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STRATEGY BRIEF

MEETING THE CHALLENGES OF HUMAN–WILDLIFE CONFLICT RECONCILIATION IN DUDHWA TIGER RESERVE

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MAIN FINDINGS

Human–wildlife conflict (HWC) leads to bearing of direct as well as indirect economic costs of conflict by the communities. Such losses can seriously dent the incomes of concerned community members and result in increased antagonism towards conservation in general.

This research in Dudhwa Tiger Reserve (DTR) highlights that communities have to incur major economic losses due to crop depredation and the average annual household monetary losses are highest in Katarniaghat – 10.17% of the average annual household income followed by 7.25% of the average annual household income in Dudhwa and 5.8% of the average annual household income in Kishanpur. Similarly, the communities also have to incur economic losses due to livestock depredation and the average annual household monetary losses are highest in Katarniaghat – 3.05% of the average annual household income followed by 1.77% of the average annual household income in Dudhwa and 1.17% of the average annual household income in Kishanpur.

KEY RECOMMENDATIONS

The report strongly suggests that a single mitigation strategy to control the HWC situations is entirely ineffective, therefore, the combination of different techniques need to be employed in DTR to reduce the risk to wildlife accustomed to any single method.

Hence the report consists of a number of recommendations focusing on governance and law, research and monitoring, securing wildlife landscapes outside the Protected Area and stronger legal protection for critical wildlife habitat and corridors, welfare of rescued animals, awareness and outreach, anti-poaching, etc. The specific strategies suggested for mitigation of HWC in the project landscape mainly consist of following strategies:-

- Draw up comprehensive, species and region-specific, conflict-mitigation plans that can cater to prevention of HWC situations and reduce the adverse impacts on both humans and wildlife
- Constitute a well-trained and adequately equipped workforce in the State Forest Department (SFD) to actively address HWC situations
- Develop in situ systems to tackle the issue of HWC

Context

HWC, impacting both the rural and urban landscapes, is a growing conservation issue throughout the country and it manifests in the Dudhwa Tiger Reserve (DTR) landscape with livestock as well as human depredation by carnivores such as leopards *(Panthera pardus)* and tigers *(Panthera tigris)*, and crop depredation due to wild pig *(Sus scrofa)*, nilgai *(Boselaphus tragocamelus)*, and porcupine *(Hystrix indica)*. This is causing serious hardship to local people as well as to wildlife, many of which are threatened and endangered globally and nationally.

Despite the seriousness of the challenge resulting in direct as well as indirect costs of conflict including hidden social costs such as diminished states of psychological or physical well-being, these conflicts still often elude solutions. Although site-specific solutions do exist, and extensive measures to mitigate the problem have already been undertaken to some extent in the project landscape. Failure to address the concerns of local communities can undermine successful conservation measures; consequently mitigating HWC as a key priority area.

This strategic brief considers the results focusing on the nature and extent of HWCs in the DTR landscape and attempts to provide comprehensive multipronged strategies to mitigate the HWC and in turn enhance the income of the forest-fringe communities affected by the conflicts.

Close proximity of forests to agricultural fields leading to high HWC in DTR

Methodology

Data were collected through literature review along with primary field surveys comprising focused group discussion and household surveys by developing questionnaires. Thirteen conflict-prone villages including Bardiya, Bisunapur, Fakirpuri, Narang (Salavat Nagar), Korriyani, Matehi, Nishan Gara, Karikot, Rampurwa, Chaltua, Ellenganj, Kisunpur, and Sehramau, which are a part of DTR landscape covering Dudhwa National Park, Kishanpur Wildlife Sanctuary, Katarniaghat Wildlife Sanctuary, and South Kheri Forest Division were prioritized by ranking documents pertaining to HWC (media reports, forest department reports, and other documentation) available for last 5 years.

