Human–Wildlife Conflict, Precarity and Gender Dynamics in Rural Bhutan

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Abstract: In rural Bhutan, human-wildlife conflict (HWC) has turned into a widespread and growing issue affecting livelihood, well-being, and everyday life. This article explores the HWC in Denchukha, Samtse, drawing comparative analysis from Kurtoe, Lhuntse, using the experiences of local farmers. The increasing wildlife encroachment in the forests, land use changes, and rural out-migration are worsening the subsistence production system. The constant destruction of crops, livestock raids, and night disruptions when guarding their farms not only ruin their financial stability but also their emotional health. The gendered implications of such effects are also highlighted (as in the fact that it is men who bear the physical risks of field protection, and women who bear the emotional stress of field protection, changing homes, and food insecurity that follows). Although community initiatives and a few government interventions offer some assistance, it is barely enough. The author tries to argue that HWC is not merely an

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environmental problem, but a social and gendered problem that needs more practical and extensive policy responses.
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Introduction

"We shout, we bang tins, but still the animals come," says Ash Kumar, a farmer in Denchukha as we spoke about the rising wildlife incursions into his agricultural fields. In Denchukha, the boundary between forest and farmland has never felt thinner. Every year, farmers are gearing up towards the re-entry of wild animals whose distribution patterns depend on the changing seasons across the landscape. Farmers are also observing that seasonal cycles are unpredictable, and changes in rainfall, temperatures, and the timing of crops can potentially affect the vulnerability of a crop as well as wildlife migration, although the mechanism through which climate change and Human Wildlife Conflict (HWC) interact remains poorly understood.

The harvest has traditionally been characterized as a time of relief and celebration, but in recent years, it has become a time of uncertainty and loss. The reduced population in Denchukha and Kurtoe largely due to the outmigration of young villagers, has led to a decline in available agricultural labour. As a result, some fields are left fallow or less intensively managed, allowing forest to move closer to farmland. This expansion of forested areas, combined with fewer people tending crops, has made HWC more systematic rather than randomly distributed, as wildlife increasingly accesses fields that were previously actively cultivated. The farmers explained that there are certain species, i.e., wild boars, deer, monkeys and porcupines, which are more active during sowing and strongest during harvest, at the time when crops such as maize, paddy, millet, and vegetables are the most susceptible.

This article focuses primarily on Denchukha, while also drawing comparative insights from Kurtoe in Lhuntse. Both sites were chosen because they were part of the original Bhutan SUCCESS project areas, providing a meaningful basis for comparison. Denchukha and Kurtoe are both agrarian societies with similar landholding patterns, dominated by subsistence farming and livestock rearing. However, the two villages differ in terms of demographic dynamics: Kurtoe experiences higher out-migration than Denchukha Together, they provide useful comparative insights for the study. Similar difficulties were reported by locals in both villages, including crop losses to wild boars and deer, night guarding, and shifts in wildlife patterns due to farmland abandonment and forest regrowth. However, the phenomenon of Gungtong (empty registered houses) is particularly pronounced in Kurtoe, where a majority of houses remain unoccupied. Farmers in Kurtoe explained that as land becomes fallow and underbrush thickens, rats and other animals find it easier to reach human settlements, increasing contact zones. This demonstrates the reality that HWC is not confined to a single place but is distributed throughout the country, affecting several rural communities, though with local differences in species, frequency, and local coping strategies.

Baral et al. (2021) report that HWC impact the livelihoods of many rural communities worldwide and are more pronounced in areas with an ever-expanding human population, substantial habitat loss or modification, and, in some circumstances, where there has been an increase in forest-cover, which is seen in the present study. This article argues that HWC is not only a consequence of ecological changes and outmigration but also a key factor shaping livelihood security, with distinct gendered vulnerabilities. By examining local narratives, this article highlights how these conflicts affect men's and women's roles differently, and how both communities and government institutions respond through various mitigation strategies,

revealing the interplay between social, ecological, and institutional dimensions of HWC.

