to conflict at lower levels, with leopards and wild dogs posing a potential threat to livestock depredation, and gaur often disrupting farming activities.

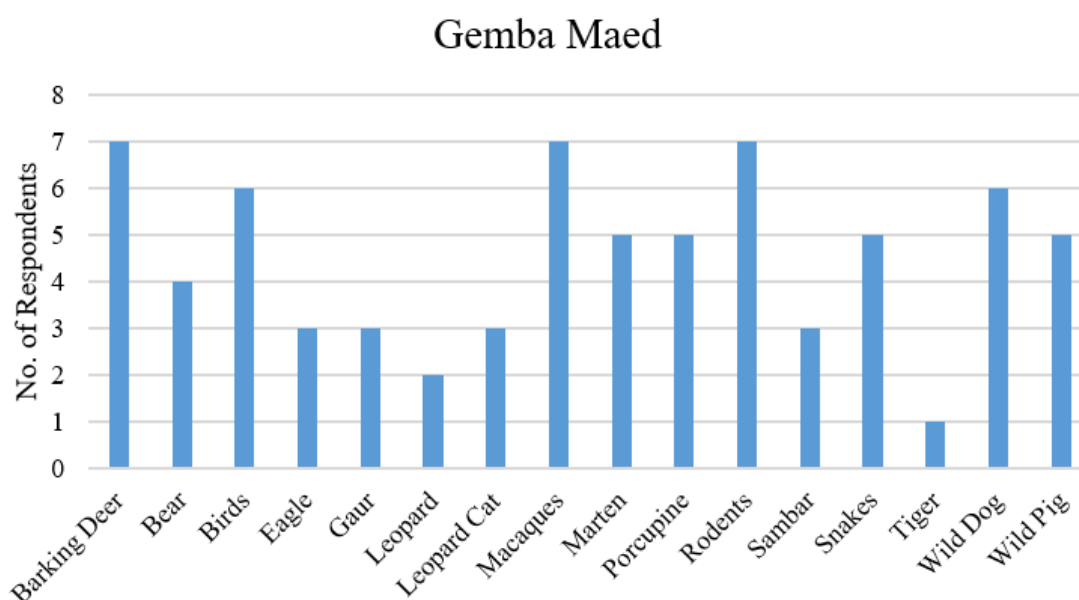


Figure 18: Conflicting species in Gemba Maed chiwog

These species have a uniform impact across all outcomes; however, the greatest impacts are observed on livelihoods and assets, 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.

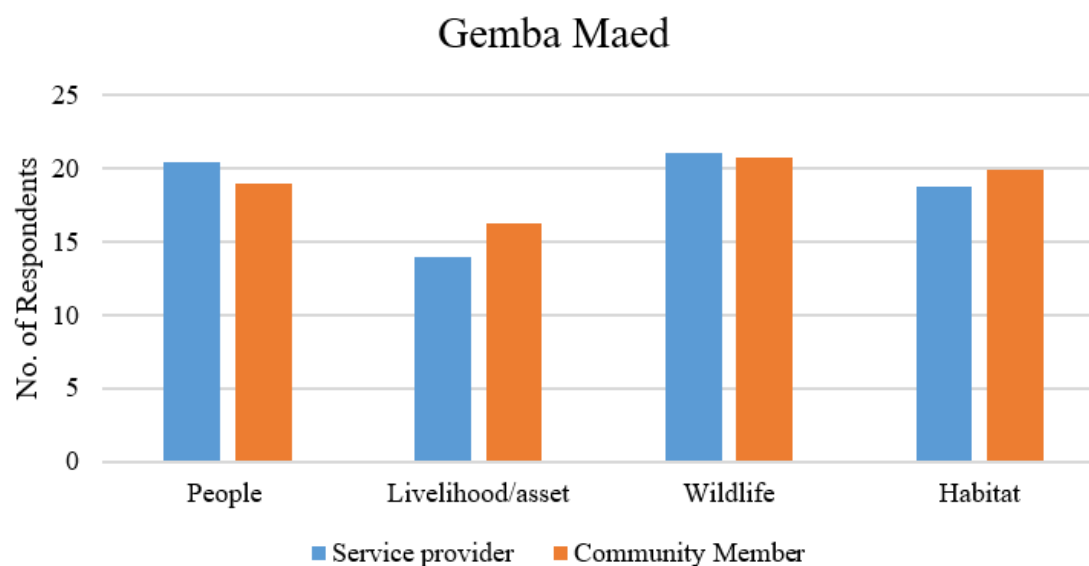


Figure 19: Result by Outcomes for Gemba Maed chiwog

Among the key elements, the 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.

