



Human-Wildlife Conflict Management

Conflict to Coexistence (C2C) Strategy for
Tashicholing Gewog, Samtse (2025-2029)



Divisional Forest Office-Samtse
Department of Forests and Park Services
Ministry of Energy and Natural Resources



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Abbreviations

C2C	Conflict to Coexistence
DoFPS	Department of Forests and Park Services
DFO	Divisional Forest Office
GIS	Geographic Information System
HEC	Human Elephant Conflict
HHs	Households
HWC	Human-wildlife Conflict
IKI	International Climate Initiative
M&E	Monitoring and Evaluation
Mtr	Meter
NWFPs	Non-wood Forest Products
%	Percentage
QRT	Quick Response Team
RGoB	Royal Government of Bhutan
SDG	Sustainable Development Goals
SMART	Spatial Monitoring and Reporting Tool
sq	square kilometer
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 Tashicholing 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 Tashicholing 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 Tashicholing Gewog and the DFO Samtse 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 Tashicholing gewog is the result of a collective and dedicated effort by the staff of the Divisional Forest Office, Samtse. The Division sincerely acknowledges the commitment, professionalism, and teamwork demonstrated by all officers and staff who contributed their time, experience, and technical inputs toward the successful formulation of this strategy. Their sustained engagement throughout the process ensured that the document is comprehensive, practical, and grounded in field realities.

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

The Division would like to extend special appreciation to Mr. Tshering Gyeltshen of DFO Samtse, 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 Tashicholing Gewog in the years to come.

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1. Introduction

Bhutan has been at the forefront for conservation of nature and protection of environment. The country is well known for the initiatives taken to protect biodiversity and sustainability of natural resources and received many prestigious accolades for conservation effort. As a developing country, Bhutan is still dependent on agriculture as a major source of income and livelihood with about 60% of population dependent on it. The agriculture practice in Bhutan mainly comprises of subsistence farming focusing on crop production, rearing of livestock and collection of Non wood forest products (NWFPs) with limited commercial activities.

Human Wildlife Conflict (HWC) is a major constraint for agricultural production. The conflicts occur in the form of crop depredation, livestock predation and property damages. Crop depredation is the most common form of conflict experienced in the country. HWC is a big challenge that impairs in fulfilling sustainable development goals (SDGs) aiming to eradicate poverty, achieve economic prosperity, gender equality, ensure social well-being, promote sustainable management and use of natural resources (Yeshey et al., 2023).

Samtse Dzongkhag is located in the south-western part of Bhutan extending from 26°43' to 27°18' latitude and 89°15' to 89°49' longitude. The Dzongkhag covers an area of 1,300.85 sq. km with the elevation ranging between 200 to 4,400 meters above sea level and shares borders with the Indian State of Sikkim and West Bengal in the west and south, and in the north with Jigme Khesar Strict Nature Reserve (JKSNR) and parts of Haa and Chhukha district in the east. According to the FIRMS data between 2019 to 2024 the Dzongkhag experience human wildlife conflicts mainly with species such as Elephants, Common Leopard, Asian Black Bears, Guar, Macaques, and Wild pigs.

HWC is a complex issue influenced by diverse factors and need to be studied through holistic approach. C2C approach underscores addressing HWC through collaborative and process -driven effort, with technical support of interdisciplinary expertise including local communities. The approach is aimed to come up with scalable solutions with immediate “win-win” outcomes at the end.

With the financial support of WWF – IKI project, Divisional Forest Office, Samtse has developed conflict to co-existence (C2C) strategy for two of the highest HWC occurring gewogs within the jurisdiction. Based on the available data and HWC cases, the Division prioritized Tashicholing and Samtse gewogs owing to the high incidents of elephant damages compared to the rest of the gewogs. The C2C approach comprises seven steps of which three steps; context screening, stakeholder identity and analysis, and the field assessment was conducted before June 2024. Field assessment was mainly conducted in the form of social survey to gather information regarding current scenario

of HWC within the two prioritized Gewogs. A total of 305 and 300 households were enumerated respectively at Tashicholing and Samtse Gewogs through random sampling that comprised of both beneficiaries and stakeholders using SMART apps in mobile phones.

This document is an outcome of the consultation program that was carried at Tashicholing gewog in the month of October 2024 to address HWC through the integrated approach following the principles of Conflict to Coexistence.

2. Goal and Objectives

Goal: : *"To ensure harmonious co-existence between wildlife and people through holistic approach"*

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

For the purpose of understanding the context of HWC in the targeted gewog, social survey was conducted to assess the situation. The survey covered two components 1; beneficiaries and 2: stakeholders. This survey was conducted in the month of June 2024 with the support of WWF-IKI project.

Tashicholing gewog is located about 50 km away from the Dzongkhag headquarter towards west and has an area of 26.9 sq km. The gewog shares borders with Pemaling gewog in the north and Namgaycholing gewog in the east and with districts of Kalimpong and Jalpaiguri under Indian State of West Bengal across the border. As per the annual statistical record of 2018 the gewog has population of 5,769 with 653 households. The Chapramari Wildlife Sanctuary and Gorumara National Park are located at close proximity across the Indian border.

The Drungkhag headquarter is located within the gewog including many other regional offices such as Royal Bhutan Police, Royal Bhutan Army, financial institutions such as Bank of Bhutan, Bhutan National Bank, and Bhutan Development Bank Limited. Also, the Gyalsung Academy at Jamtsholing is located within the Gewog. The Gewog has five chiwogs namely; Singaygang, Norjangsa-Peljorling, Dangling-Gangjug, Dewachen-Zhiwaling and Belboteng.

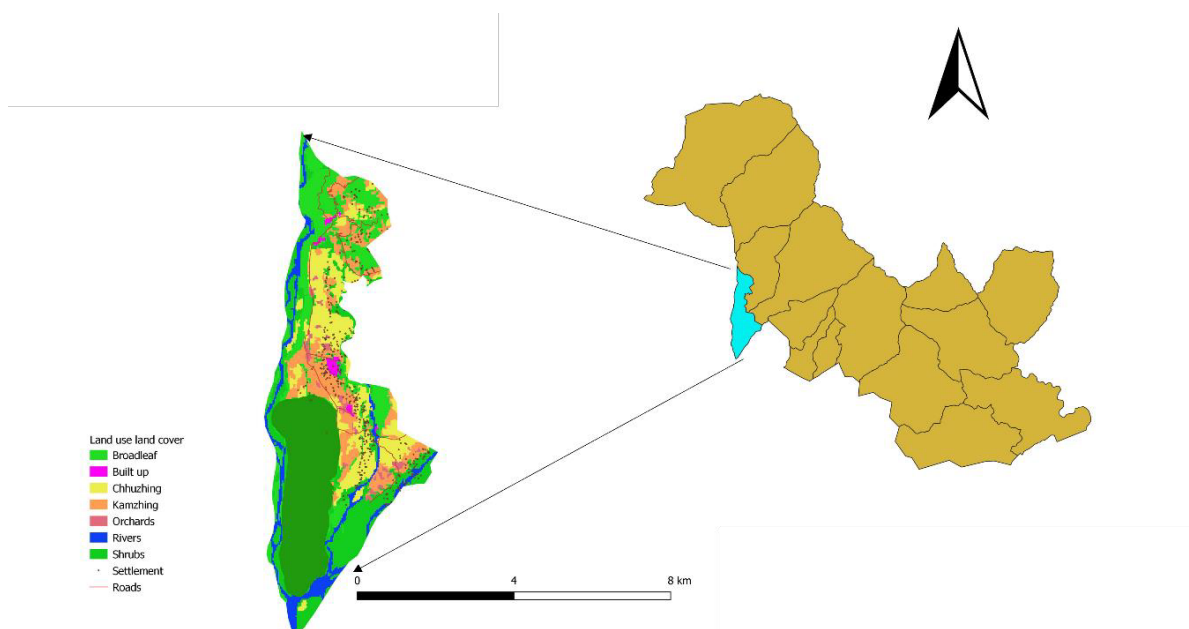


Figure 1: Study area

3.2 Methods: C2C Framework

To assess the current state of HWC in Tashicholing gewog, a social survey was conducted through interviews in five chiwogs, using random sampling proportional to the number of households in each chiwog. The survey employed the Spatial Monitoring and Reporting Tool (SMART) app, preloaded with questionnaires designed for HWC assessment based on a framework of six elements and four outcomes. Interviews were conducted at two levels: with community members residing within the gewog and with service providers or duty bearers operating in the area. Additionally, a survey was conducted with one C2C manager within the jurisdiction. To gather more detailed insights into HWC-related issues, Focus Group Discussions were also organized within each chiwog.

The C2C approach aims to enhance the management of HWC by engaging all relevant stakeholders and integrating management interventions through comprehensive planning, implementation, and monitoring. It provides a structured framework for effective management, offering both short-term and long-term solutions that are adaptable to the specific scale and context of a region.

This approach emphasizes the need to fully acknowledge the complexity of HWC, requiring skilled expertise across multiple disciplines. Developing appropriate structures, building critical capacities, and establishing meaningful processes demand significant time and effort. Such investment is essential to secure the participation and commitment of all stakeholders, which forms the foundation for sustainable, long-term solutions.

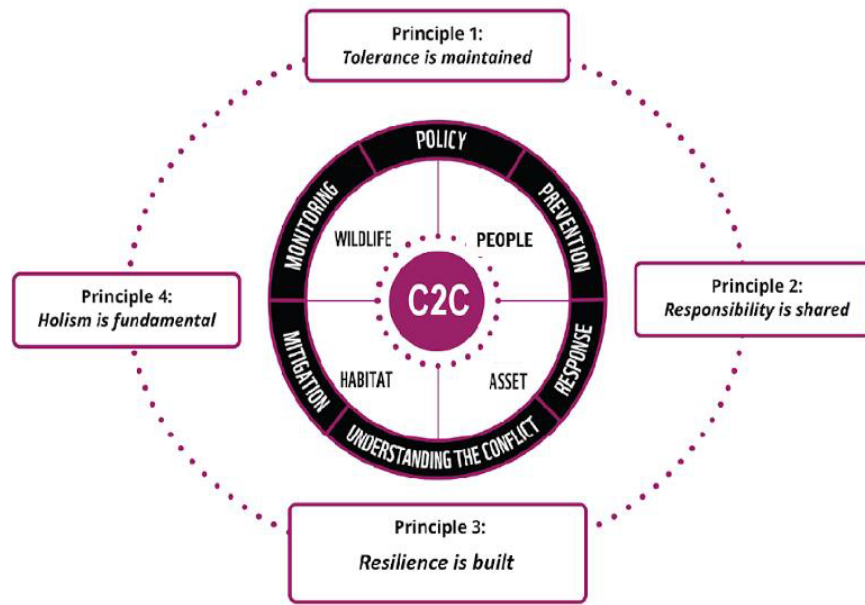


Figure 2: Framework of C2C Approach

The C2C approach is on the basis of four principles namely; tolerance, shared responsibility, building resilience and maintaining holism. The approach ultimately aims to achieve four ultimate outcomes in the context of managing HWC. The four outcomes are; people, wildlife, asset and habitat represented in the inner circle of Figure (2). These four outcomes must be achieved and realized by executing actions within the framework of six HWC management elements as depicted in the middle circle of Figure (2), with actions tailored to the specific context. These six elements of HWC management are interdependent and must be addressed holistically and not in isolation to achieve the four outcomes.

The C2C approach acknowledges the necessity of implementing both short-term and long-term measures to address HWC effectively. It highlights the significance of fostering and maintaining trust among stakeholders throughout the process, with a strong emphasis on tackling the root causes of the issues to ensure impactful and sustainable outcomes. This approach follows a seven-step process, as illustrated in Figure 3.

