



Implemented by
giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Ministry of Environment,
Forest and Climate Change,
Government of India



Directorate of Forests
Government of West Bengal

Content Module 6

Operationalizing the Holistic and Harmonious coexistence Approach to Mitigate Human-Wildlife Conflict through Cross-sector Cooperation

A Holistic Approach to Human-Wildlife Conflict (HWC) Mitigation in India



Imprint

Training Resource Material: A Holistic Approach to Human-Wildlife Conflict (HWC) Mitigation in India

Module HWC-01:	An Introduction to Human-Wildlife Conflict Mitigation: Taking a Holistic and Harmonious Coexistence Approach
Module HWC-02:	The Overall Context: Understanding HWC in a Development Context
Module HWC-03:	Legal, Policy, and Administrative Framework for HWC Mitigation in India
Module HWC-04:	Tools and techniques for effective and Efficient Human-Wildlife Conflict Mitigation
Module HWC-05:	Strengthening Community Engagement for Effective and Sustainable Mitigation of Human-Wildlife Conflict
Module HWC-06:	Operationalizing the Holistic and Harmonious coexistence Approach to Mitigate Human-Wildlife Conflict through Cross-sector Cooperation
Module HWC-07:	Holistic, Effective and Ethical communication on Human-Wildlife Conflict Mitigation: Taking a Harmonious Coexistence Approach
Module HWC-08:	A Primer on Developing Leadership and other Non-technical Competencies for HWC Mitigation
Module OH-01:	An introduction to the One Health Approach, Zoonotic and Other Emerging Diseases

June 2023

Published by:

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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On behalf of the

German Federal Ministry for Economic Cooperation and Development (BMZ)

GIZ is responsible for the content of this publication.

New Delhi, 2023

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1. About this Module

1.1 Learning Outcomes

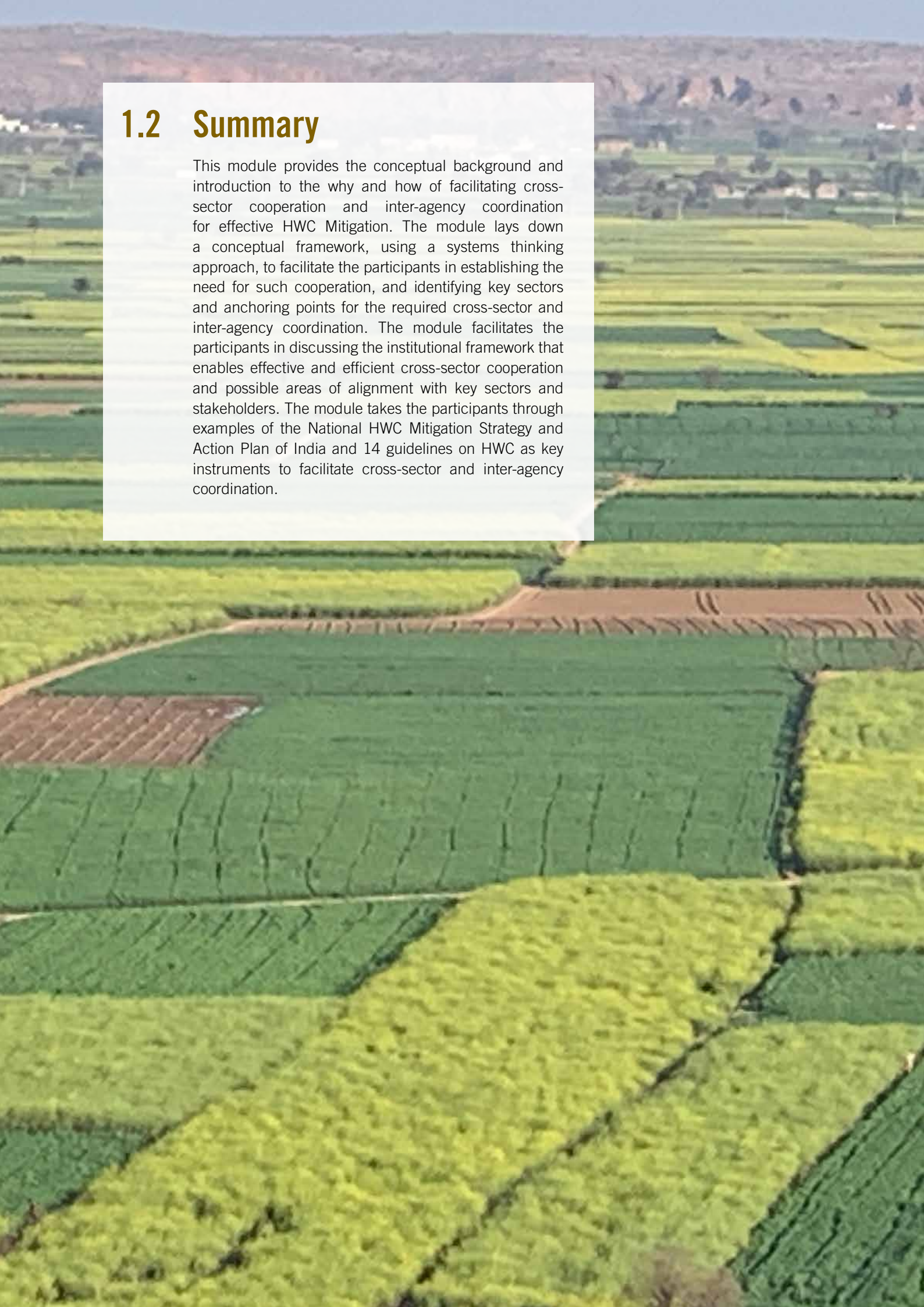
After completing this module, the participants are able to:

- establish the need for cross-sector cooperation and inter-agency coordination for effective HWC mitigation
- appraise development areas and sectors, to prioritise, in their own area of work, for cross-sector cooperation and inter-agency coordination for HWC mitigation
- demonstrate the use of tools such as environmental impact assessment (EIA), strategic environment assessment (SEA) and land-use planning critically analyse existing efforts and impacts of mainstreaming human-wildlife conflict mitigation into sectoral and cross-sectoral strategies, plans and programmes
- outline an operational plan to facilitate cross-sectoral cooperation for human-wildlife conflict mitigation, in their area of work



1.2 Summary

This module provides the conceptual background and introduction to the why and how of facilitating cross-sector cooperation and inter-agency coordination for effective HWC Mitigation. The module lays down a conceptual framework, using a systems thinking approach, to facilitate the participants in establishing the need for such cooperation, and identifying key sectors and anchoring points for the required cross-sector and inter-agency coordination. The module facilitates the participants in discussing the institutional framework that enables effective and efficient cross-sector cooperation and possible areas of alignment with key sectors and stakeholders. The module takes the participants through examples of the National HWC Mitigation Strategy and Action Plan of India and 14 guidelines on HWC as key instruments to facilitate cross-sector and inter-agency coordination.



1.3 Key Messages:

- To find a balance, and to look forward to equal importance to the welfare of animals as well as humans, viz., 'harmonious co-existence, it is crucial to find solutions keeping in mind that HWC arises due to conflicting needs from wildlife as well as different groups of people, from the same landscape). To ensure that both – human and wildlife – are protected from conflicts, mitigation measures follow the modern wildlife conservation principles to balance the needs of people with the conservation of nature. A significant approach to operationalise this holistic co-existence and participatory approach to HWC is by ensuring cross-sectoral and multistakeholder cooperation. This approach integrates the experiences of the field managers, experts, scientists, decision-makers and community in implementing the mitigation measures. In doing so, innovations that plug the gaps in the existing instruments are introduced in a targeted manner and all key stakeholders are engaged.
- Development and sectoral areas, where synergies will bring maximum effectiveness for HWC mitigation are poverty alleviation, urban and rural development, agriculture and horticulture, tourism, infrastructure development, climate change and disaster management, district administration and police, media and public health.
- To ensure that development is planned and implemented with biodiversity in mind, impact assessment is being used as an important tool. Environmental legislation in India offers several opportunities to address HWC, of which Environmental Impact (EIA) related to development projects, and Strategic Environment Assessment (SEA) related to the development of Plans, Programmes and Policies are of importance. The inclusion of biodiversity in EIA is a two-way process. It not only draws on information on biodiversity but also generates useful biodiversity data. SEA can be used to assess the influence of plans, programmes and policies on HWC, and prescribe adaptations to mitigate negative effects and to strengthen positive effects.

