



Human–Wildlife Conflict Management

Conflict to Coexistence (C2C) Strategy for
Dagala Gewog, Thimphu (2026–2030)

Divisional Forest Office–Thimphu
Department of Forests and Park Services
Ministry of Energy and Natural Resources



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Abbreviations

AI	Artificial Insemination
BHU	Basic Health Unit
C2C	Conflict to Co-existence
DoFPS	Department of Forests and Park Services
FMID.....	Forest Monitoring and Information Division
GIS.....	Geographic Information System
HHS	Households
HWC.....	Human-wildlife Conflict
IKI	International Climate Initiative
M&E	Monitoring and Evaluation
NFE	Non-Formal Education
NWFPs.....	Non-wood Forest Products
QRT	Quick Response Team
RGoB.....	Royal Government of Bhutan
SMART	Spatial Monitoring and Reporting Tool
TAI.....	Tigers Alive Initiative
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 Dagala 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 Dagala 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 Dagala Gewog and the DFO Thimphu 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 Dagala Gewog is the result of a collective and dedicated effort by the staff of the Divisional Forest Office, Thimphu. The Division sincerely acknowledges the commitment, professionalism, and teamwork demonstrated by all officers and staff who contributed their time, experience, and technical inputs toward the successful formulation of this strategy. Their sustained engagement throughout the process ensured that the document is comprehensive, practical, and grounded in field realities.

The formulation of this strategy was made possible through the unwavering support and guidance of the Department and WWF, Bhutan for which the Division is deeply grateful for their strategic direction, technical advice, and continuous encouragement. Similarly, DFO Thimphu is truly grateful to Dagala Gewog Administration including RNR Sector for their support during field surveys and consultation meetings. We anticipate similar support during implementation of this strategy document. 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. Ugyen Dorji, Sr. Forest Ranger DFO Thimphu, who played a crucial leadership role in guiding and coordinating the formulation of this strategy. His dedication, technical oversight, and leadership were instrumental in bringing the C2C planning process to completion. Finally, the Division extends its heartfelt thanks to all individuals, institutions, and stakeholders who, in various capacities, contributed to the development of this strategy. Their collective efforts have resulted in a key milestone that will guide Human Wildlife Conflict management and their co-existence in Dagala Gewog in the years to come.

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1. Introduction

Human Wildlife Conflict (HWC) constitutes a critical conservation challenge globally with direct implications for biodiversity loss, food security, poverty and community resilience (Conover, 2002; FAO, 2023). HWC occurs when interactions between people and wildlife result in adverse socioeconomic, environmental and safety for both humans and wildlife. The intensity and frequency of HWC are increasing due to population growth, infrastructure expansion, land-use change, habitat fragmentation, climate induced impacts compounded by limited institutional capacity and inadequate community-level mitigation mechanisms. These drivers force wildlife into human-dominated landscapes in search of food, water and shelter, leading to crop loss, livestock depredation, property damage, and, in some cases, human injury or fatalities. The resulting retaliatory actions further threaten already vulnerable wildlife populations, undermining conservation investments and long-term ecosystem integrity (Adhikari et al., 2022; Sharma et al., 2021).

Bhutan, located within the Eastern Himalayan global biodiversity hotspot, presents both global conservation priority and development context highly susceptible to HWC. Approximately 69.71% of the country remains under forest cover with more than 50% of its land designated as Protected Areas that harbor globally significant and threatened species such as the snow leopard, clouded leopard, Bengal tiger and Asiatic elephant. Concurrently, nearly 60% of the population resides in rural areas where livelihoods depend primarily on subsistence agriculture, livestock rearing and forest-based livelihood programs. This close human-wildlife interface, while central to Bhutan's conservation success, disproportionately exposes rural communities to HWC increasing livelihood vulnerability and undermining poverty alleviation and rural development initiative.

Dagala Gewog represents a high-priority intervention landscape where HWC directly affects household income, food security and social well-being. Livelihoods in the Gewog are predominantly livestock-based, supplemented by forestry-related activities and the collection of non-wood forest products. Settlements are largely situated adjacent to forested areas creating a persistent interface between human activities and wildlife movement corridors. Dependence on forest ecosystem services including timber, firewood, leaf litter, topsoil, and non-wood forest products has resulted in frequent wildlife incursions and escalating conflict incidents. While mitigation measures such as electric fencing, solar deterrents and compensation schemes have been introduced, their effectiveness has been constrained by limited financial resources, short project cycles, insufficient maintenance and weak integration into local governance and land-use planning systems (Dendup et al., 2021a; Dorji, 2023). Furthermore, the lack of systematic spatial analysis of HWC patterns limits the ability of institutions to prioritize hotspots,

optimize investments and scale effective interventions (Dhendup & Letro, 2016; Jamtsho & Katel, 2019; Sangay & Vernes, 2008).

In response to these challenges, there is increasing global consensus on the need for integrated, adaptive and community-centered approaches to HWC management that align conservation objectives with human development outcomes. The Conflict to Coexistence (C2C) Approach, developed in 2023 as an evolution of the Safe Systems Approach (SSA), provides a structured seven-step framework for evidence-based participatory and scalable HWC management (WWF, 2023). The C2C approach addresses operational limitations of earlier models by emphasizing rapid diagnostics, participatory co-design and multi-sectoral collaboration involving communities, local governments, conservation agencies and development actors. By embedding adaptive learning, inclusive governance and innovation-driven solutions, the C2C framework seeks to reduce conflict risks, strengthen livelihood resilience and safeguard biodiversity, thereby contributing to long-term human-wildlife coexistence and sustainable landscape management (Stone & Nyaupane, 2018; Wangdi et al., 2018).

This project proposes to operationalize the C2C framework in Dagala Gewog as a pilot, generating evidence-based solutions that are locally grounded, socially inclusive and scalable across similar high-conflict landscapes in Bhutan and the Eastern Himalayan region. The intervention aligns with national conservation priorities and international donor objectives related to biodiversity conservation, climate resilience, sustainable livelihoods, and inclusive rural development.

2. Goal and Objectives

2.1.1 Goal:

"To ensure harmonious co-existence between wildlife and people through holistic approach in Dagala Gewog".

2.1.2 Objectives:

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

3. Methodology

3.1. Site Description

Dagala Gewog, situated in the southern region of Thimphu Dzongkhag, represents one of the eight administrative Gewogs within the district. The Gewog is organized into five Chiwogs each comprising of villages with a cumulative total of 168 households. According to the Population and Housing Census of Bhutan (PHCB, 2017), Dagala Gewog encompasses an area of 100.8 square kilometers, with altitudinal variations ranging between 2,100 and 4800 meters above sea level. The Gewog hosts a population of 2,094 individuals, of which 1,387 are male and 707 are female.

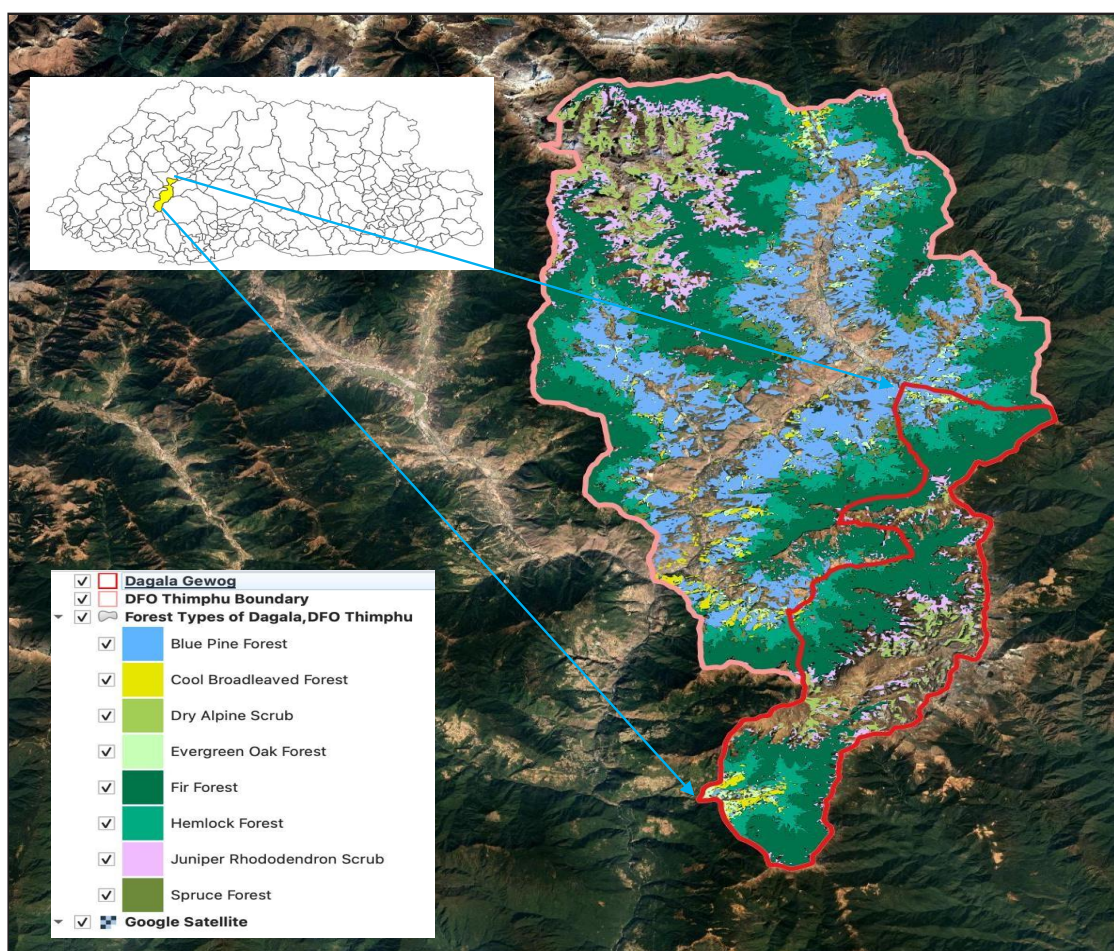


Figure 1: Map of Dagala Gewog

The Gewog has fairly satisfactory network of farm roads connected to Chamgang Toed and Chamgang Maed with a road length of 11.5 kilometers. All the households within these two Chiwogs have access to electricity and internet network coverage. While Gaytala Chiwog is partially connected by farm road, Wangdro and Dungdro Chiwogs remain without road connectivity and electricity.