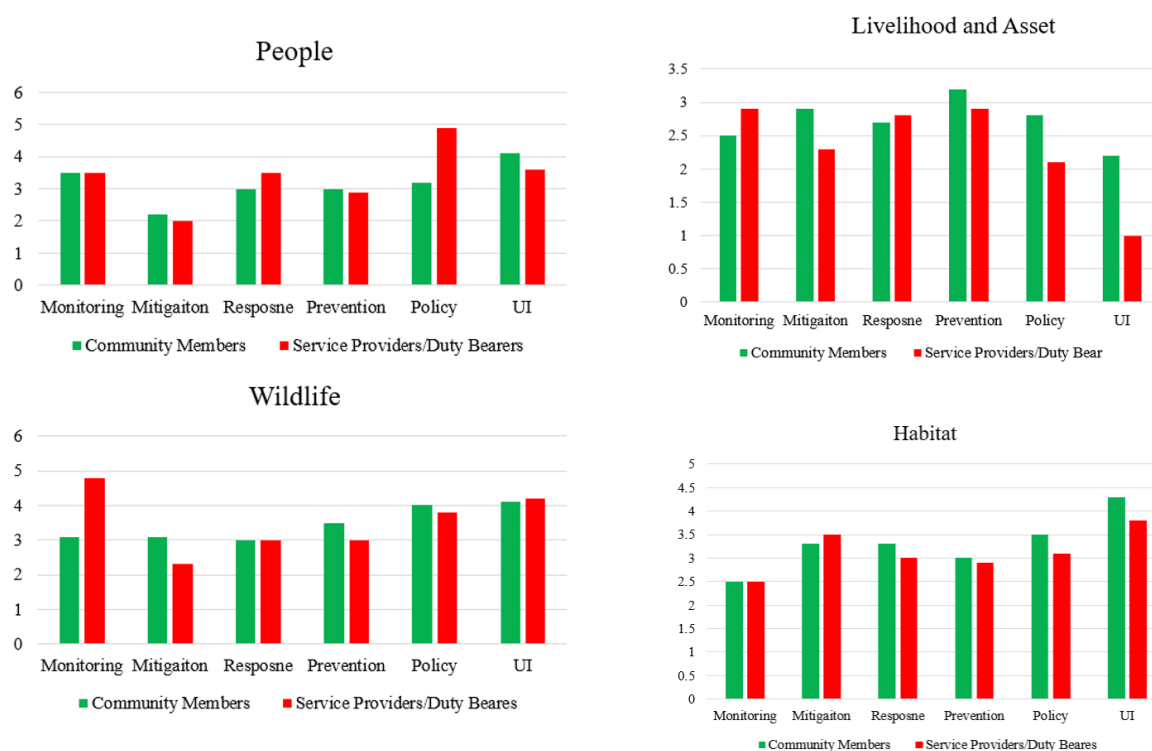


Figure 20: Results by Elements for Gemba Maed chiwog

5. Conflict to Coexistence Strategy

The C2C Management Strategy for Metakha gewog aim to transform HWC into a model of coexistence by addressing the root causes of conflict, enhancing community resilience, and promoting sustainable management practices. Based on findings from HWC-focused group discussions, assessments, and chiwog consultations for co-design, the strategy prioritizes interventions for the most problematic species identified by both community members and service providers which included barking deer, bears, macaques, birds, wild pigs, wild dogs, tigers, leopards, and rodents. Key interventions will focus on safeguarding livelihoods and assets by strengthening crop protection, improving livestock management, and promoting alternative livelihoods.

Central to this effort is community engagement, with initiatives designed to empower local communities to manage wildlife interactions and foster coexistence. Mitigation and prevention measures, such as physical barriers, compensation schemes, early warning systems, and sustainable agricultural and livestock practices, aim to reduce wildlife-related impacts on community livelihoods.

Policy integration will further support the establishment and enforcement of wildlife conservation and conflict resolution mechanisms. Regular monitoring will track wildlife populations and evaluate the effectiveness of interventions, while habitat management strategies will aim to minimize human-wildlife encounters. Collaboration among communities, service providers, government agencies, and NGOs is instrumental in ensuring the long-term success of these initiatives. This adaptive and integrated approach is designed to foster sustainable coexistence between wildlife and communities, creating a harmonious balance for both.