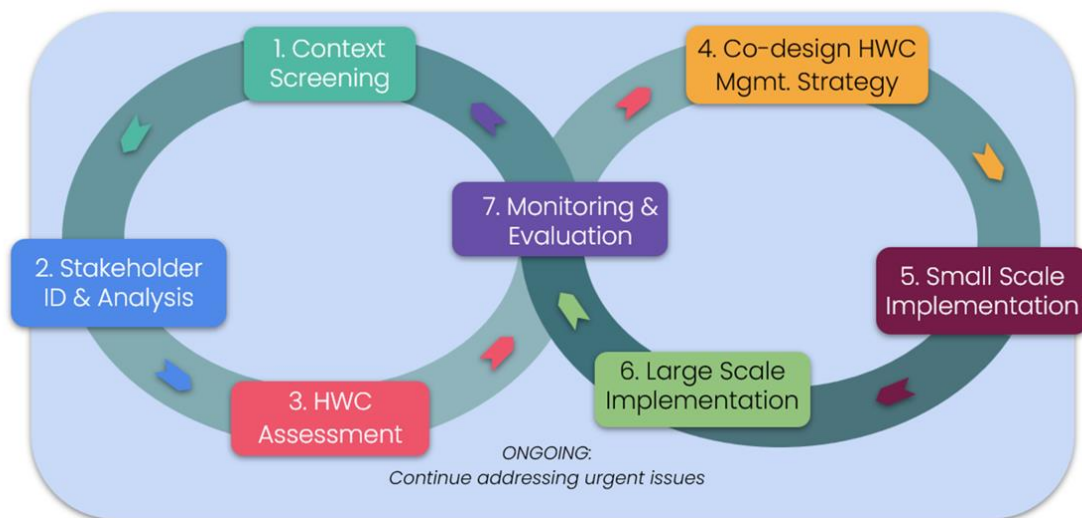


Figure 3: The C2C methodology for HWC Management

3.2.1 Context Screening

Context screening was carried out to identify and understand the details of the landscape and the situation pertaining to HWC following format specified in C2C tool 4. Prior to the commencement of this step, background information was collected from the available documents and literature about the gewog from various sources. The data was sourced from relevant field offices and through online. This step was focused to understand the current scenario of the conflict and the roles played by various stakeholders in addressing the issue.

The context screening was mainly based on six themes, first the description of the site with collection of information on demographics, geography, threats and the stakeholder. Secondly, information was gathered on the human-wildlife trends pertaining to the species in conflict, the type of conflict and its frequencies. Thirdly efforts were put to understand the causes and drivers of HWC which were broadly categorized into anthropogenic and natural drivers. In the fourth, initiatives were made to also understand the social scenario of the locality to know the composition. Fifth was on wildlife species present, their movement and behavior and finally on the laws and policies encompassing its management.

Substantial information was gathered from the office of Tashicholing gewog with regards to facilities, support structures, issues and challenges faced around the year. In this step efforts were made to understand the intensity of the conflict and frequency of its occurrence and also to know the causes and drivers of HWC which can broadly be categorized into anthropogenic and natural drivers.

3.2.2 Stakeholder Identification and Analysis

Addressing HWC demands a holistic approach that requires participation from multiple stakeholders. The process involved listing down all the stakeholders and analyzing on their roles within the purview of HWC management. The roles of duty bearers were analyzed based on the ratings provided between 1 to 5 scale on three aspects namely; Interest, Influence and Availability. The importance of a stakeholder was based on the scores achieved at the end and prioritized accordingly. Furthermore, a group account was created in the WhatsApp to involve relevant stakeholders for discussion in understanding the scope and roles of individual stakeholders. These stakeholders belonged from government offices, corporations, security personnel, shop owners and private individuals using the C2C format tool 5.

Table 1: Stakeholder Analysis Matrix

Stakeholders	INTEREST in HWC and its management in this landscape (1 - 5)	INFLUENCE on long-term success of a HWC management strategy (1 - 5)	AVAILABILITY to participate in the co-design of a HWC management strategy (1 - 5)	Category
Dasho Drungpa	5	5	5	High interest, influential and available
Divisional Forest Office, Samtse	5	5	5	
Tashicholing Range Office	5	5	5	
Singaygang Tshogpa	5	5	5	
Peljorling_Norjang Tshogpa	5	5	5	
Dewachen_Zhewaling Tshogpa	5	5	5	
Dangling_Gangju Tshongpa	5	5	5	
Belboteng_Kangduphu Tshogpa	5	5	5	
Gewog Livestock Extension	5	5	5	
Gewog Agriculture Extension	5	5	5	
Tashicholing Gup	5	5	4	High interest, influential and but slightly low availability
Gyalsung Academy, Jamtsholing	5	5	4	
Dzongkhag Agriculture Officer	5	5	4	
Member of Parliament	5	5	3	
Dzongkhag livestock officer	4	5	4	High Influence but comparatively low interest and availability
District Administration	4	5	4	
Media	4	5	4	
Farmers	5	3	5	High interest and Availability but low influence
Mangmi	5	4	4	High interest but low influence and availability

Royal Bhutan Police	4	4	4	Mid-level in interest, influence and availability
Royal Bhutan Army	3	4	4	
Pakhagoan Community Forest	4	3	4	Comparatively high interest but low influence and availability
Tashicholing Dratshang	4	3	4	
Teachers	4	3	2	
Hospital	3	2	3	Low influence, interest and availability
BPC	3	2	2	

The stakeholder analysis reveals varying levels of interest, influence, and availability in contributing to HWC management in Tashicholing Gewog. As shown in Table 1, key office bearers such as the Drungpa, Divisional Forest Office, Tashicholing Range Office, Chiwog Tshogpas, and Agriculture and Livestock Extension exhibit very high levels of interest, influence, and availability. Similarly, stakeholders like the Member of Parliament, Gup, Dzongkhag Agriculture Officer, and Gyalsung Academy demonstrate high interest and influence, though their availability is relatively lower. In contrast, institutions such as the hospital and Bhutan Power Corporation (BPC) show limited interest, influence, and availability.

3.2.3 HWC Assessment

In order to understand the situation of HWC under Tashicholing gewog, a survey was conducted with the community members and the stakeholders. Through the survey the current scenario on the six elements such as the prevention, response, mitigation, interaction, policy and governance, and monitoring was assessed. In this step the capacities of communities and various stakeholders were assessed to understand the interactions and their causes.

The survey was conducted from 3rd to 14th June 2024. The sample size for this survey was determined using Yamane's formula at 95% Confidence interval:

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

n represents the sample size, N the total population, and e is the desired margin of error (0.05).

Based on this formula, n = 284 households were selected for the interview out of total N= 980 households within the gewog. Subsequently the sample size at the chiwog level was calculated based on the total households in the chiwog out of the total population in the gewog multiplied by the total samples. In addition, for the service providers/ duty bearers a total of 21 respondents were listed that are based within the gewog jurisdiction.

Table 2: Household survey from each Chiwog under Tashicholing

Sl no.	Name of Chiwog	No. of Households Enumerated
1	Singaygang	44
2	Norjangsa	67
3	Belpoteng	83
4	Dewachen	37
5	Dangling	53
Total Hhs		284

The survey questions were designed to evaluate on the strength and weaknesses of the six elements in fulfilling HWC intervention. Some of the purposes of the assessment were to assess the effectiveness of the current intervention across the six elements and four outcomes. This assessment is also targeted to identify the gaps in the current scenario and gain insights into the perspectives of various stakeholders on HWC, understanding their use of the available programs and policies. Also, the assessment is intended to uncover the discrepancies and challenges faced by the implementors.

3.2.4 Co-design

To develop a holistic and pragmatic strategy a collaborative effort is needed from both stakeholders and community members. For the codesign of strategies participants were sensitized on general causes of HWC including the present scenario around the world and within Bhutan. A total of 301 community members were involved for the codesigning process comprising of 190 male and 111 female participants across the five chiwogs. The participants were also briefed on concepts and steps of C2C approach. In the process of highlighting on the concepts greater emphasis were made on the four principles which are; maintaining tolerance, sharing responsibility, building resilience and maintaining holism. Further the participants were also introduced on the six elements such as; policy & governance, prevention, understanding the interactions, response, mitigation and monitoring that are essential to achieve the results in the four outcome areas of People, Livelihood & Assets, Wildlife and Habitat.

The outcome of the step was coming up with the comprehensive plan of actions and proposals to address human elephant conflicts in particular. This exercise was carried out through group work and detailing on the nature of intervention with specification on the sites, tenure and urgency. Additionally, estimated budgets for the implementation were prepared was proposed along with mention of lead agency and the collaborator.

4 Result and Discussion

4.1. Demographic Information of Survey Respondents

Understanding the demographic profile of the community was essential for capturing perspectives across diverse social groups and ensuring an inclusive and accurate representation of their experiences and needs. Efforts were made to achieve gender-balanced participation in the survey. However, the final report consisted of 64.86% male respondents (n = 179) and 35.14% female respondents (n = 97), indicating a higher representation of males.

With respect to age distribution, the majority of respondents 47.83%, (n = 132) were between 41 to 60 years of age, followed by those in the 19–40 age group 37.68%, (n = 104). Respondents aged over 60 years accounted for 37% (n = 54), while a small proportion 1.09%, (n = 3) fell within the 15 to 18 age group.

In terms of education background, a substantial proportion of respondents 51.42 %, (n = 145) had no formal education, while 27.30% (n = 77) had completed primary education. Additionally, 14.54% (n = 41) had secondary-level education, and 5.32 % (n = 15) had attended Non-Formal Education (NFE) programs. Only 1.06% (n = 3) had attained tertiary education, while 0.35 % (n = 1) fell under other educational categories.

Overall, the demographic profile indicates that the community is predominantly composed of subsistence farmers dependent on agriculture and livestock farming as their primary sources of livelihood and income. Understanding these demographic and socio-economic characteristics is critical for designing effective and targeted interventions for the management of HWC in the gewog.

4.2 Overall Results of Tashicholing Gewog

This is the result of the assessment carried in June 2024. The assessment team had enumerated 19 stakeholders and 276 community members. As per the report species such as Macaques, Porcupine, Wild Pig, Elephant, Birds, Rabbit, Snakes, Rodents, Barking Deer, Leopard, Civet, Monitor Lizard, Wild Dog, Bear, Marten and Eagle are the main conflict species with conflicts.