- Instruments to provide an enabling environment for cross-sector cooperation and inter-agency coordination includes National Strategy and Action Plan on HWC Mitigation (2021-26); 14 guidelines on HWC Mitigation, State-level HWC Mitigation Strategy and Action Plans (HWC-SAPs), and the division-level HWC Management Action Plans (HWC-MAPs).
- Cross-sectoral cooperation is most effective when efforts are made at the levels from national via state to district/division and community levels. Key elements for successful cross-sectoral cooperation include trust building, participatory decision making, agreed guidelines and operating procedures, networks of information and experience, common curriculum for trainings, joint drills and training for the field teams etc.
- Key platforms in India to facilitate effective and efficient cross-sector and inter-agency cooperation include the National Knowledge and Data Platform on HWC Mitigation, A National HWC Mitigation Forum, State-level Co-ordination Committees (SLCCs), District-level Co-ordination Committees (DLCCs), and landscape-level HWC Mitigation forum.
- These cross-sector forums can contribute significantly to addressing critical issues such as the exchange of good practices in HWC mitigation and One Health, Sharing information about modern technology for preventing the incidents of conflict, jointly implemented capacity development measures, data sharing, joint patrolling and monitoring measures, multi-disciplinary research involving different sectors and agencies etc.





2. Establishing the need for cross-sector cooperation in HWC Mitigation

2.1 Overview

Anthropogenic and ecological drivers of HWC lead to increased pressures on landscape features with consequences to the state of both wildlife and people. These changed situations again generate several negative impacts on the livelihoods and well-being of people and the existence of wildlife species. It is these negative impacts on both the human and the wildlife side that indicate a need for a response. As HWC is a multidimensional problem, these responses need to be holistic, addressing all dimensions of the problem from the following five angles: addressing the drivers, reducing the pressures, assessing the situation, reducing the impact on humans and animals and developing institutional, human and financial capacities for effective implementation. Furthermore, the responses must be well-informed and backed by appropriate financial means, operational infrastructure, strong organisational capacity and cooperation partners. Strategically aligned national, state and local policies build the basis for efficient responses.

To find a balance and to look forward to equal importance to the welfare of animals as well as humans, viz., harmonious co-existence, it is crucial to find solutions keeping in mind that HWC arises due to conflicting needs from wildlife as well as different groups of people, from the same landscape. To ensure that both—humans and wildlife—are protected from conflicts, mitigation measures follow the modern wildlife conservation principles to balance the needs of people with the conservation of nature. A significant approach to operationalising this holistic co-existence and participatory approach to HWC is ensuring cross-sectoral and multistakeholder cooperation. This approach integrates the experiences of the field managers, experts, scientists, decision-makers and community in implementing the mitigation measures. In doing so, innovations that plug the gaps in the existing instruments are introduced in a targeted manner, and all key stakeholders are engaged.

Key sectors, as well as stakeholders from each of the different sectors and domains, need to be engaged to create an alliance or network of different experts and institutions with diverse perspectives, competencies and resources to address complex challenges posed by HWC more effectively. It means collaborative efforts from a wide array of partners, including groups that do not traditionally work together, such as the private sector (tea and coffee plantations), railways and NHAI, educational institutions, wildlife conservation and development NGOs, farmers' cooperatives and agricultural research institutions.

Ways to ensure cross-sector cooperation include: using a participatory and inclusive approach by the forest departments in planning and implementing mitigation measures; efficient information sharing across key departments such as police, veterinary, revenue, railways and private sector plantations etc.; establishment of a multi-stakeholder and multi-departmental forum and working groups; joint training courses for officers from key relevant departments; taking a landscape approach to plan and implement mitigation measures. To ensure cross-sector cooperation, a higher commitment would be invested from the forest departments to ensure inter-departmental collaboration.

To effectively and responsively address the issue of HWC, the Ministry of Environment, Forest and Climate Change (MoEF&CC), the Government of India has facilitated the development of the National Human-Wildlife Conflict Mitigation Strategy and Action Plan (HWC-NAP) for India and guidelines taking a participatory, integrated and inclusive approach.

HWC-NAP is a guiding document facilitating a holistic approach to mitigating HWC inclusively and sustainably. It is supported by four supplementary frameworks, providing a strategy and plan for cross-sector cooperation on HWC mitigation. It aims to integrate the One Health approach via the following measure:

HWC-NAP recommends that state- and division-level HWC mitigation plans take a One Health approach. The species-specific guidelines emphasise One Health through a dedicated section, 'Emerging diseases and One Health approach'. Two issues-specific guidelines- 'Guidelines on Health Emergencies and Potential Health Risks Arising out of Human-Wildlife Conflict (HWC) Situations' and 'Occupational Health and Safety during HWC Situations' provide detailed guidance on the operationalisation of the One Health concept and about zoonotic and other emerging diseases in the context of HWC mitigation in India.

2.2 A conceptual framework to identify possible anchors for cooperating across sectors for effective and sustainable human-wildlife conflict mitigation, taking a One Health approach

The conceptual framework on which the HWC-NAP is built works under the assumption that systems are never static. In fact, systems are evolutionary and can continuously change, adapt and respond to inevitable changes and recurring events. This ‘systems thinking’ enables us to find the root causes of a problem, rather than only treat its symptoms, and thus can be helpful to perceive new opportunities. The HWC-NAP uses the concept of Drivers-Pressures-State- Impact-Response (DPSIR) as the basic conceptual framework (Figure 1) (Khera, 2019). This framework can be used to identify possible anchors for cooperating across sectors for effective and sustainable human-wildlife conflict mitigation, taking a One Health approach.

Anthropogenic and ecological drivers of HWC lead to increased pressures on landscape features, with consequences to the state of both wildlife and humans. These changed situations negatively impact the livelihoods, health and well-being of humans as well as the health and well-being of wildlife species. It is these negative impacts on the natural ecosystems, humans and wildlife that indicate the need for a response.

As HWC is a multidimensional problem, these responses need to be holistic, addressing all dimensions of the problem from the following five angles: addressing the drivers, reducing the pressures, assessing the situation, reducing the impact on humans and wildlife and developing institutional, human and financial capacities for effective implementation.

Furthermore, the responses must be well-informed and backed by appropriate financial means, operational infrastructure, strong organisational capacity and cooperation partners. Strategically-aligned national, state and local policies build the basis for efficient responses.

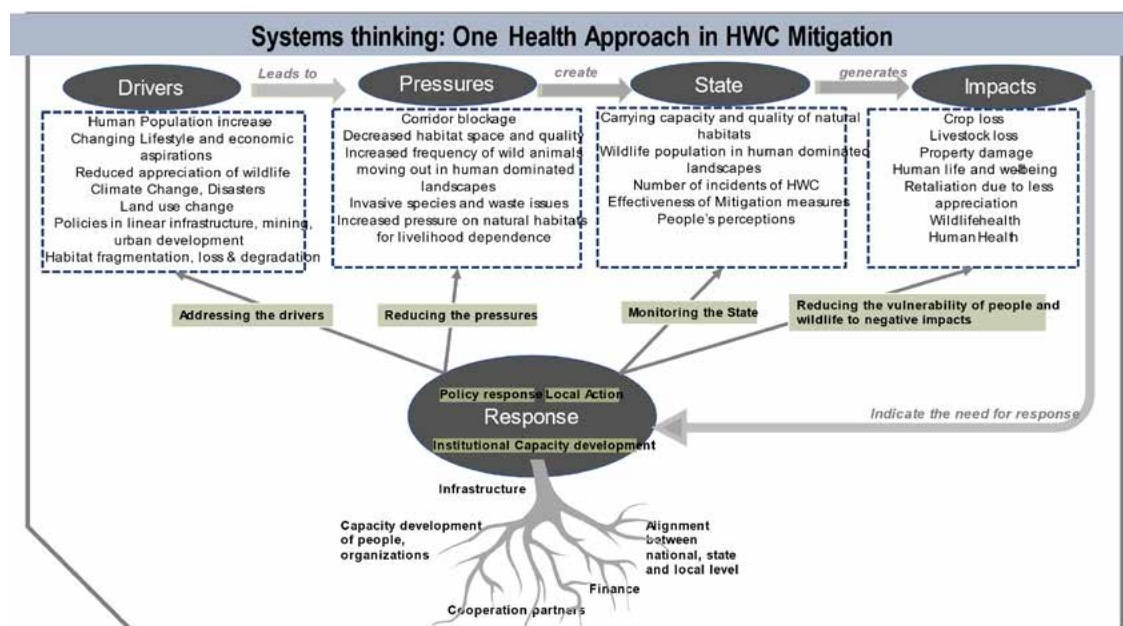


Figure 1: Conceptual framework to identify possible anchors for cooperating across sectors for effective and sustainable human-wildlife conflict mitigation, taking a One Health approach (modified conceptual framework from HWC-NAP) (Khera 2019)