Recurring Wildlife Intrusions and Precarity

"I live on the edge of the village, and wild animals come all year round. They cause a lot of damage here because there's more forest around," mentioned Chandra, a farmer in Denchukha. The patterns of wildlife intrusion differ markedly by location, with some areas experiencing more frequent or severe conflicts than others in Denchukha. The intensity and nature of HWC is determined by the proximity to forests, crop types, and the level of human activity in the fields. This also is represented by Ullah et al. (2023) who during their field survey in Teknaf Wildlife Sanctuary, Bangladesh, encountered wild monkeys and elephants near the forest edge, indicating that large mammals are commonly present along forest–human boundaries.This can be compared to Denchukha and Kurtoe, where villages on the periphery of the forests are the most frequent locations of the conflicts, and they are generally related to animals posing an imminent danger to human beings and domesticated animals e.g., bears, boars, and larger predators.

This constant exposure to danger and exhaustion shapes everyday life in these households and introduces distinct gendered dynamics within families. These risks are unevenly experienced, with labour-constrained and marginalised households facing heightened vulnerability. Such experiences contribute to precarity, understood here following Tebboth et al. (forthcoming) as the uneven distribution of vulnerability arising from differential exposure to material, economic, and psychosocial risks. In Denchukha, HWC is a key driver of this precarity. It represents a form of precarity of place, as the local ecological context exposes certain households, particularly labour-constrained and marginalised ones, to heightened physical risk, economic instability, and psychological stress. Crop loss and damage to livestock

undermine household assets and income security, while the constant threat of wildlife intrusion erodes feelings of safety and well-being. In this way, HWC links specific local environmental pressures to broader processes of unequal vulnerability and reduced well-being.

Conversely, when compared with these high-risk peripheral areas, the villagers that are in the central part of the settlement experience lower intensity conflicts, which are normally related to damage of crops by more habituated animals such as monkeys, porcupines, and deer. This spatial variation is correlated to local experiences of the frequency of conflict. According to locals, increased intrusion is often attributed to land-use change, specifically the increase in fallow land associated with the outmigration of the young. This has reduced the number of younger individuals participating in field work and guarding the land, thereby decreasing the adaptive capacity and well-being of the people who are left behind and remain in the villages. Households are now dependent on fewer and often older members of the household to undertake physically demanding and risky defensive work. The other reason that came up strongly from the respondent is due to the expanding forest cover around the periphery. The left fallow barren land was mostly government land, which is now a forest.

Chandra, a farmer of Denchukha, says, "The reason for the increase in forested areas around our village is due to depopulation, people are going to the towns to find better jobs, and the lands in the village are left empty. These empty lands are becoming forests, which become home for wild animals." Even in Kurtoe, according to the Tshogpa (village representative), rat populations have actually increased in recent years because farmers are no longer allowed to burn their fields as they used to in the past. They said burning the fields in the winter as a way to make the soil fertile, as well as reduce immediate rat activity by destroying their shelter and food sources for

a short term. However, those areas where conflict has been reported to have declined are typically those where infrastructure is better, such as ease of road transport, power supply, and even more human presence and activity, which act as a deterrent to the more dangerous wildlife.

Beyond the crop loss, intrusion by wildlife brings emotional, psychological, and physical costs that leave farmers and their families in a precarious situation. “We don't sleep peacefully; the boars come anytime,” said Aita from Denchukha. Men often have to patrol for hours, maintaining fires and defending against potentially dangerous animals, which leads to fatigue, body pain, and potential injury risk. Tshering from Kurtoe recalled that “deer in the day and boars at night” requires constant vigilance, while occasionally foxes and leopards attacked livestock, with Rinchen recounting, “Just two months ago, a leopard killed Ap Dophula's horse.” A study of working hours, sleep, and fatigue in agriculture (Elliott et al. 2022), demonstrated that chronic vigilance, resulting from long hours and disturbed sleep, was a significant safety issue, requiring adjustments in farming schedules. Their findings are consistent with research showing that HWC leads to stress, insomnia, and exhaustion among subsistence farmers. This means that HWC is not only a source of precarity in livelihood but also affects well-being.

