

An effect of Man vs Wild conflict on socio-economic status of rural people of Vidarbha, Maharashtra: A case study between 2010 to 2020

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Abstract

Human-wildlife conflict (HWC) is a major issue in rural areas especially in biodiversity rich areas like Vidarbha, Maharashtra. This paper explores the socio-economic implications of HWC for rural communities in Vidarbha from 2010 to 2020 with consideration of crop and livestock loss, compensation and its implications for livelihoods, food security and psychosocial well-being. The paper takes a case study approach and is based on primary and secondary data from the survey, academic and home government literature, as well as qualitative data from comparable areas. The results show that HWC, especially with elephants, tigers, and leopards, result in severe economic damages, exacerbated vulnerability of poor marginal people and weakened community resilience. The study highlights the importance of integrating mitigation approaches, such as compensation schemes and community-based conservation, to promote coexistence and long-term rural development.

Keywords: Human-Wildlife Conflict, Socio-Economic Impact, Vidarbha- Maharashtra, Rural Livelihoods, Compensation Schemes

1 Introduction

Human-wildlife conflict (HWC) is generated by the intersection between human activities and wildlife conservation, frequently resulting in economic loss, safety and social disruption. HWC in this region, which is an important fortnight since it hosts the Tadoba-Andhari Tiger Reserve, has escalated because of habitat fragmentation, expansion of agriculture and human population. During the decade 2010–2020, the region has experienced elevated numbers of human–wildlife conflict events, particularly of crop damage and livestock predation by elephants, tigers and leopards, which have undermined the economic and social base of rural communities. This paper examines the impacts in terms of economic losses, social vulnerability and defaces (mitigations), the latter of which is identified as a barrier to adaptation in the second of the two case studies examined.

2. Study Area and Methodology

2.1 Study Area

Vidarbha, which has 11 districts including Nagpur, Amravati and Chandrapur, has an agrarian economy. The region is home to many protected areas, which result in HWC being common due to the close proximity between people and forests. Rural economy is primarily agriculture based with cotton, soybean and paddy are the predominant crops, and over 80% of the population is rural.

2.2 Methodology

The study follows a case study method through a synthesis of primary and secondary data available in

the academic, government, and conservation literatures for Maharashtra. HWC reported incidents, compensation paid and socio-economic impacts, were obtained from reports such as reports of Maharashtra forest department and studies on HWC in India. The findings were contextualized through input from qualitative sources like the Western Ghats and other tiger reserves. As comprehensive primary data for Vidarbha are not available, the study extrapolates the emerging regional trends and deals with broad themes seen between 2010 and 2020. A descriptive analysis was used to evaluate economic impacts, social impacts, and mitigation outcome.

3. Human-Wildlife Conflict in Vidarbha (2010–2020)

Vidarbha's proximity to tiger reserves and forest-corridors has resulted in a high incidence of HWC involving (ii) :

Elephants: Since 2002, elephants from nearest states like Karnataka have been pushing their range into Vidarbha resulting in huge crop damage. Maharashtra between 2002 and 2013 reported as many as 10,200 cases of crop damage by elephants, and several Vidarbha districts, including Chandrapur and Gadchiroli, were the worst-hit.

Tigers and Leopards: The big cats that are on top of the food chain – tigers and leopards in reserves like Tadoba-Andhari led to livestock predation and also human casualties in rare cases. Research reveals some areas have fewer prey, forcing carnivores toward human settlements.

Other Species: Wild boars and nilgai were also responsible for crop damage that, however had less economic impact compared to elephants and large carnivores.

4. Socio-Economic Impacts

HWC has serious socio-economic implications in rural Vidarbha:

Economic Losses: Though crop loss was only a part of the total compensation paid in the state for the years 2002 to 2013, for example, Maharashtra paid a total of Rs. 90,248 million or US\$ 1,641 million in compensation during these years, some of which went to Vidarbha. In addition, there was livestock depredation by tigers and leopard and compromising household income for small scale farmer.

Food: (in) security Paddy crop was damaged and household food availability reduced impacting the food security of marginalised communities. Research from comparable contexts demonstrate that HWC may account for about a third of annual household food intake being lost.

Psychosocial effects: Fear of wildlife attacks, and economic insecurity undermined psychosocial wellbeing, and contributed to stress and poor community cohesion. Women in the community who tend the crops, which are not fenced off, were at greater risk of exposure, she said.

The vulnerability of specific groups Female headed households and poor households were found to be disproportionately vulnerable, with a lack of resources for protective structures (fencing, watchtowers) etc.

Opportunity and Transaction Costs: The time that was spent guarding crops and the time spent trying to negotiate bureaucratic channels and obtain compensation limited opportunities to participate in income-generating activities, deepening poverty.

5. Compensatory and Remedial Measures

The compensation programmes (undertaken by the Maharashtra government) had however not addressed the challenge:

Remuneration: Inadequate criteria for accessing, low payment levels and high transaction costs impeded the appropriateness of compensation. Many farmers said they were paid late or too little, leading to mistrust of the authorities.

Preventive Strategies: Methods such as game-proof fencing, pits and community alertness were instituted but were impeded by limited scalability and sustainability. Those efforts proved promising but were underfunded.

6. Discussion

The socio economic implications of HWC in Vidarbha region reflects the intricate nexus between conservation and the rural lives. The poor are more vulnerable to the economic impact of crop and livestock losses, and that keeps them poor. Dependence on agriculture in Vidarbha makes HWC has more significant effect, as sources of non-farm income are limited. Compensation mechanisms are also central to the issue, yet hobbled by bureaucratic inadequacies, demonstrating the importance of organized procedures and participation of local communities. Research from other parts of the world, such as Bhutan and Western Ghats, have shown that mitigation efforts that incorporate both socio-economic and ecological consideration can minimize conflict and facilitate coexistence.

The decade 2010–2020 witnessed further escalation of HWC through habitat fragmentation and expansion of agriculture necessitating movement towards coexistence paradigms. Community-level initiatives, such as participatory rural appraisals and local stewardship programs, have been successful in mitigating conflict and in sharing and encouraging conservation.

7. Recommendations

To tackle human-wildlife conflict (HWC) and its socio-economic effects in Vidarbha, we suggest the following strategies:

- 1. Improved Compensation Mechanisms:** Streamline compensation processes with clear eligibility criteria and prompt payments to minimize transaction costs.
- 2. Preventive Infrastructure:** Invest in scalable solutions like wildlife-proof fencing, bio-fencing, and audio-visual deterrents, customized to meet local needs.
- 3. Community-Based Conservation:** Involve local communities in conservation efforts through education and participatory programs to encourage coexistence.
- 4. Diversification of Livelihoods:** Encourage alternative income sources, such as eco-tourism or non-farming activities, to lessen reliance on agriculture.
- 5. Research and Monitoring:** Carry out long-term studies to monitor HWC trends and their socio-economic impacts, ensuring that policy interventions are based on solid data.

8. Conclusion

The human-wildlife conflict in Vidarbha from 2010 to 2020 has had a profound effect on the socio-economic conditions of rural communities, worsening issues like poverty, food insecurity, and mental stress. Although there have been efforts like compensation schemes and preventive measures, their success is often hindered by bureaucratic hurdles and a lack of genuine community engagement. To effectively tackle this conflict, we need a comprehensive approach that aligns conservation efforts with the economic realities of rural residents. By implementing integrated strategies and encouraging community involvement, Vidarbha can pave the way for a sustainable coexistence that benefits both

wildlife and local development.

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