2.3 Taking a holistic approach to HWC Mitigation

The National Wildlife Action Plan of India (2017- 2035)

NWAP stresses the belief that HWC is a human-induced phenomenon and, therefore, all the HWC mitigation measures must be developed in a truly participatory manner, engaging all key stakeholders. Wild animals' welfare in the conflict should be given equal importance while planning and

implementing any HWC mitigation measures. Sustainability in the mitigation of HWC is possible only when a holistic approach is taken to address the issues.

A holistic approach addresses the issue of HWC from three angles:

1. by addressing the drivers and providing a conducive policy environment through policy-making and cross-sectoral cooperation;
2. by effective use of suitable instruments, traditional knowledge, and modern technology to prevent incidents of conflict; and
3. by reducing the impact of HWC on both humans and wildlife by reducing vulnerability and through inclusive planning and implementation of all mitigation actions.

Capacity development and structured knowledge sharing are the foundation and continuing elements of this holistic approach and interventions related to these are recommended in HWC-NAP and the guidelines. Success in HWC mitigation plans is extremely difficult without cross-sector cooperation with key sectors as the drivers and pressures of HWC sit in sectors other than forest, and several programmes and plans of the other sectors directly or indirectly, positively or negatively, affect the HWC mitigation efforts.

2.4 Taking a harmonious co-existence approach to HWC mitigation

'Harmonious co-existence is defined as a dynamic but sustainable state in which humans and wildlife adapt to living in shared landscapes, with the minimum negative impact of human-wildlife interaction on humans or their resources and the wildlife or its habitats.

The mitigation measures designed using this approach maintain a balance between the welfare of animals and humans in which both are given equal importance. Overlap in space and resource use is managed to minimise conflict. While developing goals, outputs and indicators in HWC-NAP and recommendations in the guidelines, the underlying approach is to maintain the balance between the welfare of humans and wildlife.

This approach requires the implementers to use an animal-welfare lens and a human-safety lens to ensure that the mitigation measures are effective and wildlife-friendly (non-lethal), contributing to the possibilities of harmonious co-existence.

Since the implementation of mitigation measures goes beyond the forest departments, i.e., most of the resorts, buildings, plantations, farms and villages use measures to prevent the wild animals in conflict—the agriculture sector specifically uses and further develops crop protection measures—it is critical that these sectors are included in the dialogue on harmonious co-existence, and provided with the necessary technical expertise to deploy mitigation measures that are wildlife-friendly. Otherwise, the approach will not be operationalised.

2.5 Key sectors relevant to HWC mitigation

2.5.1 An overview of the broad development areas where HWC mitigation approaches need to be aligned with:

HWC mitigation needs to be incorporated into policies, plans and programmes of the most relevant development areas:

- **Poverty alleviation:** As the poorest part of the population is most vulnerable to the effects of HWC development and poverty alleviation strategies and programmes must prioritise HWC.
- **Urban and rural development:** These sectors are of special importance as wildlife species like leopards and elephants shift to agricultural areas and even to villages because of extensive loss and fragmentation of their habitats. There is a need to find ways for co-existence.
- **Agriculture and plantation crops:** Increasing pressure on agricultural areas (including tea and coffee plantations) threatens the livelihood of the rural population. Leopards leave the forests and become habituated to easy prey like cattle. Elephants also often tend to enter tea and coffee plantations.
- **Tourism:** This sector is developing fast, also in rural areas with high HWC conflict potential. Religious sites often are in these areas, and people visit them at critical times of the day.
- **Infrastructure development:** Infrastructure, especially linear infrastructure such as railways and highways, is a major driving force behind the fragmentation and degradation of wildlife habitats and for restriction of their home ranges. The good news here is that existing methods and technology are available to develop the linear infrastructure without jeopardising animal movements.
- Climate change and forestry programmes, including the Green India Mission and compensatory afforestation schemes.
- Climate change adaptation measures, including those implemented under National Climate Adaptation Fund.

- Rural development and Panchayati Raj programmes, including MGNREGA.
- Urban development programmes, including Smart Cities, Swachh Bharat Abhiyan.
- Agriculture programmes, including crop and livestock insurance (including crop damage due to wildlife animals in *Pradhan Mantri Fasal Bima Yojna*), use of alternate crops, cropping pattern.
- Exploring synergies with the institutions and volunteers, including disaster management, civil defence and home guards under the Ministry of Home Affairs, for their role in community engagement, crowd management and other rescue and emergency response measures.
- Synergies with the measures implemented by the public health departments, animal husbandry departments and other relevant agencies on One Health to integrate the One Health approach in all relevant measures at national, state and local levels.
- Exploring the possibility of cooperation with the Green Skill Development Programme and other agencies and schemes for accreditation of relevant certifying agencies and strengthening the skill base—especially of the response teams and local community.

Box 1: Guidelines on linear infrastructure

Roads, railways and power lines fragment wildlife habitats and cut migration routes. They are a major cause of injuries and death of wild animals. On behalf of the Ministry of Environment, Forest and Climate Change (MoEFCC) the Wildlife Institute of India developed the guidelines on 'Eco-friendly Measures to mitigate Impacts of Linear Infrastructures on Wildlife' (WII< 2016). The guidelines provide a standard template for measures for mitigating the impact of railway lines, roads and power lines on wildlife. The document intends to:

Provide solutions to align conservation values and actions to land development, growth management and linear infrastructure planning in the Indian context. Deliver means sensitising developers to plan, implement and pursue development objectives in the sink with conservation priorities.

Serve as a 'how to' guide for planning biodiversity-friendly developments, especially by agencies such as National Highways, Indian Railways, and PowerGrid Corporation (Mathur, 2017).

The document is structured in four parts and provides detailed guidance for planning, locating, designing, implementing and operating smart green roads, railways and powerlines. The authors of the document stress that 'concerted capacity building efforts are necessary to improve the uptake of guidance by key stakeholders, particularly infrastructure planners, builders, multilateral finance institutions, donor agencies, environmental regulators, decision-makers and policy analysts.'

The first section deals with the importance to consider biodiversity in linear planning and design. It stresses that wildlife cannot only be conserved in protected areas. These have to be seen as a network of interacting and interdependent areas. Roads not only traverse protected areas but also cut the connections between them. For this, a landscape approach is a tool to deal with wildlife in a wider context. Biodiversity conservation goals should not be viewed as contradictory to development goals. Biodiversity shall be mainstreamed in linear developments and other development initiatives to create a win-win situation for biodiversity conservation and human safety. The document promotes 'Green Infrastructure', which offers a blueprint for 'smart conservation', also incorporating human dimensions like safety and economic considerations. The key message is:

Green infrastructure promotes both smart growth and smart conservation.

Besides legal aspects, the document gives an overview of the ecological impacts of linear infrastructure.