Impacts on Livelihood Security and Precarity

“I grow different vegetables throughout the year, the animals come almost throughout the year and destroy more than half of the harvest”, said Gyana Sham, a farmer in Denchukha. Households regularly have to deal with the problems caused by wild animals whose invasions into agricultural farms destroy daily routines and jeopardize food security, making it precarious. There is also increasing scientific understanding that climate variability and change are affecting wildlife behavior, habitat use, and availability of resources, which can in turn affect the frequency and intensity of human–

wildlife interactions (Kurth et al. 2024).

For example, through changes in animal movements and changes in sources of food and water, which will lead to closer proximity of wildlife to farms and to human settlements. Gopinath, a farmer working tirelessly in the fields, described how unpredictable and persistent the wildlife is, indicating that it challenges his means of living: "The monkeys also enter the house and eat the maize stored inside, we chase them away, but there is no permanent solution." Purna experienced how maize and millet are particularly vulnerable during the summer and harvesting seasons, noting, "Even with scarecrows and fencing, the porcupines and monkeys always find a way in." Chandra, a farmer from Denchukha, says, "Even when we work from morning till evening, boars and deer destroy the maize and vegetables before we can harvest. It is like we are wasting our efforts."

Similar incidents are also witnessed in Kurtoe, Sonam reflected, "We grow rice, millet, and lentils, but wildlife steals a good chunk of it. Sometimes there is nothing to sell." These accounts show that HWC directly interferes with household food availability and income, which has a severe impact and persuades some farmers to give up cultivation because making use of hired labour is financially burdensome and often leaving farmers feeling that their own efforts are wasted (Wangchuk et al. 2023). Seasonal shifts, erratic rainfall, and prolonged dry periods, all associated with climate variability, can worsen crop vulnerability and increase the overlap between human and wildlife activity periods, compounding these challenges.

Similar ideas are also shared by the people of Denchukha, that the intrusion of wildlife has deterred the farmers who previously wanted to work in the field; however, farmers have been trying to ensure that the field is at least used to grow something instead of leaving it bare. Most households stated that they cannot leave their fields uncultivated as long as they are able to work, since

they need to grow enough crops to feed themselves. The encroachment of wild animals has even led to a decrease in the supply of food in the household, leading to family dependence on stored grains or buying more food, which again puts more strain on the limited resources. This is further emphasized by a study conducted by Hariohay and Røskaft (2015) in Northern Tanzania, where reduced harvests limited the surplus that families can actually sell in local markets, which in turn affected the income and economic stability of households.

Households implement various adaptive measures to protect their livelihoods, but these measures are only partially effective in mitigating the effects of HWC. Field guarding is arranged in day and night shifts, and neighbours sometimes join together to hunt down animals or mend fencing. A study conducted in the Tarai landscape of Nepal by Shrestha et al. (2025), found that the adaptive strategies, though necessary, are labour-intensive and only partially efficient. In Denchuka, where wildlife is kept off with electrical fences and scarecrows, boars, monkeys and porcupines often find a way around these obstacles and expose the crops to damage. The old woman Dikura says, "We currently use the green nets, as well as we have a wooden fence around our garden." Similarly, some of the households have mentioned making scarecrows to get rid of the deer, but this has not been effective. Farmers such as Khina, who are old, susceptible to chronic diseases and injury, explained their inability to fix the fences over and over again: "We have stopped fencing our field; anyhow, animals such as wild pigs and porcupines would enter and eat everything."

Meanwhile, some households have been depending on their pet dogs, using loud noises, and varying the style of planting – not planting in some areas or planting fewer desirable crops in high-risk areas – balancing the risk of loss against labour and resource investment. The adaptive practices are gaining

importance along with the variability in climate since the dynamic rainfall regimes and variation in temperatures can lead to a change in the behavior of animals and the sensitivity of crops, and result in a situation where the farmers have to change their strategies. Particularly, maize and vegetables are planted in such a way to avoid the usual routes of the animals, with some crops near the houses or in wide-spaced plots to reduce damage to wildlife and ensure that the yield is not damaged in the long run. For instance, Roini, a farmer, said, "I think it's because there's forest cover near the field, which makes it easier for wild animals to enter the field. We even stopped cultivating rice near the forest and planted oranges instead, but they did not grow." This is due to outmigration-due to decline in the cardamom especially- as the heat has increased and pests has increased so that some land has been left fallow, forest vegetation has expanded closer to fields, and wildlife intrusion has increased.