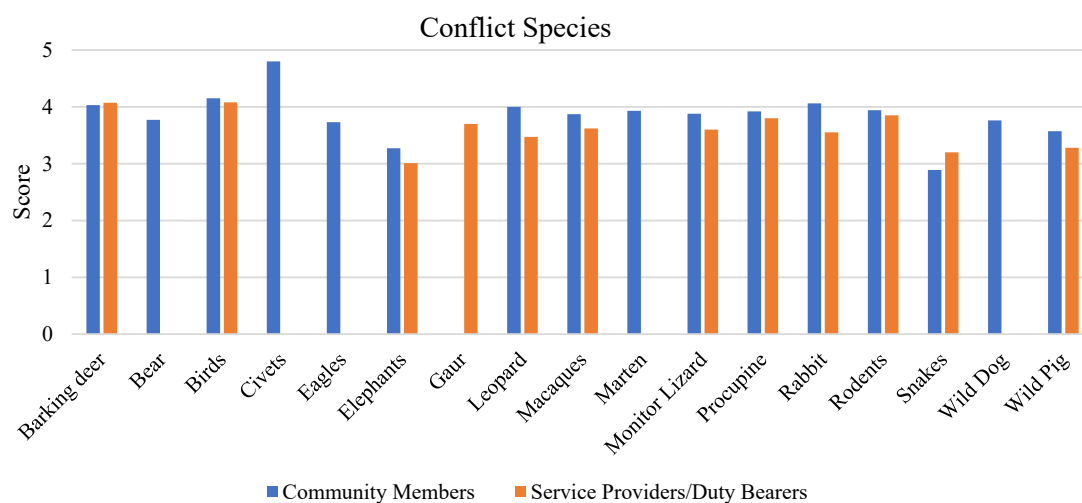


Figure 4: Overall Conflict Species of Tashicholing gewog

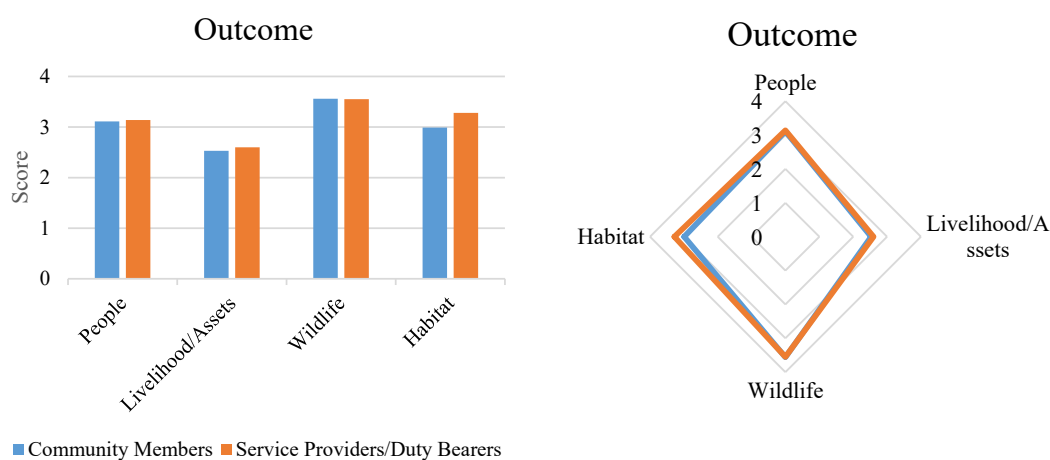


Figure 5: Overall Outcome of Tashicholing gewog

The current scenario and status of HWC management under Tashicholing gewog indicated ratings below 4 in all the four outcomes namely; People, Livelihood/assets, Wildlife and Habitat. The least score was observed for livelihood and assets. This could be attributed to the heavy destruction of crops and properties in whole of the gewog by the human elephant conflict in particular.

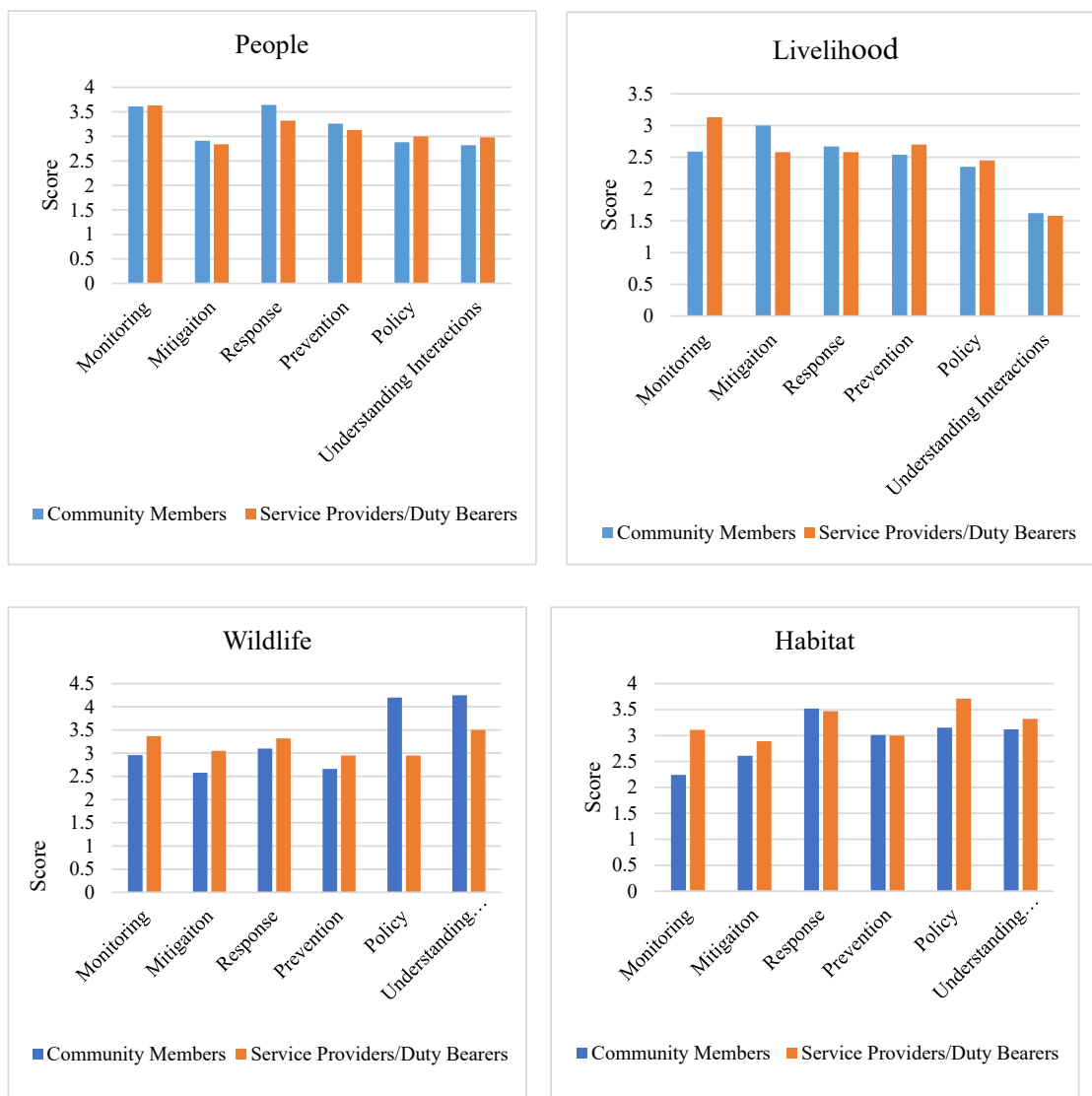


Figure 6: Results of four Outcome against six Elements in Tashicholing gewog

The four outcome parameters were further related and compared with the six elements namely; prevention, response, policy, mitigation, monitoring, and understanding the interaction. Referring the people and livelihood graphs it indicated slightly more emphasis needs to be provided to mitigation and prevention. Moreover, greater emphasis needs to be provided towards understanding the interaction. For the outcomes wildlife and habitat, the results indicated greater need of focus on mitigation, monitoring and prevention.

Chiwog wise results

4.2.1 Singaygang Chiwog

The chiwog is located at lower most site of the gewog with total of 109 households. The people are mostly dependent on cultivation of paddy and areca nut. As per the assessment result some of the most conflicting species

under the chiwog comprises of Elephants, Macaques, Wild Pig, Birds, porcupine and rabbits. However, the biggest conflict is experienced with elephants destroying considerable quantities of crops such as areca nut and paddy.

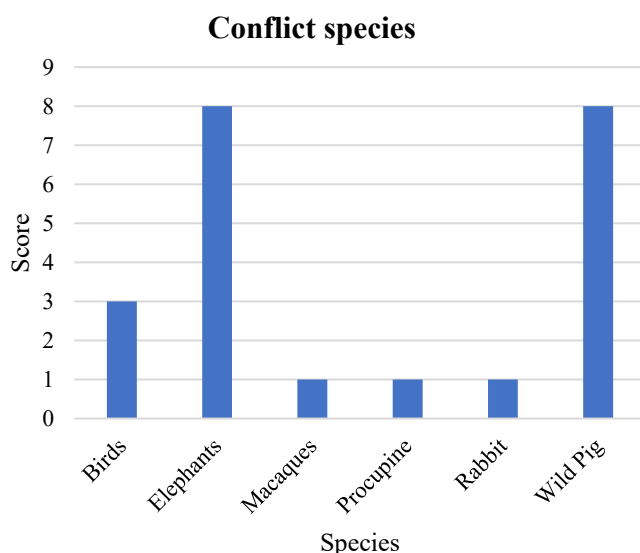


Figure 7: Conflict Species of Singaygang chiwog

The current scenario and status of HWC management at Singaygang chiwog indicate ratings below 4 in all the four outcomes namely; People, Livelihood/ assets, Wildlife and Habitat. The least score was observed for livelihood and assets. This could be attributed to the heavy destruction of crops and properties in whole of the gewog by the human elephant conflict in particular.

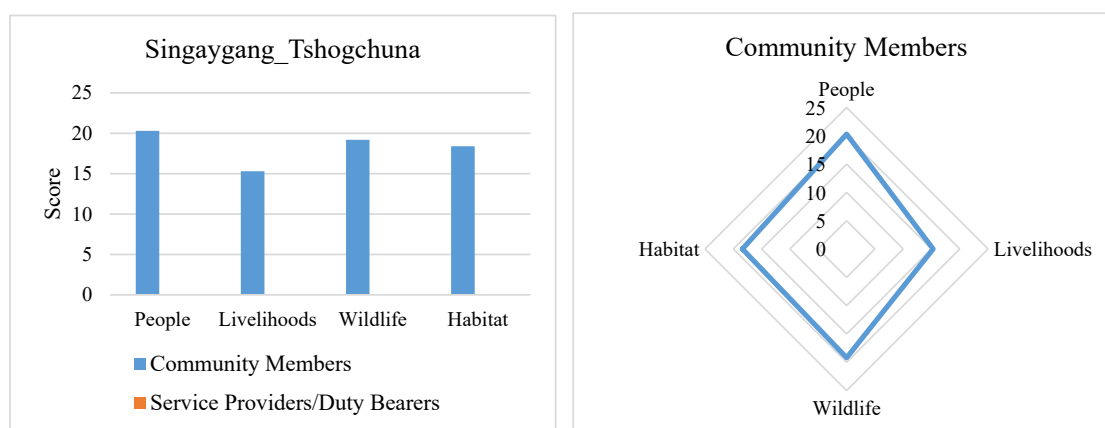


Figure 8: Outcome of Singaygang chiwog

The outcome parameters were further related and compared with the six elements namely; prevention, response, policy, mitigation, monitoring, and understanding the interaction. The outcome graph on people showed that more focus needs to be given to mitigation and understanding the

interactions whereas for the outcome livelihood and assets least score was observed for understanding the interaction and in monitoring.