2.5.2 An indicative list of sectors to be engaged in HWC mitigation in India

- The Union Ministry of Environment, Forests and Climate Change is one of the principal stakeholders in HWC Mitigation planning. The agency creates national-level policies on wildlife conservation, management, and HWC mitigation. Divisions and authorities of MoEFCC, such as the National Tiger Conservation Authority, and Project Elephant have a key role in managing tiger and elephant conservation, respectively. The Wildlife Crime Control Bureau is a key agency tasked with preventing the life trade. Since hunting, poaching and illegal wildlife trade are intricately tied to HWC levels, the WCCB also plays a key role in HWC mitigation planning. MoEFCC has released the National Wildlife Action Plan of India (2017-35), the National Human-Wildlife Conflict Mitigation Strategy and Action Plan of India (2021-26), fourteen guidelines and two advisories relevant to HWC mitigation.
- Ministry of Agriculture and Farmer Welfare, Agriculture Research institutes under the Indian Council of Agricultural Research (ICAR), Animal Husbandry Department are key players on critical issues relevant to HWC mitigation such as research and awareness on non-palatable non-preferred crops by wildlife species-in-conflict, development of deterrents and repellents for wildlife species-in-conflict and other innovative and state-of-the-art crop protection measures, methods of crop damage assessment, crop and livestock insurance; and engagement with and awareness of local communities, farmers on HWC-safe farming methods. The ICAR is the apex body for coordinating, guiding, and managing research and education in agriculture in the entire country under the aegis of DARE, Ministry of Agriculture and Farmers Welfare.

The ICAR-AU System of India has 74 Agricultural Universities comprising 63 State Agricultural, Veterinary, Horticultural and Fisheries Universities (SAUs), 4 ICAR-DUs, viz. IARI, IVRI, NDRI and CIFE, 3 Central Agricultural Universities (CAU, Imphal, Dr. RPCAU, Pusa and RLBCAU, Jhansi), 4 Central Universities (CU) having Faculty of Agriculture (BHU, AMU, Viswa Bharati and Nagaland University). The National Agricultural Research, Education and Extension System (NAREES) of India is one of the largest in the world, admitting more than 28000 students at UG level and over 17,500 students at Master's and Doctoral level annually, in different disciplines of Agricultural and Allied Sciences.

The National Academy of Agricultural Research Management (NAARM)- ICAR addresses issues related to agricultural research and education management, foundation training to the new entrants of the Agricultural Research Service of ICAR, capacity building of senior professionals of national and international NARS in agricultural research and education management, and policy and consultancy support to NARS.

- Health (for medical emergencies/also psychological): Human casualty is an extreme form of HWC. Access to healthcare and training of local healthcare workers in dealing with such emergencies is vital. Apart from physical trauma, psychological trauma is also common in such cases and requires careful consideration. Ministry of Health and Family Welfare, National Centre for Disease Control is a key stakeholder. Apart from several other initiatives, the flagship 'National One Health Programme for Prevention and Control of Zoonotic Diseases' being implemented by the Ministry of Health & Family Welfare (MoHFW), Government of India has important synergies that can be leveraged for ensuring occupational health and safety of the field staff, addressing health emergencies arising due to HWC related emergencies and other significant aspects.
- Media: Media includes regional and National TV, print media: Newspapers and Magazines, radio: All India Radio and FM, Online/Digital Media, Social Media, Filmmakers and Photographers (Refer to Module on Media for more details)
- Ministry of Road, Transport and Highways, National Highways Authority of India: India's ever-expanding road network is crucial for economic development. However, unplanned road expansion may have serious consequences for HWC such as habitat fragmentation and isolating populations. Habitat fragmentation has been attributed as a major cause of increased HWC in case of several species in India. Hence, coordination between forest department, research organisations and Ministry of Road, Transport and Highways (MoRTH) would be crucial to offset any habitat fragmentation or degradation due to such infrastructure projects.
- Ministry of Railways: Similar to roadways, the expansion of the railway network through forest areas leads to habitat fragmentation and could lead to heightened levels of HWC. Further, in elephant range areas, accidental deaths of elephants due to collision with trains are also common. Between April 2018 and March 2021, forty-five elephants died due to collisions with railways.
- Irrigation department implements flood protection measures, some of which are in forest areas, and, in some cases, these structures may negatively impact animal movement, as animal movements is generally parallel to foothills while drainage is perpendicular, so the irrigation structures may act as barriers.
- Electricity department: Powerlines can sometimes lead to wildlife deaths, especially in case of illegal hooking and the presence of live wires around crop fields. Annually several wildlife species die due to such practices by local farmers. Elephant electrocutions may occur when elephants come in contact with sagging wires while foraging in human-use landscapes. Deliberate electrocutions by placing live wires near agriculture fields have also led to elephant deaths across the country.
- Tribal Development Department: In many landscapes, certain communities are disproportionately affected by HWC than others. For instance, human deaths due to elephants is particularly high in Chhattisgarh, Odisha, Jharkhand, West Bengal and Assam. In all these states, tribal populations are more exposed to such conflicts due to the location of their settlements, marginalization and rampant alcoholism among some groups. Hence, the Tribal Development Ministry could play a vital role in poverty alleviation in these communities, better access to education, and general upliftment of tribal societies
- Ministry of Rural Development and Panchayati Raj: Since the rural communities are most often disproportionately affected by HWC, the rural development ministry could potentially play a pivotal role in HWC mitigation.

- **Municipal Cooperations:** Garbage disposal has severe implications for HWC mitigation and management, especially for species that persist close to human settlements in peri-urban or rural areas. For instance, dogs and pigs are attracted to garbage dumps. Leopards are attracted to such places due to the easy availability of food; hence, HWC may be exacerbated. On the other hand, timely garbage disposal prevents the aggregation of dogs and pigs in this area and hence will not attract leopards to the area. Similarly, in many Western countries, bears are attracted to garbage bins and, in the process, come into conflict with people. Bear-proof garbage bins have been used successfully to prevent bear entry into human habitations.
- **District Administration:** The district administration has a key role to play in not only addressing emergency situations related to HWC mitigation, but also to bring together all key sectors, department and agencies in a district together on a common platform, possible in the District-level Coordination Committee (DLCC), to jointly implement the division-level HWC management Action Plan.
- **Police:** The police department plays a vital role of crowd control and management during conflict situations. During wildlife emergencies, especially in populated areas, crowding and mobbing not only jeopardized wildlife management but also human safety. Hence, the police become a vital stakeholder in cross-sectoral collaboration.
- **Para-military and defence departments:** Defence departments including the paramilitary could play a vital role in crowd control as well and such roles needs to be formalized at a policy level. Furthermore, these departments could enable the transboundary movement of wide-ranging species such as elephants.
- **Educational Department and institutes (Universities/agricultural):** Education Department may be engaged in building a curriculum on prevention and effective management of HWC. Similarly, educational institutes may be involved in spreading awareness on human safety and HWC prevention and mitigation.
- **Non-Governmental Organizations:** Non-Government Organizations play a key role in implementing projects to minimize HWC across several states in India. Both National Level NGOs and regional and Local NGOs have been actively involved in HWC mitigation.
- **Tourism**
 - Tourism Department
 - Tour operators
 - Guides and taxi operators
 - Religious tourism
 - Hotels
 - Associations etc)
- **Animal right group, Human right groups**
- **Political parties: Local representatives**



3. Dialogue between key sectors and stakeholders to find long-term solutions to HWC

3.1 Overview:

- To achieve the true potential of cross-sectoral and cross-stakeholder cooperation, a systematic approach needs to be taken, by ensuring that cooperation is institutionalised. Efforts need to be made to facilitate dialogue between key sectors and stakeholders, to find common solutions for HWC mitigation, and to technically support key sectors and stakeholders in adopting wildlife-friendly production and processes.
- Management and dissemination of knowledge between key sectors and stakeholders is a foundational element of the holistic approach towards mitigating HWC. Departments, agencies and other stakeholders need to systematically share data, information, experiences and knowledge to co-create long-term solutions for HWC mitigation.
- Sharing and managing knowledge is a complex process requiring systematic and sustainable instruments and enablers to ensure success. Decision-makers, multi-disciplinary experts and practitioners would need to continuously exchange information on trends, challenges and good practices to learn from each other and to find innovative solutions together.