Nevertheless, Bhuwani, an old farmer who has declined strength in capacity to work, too shared his grief, "We have reduced the cultivation of crops such as maize because we can't harvest crops due to the destruction by wild animals." Instead, we started to grow cardamom, but the cardamom is not growing well because of disease." Regardless of all such adaptations, HWC is still posing a threat to food security, reduced household income, and increased labour and emotional costs. Volski (2021) points out that the technical solutions to HWC are often ineffective, not because these technologies do not work, but because their use and continued use are determined by social, economic, and institutional conditions. For instance, households may lack the financial resources to keep or replace equipment over time or the labour needed to use these tools consistently. In addition, limited institutional support and weak extension services hamper training and follow-up, while limited trust in technologies introduced from outside the region discourages long-term use. Together, these factors compromise the effectiveness of technical interventions at the community level. The pattern is also seen in

Denchukha, where residents' willingness to adopt these measures is affected by lack of finance, lack of trust in the durability of technology such as electric fencing, and lack of institutional support for maintenance and repairs. In light of this, even when technical tools are available, their application is inconsistent and frequently ineffective.

Gendered Dimensions of Vulnerability and Coping

"Every night I go to the fields with a torch, not knowing which animal I will meet. We don't sleep, and we still have to work the next day," said Ash Bdr, a male farmer. This constant exposure to danger and exhaustion highlights how HWC shapes everyday life in rural households, introducing distinct gendered dynamics within families. In cases of increased HWC, farmers such as Ash Bdr are precarious in their juggling of both productive and reproductive duties. With a small baby at home, he must divide his time between guarding crops at night and supporting his wife with childcare, food preparation, and housework. This illustrates the double burden faced by men in subsistence farming households, as well as the multidimensional precarity they experience, including economic vulnerability, time poverty, physical risk, and social pressure to fulfil traditional male roles. Isolation further exacerbates these risks, as Ash Bdr's house is located in the midst of the jungle, away from other farming households.

Similarly, in Kurtoe, Ap Dorji recalled standing for hours by the paddy terraces, explaining that "If we fall asleep, the whole night's crop can disappear." Sleep deprivation, fatigue, and potential injuries, along with the difficulty of the terrains and the fact that they are working the night shift, make crop guarding a labour-intensive and physically and mentally taxing activity. Research by Adler et al. (2025) and Galley and Anthony (2024) reiterates these results, showing that gender norms often assign crop guarding and hazard management to men, with implications for their physical health,

time spent in labour, and family livelihood. These wildlife intrusions, though, ripple through the whole household and affect women in different but equally important ways. While men are exposed to this directly on the physical level in the fields, women are involved in a lot of emotional, domestic, and social labour.

Mongali, a housewife in Denchukha, explained that "we do not sleep, we wait for them to return safely" as destruction of crops by livestock "creates tension in the home," particularly when maize crops are infested by rats or wild animals destroy crops before the harvest. Such losses threaten food security and household income, forcing women to adjust household routines, care for children alone, manage scarce resources, and negotiate responsibilities among family members. Collectively, these narratives illustrate that HWC is a household-wide challenge: men bear the physical and temporal burdens of guarding crops, while women absorb the emotional and social consequences, together shaping the cropping decisions, labour allocation, emotional well-being, and gendered vulnerability.

For many men, the responsibility to protect crops is tied to social expectations of strength and provision, meaning injury or crop loss can be perceived as personal failures, intensifying psychological strain. As highlighted by Devi, a 72-year-old male farmer who lives at the bottom of the village, his fields are particularly exposed to wildlife intrusion. "I have to hire a guard to protect the orange orchard from monkeys, and we pay him Nu. 9,000 per month." This is an indication of a visible measure of socio-economic stigma of HWC. Being a primary provider who defends the family assets in any circumstance, Devi has to hire external labour and shows a lack of labour autonomy and independence in the family. The necessity of having to depend on paid help, despite his obvious commitment to provide, is perceived as a failure to live up to the traditional role of male protector in the field, especially since he

associates this failure with his old age, labour shortage, and the outmigration of his sons. Similarly, Ram shared, "We get frustrated because if we didn't have to guard the fields, we could do other work", which highlights the serious cost of lost time caused by HWC.