The primary economic activities in the Gewog include livestock farming followed by forest based and other off-farm activities. The average landholding per household is estimated to be between 10 to 15 decimals consisting mostly of dryland. With regard to public amenities and infrastructure, the Gewog has one Basic Health Unit (BHU), one high school, and one Early Childhood Care and Development (ECCD) center.

3.2 Methodology: C2C Framework

The strategy design is based on the approaches and principles of C2C approach. The C2C approach is a structured, integrated framework designed to guide the systematic planning, implementation and monitoring of Human-Wildlife Conflict (HWC) management with principles of holism, resilience, shared responsibility and tolerance. The approach operates on four key assumptions: HWC is a social issue, not just a wildlife problem; complete elimination of conflict is neither realistic nor desirable; co-existence depends on local tolerance and benefits and shared responsibility and participatory governance are essential. All four primary outcomes must be achieved to manage HWC effectively. The approach provides clear, stepwise guidance for effective management, promoting integrated and holistic strategies that balance long-term solutions with short and intermediate-term interventions (figure 2).

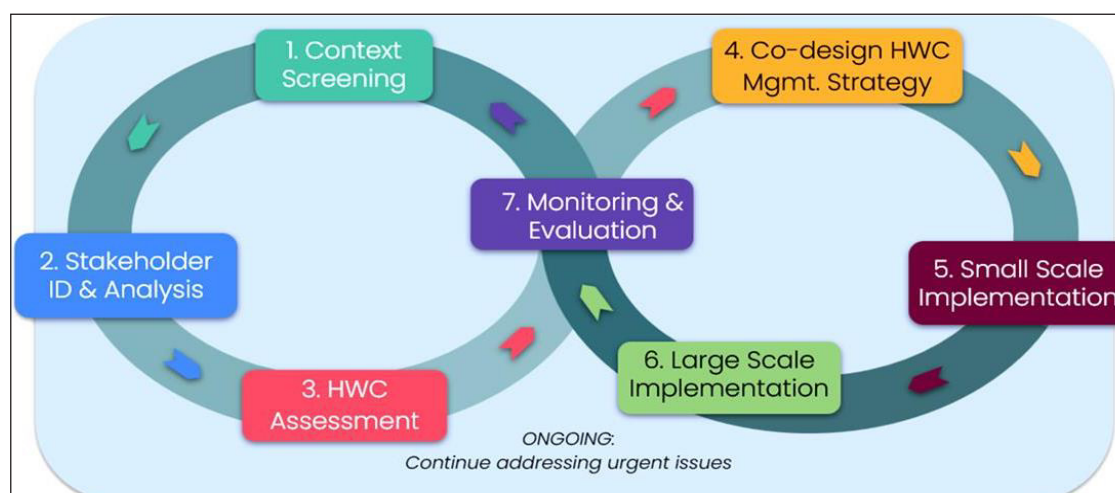


Figure 2: C2C framework for effective and sustainable management of HWC

3.2.1 C2C Process

Step 1: Context Screening

Context screening serves as the foundational phase of the assessment process focusing on identifying and analyzing the unique characteristics of a landscape and its prevailing Human-Wildlife Conflict (HWC) dynamics. This phase entails the collection of comprehensive baseline information such

as: household numbers, population data, land holdings, social landscape mapping and other relevant resources to have a holistic understanding of the area.

The assessment is carried out using C2C Tool 4 which facilitates a detailed exploration of the landscape in terms of its demography, livelihood patterns, trends in HWC, records of conflict species, frequency and severity of incidents, types of conflict, existing management interventions and the underlying drivers of HWC which can be both human-induced and natural. Through this systematic process, context screening lays the groundwork for informed planning and targeted interventions.

Step 2: Stakeholder Identification and Analysis

Stakeholders are individuals or group of individuals who have specific or a number of roles. Typically, multiple stakeholders are involved in HWC scenarios where some groups are directly impacted by HWC, while others are involved in its management. In addition, some stakeholders are not directly affected but are highly influential. For C2C approach, it is crucial to understand the stakeholders involved in HWC and their collaborative potential.

A core team was constituted comprising the Officials from Divisional Forest Office, Thimphu, local government and officials who work for the community such as Gewog Agriculture and Livestock Extension Supervisors. The stakeholder identification and analysis were conducted employing the stakeholder analysis matrix, a C2C Tool 5 that involved clustering of stakeholders. The matrix employed a systematic evaluation process by answering a series of questions on a scale of 1 to 5 where 1 indicates Strongly Disagree and 5 indicates Strongly Agree focusing on the following aspects:

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

Stakeholders were classified into two categories: duty bearers/service providers and community members. A total of 21 duty bearers/service providers and 113 community members were identified. The stakeholder analysis highlighted a diverse range of interest, influence and availability levels among groups involved in the HWC management strategy.

Step 3: C2C Assessment

The assessment consists of tailored questionnaires for two stakeholder groups: Duty Bearers/Service Providers and Community Members. The structure captured diverse perspectives and compared how views align or differ across six elements; Policy, Prevention, Response, Understanding the Conflict,

Mitigation and Monitoring within the four outcomes: People, Livelihoods/ Assets, Habitat and Wildlife. Questionnaires addressed to Duty Bearers and Service Providers assess the effectiveness and adherence to HWC policies and programs. Conversely, questions presented to Community Members evaluated their experiences, awareness and perceptions of these initiatives, utilizing a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The assessment intensity was determined applying the Yamane's (1967) formula at 95% confidence level where:

$$n = N / (1 + N \cdot e^2)$$

Where n = Sample size; N = Total Population/HHs; e = level of precession at 5% or 0.05. The total household in the study area (Dagala Gewog) from five chiwogs is about 168 households. Therefore, the sampling frame for the survey was determined at 118 households based on Yamane's (1967) formula at 95% confidence level. However, while conducting the field assessment, only 113 households were interviewed due to unavoidable circumstances. 21 duty bearers/service providers were also interviewed where Efforts were made to ensure equal gender representation to reduce biasness during assessment.

Table 1: Households interviewed from each chiwog under Dagala Gewog

Sl. No.	Name of Chiwog	Total Households	No. of HHs interviewed
1	Chamgang Maed	67	46
2	Chamgang Toed	55	37
3	Dungdro	18	12
4	Wangdro	19	13
5	Gaytala	9	5
Total		168	113

Step 4: Co-design

The co-design of C2C strategy process involved stakeholder consultation with all the Chiwogs of Dagala Gewog held on 20th October 2025 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 C2C strategy was adopted through participatory approaches. The inclusive process ensured that the strategies were closely aligned with the needs and perspectives of the local communities.

A total of 35 community members participated in the consultation process in co-designing the C2C strategy for Dagala Gewog, with 69% of participants being female (n = 24) and 31% Male (n = 11), refer table 2.

During the consultation, the results of the C2C assessment were presented to the stakeholders through a visual report detailing the overall status at the

Gewog level, 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 aimed at managing HWC, categorized into short-term and long-term actions, implementation sites and description of each action. The individual group presented their proposed interventions which were then discussed in larger group to validate and refine the proposed actions based on the HWC scenario in each of the five chiwogs. The compiled actions from the consultation workshop were then reviewed for effective HWC management over the next five years (2026–2030).

Table 2: Participants from chiwogs during co-design consultation workshop

Sl/No.	Chiwog	Nos. of Participants	Male	Female
1	Gaytala	7	2	5
2	Dungdro	7	2	5
3	Wangdro	7	3	4
4	Chamgang Toed	7	2	5
5	Chamgang Maed	7	2	5
Total		35	11	24
Percentage			31%	69%

Step 5: Small Scale Implementation

The small-scale implementation are the interventions proposed by local communities and relevant stakeholders which are designed and can be executed within a shorter time frame with available resources. These activities are practical and manageable, enabling impacted communities to take immediate action to address the pressing HWC. While 3 actions are identified as long-term implementation program, 14 actions have been identified as short-term interventions for Dagala. These actions are expected to provide quick and tangible solutions in mitigating the impact of HWC.

4. Results and Discussion

4.1 Demography and Social Information

Understanding the demographic profile of the gewog was essential to capture perspectives of the community providing inclusive and precise representation of their experiences and needs. The efforts were also made to ensure gender-balanced participation in the survey. The final sample comprised 82% female respondents (n = 29) and 18% male respondents (n =6), indicating much

higher female representation. In terms of age distribution, the majority of the respondents (19%, n = 22) were aged over 60 years, followed by 39% (n = 45) in the age group of 31-40 years, and 40% (n = 46) in between the age group of 41-59. Regarding educational background, 54% (n = 62) of the respondents were illiterate, followed by secondary education (22%, n = 25), primary education (9%, n = 11), Non-Formal Education (NFE, 7 %, n = 9), and tertiary education (college/technical, 4%, n = 5). The demographic factor aimed to generate a comprehensive understanding of the community's dynamics, which is essential for designing effective, target oriented interventions for managing HWC. The communities were mainly subsistence farmers, dependent on livestock farming and off-farm activities as a means of their livelihoods and income generation.