3.2 The Platforms for cross-sector dialogue:

- Provisions will be made to plan for soft structures, and mechanisms are planned to ensure that all key stakeholders can effectively participate in the planning, development and implementation of HWC mitigation interventions. These structures and mechanisms are broadly divided into national and state levels for better coordination and cooperation.

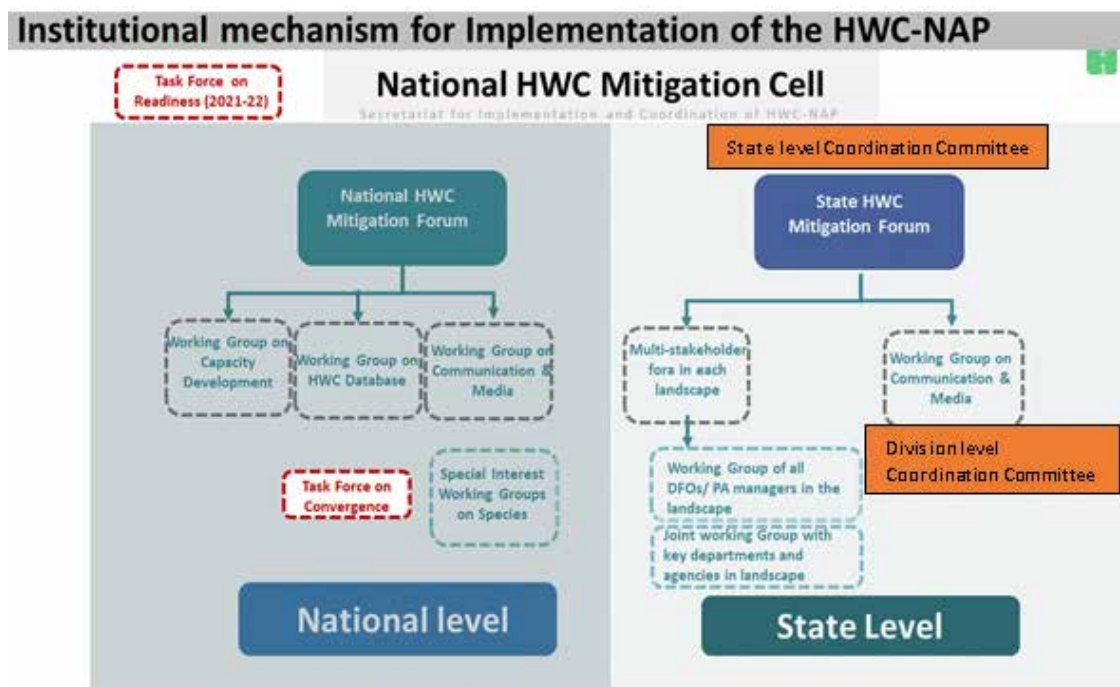


Figure 2: Institutional mechanism for facilitating Cross-sector Cooperation (HWC-NAP of India, 2021-26)

A national-level platform for cross-sector cooperation:

- At the national level, an HWC mitigation forum will be established for overall coordination and guidance of implementation at the national level. Representatives from all relevant divisions/ departments/agencies of MoEFCC at the national level shall be part of the forum. Within the forum, it is proposed to set up a multi-stakeholder sub-group, which will primarily facilitate a wider dialogue among key stakeholders to ensure the achievement of all goals where cross-sector and multi-stakeholder engagement is envisioned. The forum intends to bring together key sectors and stakeholders to discuss, brainstorm and find common ground on key HWC issues that require cross-sector and multi-stakeholder cooperation.
- To ensure vertical coordination, a sub-group of CWWs, on experience-sharing towards implementing the state-level HWC Mitigation Strategy and Action Plans (HWC-SAPs) using a common framework and approach. The MoEFCC will steer the forum of CWWs from all states and UTs of India for the effective implementation of the Strategic Action Plans.
- Aside from the sub-groups, there will also be three working groups for coordinating technical work on key issues concerning HWC. The first national working group on Capacity Development, with a membership of all key training institutions and experts from the forest and other key relevant sectors, will enable experience sharing and joint training programmes addressing cross-sector issues. The national working group on HWC Mitigation Communication, with a membership of communication and media experts, will facilitate in developing, implementing and monitoring of goals and indicators specific to communication and awareness, as well as media guidelines and, finally, the National Working Group on HWC Database, with a membership of database experts from key agencies from India, apart from MoEFCC and the Wildlife Institute of India (WII), will be responsible for monitoring and updating the national database and facilitating the states in data inputs.

State-level platform for cross-sector cooperation:

To prevent and manage human-wildlife conflict and mitigate its risk and adverse impact, the **MoEFCC has issued an advisory to all states (February 2021)**. The advisory recommends constituting an inter-departmental level coordination committee at state/ UTs and the districts.

State Governments/ UT Administrations of the affected states/ UTs should constitute a State Co-ordination Committee (SLCC) headed by the Chief Secretary with a membership of Secretary in-charge of finance, natural resources, infrastructure, home and forest departments of state/ UT, Director General of Police, PCCF-HoFF and representatives of concerned Central Government departments (Railways, Revenue Intelligence, Customs, etc.). The Chief Wildlife Warden is to act as the member secretary of this committee.

A landscape-level platform for cross-sector cooperation:

The Draft National HWC Mitigation Strategy and Action Plan (HWC-NAP), developed under the Indo-German Project recommends establishing an overarching **HWC Mitigation Multi-stakeholder Forum at the landscape level**, anchored at the CCF/CF level to steer landscape-level planning and HWC-MAPs, with effective involvement of the district administration and other line agencies. HWC-NAP further recommends that the landscape-level forum should have working groups

- for horizontal coordination (Joint working group for regular land-use change management at the landscape level)
- for vertical coordination (working group of all DFOs/PA managers in the landscape for regular strategic planning and information sharing).

A district-level platform for cross-sector cooperation:

On the recommendation of the Chief Wildlife Warden (CWLW), the State Government/UT Administration should constitute an inter-departmental coordination committee in all or identified district(s) of the State/ UT that are vulnerable to HWC to be chaired by District Collector and comprising of district-level officers of departments/organisations included in the SLCC.

Possible Participants of the landscape level HWC Mitigation Forum and DLCC

<ul style="list-style-type: none"> • District Collector (to act as Chairperson of DLCC) • DFO • Panchayat and Rural Development Departments • Police Department • Disaster Management • Department of Urban Development • Department of Tourism • Rural Development and PRI (officer for MGNREGA) 	<ul style="list-style-type: none"> • Animal Husbandry and Fisheries • Fire Bridge • Tribal Welfare • Agriculture Department of Education • Department and Higher Education • Department of Minor Irrigation • Department of Energy • Paramilitary establishments • Youth Empowerment and Sports • Horticulture and Sericulture 	<ul style="list-style-type: none"> • Department of Health and Family Welfare and Key Hospitals • District Panchayat and Rural Development Officers • Railways • Department of Infrastructure, Ports and Inland Water Transport
<ul style="list-style-type: none"> • Wildlife Crime Control Bureau (WCCB) • The Wild Life Warden of the District headquarters (to act as Member Secretary of DLCC) • Honorary Wild Life Warden • Two non-official expert members (elephant expert, tiger/ leopard expert) 	<ul style="list-style-type: none"> • Block Development Officers • Block Livestock Development Officers • Block Disaster Management Officer • Block Development Officers (BDOs) and Executive Assistants (VDOs) of gram panchayats 	<ul style="list-style-type: none"> • Panchayats and Samitis • Community-level primary response with panchayats and State Forest Departments • Self-Help Groups (SHGs), Biodiversity Management Committees (BMCs), Joint Forest Management Committee (JFMC), Eco-development Committee (EDC) and other village-level committees
<ul style="list-style-type: none"> • Training Institutions 		

3.3 Possible issues to be addressed at these cross-sector committees and forums:

Management and dissemination of knowledge between key sectors and stakeholders are foundational elements of the holistic approach towards mitigating HWC. States, agencies and other stakeholders will systematically share data, information, experiences and knowledge with each other to co-create long-term solutions on HWC mitigation. Sharing and managing knowledge is a complex process, which would require systematic and sustainable instruments and enablers to ensure success. Policymakers, multi-disciplinary experts and practitioners would need to continuously exchange information on trends, challenges and good practices, with the aim to learn from each other and to find innovative solutions together.