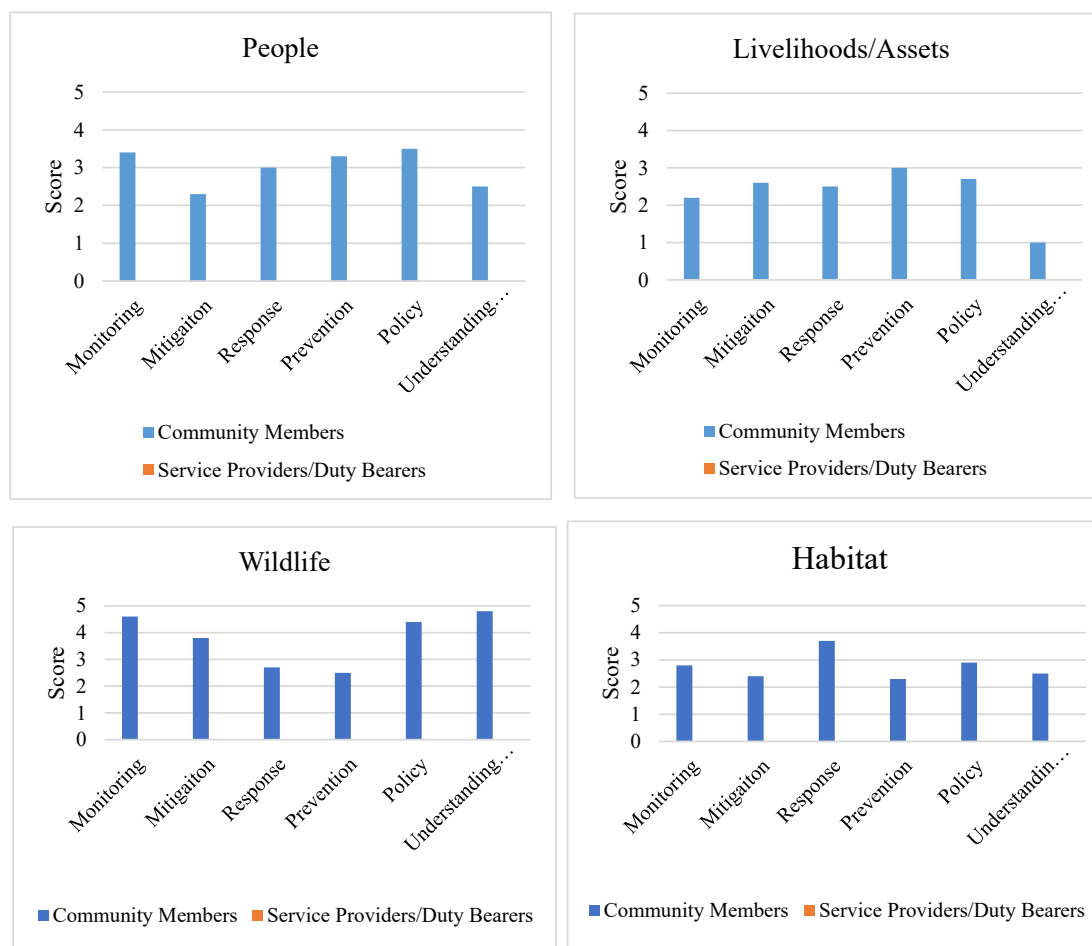


Figure 9: Six Elements of Singaygang chiwog

The outcome graph for wildlife indicates that ensuring response and prevention has the least score for Singaygang Chiwog with better score for understanding the interaction, policies and monitoring. For the outcome habitat highest score was observed for response and the least for prevention.

4.2.2 Peljorling Norjangsa Chiwog

The chiwog is well connected with road and the Peljorling Higher Secondary School is located within the jurisdiction. The chiwog has total of 272 households. The people are mostly dependent on cultivation of paddy and areca nut. The Jamtsholing Gyalsung Academy covering an area about 624 Ha is also located within the chiwog. The houses in the chiwog are well built and people are fairly doing well. The result from C2C survey indicates that Elephants, Wild pigs and Macaques are the most problematic species.

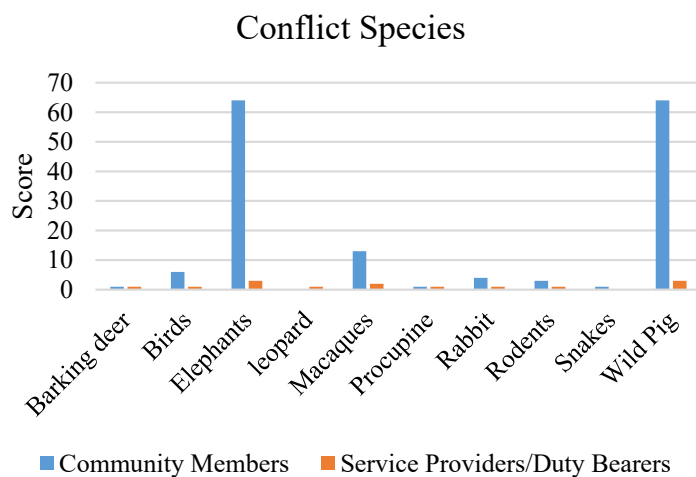


Figure 10: Conflict Species of Peljorling -Norjangsa Chiwog

The current outcome scenario of Peljorling- Norjangsa Chiwog has lowest score for livelihood/assets in comparison people, wildlife and habitats. The highest score is observed in wildlife with people and habitat with slight lower score. The low score for the chiwog could be because of significant destruction to crops and properties caused by human elephant conflict as perceived by both community members and duty bearers.

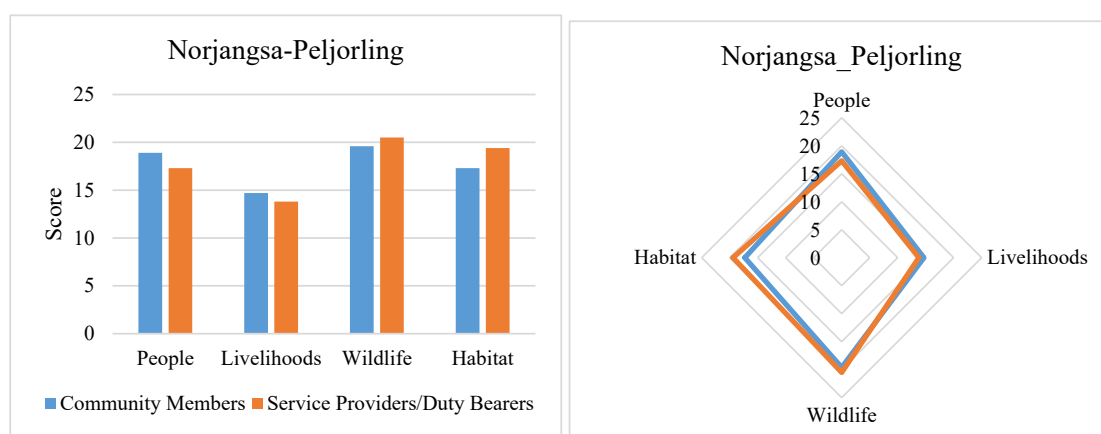


Figure 11: Outcome of Peljorling -Norjangsa chiwog

On comparing the four Outcome parameters with six Elements namely; prevention, response, policy, mitigation, monitoring, and understanding the interaction it was observed that lowest score to People as an outcome is contributed by mitigation and lack of understanding of the interaction. Similarly, the outcome livelihood/assets showed that lack of understanding of the interaction and policies covering HWC as the main factor affecting the overall score.

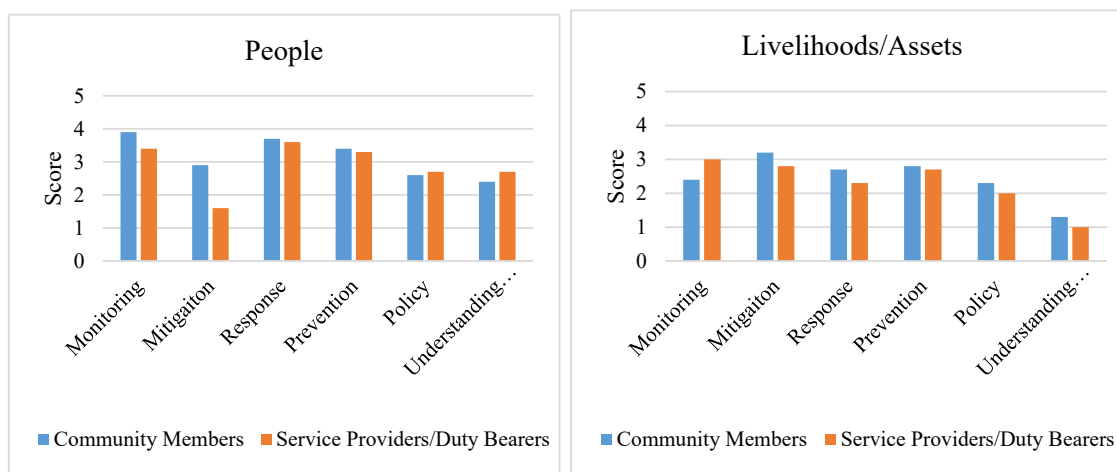


Figure 12: Six Elements of Peljorling –Norjangsa chiwog

The outcome of wildlife indicated scores below 4 in monitoring, mitigation, response and prevention but comparatively better for policy and understanding the interaction. For the outcome Habitats all the 6 elements were below four with the lowest in mitigation.

4.2.3 Dewachen Zhiwaling Chiwog

The chiwog is well connected with road and other basic amenities. The total households under the chiwog are 114 households. The people are mostly dependent on cultivation of paddy, areca nut and vegetables. Some of the important offices such as Tashicholing Gewog Office, Tashicholing Range Office and Drungkhag Hospital are all located within the chiwog. Similar to Peljorling chiwog, the houses in the chiwog are well build and people are fairly doing well. The result from C2C survey indicates that human wildlife conflict is usually experienced with elephants, wild pigs, porcupine, macaques, birds, barking deer, rabbit etc. The frequency of elephant entering the chiwog is low compared to another nearby chiwogs. However, elephants do visit the jurisdiction and cause HEC occasionally. The other conflict species is wild pig that significantly damage crops in the area.

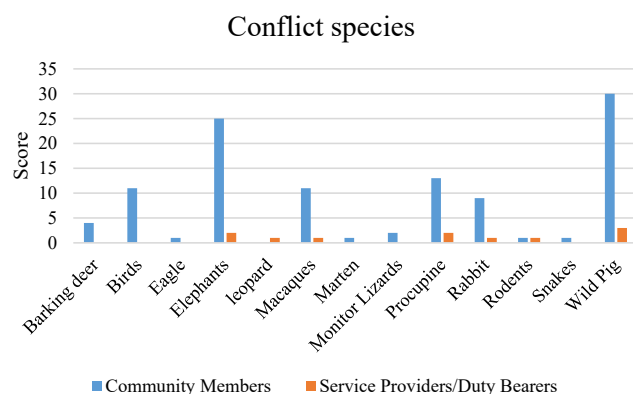


Figure 13: Conflict Species of Dewachin Zhiwaling chiwog

The outcome scenario of Dewachin-Zhiwaling chiwog indicates lowest score for livelihood/assets in comparison people, wildlife and habitats. The highest score is observed in people and wildlife. The low score for the chiwog in terms of livelihood/assets is could be due to damages of crops by wildlife such as elephants, wild pigs, porcupine and macaque.