4.2 Overall Results of Dagala Gewog

4.2.1 Conflict Species of Dagala Gewog

Service providers identified bears, wild pigs, and barking deer as the major conflict species in Dagala Gewog, followed by tigers and dholes. While wild pig inflicts substantial damage through crop raiding, the species causing the greatest impact were reported to be bears and tigers with livestock predation and occasional threats to human safety. It is followed by dholes and barking deer, which comparatively lesser but still with notable impacts. In terms of frequency of conflict, wild pigs and bears were found to cause incidents more often, followed by tigers, dholes, and barking deer. The relative intensity and frequency of these conflicts are illustrated in figure 3.

Community members in Dagala Gewog, as reported by 113 respondents, identified bear, tiger and barking deer as the most significant conflict-causing wildlife species. Among these, the species causing the most severe impacts were noted to be wild pigs, tigers, bears and dholes, primarily due to their roles in crop damage, livestock predation, and property destruction. In terms of the frequency of conflict, wild pigs, tigers, bears, and foxes were reported as the species that most frequently impact local livelihoods, often leading to recurring losses for the community. These findings collectively highlight the persistent and multifaceted nature of HWC in Dagala Gewog.

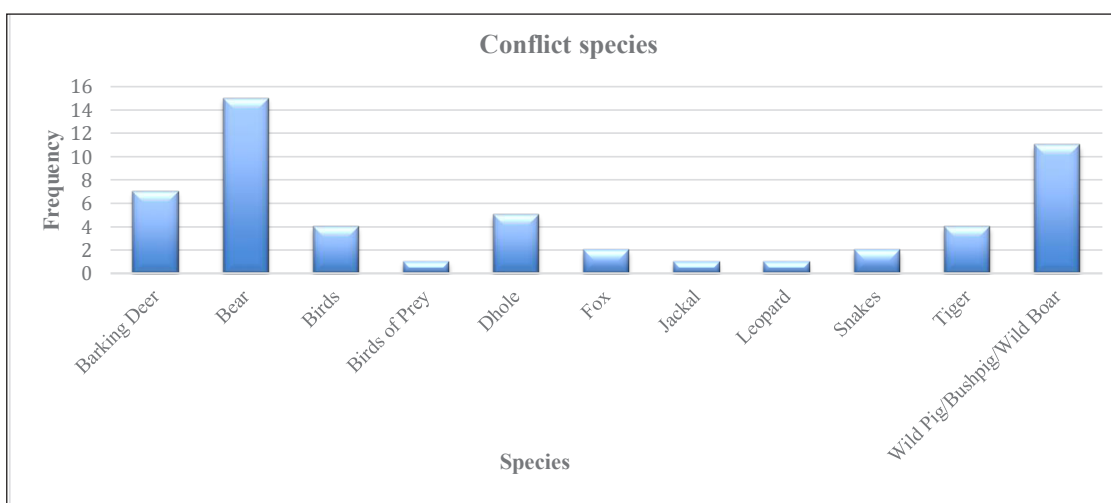


Figure 3: Conflict species of Dagala Gewog

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 that would foster harmonious co-existence among people and wildlife. The implementation of interventions will minimize losses as a result of crop damage and livestock predation, securing livelihoods and assets. As a result, retaliatory killing, poaching will be reduced and tolerance levels will be high, allowing wildlife to thrive alongside people and human settlements. To ensure there are enough natural spaces for wildlife to thrive, we must protect and support sustainable animal populations in the wild. By addressing the interconnected needs of people and wildlife, we see that when communities are secured and wildlife is given room to flourish, a balanced and harmonious coexistence becomes possible. This approach benefits both local communities and the broader ecosystem in the long term.

Table 3: Score given for each outcome by two categories of respondents

Outcome	Service Providers/Duty	Community Members
People	3.05	4.04
Livelihoods/Assets	3.07	3.69
Wildlife	3.19	4.06
Habitat	3.47	4.16

Note: Service Providers and Community Members scores are between 1 and 5, with 1 being Strongly Disagree and 5 being Strongly Agree.

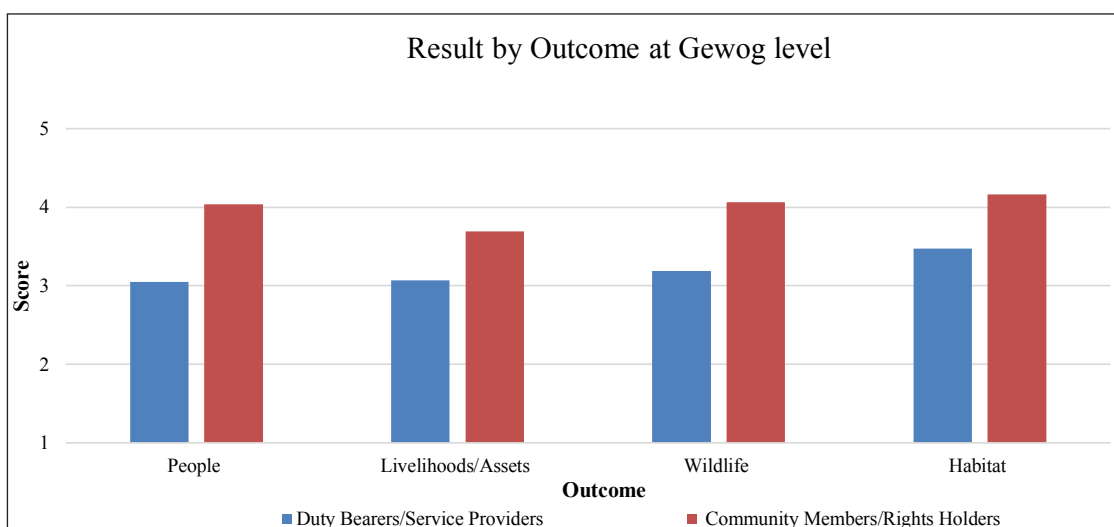


Figure 4: Result by outcome for Dagala Gewog

Among the four outcomes, service providers/duty bearers and community members had identified challenges in securing livelihoods and assets as the most critical issue (refer table 3). Figure 4 reveals livelihoods/assets to be the most impacted outcome, as it has the lowest ratings from both service providers/duty bearers and community members. As a result, interventions designed to mitigate HWC and promote co-existence should prioritize addressing challenges related to livelihoods/assets as the primary focus, followed by Habitat, People, and Wildlife.

Status of Elements at Gewog level

To achieve the four outcomes, the six essential elements were 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 elements of the co-existence framework (figure 5).