- Exchange of good practices in HWC mitigation and One Health. A database of good practices in the mitigation of HWC, including the use of EIA, case studies from different parts of the country as well as the world and emerging trends and challenges will be shared amongst sectors and stakeholders
- **Key technological innovations and challenges:** Sharing information about modern technology for preventing conflict incidents are crucial to contain and minimise incidents and resolve existing problems. For example, use of technology will be used to create early warning systems. Technologies such as satellite telemetry using radio/satellite collars, drones, seismic waves, infrared technology, temperature, movement sensors and other systems for tracking the movement of wildlife in and around hotspots need to be systematically explored for their varied applications and their effectiveness as early warning instruments should be enhanced, along with a system of robust response teams.
- **Potential or ongoing collaborations:** Information on collaboration and partnership between the forest department and other key sectors and stakeholders which is ongoing or can potentially be explored, will be shared.
- **Capacity development opportunities:** Identifying capacity development opportunities, such as joint trainings across sectors, opportunities for field visits, joint working on specialised cases, etc.
- **Live monitoring data:** Putting in place a system to generate clear information and data on the status of conflicts and mitigation measures, to be able to make informed and evidence-based decisions by the decision-makers and to implement the most efficient mitigation measures by the field teams, on HWC as well as One Health relevant data.

3.4 National Knowledge and Data Portal on HWC Mitigation: A key instrument to facilitate cross-sector cooperation

- Creation and management of a database is the first step. Further efforts are needed to ensure that there are avenues and opportunities to share qualitative information, as well as explicit and implicit knowledge on managing HWC among key stakeholders. Mechanisms for data inputs, including real-time inputs, would be created so that the regularly incoming data improve the quality of information generated from the database. Policymakers, multi-disciplinary experts and practitioners would need to continuously exchange information on trends, challenges and good practice, to learn from each other and to find innovative solutions together. Provision of an enabling environment for knowledge sharing would be achieved via a diverse set of instruments to build trust among key stakeholders, such as the creation of a shared space for the exchange of ideas and information, joint training, discussion forums, joint publications and other instruments and measures. A web-based national knowledge platform will be created to provide the anchoring for all discussion and dialogue that will not only facilitate immediate solutions on HWC mitigation issues but also formulate recommendations for the revision processes of the HWC-NAP and HWC-SAPs. A significant section of knowledge on human-wildlife conflict mitigation would also come from the traditional and local knowledge available in different communities in India, some of which may have the potential to be adopted as such or combined with new knowledge and technologies.
- A working group on the 'National HWC Mitigation Database' will manage the national HWC database and ensure that data is being collected, stored, analysed and utilised for its intended purpose. Training curricula will be developed for officers and experts from key relevant departments and sections, and for the response teams to ensure that data input is efficient. All states would be encouraged to make good use of the national database and analyse information on HWC and mitigation measures and use this information to support evidence-based HWC management decisions. The data gaps identified by the field teams will be consolidated and shared by the representatives from states, leading to the establishment of research priorities for national and state-level wildlife research institutions.

Key Sectors

How Do They Impact HWC

How do we communicate with the

RAILWAYS

- Affecting elephant corridors.
- Loss of human life & property.

Periodic meeting
daily bilateral communication.

Tea gardens

- Habitat Fragmenting
- Inter Sectoral Tussle
- Animal Deaths & Negative publicity

Bulk SMS, direct phone calls & regular meetings.

Tea garden
Tea gardeners

TE: Socio-Eco condition of TE labours ~~form~~ relate with HWC

TE: Awareness meeting
TE Managers & Labour
Training on HWC mitigation

Defence

Defence: Strategic Location & Corridor blockage.

Defence: Meeting with persons
Awareness generation

RAILWAYS

WILDLIFE DEATHS & INJURY

INTER-DEPARTMENTAL CO-ORDINATION MEETINGS & TRAINING

FRINGE VILLAGERS & Tea Garden Workers

BIOTIC PRESSURE ESCALATES HWC

JFMCs MEETING & AWARENESS

Fishing & Agriculture

Public representatives
help in driving

At block level and District level meeting.

Local

HOW the HWC

4. Alignment of plans and programmes of key sectors and stakeholders, for effective HWC mitigation

4.1 Overview: mainstreaming HWC into key relevant sectors at national, state and local levels

The definition of mainstreaming of the Convention on Biological Diversity (CBD) can be adapted to HWC: 'mainstreaming' means integrating or including actions related to human-wildlife conflict in sectoral strategies to production sectors (such as agriculture, fisheries, forestry and mining) in national plans and programmes (such as poverty reduction plans and national sustainable development plans). The interlinkage with other sectors and processes is also a two-way process, where HWC affects the activities of the other sectors and/or is affected by the activities of a particular sector. Whether the relationship will be positive or negative depends on the degree to which HWC is kept in mind while the activities are carried out.

If HWC concerns are integrated into the overall development planning, sectoral strategies and legal frameworks, there will be a two-fold impact:

- Negative impacts of the activities/strategies/policies of the other sectors can be minimised, leading to a reduction of HWC, for example, rural development, traffic and agriculture.
- Reduction of HWC may significantly increase the sustainability of certain sectors, like poverty alleviation or climate change adaptation.

Integrating HWC concerns into key relevant sectors such as agricultural, linear infrastructure, rural development, urban development, tourism, electricity, and mining is crucial to ensure that activities of these sectors do not lead to situations that result in HWC. Strategic Environmental Assessment (SEA) can be useful in identifying specific programs and activities that might increase the conflict or negatively affect HWC mitigation efforts. SEA can also help in identifying areas where synergies may be possible. Two areas where more detailed studies and joint working are important are climate change and disaster management. Operational synergies need to be achieved with the disaster management measures, especially with regard to disaster relief funds to compensate for negative impacts of HWC, and creation of a cadre of National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF) personnel trained to deal with special HWC situations. It is also important to mainstream HWC mitigation into the ongoing discussions and processes on development and biodiversity conservation, such as SDGs implementation and post-2020 biodiversity agenda.

Key sectors and stakeholders need to review their plans and programmes to identify possible trade-offs with human-wildlife conflict mitigation, or possible factors contributing to or increasing the magnitude of human-wildlife conflict. This alignment is critical to ensure that all efforts made toward HWC mitigation are sustainable and efficient.

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wildlives have rights too
most staff are

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encroachment openly.
must remain impartial

1. To continuously engage
with them to keep them
aware of various wildlife
issues of various importance.

4.2 Key instruments for bringing alignment across plans and programmes of key relevant sectors on HWC mitigation:

Impact Assessment

One legal instrument specifically of relevance to mainstreaming HWC mitigation is impact assessment. In the following section, we discuss two forms of impact assessment: Environmental Impact Assessment (EIA), which is already a mandatory requirement in India, is supported by law but a lot is to be done to ensure that it facilitates in integrating human-wildlife conflict mitigation concerns into other sectors' plans and projects, and Strategic Environmental Assessment (SEA), which is still in its infancy is purely voluntary. These two differ in scales and objectives.

To ensure that development is planned and implemented with human-wildlife conflict in mind, impact assessment is being used as an important tool. The major conventions on biodiversity—CBD, the Ramsar Convention and the Convention on Migratory Species— recognise impact assessment as an important decision-supporting tool to help plan and implement development with biodiversity – including wildlife—in mind.

The CBD requires parties to apply impact assessment to projects (EIA) as well as to programmes, plans and policies (SEA), which have potential negative impact on biodiversity.

Environmental legislation in India may offer several opportunities to address HWC, of which Environmental Impact Assessment (EIA) related to development projects, and Strategic Environment Assessment (SEA) related to the development of plans, programmes and policies may of importance.