Guarding causes male providers to spend valuable work hours on defensive tasks that fail to generate income, instead of activities that could grow their yield. Because they are forced to do this defensive labour; their economic progress stops, which causes a significant social stigma. The fact that they cannot demonstrate the desired success and betterment of a competent head of a household makes them merely maintain what they have, and as a result, the community sees them undergoing agricultural decay. Ogra (2008) also draws attention to the fact that men are responsible for the protection of resources, securing the livestock, and working on the fields, which are linked to their status and social identity. Ogra stresses the fact that conflict has affected men the most due to the deprivation of "traditional identity, power, and position", as their failure to defend crops and livestock in the public sphere indicates their failure to be regarded as capable providers and heads of the family.

The current body of literature on gendered precarity in rural South Asia highlights the fact that the diverse experiences of men (physical, immediate risk) and women (chronic, emotional precarity) are not accidental coping strategies but based on the gendered power structure regarding land, resources, and decision-makers in rural South Asia (Agarwal 1994). Such gendered weaknesses brought about by HWC have different impacts on both sexes due to their traditional productive roles. Since men are the primary producers of agriculture, they must engage in such risky work as night guarding of crops, fence mending, and challenging wild creatures like boars and deer. This exposes them to physical danger while in contrast, women

possess a repressed emotional burden. As Ash Bdr's wife states, "We wait for them until they return, if they don't shout from the fields, we keep worrying." This shows that women are never sure whether their men are safe, or whether their farms, and the food supply of their families, would make it through the night.

Also, when men are in charge of resolving the effects of such encounters, women end up bearing the weight; they have to manage household meals despite reduced harvests, they have to look after children when they are on their own, and they have to reduce family tensions caused by the stress of consistent losses. Sanjana, a young woman in Denchukha, states, "the whole home becomes tense when the crops are damaged again," underscoring how women absorb emotional fallout while men absorb physical risk.

Community and Government Interventions: Shaping Resilience

"We have not received any support from the government. There was once a talk about providing fencing, but we didn't receive it. We have also seen in other places that fencing did not effectively protect crops from animals, so we didn't take much interest in requesting it," asserted Gopinath, who lives in the core of the village. In the absence of reliable or trusted institutional support, people in Denchukha rely primarily on community-based strategies to cope with HWC. With the ongoing damage from wildlife and lack of effective outside help, families have begun to cooperate more to protect the crops and other animals like cattle and poultry, which are their sources of income. An interesting conversation that emerged in Kurtoe, Chiwog Tshogpa mentioned that they were able to shoot and hunt down wild animals in the past, but today, it is against the law to kill wild animals. This has adversely affected the farmers since the invasion of wild animals has been more aggressive and difficult to manage. However, most farmers are particularly determined to stay on their farms instead of giving up despite the frequent losses. This sense

of community is sustained by the local social networks, which allow the neighbours to share information promptly regarding the sight of wildlife and to support each other in cases where the animals invade the cultivated land. According to Chetnath, a farmer in Denchukha, "Our neighbours are helpful, as they alert us if the wild animals are nearby." While such cooperation helps share the burden of risk, it is not always enough to avoid loss completely. This social capital (network of trust, cooperation, and information) plays an important role in the rural environment as it helps people to address the threat communally, also providing support in the form of formal aid. The study by Manoa et al. (2021) shows a persistent finding that even in Kenya, scarecrows, fencing, dog guarding, lighting, and noise devices are common mitigation strategies in the community intervention strategy. Equally, these community-based approaches reflect how resourceful and cohesive the local population is in Dechukha. However, their effectiveness is usually limited. The animals are too unpredictable and the networks are usually too small and inconsistent with irregular participation and the lack of coordination among themselves, making it hard to create timely responses.