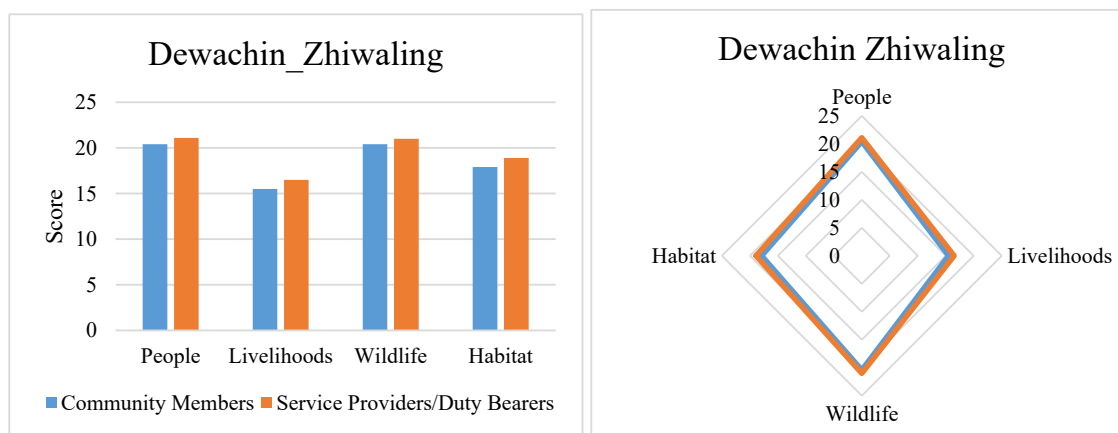
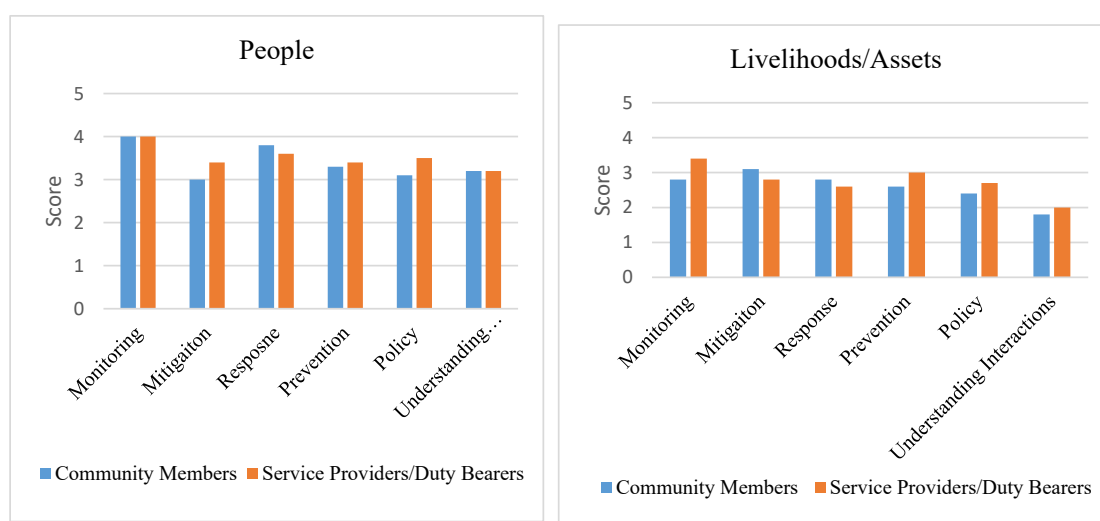


Figure 14: Outcome of Dewachin Zhiwaling chiwog

The outcome parameters were further related and compared with the six elements namely; prevention, response, policy, mitigation, monitoring, and understanding the interaction. The outcome graph on people showed that more focus needs to be given to mitigation and understanding the interactions whereas for the outcome livelihood and assets least score was observed for understanding the interaction and in the policies.



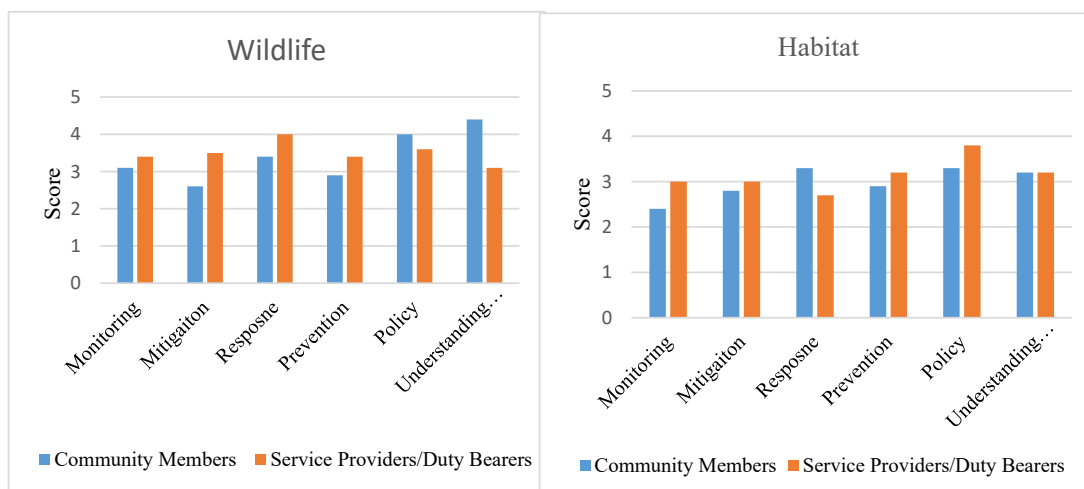


Figure 15: Six Elements of Dewachin Zhiwaling chiwog

The outcome of wildlife indicated scores below 4 in monitoring, mitigation, response, prevention and policy but comparatively better for understanding the interaction for Dewachin Zhiwaling chiwog. For the outcome 'Habitats' highest scores were observed for policy and understanding the interactions with rest of the elements scores below 3 for monitoring, mitigation, response and prevention.

4.2.4 Dangling Gangju Chiwog

The total of Dangling Gangju is 87 households with 43 Hhs in Dangling and 44 Hhs in Gangju villages. As per the report of the assessment species such as macaques, wild Pig and porcupine are the main conflicting species. The other conflict species include elephants, birds, rabbit, snakes, rodents, barking deer, common leopard, monitor lizard and wild dogs.

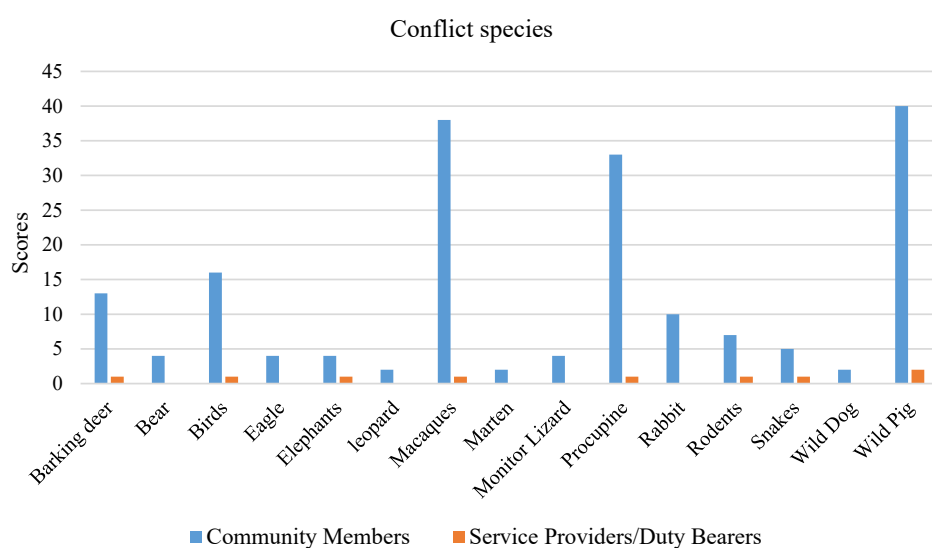


Figure 16: Conflict Species of Dangling Gangu chiwog

The outcome scenario of Dangling-Gangju chiwog indicates lowest score for livelihood/assets in comparison people, wildlife and habitats. The score for Wildlife and Habitat is observed uniform for both community members and duty bearers above 15. The low score for the chiwog in terms of livelihood/assets is could be due to damages of crops by wildlife such as, wild pigs, porcupine and macaque. Elephants recorded to raid the villages occasionally.



Figure 17: Outcome of Dangling Gangju chiwog

On comparing the four outcome parameters with six elements namely; prevention, response, policy, mitigation, monitoring, and understanding the interaction it was observed that there is an average score of 3 for all the elements except lightly better for understanding interaction for the People as an outcome. However, for livelihood as an outcome all the six elements indicate scores below 3 with the least score observed in understanding the interaction.

The outcome of wildlife indicated scores at 4 and below for all the six elements with the least in mitigation and prevention. For the outcome habitat all the six elements indicated average score between 2.5 and 3.5 for the Chiwog with least score for monitoring.

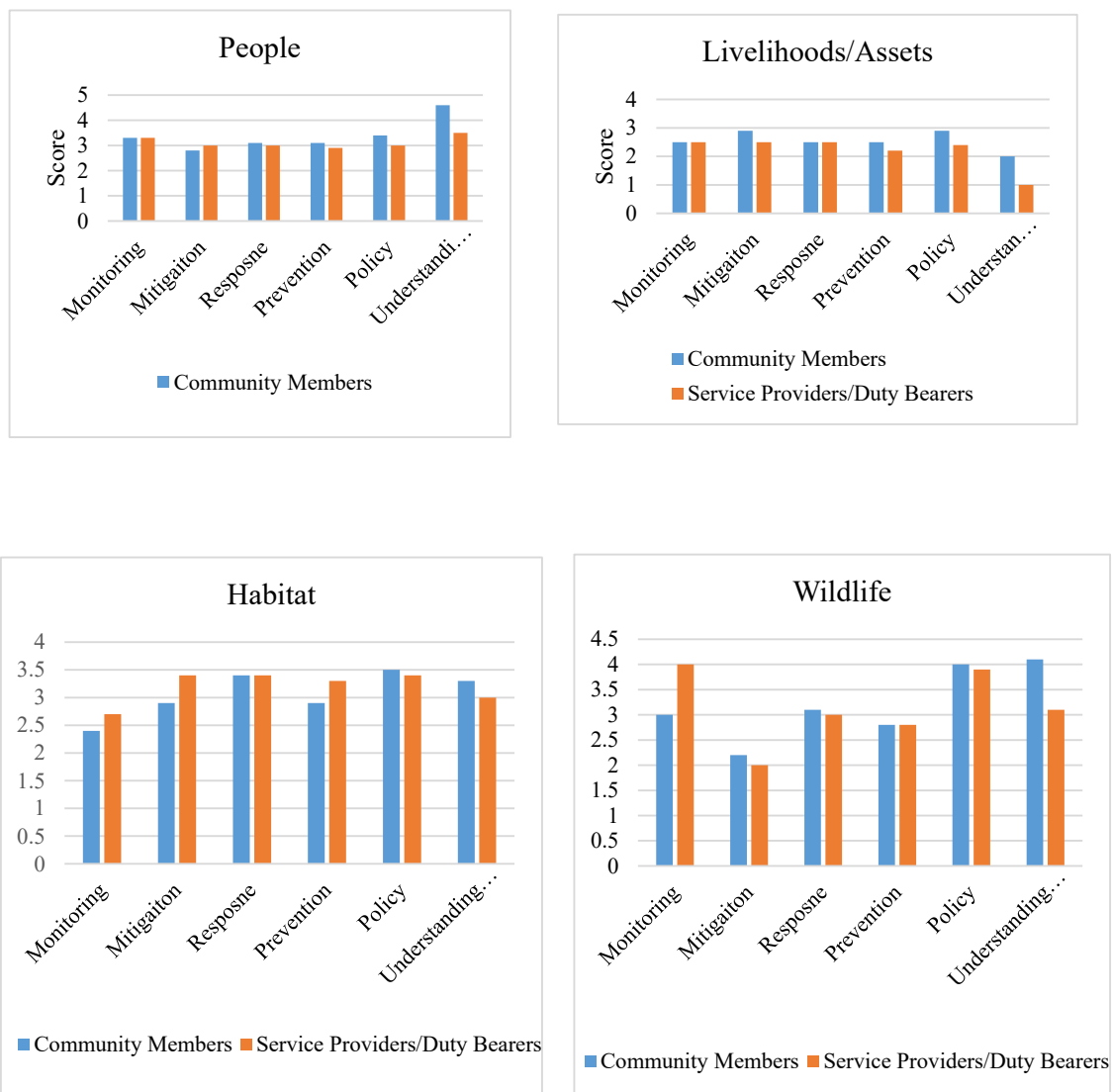


Figure 18: Six Element of Dangling Gangu chiwog

4.2.5 Belboteng Kangduphu Chiwog

The chiwog has a total of 150 households. As per the report species such as elephant and wild pigs are the most conflicting species. The other conflict species include birds, porcupine, rabbits, macaques, leopard.