- If development projects may compound HWC, this should be addressed in EIA. If a significant effect is expected of the construction, presence or operation of the realized structure or other landscape change, the EIA prescribes:
 - measures in the Environmental Management Plan accompanying the project to mitigate the impact,
 - compensation of the increased impacts,
 - the application of an alternative development scenario having less or no impact, or
 - the cancelation of the development project.
- Similarly, SEA can be used to assess the influence of plans, programmes and policies on HWC, and prescribe adaptations to mitigate negative effects and to strengthen positive effects. Addressing HWC in SEA is for example relevant for the development of land use plans, sector development plans and programmes, infrastructure development plans, urban development plans, as well as policies affecting the use of land and natural resources.

Strategic Environmental Assessment (SEA)

- SEA refers to a range of 'analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter-linkages with economic and social considerations.' SEA can be described as a family of approaches that use a variety of tools, rather than a single, fixed and prescriptive approach. A good SEA is adapted and tailor-made to the context in which it is applied. This can be thought as a continuum of increasing integration: at one end of the continuum, the principal aim is to integrate the environment, alongside economic and social concerns, into strategic decision-making; at the other end, the emphasis is on the full integration of the environmental, social and economic factors into a holistic sustainability assessment.

- SEA is applied at the very earliest stages of decision-making both to help formulate policies, plans and programmes and to assess their potential development effectiveness and sustainability. This distinguishes SEA from more traditional environmental assessment tools, such as the EIA, which have a proven track record in addressing the environmental threats and opportunities of specific projects but are less easily applied to policies, plans and programmes. SEA is not a substitute for, but complements, EIA and other assessment approaches and tools.

Table 2.1. SEA and EIA compared

EIA	SEA
Applied to specific and relatively short-term (life-cycle) projects and their specifications.	Applied to policies, plans and programmes with a broad and long-term strategic perspective.
Takes place at early stage of project planning once parameters are set. Considers limited range of project alternatives.	Ideally, takes place at an early stage in strategic planning. Considers a broad range of alternative scenarios.
Usually prepared and/or funded by the project proponents.	Conducted independently of any specific project proponent.
Focus on obtaining project permission, and rarely with feedback to policy, plan or programme consideration.	Focus on decision on policy, plan and programme implications for future lower-level decisions.
Well-defined, linear process with clear beginning and end (e.g. from feasibility to project approval).	Multi-stage, iterative process with feedback loops.
Preparation of an EIA document with prescribed format and contents is usually mandatory. This document provides a baseline reference for monitoring.	May not be formally documented.
Emphasis on mitigating environmental and social impacts of a specific project, but with identification of some project opportunities, off-sets, etc.	Emphasis on meeting balanced environmental, social and economic objectives in policies, plans and programmes. Includes identifying macro-level development outcomes.
Limited review of cumulative impacts, often limited to phases of a specific project. Does not cover regional-scale developments or multiple projects.	Inherently incorporates consideration of cumulative impacts.

Environmental impact assessment (EIA)

- EIA is a planning tool used to predict and evaluate the potentially significant impacts of the proposed action and provides a mitigation plan for minimising adverse impacts for making decisions on the proposed project/program/policy. It is a procedure to know the positive and negative aspects of a proposed activity, including the natural, social and economic aspects. It is a decision-making process to decide whether a developmental project must start or not.
- The International Association for Impact Assessment (IAIA) defines EIA as ‘the process for identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made.’ In environmental cases, the purpose of the assessment is to ensure that decision-makers consider the ensuing environmental impacts when deciding whether a project should be allowed to proceed or not. The EIA includes likely adverse effects on human beings, vegetation cover, animal kingdom, air, water, land and property.
- The EIA is a tool that seeks to ensure sustainable development through the evaluation of those impacts arising from a major activity (policy, project or programme and plan) that are likely to have environmental effects. The purpose of EIA is to ensure the protection and conservation of the environment and natural resources, including human health aspects, against uncontrollable development. It is anticipatory, participatory and systematic, and relies on multidisciplinary input.
- Potential HWC may be included in the ToR for new roads or railways projects to avoid cutting off migration routes. This should be supported by the use of GIS and remote sensing technology.

Cross-sectoral cooperation has to take place on all levels, from national via state to community/district levels

National Human-Wildlife Conflict Mitigation Strategy and Action Plan

The National Human-Wildlife Conflict Mitigation Strategy and Action Plan (HWC-NAP) for India is a guiding document facilitating a holistic approach to mitigating human-wildlife conflict (HWC) in an inclusive and sustainable manner.

The HWC-NAP presents an opportunity and framework to mainstream HWC mitigation in policies, plans and programmes of the forest sector and other sectors and, at all levels of governance (national, state and local), to ensure harmonious co-existence and overall well-being of humans and wildlife, conservation of ecosystem services and sustainable economic development. This approach is consistent with the Indian tradition of living in harmony with nature, the Vision for New India @75 and the 2030 Agenda for Sustainable Development.

The HWC-NAP recommends a **participatory approach to plan, develop and implement HWC mitigation measures**. It states ‘Planning, development and implementation of HWC mitigation plans and measures will involve key sectors and stakeholders at national, state and local levels. The process of stakeholder engagement will follow a systematic approach to ensure that they play an effective role in decision-making. Stakeholders’ views will be adequately reflected in the design and implementation of mitigation measures. The HWC mitigation plans and measures will be sensitive to the special needs of vulnerable sections, such as economically weaker sections of the society in rural and urban areas, and the youth. The concerns of women will be specifically addressed.

Table 1: Indicators in the National HWC Mitigation Strategy and Action Plan achievement of which requires effective cross-sector cooperation

Goals	Indicators
Goal 1: HWC mitigation is integrated into overall development planning as well as policies and plans of key relevant sectors	Number of national programmes, plans, policies and legislation where HWC concerns are explicitly integrated (O)
	Number of Inter-ministerial consultations on HWC mitigation (P)
	Number of state level programmes, plans, policies and legislation where HWC concerns are explicitly integrated (O)
Goal 2: All development activities are sensitive to potential human wildlife conflicts	Number of cases where HWC was integrated into EIA report (P)
	Number of new conflict hotspots as a result of development projects (I)
Goal 3: Comprehensive and integrated land use planning ensures that wildlife habitats are protected from loss, fragmentation and degradation	Trend of change in land-use/land cover (I) ¹
	Number of Protected Areas integrating climate change models into carrying capacity assessments (P)
Goal 4: People are enabled in working on their risk perception, improving their tolerance and co-existence with wildlife in the same landscape	Number of educational institutions with ‘holistic approach to HWC mitigation’ integrated as part of their curriculum (O)
	Trends in number of media reports with holistic approach towards HWC (I)
Desired Results & Achievements	Indicators
Goal 5: Critical wildlife corridors, migratory routes, and movement paths of key wildlife species in conflict are identified, assessed and secured	Area of land brought under conservation in the wildlife corridors (O)
Goal 6: Livelihood dependence of people on protected areas, corridors, forests and other natural habitats is reduced	Trends in number of women and farmers practicing HWC-safe livelihoods (I)
Goal 10: Sustainable waste management and HWC-safe food storage in and around Protected Areas, and at HWC conflict hotspots	Proportion of divisions with functional waste management plans (O)

¹ Synergies with existing indicators: Post-2020 Biodiversity; National land-use policy