As such, in addition to community programmes, government programmes in both Denchukha and Kurtoe have attempted to manage HWC by infrastructure, which includes availability of roads and electric fencing. Kurtoe Tshogpa shared, "Some houses got electrical fencing just a couple of years back, and it has been helpful. We don't see many deer around, and the boars do get close to the fencing, but soon run away once zapped." However, "there's so much work with the electrical fencing, we have to change the pole once a year, and it makes a lot of noise." This was also seen in Denchukha; according to the household, electric fencing has been put in place around certain fields, which is an effort to keep wild animals away, but this is not a widespread action and is limited to selected areas. Matrika, a farmer in Denchukha, says that some of the villagers received the electric fencing two

years ago. The electric fencing that was destroyed by animals such as wild pigs, bears, and monkeys as they received an electric shock, never returned. The fencing did help farmers. An example of this is a household where they were able to harvest some maize after not being able to cultivate for many years, but Matrika states, "After two years, the wooden poles of the fencing were damaged. We have requested new poles, but we have not received them." Redpath et al. (2013) found that conflict resolution often fails due to institutional problems, which leads to a breakdown in trust and social legitimacy, meaning that residents lose faith in the authorities or systems that are responsible for managing the conflict. This is the situation at Denchukha, where ultimately, local trust in government conservation projects is destroyed and the entire responsibility for long-term maintenance falls back onto the already struggling farmers.

Some of the key implementations towards HWC have also started in Bhutan, one of the implementations is currently initiated by the Ministry of Agriculture and Livestock (MoAL), National Plant Protection Centre (NPPC), and Japan International Cooperation Agency (JICA). This project is developing an HWC mitigation and management model for major pests, such as wild boar, deer, and monkeys, in four pilot locations of Punakha, Wangdue, Tsirang, and Dagana dzongkhags. However, as per the respondents, in Denchukha, it was shared that the compensation mechanism or awareness programmes by the government haven't been employed in the village. Dikura shared, "We don't report the loss of the crops to the gewog." There was no evidence of any farmers reporting to get compensation for what had been lost. This means that when the farmers have been compensated to some extent, their crops have already disappeared, and the loss would be greater than what the government is covering at present. As Berkes (2004) pointed out, conservation success is the result of local knowledge and group action. The direct mechanisms of generating the social learning required by a community

to effectively design and maintain its own mitigation rules and measures are education and information sharing. However, this research and the findings from Denchukha and Kurtoe contrast with no such campaigns and monitoring initiatives to educate communities about coexistence strategies and safe practices being given to the communities in Denchukha to combat HWC.

Thus, the difference between the community-level and government interventions highlights major gaps in resiliency building. Community practices, such as rotational guarding and neighbourly support, help achieve immediate coping mechanisms, social cohesion, and risk management. However, they are labour-intensive, unpredictable, and finally not enough to compensate for the loss of crops and livestock, which recur every now and then. Governments' intervention, such as fencing, compensation, and awareness programmes, may be effective in improving resilience on a long-term basis, but it cannot bring anything significant because of maintenance problems, slow response mechanisms, and poor adaptability to local ecological and social factors. These observations are supported by interviews Denchukha describes; while neighbourhoods make an effort to organize the guarding system and take up the workload, without any stable governmental assistance, families live with the constant risks, all on top of the already precarious situation.

Conclusion

HWC in Denchukha is a continuous phenomenon that determines the day-to-day routine, sources of livelihood, and emotional and physical health of families. The experiences of farmers show that the repetitive loss of crops, lack of sleep, and constant alertness destroy subsistence structures that were already characterized by uncertainty and put families in volatile loops of labour, risk, and adjustment. The comparative observations made by Kurtoe also demonstrate that the patterns of intrusion might be different, but the

pressures on the rural families are very similar. This is made even more precarious by gendered realities. Men are at increased physical risk when guarding fields, whereas women are burdened with increased domestic work, emotional burden, and invisible work associated with food insecurity. The community coping strategies, such as rotational guarding, neighbour alerts, and informal support, provide some level of buffer but are not sufficient in cases of sustained and well-structured government intervention. Poor fencing mechanisms, and a lack of monitoring lead to enormous gaps in protection. Finally, the policy measures that would help build resilience would be based on the recognition of the local ecological conditions, the reduction of the pressure at the household level, and the fact that men and women have different levels of vulnerability.

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