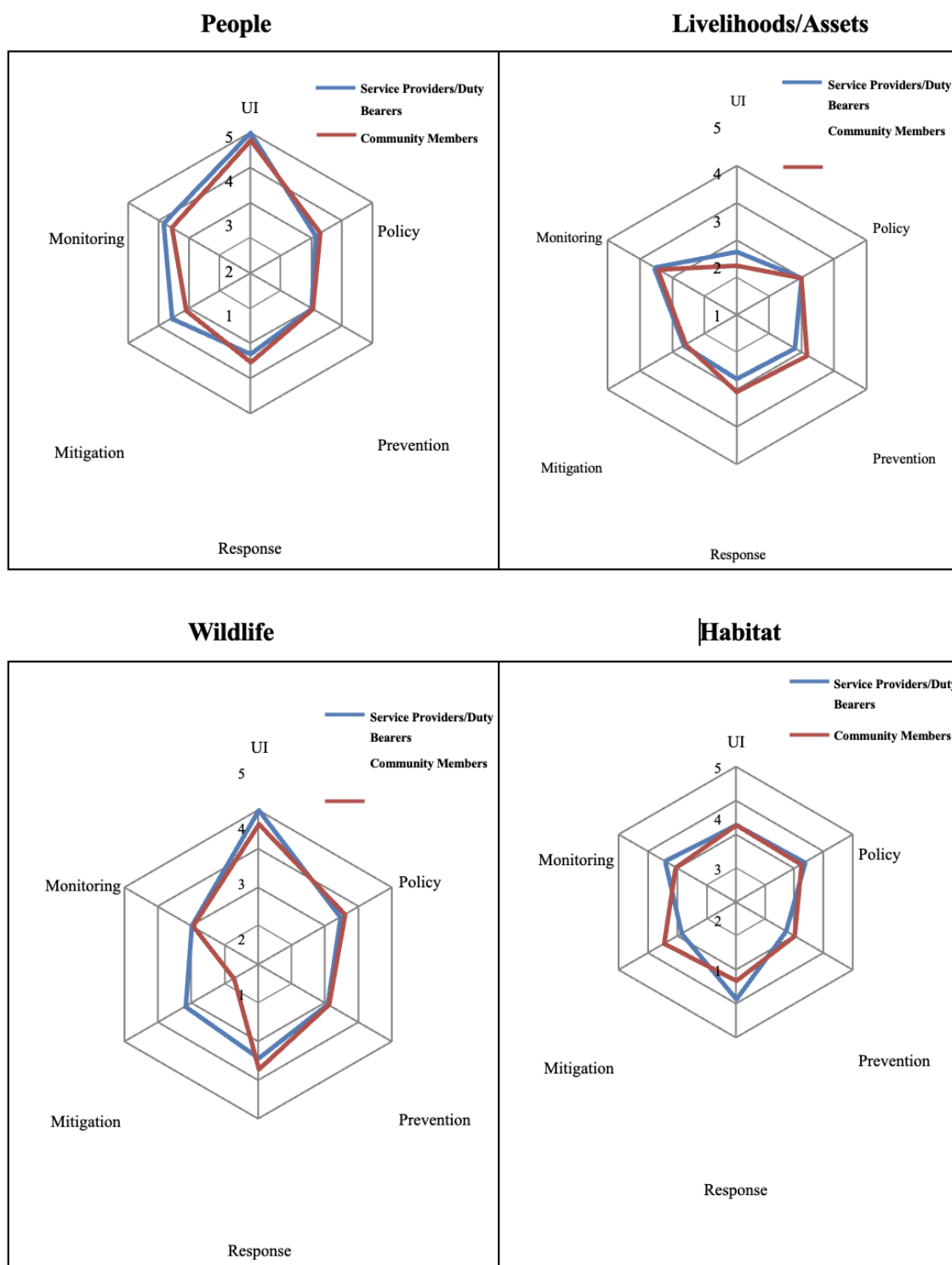


Figure 5: Results by elements for each of the outcomes

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

i. People Able and Willing to Live Alongside Wildlife

Service Providers/Duty Bearers and Community Members rated “Understanding of Interaction (UI)” the highest, reflecting strong awareness of human-wildlife dynamics, while Policy and Prevention has been rated the lowest. Service Providers/Duty Bearers expressed greater confidence in monitoring and mitigation strategies, whereas Community Members reported stronger confidence in response measures. The low ratings for prevention and policy indicates that, despite a clear understanding of issues, the absence of robust preventive mechanisms and supportive policy frameworks continue to constrain the overall effectiveness of coexistence strategies.

ii. Livelihoods/Assets Secured Against the Presence of Wildlife

Livelihood or the assets of local communities are more vulnerable among the four outcomes and all the six elements make a very weak contribution. Contributions of each element are rated at a similar level with slightly higher contribution from monitoring and least from mitigation and understanding the interactions by both the Service Providers/Duty Bearers and community members. This indicates that it is crucial to design mitigation and understanding the interactions related strategies to enhance the security of Livelihoods/Assets Secured against the Presence of Wildlife.

iii. Wildlife Thrives Alongside People

Both the groups have rated UI and policy highest among the elements. However, the lowest rating for mitigation indicates that existing strategies to reduce the impacts of wildlife-related conflicts may be perceived as inadequate or ineffective in meeting their needs. Service Providers/Duty Bearers expressed concern regarding monitoring efforts and strategies, while Community Members highlighted significant concerns over mitigation measures, identifying these as key obstacles to effectively managing human-wildlife coexistence.

iv. Habitat Sufficient to Ensure Sustainable Wildlife Populations:

The lowest score within this outcome was associated with the Prevention element, suggesting ongoing degradation of natural resources in the landscape. This decline compromises habitat quality, negatively affecting wildlife populations and heightening the risk of conflict as wildlife encroaches human settlements. Both Service Providers/Duty Bearers and the Community Members emphasized the need to enhance and strengthen the sustainable management and utilization of natural resources.

4.3 Status of Outcome at Chiwog level

4.3.1 Chamgang Maed

In ChamgangMaed Chiwog, both community members and service providers identified wild pigs, bears, and deer as the primary species involved in HWC. These animals were reported to cause the most significant impacts and occur with higher frequency, particularly in relation to crop damage and property loss. Tigers, dholes, and birds were also recognized as conflict species, though to a comparatively lesser extent. The identification of these species highlights the pressing need for targeted conflict mitigation strategies, such as improved crop protection measures, habitat management, and community awareness programs to reduce losses and promote coexistence between people and wildlife in the area.

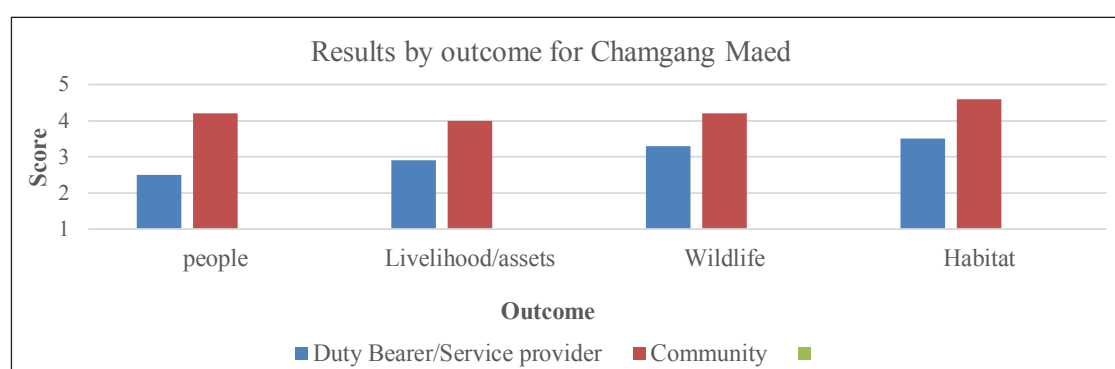


Figure 6: Results by outcome for Chamgang Maed Chiwog

In Chamgang Maed Chiwog, the people Outcome received the lowest score among the four outcome areas as rated by the service providers or duty bearers, indicating that issues related to people’s wellbeing, participation, or empowerment may require greater attention. In contrast, within the livelihood/assets category, the community aspect was rated the lowest, suggesting that collective efforts and community-based support systems in improving livelihoods and managing assets are relatively weaker compared to individual or household-level factors.

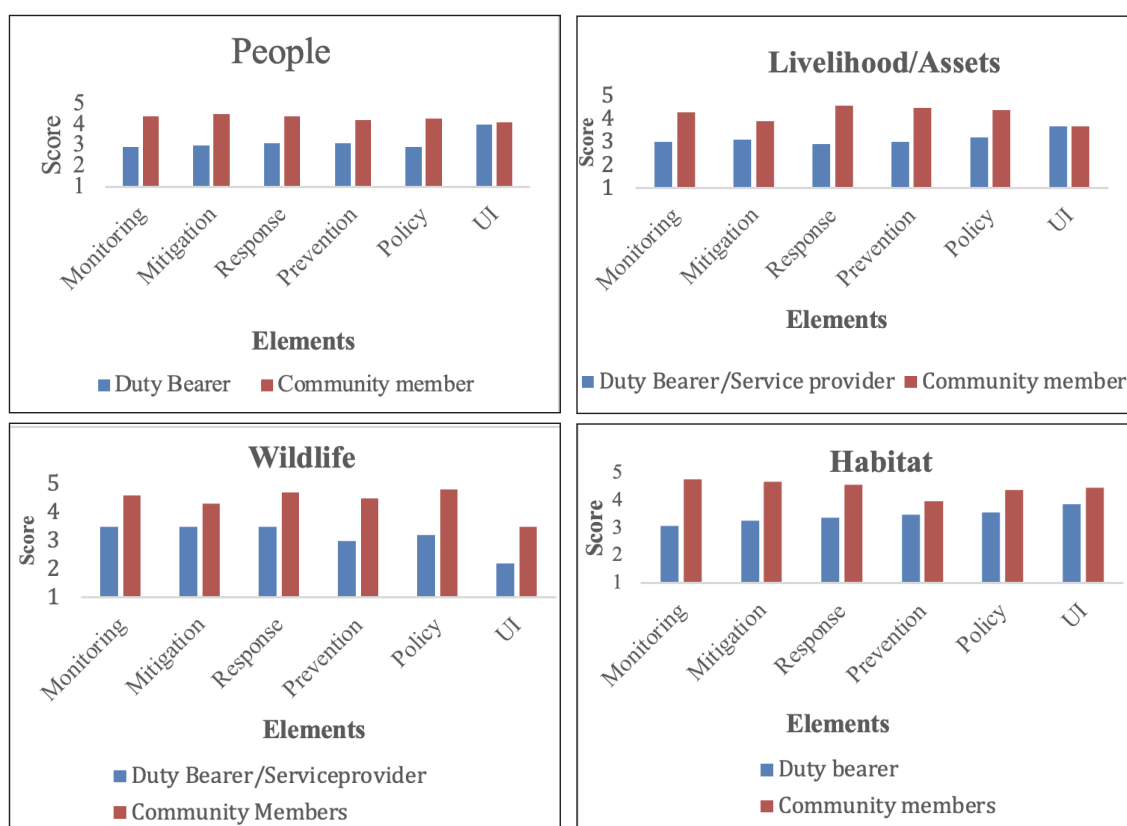


Figure 7: Result by elements for Chamgang Maed Chiwog

4.3.2 Chamgang Toed Chiwog

In terms of impact and frequency, both Service Providers /Duty Bearers and community members identified bears and wild pigs as the primary conflict species in the area. These animals were reported to cause the greatest damage, frequently raiding crops, attacking livestock, and posing threats to human safety. Their repeated encounters and significant economic losses have made them the most concerning species in HWC discussions. Additionally, jackals were also recognized as conflict species, however, their impact and frequency were relatively minimal compared to bears and wild pigs. While jackals occasionally prey on small livestock or scavenge near settlements, their overall effect on livelihoods and property is considered minor. These findings underscore the need for targeted interventions focusing primarily on mitigating conflicts with bears and wild pigs while maintaining preventive measures for lesser-impact species like jackals.