Key Results

The following are the results showing nature and extent of HWC in form of crop raiding:

- As per the data, the major source of income for 84.5% of the households is subsistence agriculture. Since the distance between the reserve forest and the farm lands owned by most of the villages is between 0.5 and 2 km, the communities have to incur major economic losses due to crop depredation. The average annual household monetary losses are highest in Katarniaghat – INR 4000–5000 of the average annual household income of INR 44,247 followed by INR 4000–5000 of the average annual household income of INR 62,055 in Dudhwa, and INR 2500–3000 of the average annual household income of INR 47,086 in Kishanpur.
- As per the survey, around 95.5% of the respondents reported significant crop damage by wild pig *(S. scrofa)* followed by nilgai or blue bull *(B. tragocamelus)* – 92.5% and porcupine *(H. indica)* – 88%. The major crops affected due to crop depredation are sugarcane, paddy, wheat, pulses (red lentil or masoor, red gram or arhar), sorghum or jowar, and chickpea or chana.
- In order to overcome the losses, it was reported that though 81% of the respondents reported use of alternative and unpalatable crops such as Mentha, chilli, citrus, etc., as a major strategy to reduce crop raiding by wild ungulates, it was observed that the current mitigation strategies adopted by the people to prevent HWC are guarding fields at night, installing electric fencing, use of crackers or fire bombs to create noise,

sticks, community patrolling, use of colourful films, old colourful sarees, red and green LED bulbs to deter wild animals, and scarecrows and local wind chimes to deter birds and other animals. However, these have not proved to be successful in achieving their objectives.

- It was also reported that the use of solar electronic fencing has proved to advance the success rate in reducing HWC in many high conflict areas but is an expensive proposition, which also requires constant insulation. Currently a famer has installed an electric fence in four acres of his agricultural land at a cost of INR 37,500 an acre taking the total cost to INR 1.5 lakhs. The forest department is currently using ANIDERS (Animal Intrusion Detection and Repellent System) and laser fencing on pilot basis.

The following are the results showing nature and extent of HWC in form of cattle lifting and human casualties:

- As per the survey, maximum incidents of conflict resulting in injuries and loss of life of livestocks as well as human beings are due to tigers (92%), wild pigs (89.5%), and leopards (84%). In case of domestic animals it was reported that the domestic animals such as goats, calves, and buffaloes are frequently falling prey to carnivore attacks in the entire landscape, but the highest mortality is of goats.
- This again has resulted in economic losses to the communities and the average annual household monetary losses are highest in Katarniaghat – INR 1200–1500 of the average annual household income of INR 44,247 followed by INR 1000–1200 of the average annual household income of INR 62,055 in Dudhwa, and INR 500–600 of the average annual household income of INR 47,086 in Kishanpur.
- In case of human casualties and injuries by wild animals it was reported that most conflicts were reported inside or close to the forest areas and 88% of the victims are females. The incidents took place outside homes when activities such as cattle grazing, fodder collection, or firewood collection were being carried out, which are female dominated.

The following are the results showing community awareness and perception with respect to HWCs:

Presence of human settlements in and around DTR often result in confrontation with the wildlife

Habitat of DTR comprising of woodlands, grasslands and wetlands

- The community's overall perception towards HWCs is of reverence and respondents reported strong sentiments for the need to conserve wildlife. However, most respondents felt that the strategy of mitigating HWCs have not been successful and that has resulted in severe damage to agricultural production, livestock, and human lives in last few years.
- The major causes or drivers resulting in HWC in the project landscape as reported by the respondents are increased human population (82.6%) followed by increased wildlife population (69.6%), habitat fragmentation and loss of corridors (56.5%), overexploitation of natural resources (for collection of firewood, fodder, Non timber forest produce, medicinal plants, etc.) – 26.1%, and infrastructure development (roads, powerlines, railways) – 21.7%.

Recommendations in Form of Strategies and Actions

The specific strategies and actions suggested for mitigation of HWC in the project landscape are as follows:

Strategy: Draw up comprehensive, species, and region-specific, conflict-mitigation plans that can cater to prevention of HWC situations and reduce the adverse impacts on both humans and wildlife.