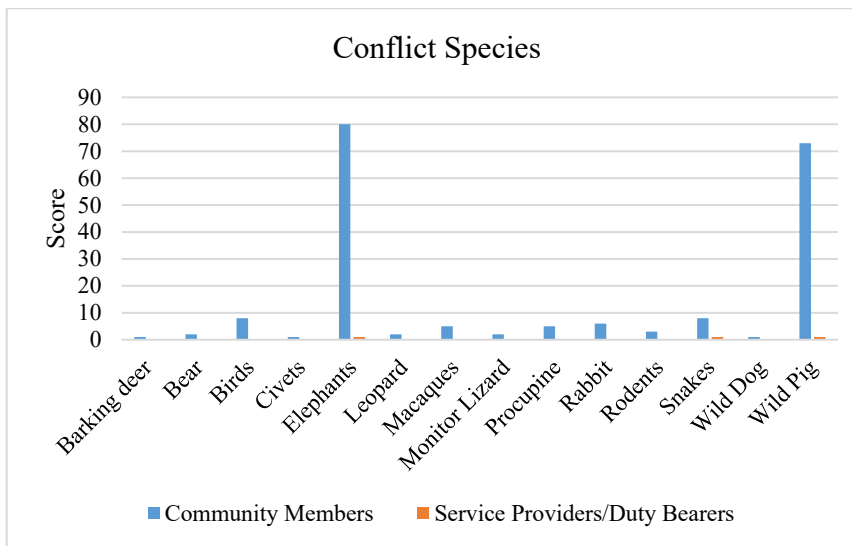


Figure 19: Conflict Species of Belpoteng Kangduphu chiwog

The outcome scenario of Belpoteng Kangduphu chiwog indicates lowest score for livelihood/assets in comparison to people, wildlife and habitats. The highest score is observed for wildlife with intermediary scores for people and habitat. The low score for livelihood/asset is most likely from the damages by wildlife such as, elephants, wild pigs, and birds.

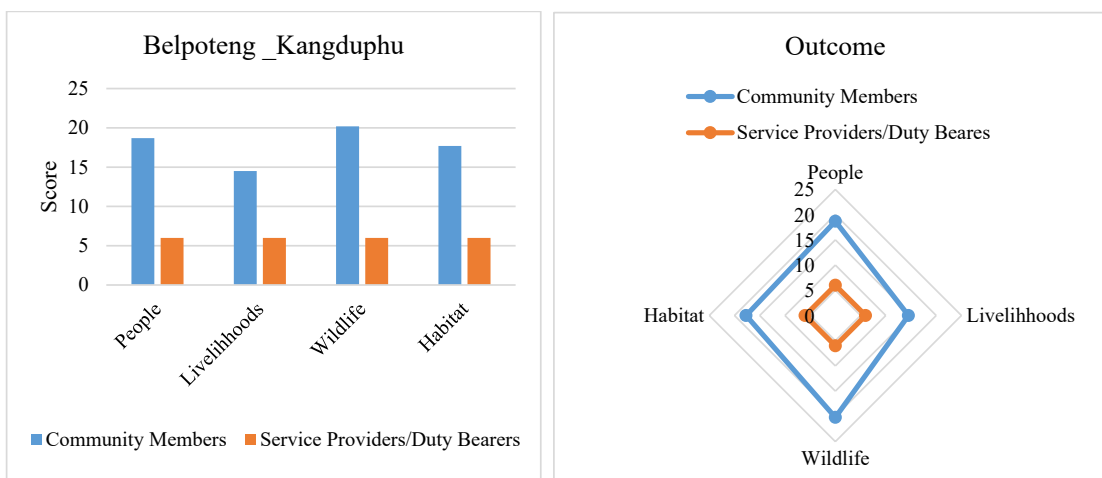


Figure 20: Outcome of Belpoteng Kangduphu chiwog

On comparing the four outcome parameters with six elements namely; prevention, response, policy, mitigation, monitoring, and understanding the interaction it was observed that the rating score for the outcome people is between 2.5 to 3.5 with slight better score for response. For the outcome livelihood the highest score is observed for mitigation and the lowest is observed for understanding the interaction.

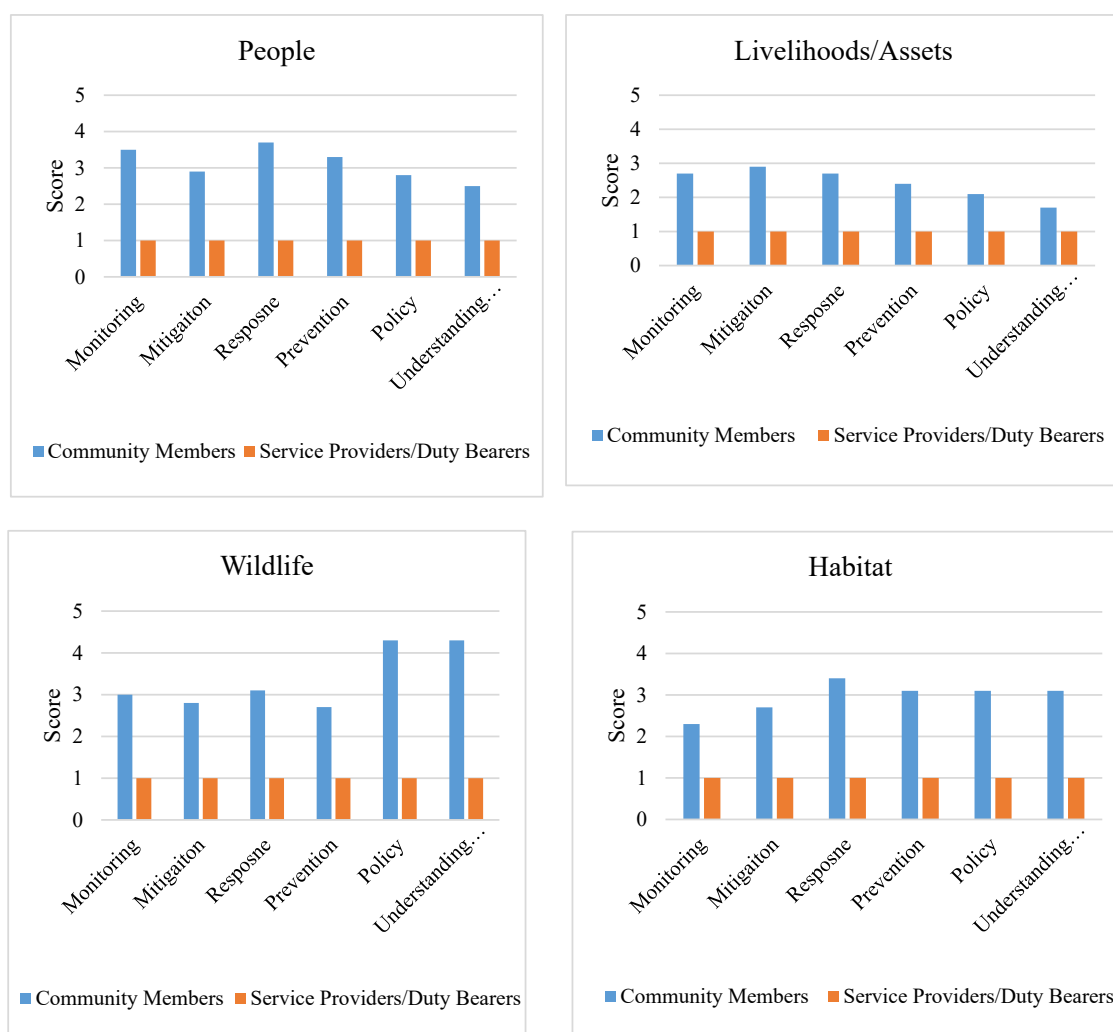


Figure 21: Six Elements of Belpoteng Kangduphu chiwog

While comparing the outcome wildlife with the six elements it was observed that the scores are slightly better for policy and understanding in relation to rest of the four. For the outcome habitat it is observed that the scores are slightly better for response, prevention, policy and understanding the interaction with light low score for monitoring and mitigation.

5. Conflict to Coexistence Strategy

The porous southern borders and the shrinking availability of suitable wildlife habitats have made human-elephant conflicts the most prevalent form of HWC in Tashicholing gewog. The gewog also shares borders with the Indian state of West Bengal. Elephant-related destruction has caused significant damage, including extensive crop and property losses, and occasionally, human fatalities. The HEC affects all almost all the chiwogs such as Singaygang, Peljorling, Belpoteng, and Zhiwaling.

Records indicate that human–elephant conflicts are predominantly observed within the jurisdiction of the Tashicholing Range. This is likely due to the area’s proximity to Chapramari Wildlife Sanctuary and Gorumara National Park, which serve as the last remaining safe habitats for elephants following habitat fragmentation caused by deforestation across the border. Additionally, increased developmental activities and expanding settlements along the borders have heightened human–wildlife interactions. The risk to human lives and property is further exacerbated by the presence of settlements situated along elephant migratory routes.

Accordingly, interventions aimed at addressing human elephant conflict and promoting human wildlife coexistence are structured around four key outcomes.

First, to ensure the safety of people, twelve activities are proposed. These include the installation of solar street lights at strategic locations, routine clearing of bushes in high-risk areas, installation of sound-based alert systems, capacity-building training for Quick Response Team (QRT) members, construction of watchtowers, and community awareness programs.

Second, to safeguard and enhance local livelihoods, eleven activities have been proposed. The major interventions include the construction of concrete walls at strategic locations, installation of chain-link fencing combined with electric fencing, promotion of crop varieties less preferred by elephants, maintenance of existing trenches, and clearing of fallow lands.

Third, under the wildlife conservation outcome, activities include the establishment of artificial salt licks, deployment of tracking collars on elephants to study movement patterns, and the provision of safety equipment to QRT members.

Finally, for habitat management, two activities are proposed: enrichment planting along elephant migratory corridors and the implementation of proper waste management systems.

In total, the implementation of all twenty-nine activities is estimated to require a budget of Nu. 24.35 million as elaborated in table 3.