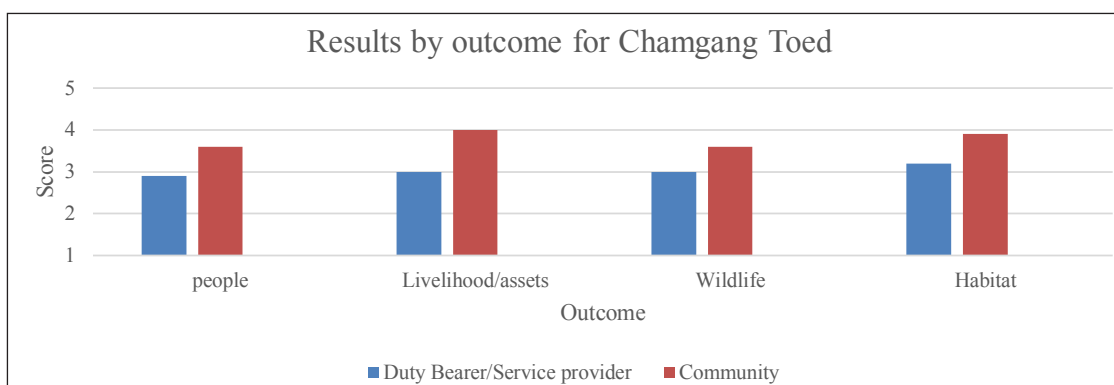


Figure 8: Results by outcome for Chamgang Toed Chiwog

As illustrated in figure 8, community members rated people and livelihoods/assets as the lowest among the outcome areas, indicating concerns related to individual wellbeing, income generation, and asset sustainability. In contrast, Service Providers or Duty Bearers assigned the lowest scores to “wildlife” and people, suggesting that they perceive challenges in managing human-wildlife interactions and addressing community-related issues. Based on these findings, interventions should prioritize efforts to reduce human-wildlife conflicts and promote harmonious coexistence, particularly under the people and livelihoods/assets categories from the community’s perspective. Meanwhile, Service Providers and Duty Bearers emphasize that interventions should comprehensively address both people and wildlife outcomes to ensure balanced and sustainable development.

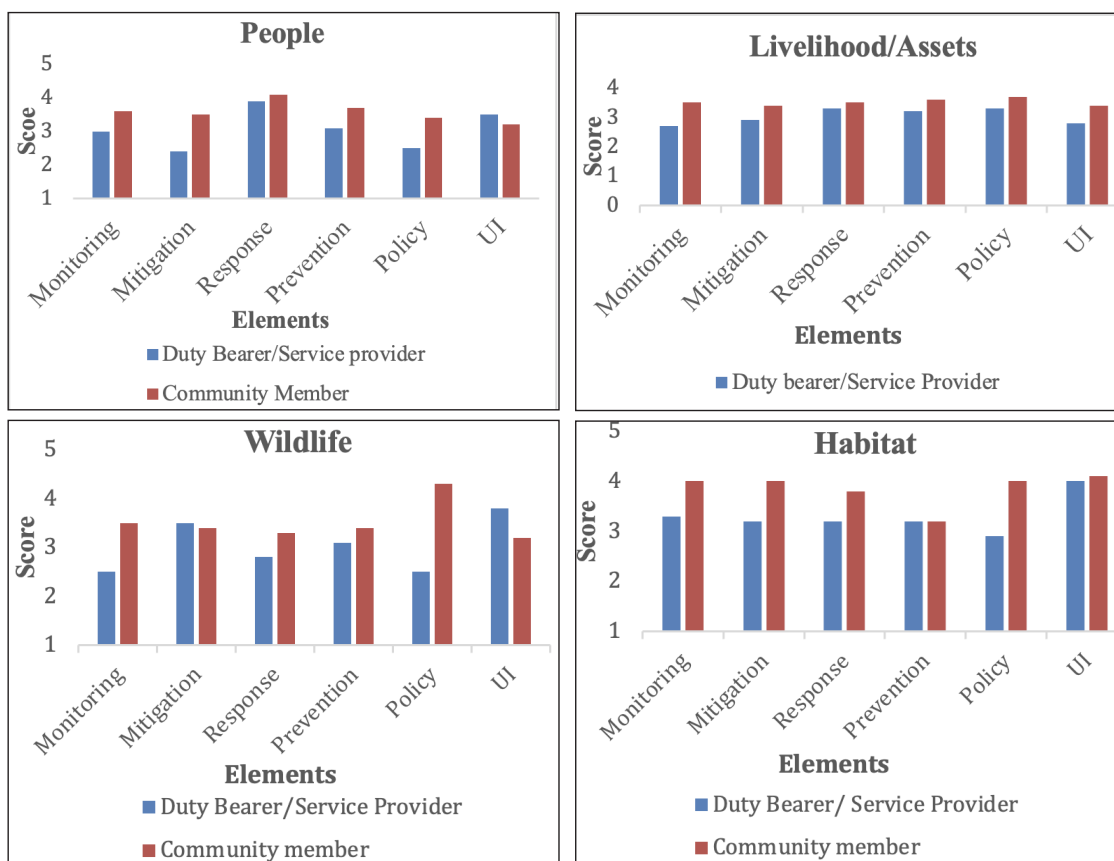


Figure 9: Results by elements for Chamgang Toed Chiwog

4.3.3 Dungdro Chiwog

In terms of impact and frequency, both Service Providers and Duty Bearers and community members identified tiger as the primary conflict species followed by bear and leopard. These animals were reported to cause the greatest damage as the community has lost 46 livestock to tiger and leopard (Gewog and DoL). Additionally, wild pigs, fox, dhole and wolf also impacted the community and livestock.

The data on the indirect negative effects of HWC reveals several key concerns experienced by the community. The most frequently reported effect was anger over losses due to wildlife (60 cases), highlighting the deep frustration and resentment caused by repeated damages to crops, livestock, and property. Fears for physical safety were also significant (48 cases), reflecting anxiety about potential encounters with dangerous animals such as bears or wild pigs.

A considerable number of respondents also reported feeling powerless to manage HWC (27 cases) and experiencing mental distress due to wildlife (26 cases), suggesting that the psychological toll of ongoing conflicts is substantial. The need to invest time in HWC management (29 cases) and frustration about having to adjust daily movement patterns (18 cases) further emphasize the disruption wildlife causes to people's routines and productivity.

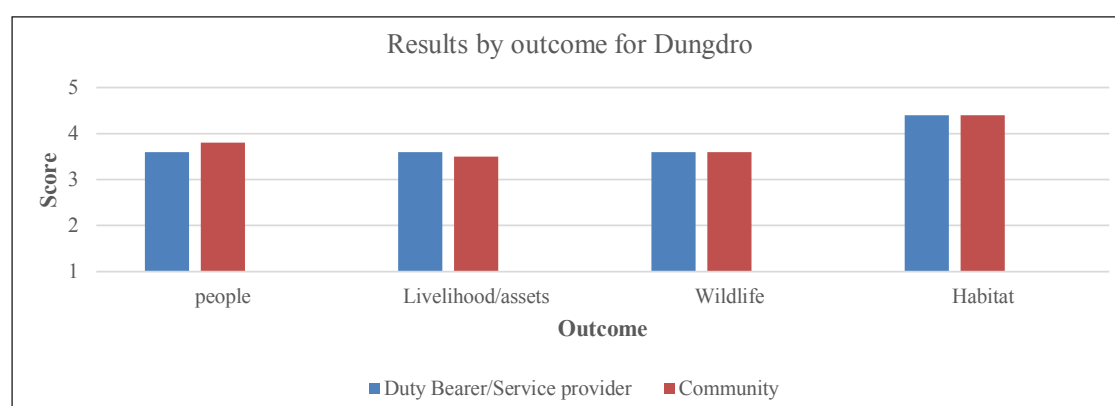


Figure 10: Results by outcome for Dungdro Chiwog

In Dungdro Chiwog, the people, livelihood/assets and wildlife categories received equally low scores across all outcome areas as rated by the Service Providers or Duty Bearers. This suggests that these three areas addressing community wellbeing, improving livelihoods, and managing wildlife-related challenges require greater attention and targeted interventions. Similarly, from the community's perspective, livelihood/assets and wildlife were rated the lowest, indicating that local residents are particularly concerned about limited livelihood opportunities and increasing wildlife-related issues. Therefore, focused and coordinated interventions are needed to enhance livelihood security, promote human-wildlife coexistence, and strengthen community resilience in Dungdro Chiwog.