This section outlines the strategic recommendations to address the Conflict to Coexistence challenges faced by the Metakha gewog community. The strategy is organized around two primary objectives, four core outcomes, and eight specific actions detailed in the logical framework. Of these actions, two are short-term initiatives, while six are long-term interventions. The total budget outlay for the 5-year C2C Strategy (2025–2029) is projected at Nu. 9 million. However, as no budget has been officially approved, securing funding from external donors or supplementary contributions from the Royal Government of Bhutan will be critical for successful implementation and achieving the strategy's objectives.

Table 4. Implementation Plan and Financial Outlays

Sl. No.	Outcomes	Activities	Location	Category	Responsibility		Budget Estimate (Nu millions)	Source of Fund	Timeline
					Lead	Collaborators			
1	People- able and willing to live alongside wildlife	1.1 Installation of electric fencing	Gumina Eukha Pangu	Long-term	Tarayana	DoFPS/DoA	4	WWF	2025 - 2029
		1.2 Awareness program on HWC, conservation of nature and wildlife	Gumina Pangu Eukha Gemba	Short-term	DoFPS	Gewog	0.3	WWF	2025-2026
2	Livelihood/ Asset- secured against presence of wildlife	2.1 Planting of fruit trees: Formation of farmers group to improve the livelihoods	Gumina	Long term	Gewog	DoA	0.8	Potential donors	2026-2027
		2.2 Supply of Jersey cows to generation of income	Gemba Gumina Pangu Eukha	Long-term	Gewog	DoL	1	Potential donors	2026-2028
		2.3Provide materials for the establishment of livestock farms	Gemba Gumina Pangu	Long-term	DoL	Gewog	2	Potential donors	2026-2029
3	Wildlife- thrives alongside people	3.1 SMART patrolling training for the service providers	Metakha Gewog	Short-term	DoFPS	Gewog	0.3	RGoB	2025 - 2026
4	Habitat- sufficient to ensure sustainable wildlife population	4.1 Plantation of fruit trees in the nearby SRFL	Gemba Eukha	Long-term	DoFPS	Gewog	0.4	Potential donors	2025 - 2029
		4.2 Establishment of Community Forest	Eukha Gumina	Long-term	DoFPS	Gewog	0.2	Potential donors	2025 - 2027
	Total						9.00		

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 management 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 the Division and external representatives, including members from concerned functional divisions, ensuring a comprehensive and impartial assessment of the plan's implementation and outcomes.

Table 5. Monitoring and Evaluation Framework

Sl. No.	Outcomes	Activities	Action indicator	Baseline	Unit	Yearly Target				
						I	II	III	IV	V
1	People- able and willing to live alongside wildlife	1.1 Installation of electric fencing	Area of farm fenced	NA	Area	1	1		1	
		1.2 Awareness program on HWC, conservation of nature and wildlife	5 chiwogs/No. of HHs	118	No	118				
3	Livelihood/Asset-secured against presence of wildlife	2.1 Planting of fruit trees: Formation of farmers group to improve the livelihoods	Area/ No.of Groups	4	No	1	1		2	
		2.2 Supply of Jersey cows to generation of income	No.of Jersey supplied to each chiwogs	20	No		5	5	5	5
		2.3 Provide materials for establishment of livestock farms	Five Jersey to each chiwog	20	No		2	2	2	2
3	Wildlife- thrives alongside people	3.1 SMART patrolling training for the service providers	No. of service providers trained	10	No	10				
4	Habitat- sufficient to ensure sustainable wildlife population	4.1 Plantation of fruit trees in the nearby SRFL	Area. of fruit trees planted	3	Acres		1	1	1	
		4.2 Establishment of Community Forest	No. of CF established	2	No		1		1	

7. Conclusion

Human-wildlife conflict is a complex and multifaceted issue, but it also presents an opportunity to foster coexistence through innovative and collaborative strategies. A shift toward coexistence involves recognizing the intrinsic and ecological value of wildlife while addressing human needs and concerns. By implementing evidence-based management practices, promoting community involvement, and strengthening policy frameworks, we can reduce conflicts and create sustainable solutions that benefit both people and wildlife.

Key to this transition is education and awareness, fostering empathy and understanding among communities, and empowering local stakeholders to take an active role in conservation efforts. Technological advancements, habitat restoration, and conflict-mitigation tools also play a pivotal role in reducing negative interactions while supporting biodiversity.

Ultimately, achieving coexistence requires a commitment to long-term investments in conservation, a respect for traditional knowledge, and partnerships that bridge the gap between human development and wildlife preservation. By embracing coexistence, we pave the way for a harmonious future where both humans and wildlife thrive together in shared landscape.

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