Table 3: Implementation Plan and Financial Outlays

Outcome	Actions/Activities	Location	Category	Responsibility		Budget (million)	Source of fund	Timeline
				Lead	Collaborator			
People	1.1 Clearing bushes at elephant entry points for proper visibility	Peljorling Norjangsa Chiwog, Dangling Gangju Chiwog	Short Term	Gewog	Forestry	0		Annual
	1.2 Installation of solar street lights for better visibility at strategic locations	Peljorling Norjangsa & Singaygang Chiwog	Long Term	Gewog	Forestry	1	Need to explore	2026-2029

	1.3 Installation of long-range search lights at strategic location	Singaygang, Peljorling & Dewachin Zhiwaling villages	Short Term	DFO, Samtse	Gewog	0.5	Need to explore	2026-2027
	1.4 Routine clearing of bushes in thram land at strategic locations	All Chiwogs	Short Term	Gewog	Communities			Annual
	1.5 Promote elephant friendly farm practices by selective farming	All Chiwogs	Long Term	Agriculture	Forestry	0.5	Need to explore	2027-2029
	1.6 Early warning system (Sound alert system, search light)	Norjangsa, Dangling Gangju	Short Term	DFO, Samtse	Gewog	0.7	DFO, Samtse	2026-2028
	1.7 Strengthen QRT members by increasing membership and providing capacity building training	All Chiwogs	Short Term	DFO, Samtse	Gewog	0.1	DFO, Samtse	2025-2026
	1.8 Build capacity of community on animal behavior and safety measures	All Chiwogs	Short Term	DFO, Samtse	Gewog	0.05	DFO, Samtse	2025-2026 2026-2027
	1.9 Exposure tour program to learn good practices and develop skills on handicraft development	All Chiwog	Short Term	DFO, Samtse	Gewog	0.5	DFO, Samtse	2028-2029
	1.10 Construct night guarding shed to secure against depredating elephants	Four numbers required under Singaygang chiwog	Short Term	Gewog	Forestry	2	Gewog/ Dzongkhag	2026
	1.11 Construction of elephant watch tower	Two numbers required under Singaygang Chiwog, 8 Dangling Gangju	Short Term	Gewog	Forestry	2	Gewog/ Dzongkhag	2026-2027
	1.12 Awareness on sustainable management of NWFPs	All Chiwogs	Short Term	DFO, Samtse	Gewog	0.1	DFO, Samtse	2025-2026
Livelihood	2.1 Construction of concrete wall with integration of concertina wire for additional protection	Along Sipsoo river, Singaygang	Long Term	Gewog	Forestry	3.5	Need to explore	2026-2029
	2.2 Installation of Chain link fence combined with electric fence	Dangling Gangju, Peljorling Norjangsa Chiwog, Singaygang Chiwog Belpoteng Chiwog	Long Term	Gewog	Forestry	4	Need to explore	2026-2029
	2.3 Cultivate fallow land (Elephant non-favoring species)	All Chiwogs	Short Term	Gewog	Agriculture	0.2	Gewog Agriculture	2026-2027
	2.4 Initiate bee hive fence at strategic location	All Chiwogs	Short Term	Livestock	Gewog	0.3	Gewog Livestock	2028-2029
	2.5 Provide training on entrepreneurship development	All Chiwogs	Short Term	Gewog		0.1	Need to explore	2026-2027
	2.6 Construction of trenches constructed by Gyalsung (Maintenance)	Norjangsa Chiwogs	Short Term	DFO, Samtse	Gewog	0.8	Need to explore	2028-2029

	2.7 Explore ecotourism potential activities in the Gewog such as CF	All Chiwogs	Short Term	DFO, Samtse	Gewog	0.2	Need to explore	2027-2028
	2.8 Installation Electric fence	Dangling Gangju	Short Term	DFO, Samtse	Gewog	1.5	Need to explore	2026-2028
	2.9 Use scare crow (Tiger) for deterrence of macaques	Dangling Gangju	Short Term	Community		0	NA	
	2.10 Major renovation of irrigation channel	Dangling and Zhiwaling chiwogs	Long Term	Agriculture	Gewog	4	Need to explore	2026-2029
	2.11 Clear fallow lands to deter elephant intrusion and cultivate favorable crops	Belboteng Chiwog	Short Term	Gewog	Agriculture	0.3	Gewog Agriculture	2027-2028
Wildlife	3.1 Create artificial water holes	Gangatey, Kalamatey & below Singaygang, Lungini Gaira	Short Term	DFO, Samtse	Gewog	0.25	DFO, Samtse	2026-2027
	3.2 Create artificial salt licks in migratory corridor of elephants	Singaygang Chiwog, Norjangsa, Dangling Gangju	Short Term	DFO, Samtse	Gewog	0.25	DFO, Samtse	2026-2029
	3.3 Procurement of elephant tracking device for monitoring movement	All Chiwogs	Long Term	DFO, Samtse	Gewog	1	DFO, Samtse	2027-2029
	3.4 Safety equipment to QRT members	All Chiwogs	Short Term	DFO, Samtse	Gewog	0.5	DFO, Samtse	2026-2029
Habitat	4.1 Enrichment plantation at elephant migratory corridor with species such as Banana, Ficus sp. Pine apple, bamboo etc.	Under Singaygang Chiwog with an estimate area of 25 Acre, Norgangsa, Dangling_Gangju, Sath-Rupay, Ram Dhalay under Dewachin Chiwog	Short Term	DFO, Samtse	Gewog	2	DFO, Samtse	2026-2027
	4.2 Initiate proper waste management programs at strategic location	All Chiwogs	Long Term	DFO, Samtse	Gewog	0	NA	2025-2029
Total estimate budget in million				24.35				

6. Monitoring and Evaluation:

Monitoring and evaluation (M&E) are an integral component of the C2C approach, ensuring that planned activities achieve their intended outcomes. This section outlines the framework for tracking and assessing the implementation of the four strategies and their associated actions. A detailed M&E plan is presented in Table 4, which includes specific indicators designed to measure the performance against each outcome. These indicators provide a clear basis for evaluating progress and effectiveness. Output indicators will focus on tracking the completion and impact of the actions outlined in Table 3, ensuring accountability and driving continuous improvement throughout the implementation process.

6.1. Monitoring

Regular monitoring is crucial for providing timely updates on activity progress and ensuring transparency and clarity throughout the implementation process. The strategic plan spans a five-year period, during which monitoring will be conducted annually. This approach ensures that planned actions remain on track, enabling the identification and implementation of necessary adjustments to achieve the intended outcomes effectively. The Division shall conduct annual monitoring to track progress and to ensure that the actions are aligned as per the intended outcomes.

6.2. Evaluation

The actions/implementations will be assessed during the middle and final years of the plan. The midterm evaluation will occur in the second quarter of the third year, while the final evaluation will take place in the last quarter of the fifth year. Both evaluations will be carried out collaboratively by staff of DFO Samtse and concerned Functional Division ensuring a thorough review of the results from the actions implemented on the ground.

Table 4: Monitoring and Evaluation Plan of Tashicholing

Outcome	Actions/Activities	Action Indicator	Baseline	Unit	Years				
					1	2	3	4	5
People	1.1 Clearing bushes at elephant entry points for proper visibility	Area cleaned of bushes at strategic entry points	0	Acres	3	3	3	3	3
	1.2 Installation of solar street lights for better visibility at strategic locations	Solar street lamps installed at strategic locations	0	Nos	0	10	10	10	10
	1.3 Installation of long-range search lights at strategic location	No of long-range search lights installed at strategic location	0	Nos		5	5		
	1.4 Routine clearing of bushes in thram land at strategic locations	Area cleaned of bushes	0	Acres	3	3	3	3	3
	1.5 Promote elephant friendly farm practices by selective farming	Training report on new farm practices or new crop introduced	NA	Nos			1	1	1

	1.6 Early warning system (Sound alert system, search light)	Nos. of SAS installed	2	Nos		5	5	5	
	1.7 Strengthen QRT members by increasing membership and providing capacity building training	Nos of QRT members increased	45	Nos	55	65			
	1.8 Build capacity of community on animal behavior and safety measures	Training report	45	Nos	100	100	100		
	1.9 Exposure tour program to learn good practices and develop skills on handicraft development	Program report	0	Nos				40	40
	1.10 Construct night guarding shed to secure against depredating elephants	No. of structures constructed	0	Nos		4			
	1.11 Construction of elephant watch tower	No. of watch tower constructed	1	Nos		2	2		
	1.12 Awareness on sustainable management of NWFPs	Training Report	0	Nos	1	1			
Livelihood	2.1 Construction of concrete wall with integration of concertina wire for additional protection	Length of wall constructed	0	Mtr		50	50	50	50
	2.2 Installation of Chain link fence combined with electric fence	Length of fence installed	0	Mtr		500	500	500	500
	2.3 Cultivate fallow land (Elephant non-favoring species)	Area brough under cultivation	0	Acres		3	3		
	2.4 Initiate bee hive fence at strategic location	Nos of bee hives installed	0	Nos				10	10
	2.5 Provide training on entrepreneurship development	Training report	0	Nos		50	50		
	2.6 Construction of trenches constructed by Gyalsung (Maintenance)	Length of construction	0	Nos				700	700
	2.7 Explore ecotourism potential activities in the Gewog such as CF	Training report	0	Nos			1	1	
	2.8 Installation Electric fence	Length of fence installed	0	Nos		500	500	500	
	2.9 Use scare crow (Tiger) for deterrence of macaques	No. of scare crow procured	0	Nos					
	2.10 Major renovation of irrigation channel	Length of irrigation channel renovated	0	Mtr		400	400	400	400
	2.11 Clear fallow lands to deter elephant intrusion and cultivate favorable crops	Additional area brought under cultivation	0	Acres			1	1	
Wildlife	3.1 Create artificial water holes	Nos, of new water holes created	1	Nos		1	1		
	3.2 Create artificial salt licks in migratory corridor of elephants	Nos. of artificial salt lick created	1	Nos		1	1		
	3.3 Procurement of elephant tracking device for monitoring movement	Procurement report	1	Nos			2		
	3.4 Safety equipment to QRT members	Field gears distributed to QRT	45	Nos		65			
Habitat	4.1 Enrichment plantation at elephant migratory corridor with species such as Banana, Ficus sp. Pine apple, bamboo etc.	Area under enrichment plantation	10	Ha		5	5		
	4.2 Initiate proper waste management programs at strategic location	Program report	12	Year	12	12	12	12	12

7. Conclusion

An effective approach to addressing HWC requires multisectoral collaboration with shared responsibility and accountability. Tashicholing gewog, despite its small size, has a relatively high population compared to other gewogs and faces significant HWC challenges, particularly with elephants. Therefore, the C2C strategy for the gewog is a timely and suitable initiative involving all stakeholders. The C2C approach adopts a comprehensive, community-driven method to addressing the issue, aiming to find solutions through in-depth assessments and extensive consultations with the focus on six elements: policy, mitigation, understanding interactions, prevention, mitigation, and monitoring.

The gewog has undergone significant changes over the past decade, marked by urban expansion and a growing population, coupled with a decline in forest cover both locally and across the border. These factors have contributed to a rise in HWC incidents, particularly involving elephants. Therefore, finding the solution in terms of four outcomes namely people, wildlife, livelihood and habitat has become more important while developing strategies and actions.

The development of the C2C strategy will not only enhance the safety of human lives and properties but also promote ecological resilience and biodiversity conservation by protecting wildlife and their habitats. This will ultimately foster harmonious coexistence between humans and wildlife.

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

Overview of Categories:			
1. Landscape / Site description: demographics, geography, threats, stakeholders,			
2. Human-wildlife conflict trends: type of conflict, frequency, conflict species			
3. Drivers of conflict: Anthropogenic drivers, natural drivers			
4. Social dynamics: social carrying capacity, community heterogeneity			
5. Wildlife dynamics: species population, movements, behaviors			
6. Policy: legal instruments, management mechanisms			
Screening:			
Before completing this screening format, collect all baseline information on the landscape/site (previous assessments, reports, published literature, social landscape mapping if completed, etc.).			
** All information below might not be known/available/collected - fill out all available information. In case information is not available mark "NN"			
1. Landscape/Site description for the area C2C: Conflict to Coexistence-Approach will be implemented in			
Category	Example	Information/Details	Reference (Source of information)
1.1 Name of landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., Ruvuma; Terai Arc Landscape; Tawau, KAZA TFCA	Tashicholing	NSB
1.2 Country	e.g., Nepal; Gabon; Tanzania	Bhutan	
1.3 Administrative division (Province, State, District etc.)	Chitwan District; Province de l'Ogooué-Maritime; Namtumbo and Tunduru districts	DFO, Samtse	
1.4 Area/size of the landscape or site (km ²)	e.g., 100 km ²	27.67 km ²	
1.5 Name/Proportion protected area (include type of PA/OECM) within the landscape	e.g., Nyungwe National Park (25% of landscape), Volcanoes National Park (10% of landscape), etc.		
1.6 Dominant land use type within site or landscape	e.g., National Park; Villages; Rangelands; Agroforestry	Forest (42%), Agriculture (28%), Barren/Grassland (16%), Waterbody (7%), Buildup Area (7%)	
1.7 Human population (number of residents and density) in the landscape or site - and population trend	e.g., 5000 residents in village Xy, 50 per sq km, increasing population; 2500 residents in village Xy, 50 per sq km, decreasing population	3930	
1.8 Location of Communities within the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., One community within national park, one community outside of national park	Perjorling, Singyegang, Norjangsa, Kangdoongphu, Belpoteng, Zhiwaling_ Dewachen	
1.9 Community demography (age, gender, education, income) in landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., any available census data - 52% female, 48% male - 10% over 50, 40% 30-50, 50% under 30 - 85% of residents have primary level education, 50% secondary level - mean income level, etc. etc.	Male : 2018 Female: 1942 Age: Children (0 to 14): 1134 Economic/working/adults (15 to 64): 2590 Old (65+): 236	NSB