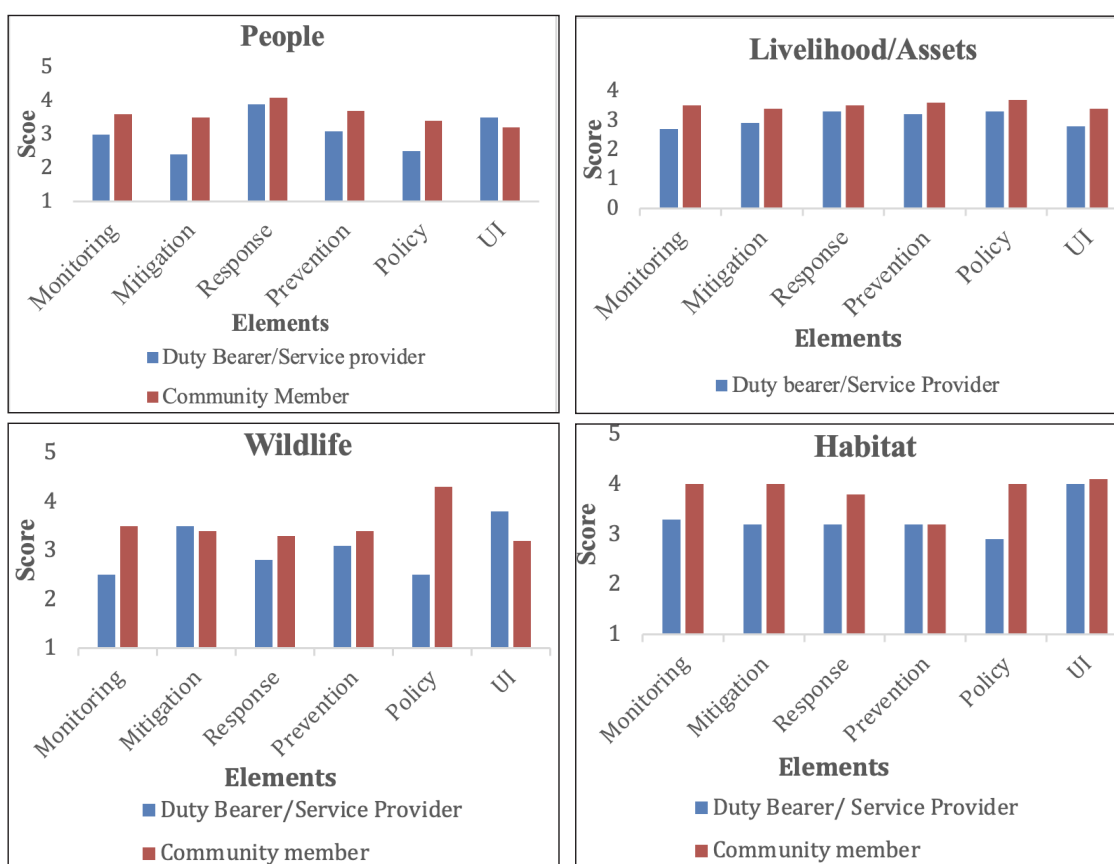


Figure 11: Result by elements for Dungdro Chiwog

4.3.4 Wangdro Chiwog

In terms of impact and frequency, both Service Providers and Duty Bearers, as well as community members, identified tigers as the primary conflict species, followed by bears, foxes, dholes, and wild pigs. These species have been responsible for the majority of HWC in the area, causing significant damage to livestock and in some cases, threatening human safety. Tigers and bears, in particular, are associated with high-impact conflicts due to their predation on livestock and potential danger to people, while foxes, dholes, and wild pigs contribute to frequent, though generally lower-severity conflicts. The combined presence of these species highlights the need for targeted conflict mitigation measures to protect both community livelihoods and wildlife populations.

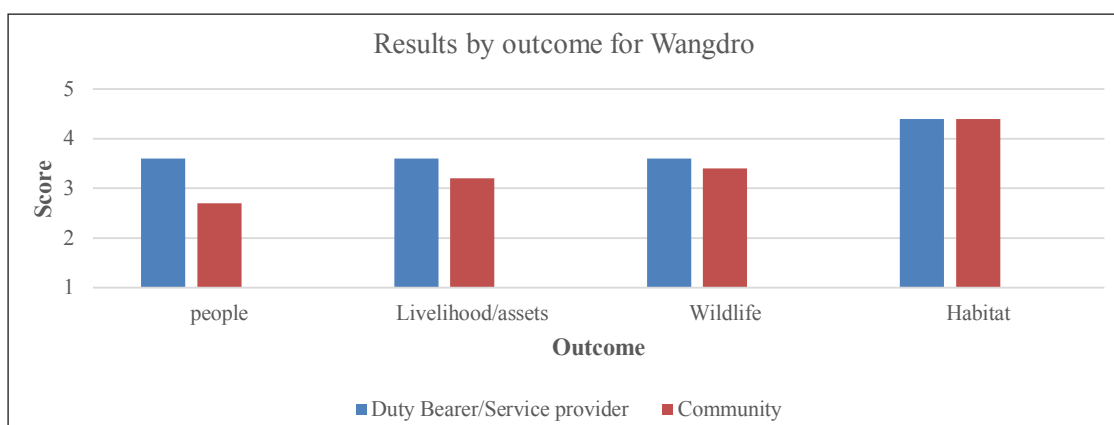


Figure 12: Result by outcome for Wangdro Chiwog

As revealed in figure 12, community members rated people as the lowest, followed by livelihoods, among the outcomes. This indicates growing concerns related to people's wellbeing, socio-economic stability and access to sustainable livelihood opportunities. On the other hand, Service Providers or Duty Bearers assigned the lowest scores to people, wildlife and livelihood/ assets, reflecting their perception of multifaceted challenges in these areas. These include difficulties in managing human-wildlife interactions, impacting livelihood security and economic challenges within the community. The findings highlight the need for integrated interventions that simultaneously strengthen community wellbeing, improve livelihood resilience, and promote sustainable coexistence between people and wildlife.

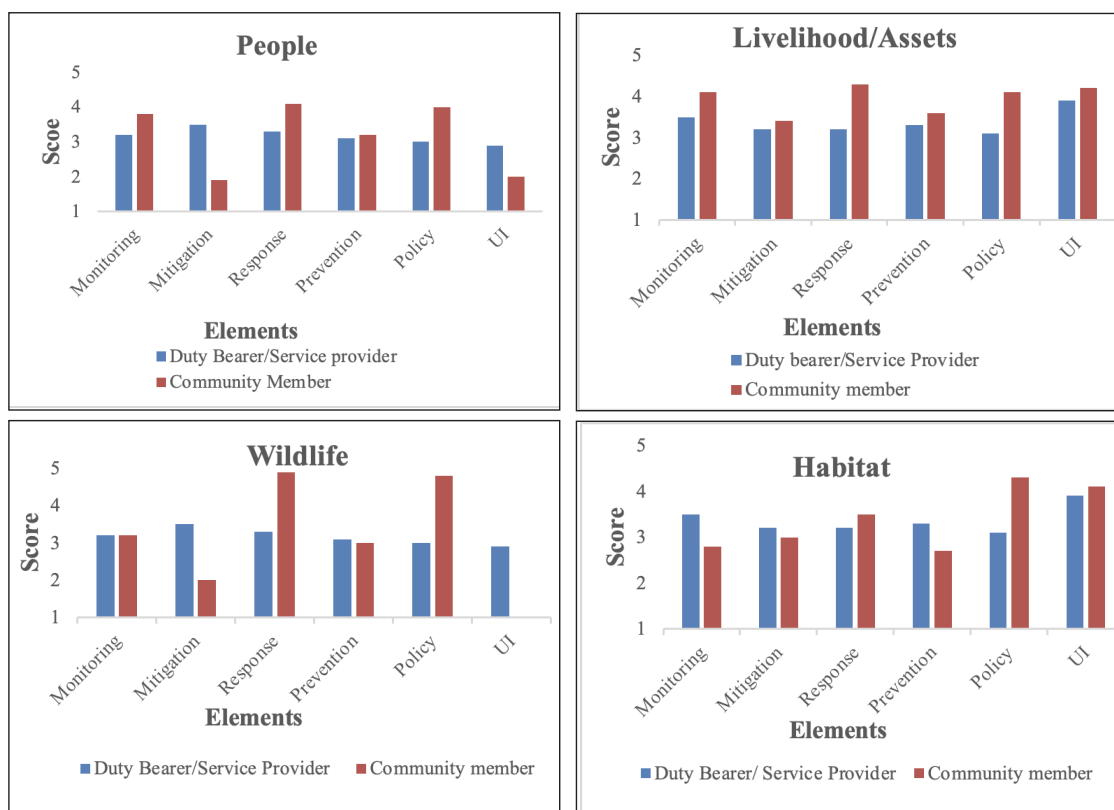


Figure 13: Result by elements for Wangdro Chiwog

4.3.5 Gaytala Chiwog

Both Service Providers and Duty Bearers have identified tigers, bears, and foxes identified as the most significant conflicts with people and wildlife. In terms of frequency, wild pigs, tigers, and foxes were reported as the species encountered most often, indicating that these animals repeatedly come into contact with human settlements, livestock, and crops. When considering impact, wild pigs, tigers, bears, and foxes were identified as causing the greatest damage, affecting livelihoods, property, and safety. These findings suggest that while some species may appear more frequently, others may cause higher levels of destruction, emphasizing the need for both preventive and responsive interventions tailored to the specific behaviors and risks posed by each conflict species.

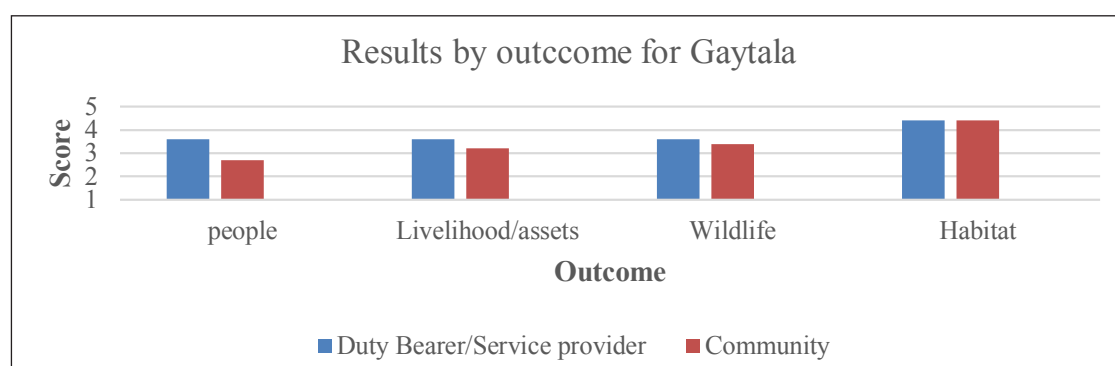


Figure 14: Result by outcome for Gaytala Chiwog

In Gaytala Chiwog, the people, livelihood/assets and wildlife categories received equally low scores across all outcome areas as rated by the Service Providers or Duty Bearers. This indicates that issues related to people's wellbeing, livelihood opportunities, and wildlife management requires greater attention and targeted interventions. In contrast, under the community's assessment, the people aspect received the lowest score, suggesting weaknesses in collective action and community-based support systems for addressing human-wildlife conflicts.