1. Collect extensive data on various aspects related to HWC at range, divisional, and district levels.
2. Create a centralized analytical database to assess the temporal changes in frequency of conflict at using data trends, models, and latest GIS tools.
3. Establish a land-use practices assessment and planning committee to identify various land-use practices that result in HWC and develop more pragmatic land-use practices for various relevant regions.
4. Ensure that Environmental Impact Assessment of developmental projects takes into consideration potential HWC spinoffs that large landscape level land-use practices or alterations can cause.
5. Develop region-specific conflict mitigation plans for various prioritized species involved in intensive conflict situations with humans (e.g., leopards, elephants, rhesus macaques, wild pigs, etc.).

6. Highlight and upscale the traditional systems of dealing with HWC in the state.

Strategy: Constitute a well-trained and adequately equipped workforce in the SFD to actively address HWC situations

1. Set up conflict mitigation squads in the selected regions comprising carefully screened forest personnel.
2. Develop and implement a comprehensive training and capacity enhancement programme for the conflict-mitigation squads.
3. Establish suitably equipped mobile units supported by trained veterinarians in districts having high levels of HWC to attend to wildlife emergencies, rescue, and rehabilitation, and to provide wildlife health support.
4. Organize regular short-term training programmes including first aid for front-line staff of Forest Department at the forest training institutes.
5. Develop specialized programmes in wildlife management for a range of important stakeholders, especially staff of NGOs, institutions, and enforcement agencies.

Strategy: Develop in situ systems to tackle the issue of HWC

1. Constitute a network of primary response teams (PRTs) consisting of local community members/local bodies, which address conflict situations in situ and form a bridge between the larger community and the SFD.
2. Provide small honorariums and recognition to the PRTs in return.
3. Set up kill-and-damage inspection teams in zones with a high intensity of human–animal conflicts including joint inspection with local NGOs and local bodies.
4. Streamline the official procedure for payment of ex gratia relief to the victims of HWC to ensure that the relief is disbursed immediately with minimal paperwork and hindrances.
5. Put in place arrangements by liaison with medical treatment centres so that persons injured by wild animals receive quick and proper medical treatment and rehabilitation support including wheelchairs, prosthetic limbs, and plastic surgery, whenever required. Also treat injured animals whenever needed.
6. Initiate pilot livestock and crop insurance schemes through agriculture and animal husbandry department to not only reduce HWC but also for sustainable management of agro-biodiversity.
7. Use the results from these schemes for preparing a state policy or long-term welfare schemes.
8. Encourage the participation of the local bodies (e.g., gram panchayats/municipality/corporation) in the management of HWC, such as formation of local wildlife squads; construction and maintenance of barriers and fences; promotion of alternative cropping practices among villagers; distribution of relief to the victims of HWC; and organization of eco-development activities in the villages affected by HWC.
9. Formulate and implement extensive education and awareness programmes to reduce the growing animosity among people towards wild animals involved in the conflicts, as well as to enlist their help in mitigating HWC.
10. Cultivating plants like Mentha and other essential oil plants like chamomile, lemongrass, ginger, etc., on the edge of the agricultural fields to create a buffer around it have been reported to prove useful for the farmers who experience loss of crops through crop raiding. However, their market rates fluctuate a lot each year.
11. Since the households in the project landscape are heavily dependent on the forest products especially for fuelwood, alternative options for cooking energy like improved cook stoves, biogas, and LPG are needed. LPG can be provided through convergence with ongoing government schemes like *Ujwala*.

ABOUT THIS STRATEGY BRIEF

This strategy brief is part of the project titled 'Conservation of Protected Areas through Carbon Finance: Implementing a Pilot Project for Dudhwa Tiger Reserve' in collaboration with the Uttar Pradesh Forest Department.

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