1.10 Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities resident in landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g. Sami, Inuit, Khoisan, etc		
1.11 Ethnic groups/castes resident in landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	Orang Asli, Brahmins, Adivasi, etc	Adivasi, Sharchops, Ngalsops, Lhostham, Khengpa	
1.12 Proportion of people living in poverty landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	e.g., 30% of residents live below poverty line (as defined for the region)	e.g., 11.22% of residents live below poverty line	
1.13 Faiths/Religions of people living in poverty landscape or site where C2C: Conflict to Coexistence-Approach will be implemented	Buddhist, Islam, etc	Buddhist, Hindu, Christian	
1.14 Main community livelihood activities in the landscape (including livestock type, crop type, etc.)	e.g., livestock production (cattle, sheep), crops (corn, soybeans),	e.g., Livestock production (cattle, poultry, piggery, goat), Agriculture (Paddy, maize; Vegetables, horticulture (Areca nut), Dragon fruit, Avocado,	
1.15 Non-consumptive tourism activities	e.g., photo tourism, visiting NP, hiking, rafting, camping		
1.16 Consumptive tourism activities	e.g., trophy hunting, fishing, mushroom collection		
1.19 Other important site information		Jamtsholing Gyalsung Project is located within the Gewog. Drungkhag Headquarter Major regional branch offices (Financial Institutions (BoB, BNB, BDBL, RICB), RBP, RBA, Tcell, Bhutan Telecom, Schools, BPC substation), Hospitals (20 bedded), Forest Range Office, BoD, Milk Processing Unit, Sawmill, Crushing Unit, Shedra, Dratshang, Throema Lhakhang, Workshops, ECCD, NFE centre, Dairy Farm, Post Office, Immigration Office, RNR -EC, Gewog Administration, Mandir, Archery Range, Futsal ground, ORC, Hotels	

2. Human-wildlife conflict trends			
Category	Example	Information/Details	Reference (Source of information)
2.1 Which wildlife species cause negative interactions with people in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented (conflict species)	e.g., elephant, lion, wild boar	e.g., Elephants, Leopard, Wildpigs, Squirrels, Macqua, Peafowl, rabbit, porcupine, barking deer	Secondary data
2.2 Conflict animal characteristics (sex, age, hierarchy, etc., if known) in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., if there is problem animal or animals could list their characteristics here: bachelor young male elephant	1. Wildpigs get violent during mating season, interbreeding with domestic pigs 2. Birds deprading crops (Peafowl, Jungle fowl, Jungle Babler) 3. Squirrel 4. Macgaues 5. Elephant herd of 50 heads at times encroach settlement 6. Leopard 7. Snakes (Python, Cobra)	Field observation
2.3 Description of physical damage (crops, livestock, other property) caused by wildlife species in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., elephants damage maize and vegetable gardens lions kill livestock at pastures wild boar damage vegetable gardens	Elephants damage maize and vegetable gardens Leopard kill livestock (goats, cattle) Wildboars damage vegetable gardens	Field observation/ SMART data
2.4 Severity of conflict (number of lethal conflicts for wildlife and people)	e.g., 1 lethal conflict resulting in death of human in year 2022, 1 retaliatory killing of lion in 2023	1 lethal conflict resulting in death of human in year 2022	SMART Data
2.5 Frequency of conflict (number of conflict incidents* over 12 months)	e.g., 12 incidents of livestock predation and 30 crop damage incidents over past year	11 crop damage incidents over past year	
2.6 What HWC-related data is available for the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented and how is it gathered?	e.g. Monitoring data by forest department, based on reports/claims of farmers	1. Google Spreadsheet maintained on incidences 2. FIRMs report	
2.7 Is HWC increasing, stable or decreasing in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g. Increasing crop damage by elephant and wild boar reported from villages in area xx, but overall increasing number of human fatalities.	Stable trend of crop damage by elephant and wild boar reported from villages in area , but overall decresing number of human fatalities. The wildpig, birds, squirrels conflict incidences is increasing	SMART Data
2.8 Which HWC hotspots have been identified in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g. 3 villages (name1, name2, name3) in district xx, have been identified based on frequency and severity of HWC	Singaygang, Peljorling, Kangdoongphu, Norjangsa villages of Tashicholing Gewog have been identified based on frequency and severity of HWC	

2.9 Description of intangible costs caused by wildlife in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g. behavioral adjustments; heavy workload through guarding practices; exposure to other risks; fear	Risk to human life and property due to movement corridor falling within human settlement.	
2.10 Level of tolerance of communities towards wildlife (e.g., attitudes or behaviors) in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., high tolerance for herbivores, low tolerance for lions	Moderate tolerance for elephant	
2.11 HWC management methods implemented in the past or currently being implemented (e.g. technical, financial or social strategies to prevent, reduce or mitigate HWC) in the landscape or site.	e.g., fences around rangelands, guard donkeys/dogs used, deterrents in use, guarding, conservation performance payments, awareness programs, community HWC response teams, early warning systems	Fences (Live fences), SAS, Electric Fences, Trenches, Solar Fences around agricultural land and human settlement, QRT, Supply of field/patrol gears.	Field observation
2.12 Have any of the HWC management methods listed above failed in the past? If yes, please elaborate on the barriers to success.	e.g. the electrical fence constructed 5 years ago was damaged, due to low buy-in of community and insufficient maintenance	Due to challenges such as weak cooperation from the communities most of the interventions are difficult to achieve the expected outcome. Failure to take collective social responsibility Poor cooperation amongst beneficiaries	Field observation
2.13 Other important information on HWC trends.			

3. Drivers of conflict			
Category	Example	Information/Details	Reference (Source of information)
Anthropogenic drivers			
3.1 Which changes in land cover/use have been observed in the past years in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., in the past 10 years (from 2012) 30% of the natural forest in the buffer zone of xx NP has been cleared for rangeland; in 2020 a palm oil plantation has been converted into a forest corridor between NP1 and NP2	1. Conversion of paddy field to Areca nut cultivation 2. Increase in fallow land 3. Change in land use due to loss of forest cover (Developmental activities) 4. Disturbances in migratory route	
3.2 Which developments have impact on connectivity for wildlife in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., settlements or development in corridors, infrastructure fragmenting habitat	Developmental activities	
3.3 What attractants are found for wildlife on community-lands?	e.g., food (fruit trees, crops), light, heat, garbage dumps	Food (paddy, arecanut, banana), Mineral (salt), garbage dumps, traditional migratory route	

3.4 How is hunting regulated in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented and which local hunting practices exist?	e.g., hunting is not permitted in landscape	Hunting is prohibited Strict enforcement of law Regular patrolling Awareness Law enforcement agencies in close proximity Spiritual believes	
3.5 Illegal hunting trends	e.g., illegal hunting of small prey species common	Data deficit	
3.6 What types of land rights are found in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g. legal land rights, illegal land use, traditional land rights, etc.	PRL, SRFL, Institutional Land.	
3.7 Other anthropogenic drivers	e.g., any other anthropogenic drivers not listed here?	Urbanization, Satshab, Land lease, Developmental activities	
Natural drivers			
3.8 How does or could climate change impact on HWC?	e.g., longer dry season leading to drought conditions		
3.9 Which landscape features (topography) of the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented influence behavior, movement and dispersal of wildlife (and people)?	e.g., river along part of national park border (dry conditions make this river crossable)	1. Habitat loss and fragmentation 2. Migration 3. Resource scarcity induced by climate change 4. Extreme weather conditions	
3.10 Are natural food and water sources sufficient for the wildlife species in conflict in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., river in national park provides sufficient water year-round, prey abundance sufficient for tiger population	Plain area (grassland) adjacent to Indian Border separated by rivers. Fallow private land near to forest facilitate presence of wildlife Presence of protected areas such as National Parks and Sanctuaries across the border	National Water sources data 2021.
3.11 How do forest fires impact on wildlife and what are fire trends in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., annual bush fires are natural but number and severity of fires has been increasing in past 5 years.	No	
3.12 Other natural drivers	e.g., any other natural drivers not listed here?	Very minimal Not much incidents of forest fire	

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

5. Wildlife dynamics			
Category	Example	Information/Details	Reference (Source of information)
5.1 Conflict species relative abundance/ density in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., estimated abundance of 55 elephants in national park and 30 lions	NFI, NTS , RBA Report	
5.2 Population trends of conflict species in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented.	e.g., increasing population of elephants, decreasing population of lions (could include specific population numbers if known)	No data	
5.2 Population trends of prey species (in case carnivore conflicts are observed)	e.g., decrease in small ungulate species (could include specific population numbers if known)	No data	
5.3 Which wildlife movements through the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented, are observed	e.g. elephant migrate through community land between national parks in the dry season; crocodiles gather in specific waterholes during months xx-xx; baboons pass xx fields in morning hours	Existence of elephant refuge area and migratory route	
5.5 Has any type of behavior by specific wildlife species or individuals been observed that may point at learned behavior or that might be specifically challenging? Please provide details.	e.g., Individuals of elephants use tusks to lift up electric fence wires; wolf jumps over specific fences; hyena follows wild boar under barrier; primates learned to unlock doors	Individuals of elephants use tusks to lift up electric fence wires Wild pigs and Macaques are accustomed to live alongside with human	
3.9 Which changes of wildlife behavior, movement or dispersal have been observed in the past years in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., troops of primates found close to NP boundary more often; elephants moving out of NP in evening and returning during day, stronger activity of deer at night		
5.6 Other important wildlife-related information that impacts on human-wildlife relationship		Wild pigs and Macaques are accustomed to live alongside with human	

6. Policy, governance and institutions			
Category	Example	Information/Details	Reference (Source of information)
6.1 List of policies related to HWC or HWC management relevant for the landscape	e.g., Law 153B no killing of protected species (elephant, lion), Policy #453 land use policies within community land, etc. etc.	FNCA and FNCRR 2023 Biodiversity Act of 2022 National Biodiversity Strategy Action Plan Bhutan Legal Framework	
6.2 List of SOPs or other operational regulations/documents relevant for managing the interaction of wildlife and people	e.g., SOP on rapid HWC response; decision support system for problem animal control	HWC management strategy 2018-2028	
6.3 Which administrative and other governance structures are in place in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented that relate to HWC and coexistence?	e.g. district level HWC reporting scheme; natural resource boards operating fence maintenance; conservancy board involved in HWC monitoring; landscape level platform/forum on HW coexistence	Drungkhag Gewog Forest Range Office Schools	
6.4 Which governmental, non-governmental and private institutions are active in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?			
6.5 Which funding sources for managing HWC and developing HW coexistence strategies are currently available in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?	e.g., WWF, local government, etc.	1. WWF IKI Project 2. IUCN Tiger Conservation Project 3. WWF Elephant Landscape Conservation Project	
6.6 Which staff capacity is available to be engaged in HWC management and human dimensions of conservation work?	e.g. HWC focal person, staff with background in social sciences	Forest Rangers	
6.7 Which lead group is expected to manage HWC in the landscape or site where C2C: Conflict to Coexistence-Approach will be implemented?		QRT	