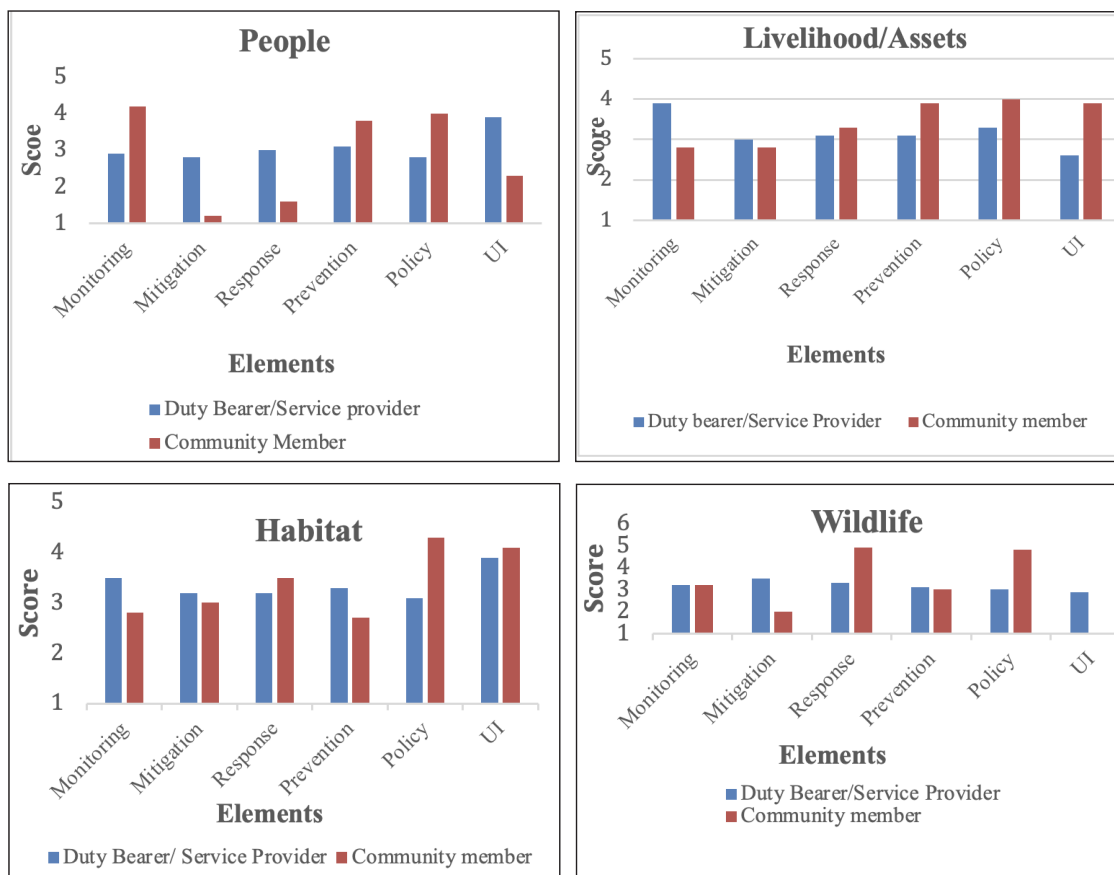


Figure 15: Result by elements for Gaytala Chiwog

5. Conflict to Co-existence Strategy

The C2C management strategies and action plan for Dagala Gewog is designed to shift the paradigm of HWC from confrontation to coexistence by tackling its underlying drivers, strengthening community adaptive capacity and institutionalizing sustainable conservation agriculture and landscape management practices. Grounded in insights from assessment findings, participatory stakeholder consultation on co-designing processes, the strategy emphasizes evidence-based interventions targeting the most conflict-prone area and species identified by local communities and service providers. These priority species include barking deer, Asiatic black bear, birds, wild pig, dhole, Bengal tiger, leopard, Sambar, among others that pose significant challenges to livelihoods and ecosystem balance.

Interventions are prioritized on safeguarding community livelihoods or assets through integrated measures that will enhance crop protection systems hence, improving the crop production. Further, the interventions will strengthen sustainable livestock management and diversify income generation through alternative livelihood opportunities. Central to these approaches are active community engagement with tailored programs that empower local stakeholders in managing human-wildlife interactions and implementing stewardship initiatives. Mitigation and prevention strategies

will combine structural and non-structural solutions including installation of physical barriers such as live-fencing, electric fencing and chain-link fencing. In addition, the deployment of early warning systems, initiation and enhancement of rapid response systems, adoption of nature-based solutions, wildlife resilient agricultural and livestock practices will be initiated and adopted to minimize crop and livestock losses.

Policy mainstreaming will ensure that wildlife conservation and conflict resolution mechanisms are embedded within local and national frameworks, supported by clear enforcement protocols. Continuous ecological monitoring will assess wildlife population dynamics, habitat conditions and intervention effectiveness, providing evidence-based for adaptive management. Habitat restoration and land-use planning will reduce spatial overlap between human settlements and wildlife, thereby decreasing conflict risk. Multi-stakeholder collaboration, encompassing local communities, service providers, government institutions, civil society organizations and non-governmental organizations will be established to sustain long-term outcomes. This adaptive ecosystem-based and participatory framework seeks to establish harmonious coexistence between people and wildlife, promoting ecological integrity while enhancing socio-economic resilience and community well-being.

The section outlines the strategic recommendations formulated to address the HWC challenges faced by the local communities of five Chiwogs under Dagala Gewog Administration. The strategy is organized around two overarching objectives, supported by four core strategies and 17 specific actions (Table 5). Among these actions, 14 actions are prioritized as short-term initiatives, while remaining three are identified as long-term interventions aimed at sustaining coexistence efforts.

The total projected financial outlay for the five-year Conflict to Co-existence (C2C) strategy plan (2026-2030) for Dagala Gewog under Thimphu Dzongkhag is estimated at Nu. 23.10 million. The funding is anticipated to be mobilized through the WWF IKI Project, other Conservation Partners and Royal Government of Bhutan (RGoB).

6. Monitoring and Evaluation

Timely and systematic monitoring and evaluation (M&E) of planned programs are essential to ensure the effective delivery of the intended outcomes and the overall success of the strategy. This section presents the approach and methodology for monitoring and evaluating the implementation of strategic actions.

A comprehensive Monitoring and Evaluation (M&E) Plan, as outlined in Table 5: Monitoring and Evaluation Framework, has been developed to align closely with the Implementation Framework. The plan serves as a guiding tool to assess progress, identify challenges, and make informed adjustments during implementation.

The M&E framework incorporates specific performance indicators designed to measure the success of each strategic action, providing a transparent and evidence-based approach in tracking progress. These indicators will help assess the effectiveness, efficiency and relevance of interventions over time.

In particular, output indicators will be used to monitor the tangible achievements of the actions outlined in Section 4, ensuring that activities are implemented as planned and that desired results are being achieved. Regular data collection, review meetings, and progress reports will form part of the monitoring process, promoting accountability, learning, and continuous improvement throughout the strategy's implementation cycle.

Ultimately, this structured M&E approach will help ensure that lessons learned are integrated into future planning and that the strategy remains adaptive, impactful, and responsive to evolving community and environmental needs.

6.1 Monitoring

Monitoring is a continuous and systematic assessment process designed to provide stakeholders with timely, accurate, and detailed information on the progress or delays of planned activities. It plays a crucial role in ensuring transparency, accountability, and clarity regarding the status of implementation. Through regular monitoring, stakeholders can make informed decisions, address challenges promptly, and adjust strategies as needed to stay aligned with the overall goals.

For the five-year strategy plan, the DFO, Thimphu management team will carry out annual monitoring exercises to review and evaluate progress made toward the achievement of strategic objectives. These assessments will help identify key accomplishments, highlight any gaps or challenges encountered during implementation, and recommend corrective measures to enhance effectiveness. By tracking progress annually, the DFO team can ensure that planned actions remain on course to achieve the intended outcomes while fostering adaptive management and continuous improvement throughout the strategy period.

6.2 Evaluation

The evaluation of the strategy plan will be conducted twice during the five-year implementation period to assess its effectiveness, efficiency, and alignment with the set objectives. The midterm review will take place in the last quarter of the second year, serving as a crucial checkpoint to evaluate progress made, identify challenges or deviations, and recommend necessary adjustments to improve implementation. This early assessment will help ensure that corrective measures are taken in time to enhance the likelihood of achieving the desired outcomes.

The final evaluation will be carried out in the last quarter of the fifth year, providing a comprehensive review of the overall performance, achievements,

and impacts of the strategy. This assessment will focus on determining the extent to which the intended goals and objectives have been met and will draw lessons to guide future strategic planning and management efforts.

Both evaluations will be conducted by a joint team comprising of internal members from DFO, Thimphu and external representatives including members from functional divisions of Department of Forests and Park Services (DoFPS). The inclusion of multiple institutions and perspectives will ensure that the evaluations are comprehensive, objective and transparent, thereby strengthening accountability and promoting evidence-based decision-making for improved strategy implementation.

Table 4: Implementation Plan and Financial Outlay

Outcome	Actions/Activities	Location	Category	Responsibility		Budget estimate (Nu. In million)	Potential funding source	Timeline
				Lead	Collaborator			
People able and willing to live alongside wildlife	1.1. Conduct public awareness, advocacy and education program to promote better understanding of co-existence between people and wildlife.	All Chiwogs	Short Term	DFO Thimphu	DoFPS, Dagala Gewog Administration	0.7	RGoB/ Conservation Partner	2026-2027
	1.2. Support the government to roll out compensation scheme that provides immediate relief and support mechanisms to victims of tiger conflict.	All Chiwogs	Short Term	DFO Thimphu	DoFPS, Dagala Gewog Administration	0.25	RGoB/ Conservation Partner	2026-2027
	1.3 Enhance Education and Awareness Programs on Human-Wildlife Conflict to schools and ECCD centers	Chamgang Toed	Short Term	DFO Thimphu	Dagala Gewog Administration, Thimphu Dzongkhag	0.3	RGoB/ Conservation Partner	2027-2028
	1.4 Supply of energy efficient Bukhari to reduce firewood consumption	Wangdro, Dungdro and Gaytala	Short Term	DFO Thimphu	Dagala Gewog	5.6	RGoB/ Conservation Partner	2027-2028
	1.5 Maintain/revive spring water source for herding communities	Dungdro Chiwog	Short Term	DFO Thimphu	Dagala Gewog Administration	0.500	RGoB/ Conservation Partner	2027-2028
	1.6 Conduct waste management awareness, setting up of designated collection areas and installation of CCTV camera and signboard to reduce HWC incidents	Chamgang Toed and Maed	Short term	DFO Thimphu	Dagala Gewog Administration	0.5	RGoB/ Conservation Partner	2027-2028

	1.7 Enhance the frequency of monitoring by forestry officials and other relevant agencies to effectively prevent illegal activities	All Chiwogs	Short Term	DFO Thimphu	DoFPS	0.3	RGoB/ Conservation Partner	2026
Livelihood/ Assets -secured against the presence of wildlife	2.1 Support for NWFP Enterprise Development and Value Addition for farm and forest products to enhance livelihoods	Chamgang Toed & Maed	Long term	DFO Thimphu	DoFPS, Dagala Gewog	1.5	RGoB/ Conservation Partner	2027-2030
	2.2 Facilitate Eco-tourism and Homestay Programs for sustainable income and vibrant livelihoods	All Chiwogs	Long term	DFO Thimphu	DFO Thimphu & Dagala Gewog	5	RGoB/ Conservation Partner	2027-2030
	2.3 Strengthen development of campsite and trails	Gaytala Chiwog	Long term	DFO Thimphu	Dagala Gewog	1.5	RGoB/ Conservation Partner	2027-2030
	2.4 Provide solar corral fencing to prevent livestock depredation by wildlife	Wangdro, Dungdro and Gaytala Chiwogs of Dagala	Short Term	DFO Thimphu	WWF Bhutan and Tarayana Foundation	3.2	WWF IKI	2026-2030
Wildlife thrives alongside people	3.1 Supply noise deterrent device along vulnerable stretch and conflict prone area	Chamgang Toed Chiwog	Short Term	DFO Thimphu	Dagala Gewog	0.45	RGoB/ Conservation Partner	2026
	3.3 Provide sound bells and nets to protect crops from birds' damage	Chamgang Maed	Short Term	DFO Thimphu	Dagala Gewog	0.3	RGoB/ Conservation Partner	2027
	3.4 Implement systematic wildlife population monitoring through the deployment of camera traps and drone-based surveys	All Chiwogs	Short Term	DFO Thimphu	Dagala Gewog	0.4	RGoB/ Conservation Partner	2029
Habitat sufficient to ensure sustainable wildlife population	4.1 Support sanitation operation with reduced timber waste in forest floor to promote Tsamdro management	Chamgang Toed	Short Term	DFO Thimphu	DoFPS/ DoL Dagala Gewog Administration	1.5	RGoB/ Conservation Partner	2027-2030
	4.2 Restore degraded wildlife habitats through enrichment plantation and introduction/promotion of native plant species	Chamgang Toed	Short term	DFO Thimphu	Dagala Gewog	0.5	RGoB/ Conservation Partner	2027-2028

	4.3 Create water holes to ensure the availability for wildlife during dry season to reduce human wildlife conflict, and enhance habitat quality for biodiversity conservation and forest fire suppression.	Chamgang Toed and Maed	Short term	DFO Thimphu	DFO Thimphu & Dagala Gewog	0.3	RGoB/ Conservation Partner	2026-2027
Total budget (Ngultrum in million)						23.10		

Table 5: Monitoring and Evaluation Framework

Outcome	Actions/Activities	Action Indicator	Baseline	Unit	Yearly Target				
					I (2026)	II (2027)	III (2028)	IV (2029)	V (2030)
1. People-able and willing to live alongside wildlife	1.1. Conduct public awareness, advocacy and education program to promote better understanding of co-existence between people and wildlife.	Number of community outreach and educational programs conducted and report produced.	2	Report	1	1	0	0	0
	1.2. Support the government to roll out compensation scheme that provides immediate relief and support mechanisms to victims of tiger conflict.	Number of community members compensated	2	Report	1	0	1	0	0
	1.3 Enhance Education and Awareness Programs on Human-Wildlife Conflict to schools and ECCD centers	Number of students trained in HWC.	2	Report	500	0	500	0	0
	1.4 Supply of energy efficient Bukhari to reduce firewood consumption	Number of High Heat Retention Bukhari supplied	168	Report	0	0	0	168	0
	1.5 Maintain/revive spring water source for herding communities	Number of spring-water source maintained/revived	2	Report	0	1	1	0	0
	1.6 Conduct waste management awareness, setting up of designated collection areas and installation of CCTV camera and signboard to reduce HWC incidents	Number of waste management awareness conducted and CC camera and signboard installed	5	Number	1	1	1	1	1
	1.7 Enhance the frequency of monitoring by forestry officials and other relevant agencies to effectively prevent illegal activities	Number of monitoring conducted	5	Number	1	1	1	1	1

2. Livelihoods/asset s-secured against the presence of wildlife	2.1 Support for NWFP Enterprise Development and Value Addition for farm and forest products to enhance livelihoods	Number of Enterprise Developed	5	Number	0	2	3	0	0
	2.2 Facilitate Eco-tourism and Homestay Programs for sustainable income and vibrant livelihoods	Number of home stay and ecotourism facilitated	5	Number	0	0	5	0	0
	2.3 Strengthen development of campsite and trails	Number of camp site and trails developed	3	Number	0	1	1	1	0
	2.4 Provide solar corral fencing to prevent livestock depredation by wildlife	Number of HHs	38 (small scale by ICIMOD)	38	20	18	0	0	0
	3.1 Supply noise deterrent device along vulnerable stretch and conflict prone area	Number of noise device supplied	5	Number	5	5	5	5	5
3. Wildlife-thrives alongside people	3.2 Reseeding of Tsamdro areas encroached by unpalatable species and woody vegetation	Tsamdro area reseeded	0	Acre	2	2			
	3.3 Provide sound bells and nets to protect crops from birds' damage	Number of ring-bells and nets supplied	5	Report	0	0	5	0	0
	3.4 Implement systematic wildlife population monitoring through the deployment of camera traps and drone- based surveys	Number of wildlife population monitoring conducted	5	Report	1	1	1	1	1
4. Habitat-sufficient to ensure sustainable wildlife population	4.1 Support sanitation operation with reduced timber waste in forest floor	Acres of sanitation conducted	5	Acres	0	1	1	1	0
	4.2 Restore degraded wildlife habitats through enrichment plantation and introduction/promotion of native plant species	Acres of enrichment plantation carryout	5	Acres	1	1	1	1	1
	4.3 Create water holes to ensure the availability for wildlife during dry season to reduce human wildlife conflict, and enhance habitat quality for biodiversity conservation and forest fire suppression.	Number of waterholes created maintained/ revived	10	Number	2	2	2	2	2

7. Conclusion

The Conflict to Co-existence (C2C) Strategy for Dagala Gewog offers a clear, community- focused plan for managing Human-Wildlife Conflict (HWC) over five years. The strategy is based on consultations with local communities and key stakeholders, participatory assessments, and co-design workshops. It describes specific actions across four main areas: People, Livelihoods/Assets, Wildlife, and Habitat, further it also includes six elements such as Policy, Prevention, Response, Conflict Understanding, Mitigation, and Monitoring etc.

The strategy highlights the need to keep wildlife habitats safe, protect community livelihoods and assets, and encourage co-existence through programs that develop skills and promote community involvement. It aims for a balanced approach that aligns conservation goals with sustainable development, creating a positive relationship between people and wildlife.

To put this strategy into action, strong financial support and active involvement from the Dagala community are crucial. There must also be coordinated efforts among government agencies, conservation groups, and other partners. Effective management needs solid monitoring systems in place. Similarly, and more importantly, the financial support is anticipated from Conservation partners including WWF IKI Project which will end in early 2028. Some financial support is also expected from Royal Government of Bhutan (RGoB) funding through local government programs. For the successful implementation of this strategy, a total amount of Nu. 23.10 million is required

By following this strategy, Dagala Gewog is set to improve ecological resilience, protect community livelihoods, and support lasting human-wildlife co-existence. With ongoing teamwork and innovative ideas, Dagala Gewog is expected to become a model for healthy relationships between humans and wildlife, ensuring a strong and prosperous future for both communities and wildlife.

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