Desired Results & Achievements	Indicators
Goal 12: Evidence-based HWC mitigation measures that are effective and wildlife-friendly, are designed, implemented and customized for site specific needs	Index on effectiveness and wildlife-friendliness of HWC mitigation measures (I)
Goal 13: A national database is available, to assess, monitor and report on HWC and its mitigation in the country	Trends in quality of data received at the National Database (O)
Goal 14: States, agencies and other stakeholders systematically share data, information, experiences and knowledge with each other to co-create long-term solutions on HWC mitigation	Number of representatives from civil society and community-based institutions at the National, State and landscape level HWC Mitigation Fora and working groups (P)
Goal 15: Reduced vulnerability of people	Trends in sustainable, climate and wildlife-smart agricultural practices at HWC hotspots (O)
Goal 17: Reduced vulnerability of wildlife species and animal welfare measures	Numbers of veterinary experts at the HWC Mitigation Fora and Working groups at National, State and division levels (P)
	State-wise proportion of divisions and PAs with a full-time wildlife veterinary expert (P)
Goal 19: Institutional capacities in forest and other key relevant sectors are strengthened, for effective implementation of HWC mitigation in the country	Trends in forest, agriculture, veterinary, administrative, disaster management, Rural Development and Panchayati Raj training institutions with HWC mitigation integrated into their curriculum (O)
Goal 22: Division-level HWC Management Action Plans (HWC-MAP) in all states and Union Territories of India are developed, implemented and regularly updated	Number of districts with HWC integrated into district-level planning (I)
Goal 23: Finance and infrastructure is available for implementing National, State and Divisional Plans	Trends in the convergence of HWC-NAP with schemes of other sectors (I)
Goal 24: Measures are in place for fostering partnerships between key stakeholders, for sustainability and greater outreach in HWC mitigation efforts	Trends in number of interventions in the HWC-NAP being led by civil society organizations (O)

State-level HWC Mitigation Strategy and Action Plans (HWC-SAPs)

HWC is becoming a development issue, affecting the achievement of National Biodiversity Targets and Sustainable Development Goals and several national and state efforts, focussing on poverty alleviation and sustainable livelihoods. This makes it essential to ensure that the planning and actions are coherent at the national, state and local levels. Further, HWC mitigation requires a coordinated effort by key sectors and stakeholders. Unless addressed in a synergistic manner, it can undermine the development gains achieved by these sectors. Hence there is a need for dev, and state-level strategies are needed to be aligned with the HWC-NAP to effectively mitigate the effectiveness and sustainability of all HWC mitigation strategies and plans depending on successful involvement and commitment at all levels of decision-making. While the union government, through MoEFCC, provide an overall enabling policy and institutional environment, state-level authorities play a crucial role in addressing HWC at the field level. In this context, to operationalise the implementation of the HWC-NAP, it is imperative that the state governments develop State HWC Mitigation Strategies and Action Plans (HWC-SAP). The state plans will aim at -

1. Facilitating state governments in providing leadership and coordinating HWC mitigation efforts at division and local levels.
2. Facilitating consolidation, analysis and dissemination of state-specific data, information
3. and knowledge of HWC to support HWC mitigation planning.
4. Identifying and addressing capacity development needs for mitigating HWC in that state, effectively and efficiently, on a sustained basis.

5. Assessing the synergies and trade-offs of HWC mitigation with other development and environmental plans, programmes and policies, and successful integration of HWC mitigation into state-level development and sectoral planning.
6. Appraising key HWC mitigation measures to prioritise the optimum measures for key scenarios and support decision-making on effective and wildlife-friendly HWC mitigation.
7. Facilitating the monitoring, periodic review and updating of the HWC-SAP to ensure effective implementation.
8. Effective experience and resource sharing among states: Since conflict, mitigation is a continuous process, which needs to keep evolving as the animals adapt to certain mitigation measures rendering these ineffective over time, experience-sharing on the development and use of mitigation measures among different states becomes very important.
9. Contributing to the system of monitoring of HWC-NAP.

HWC-SAPs will build on the existing mitigation policies and plans of the state government. Each HWC-SAP will consider the ongoing programmes and schemes being implemented within that state, HWC-NAP and provisions in the species-specific guidelines. HWC-SAP will be able to achieve its purpose only when it is integrated into the state-level planning process. Only then can the resource allocation for the implementation of mitigation measures be defined, with an objective to achieve the overall development goals of the state governments and synergies with key relevant departments can be enhanced and trade-offs minimised.

Division-level HWC Management Action Plans (HWC-MAPs)

One instrument specifically designed for this purpose is the division-level Human-Wildlife Conflict Management Action Plan (HWC-MAP).

The National Wildlife Action Plan (NWAP) 2017-35 mandates each territorial division to develop and implement a Human-Wildlife Conflict Management Action Plan (HWC-MAP) for systematically addressing human-wildlife conflict mitigation. HWC-MAP will facilitate bottom-up feedback to the state and national-level strategies and action plans on good practices in HWC mitigation. This integration of field knowledge and experiences in the national and state-level plans will ensure that the approach taken by the national and state governments is reflected in the local-level planning and implementation.

The HWC-NAP and its supplementary framework further provide the template and process for developing HWC-MAPs. Model HWC-MAPs for selected forest divisions have been developed under the Indo-German Project on HWC Mitigation (2017-23), available from the National Knowledge and Data Platform on HWC mitigation.

1. This plan provides the division forest officers and officers from other sectors and agencies with a holistic approach and required instruments towards implementing HWC mitigation measures in a coordinated manner, which will enhance the efficiency and effectiveness of HWC mitigation measures being implemented at the division.
2. The HWC-MAP acts as an instrument for collaborative efforts from various partners, including groups that do not traditionally work together. Human-Wildlife Conflict Management Action Plan (HWC-MAP): The National Wildlife Action Plan (NWAP) 2017-35 mandates each territorial forest division in India to develop and implement a Human-Wildlife Conflict Management Action Plan (HWC-MAP) for systematically addressing human-wildlife conflict mitigation. HWC-MAP facilitates bottom-up feedback to the state and national level HWC mitigation strategies to ensure that the experiences from local planning are integrated into the national and state-level planning and implementation. This is an anchoring plan for integrating One Health into HWC mitigation and other plans of the forest department.

4.3 Possible areas of Alignment with key sectors

- Key areas of alignment can be as follows:
 - Emergency response Planning for HWC Mitigation, as outlined in the guidelines can be integrated into the emergency response plans of the **District Administration, Police Department** and **fire brigade**

These departments play a vital role of crowd control and management during conflict situations. During HWC-related emergencies, especially in populated areas, crowding and mobbing not only jeopardized wildlife management but also human safety. Hence, the district administration and police become a vital stakeholder in cross-sectoral collaboration. Coordination between Forest Department and District Administration and Police department is hence vital during animal emergencies in human habitations.

Box 2: Mumbai Leopard Management

Mumbai city has a thriving population of leopards in the Sanjay Gandhi National Park. The dense population pressure just beyond the park and the presence of tribal settlements inside the park have led to frequent interactions between people and leopards. Leopards entering housing areas is a common occurrence in the area and the Forest Department works in close collaboration with the Mumbai Police Department to ensure effective crowd control during leopard rescue situations. If the crowd is not well managed then such emergencies could lead to serious consequences for human safety as well as the safety of the wildlife species in question.

Box 3: Example of police support in crisis situations in North Bengal

The northern districts of West Bengal are a mosaic of forests and tea plantations. The fragmented nature of the landscape, a high human population, and the persistence of species such as leopards and elephants have led to high levels of human-wildlife conflicts such as human casualties, animal straying in habitations, economic losses, and retaliatory killings of wildlife. Leopard emergencies in inhabited areas and elephant emergencies in tea-estate settlements are recurrent issues. Crowd build-up is a major hurdle to safety rescue and management in such cases. Moreover, crowding and mobbing of wildlife, such as elephants and leopards, could be dangerous for people as well, leading to further casualties. Hence, the West Bengal Forest Department works in close collaboration with the state police and the Sasashtra Seema Bal (SSB) to ensure that wildlife emergencies are handled efficiently. The task of crowd control is carried out by the police department and in extreme cases, by the SSB. The task of rescuing animals and their management is carried out by the West Bengal Forest Department. Regular coordination meetings are held between these line departments to ensure quick communication and response in case of wildlife emergencies such as leopards/elephants entering densely populated areas or elephants entering settlements in tea estates.

- Operational synergies can be achieved between the forest department and **disaster management department**, especially with regard to joint trainings of personnel, and joint operations, with possibly National and State Disaster Response Force (NDRF, SDRF) personnel trained to deal with special HWC situations, specifically the crowd management.
 - Operational synergies need to be achieved with the disaster management measures, especially with regard to the use of disaster relief funds to compensate for the negative impacts of HWC, and the creation of a cadre of National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF) personnel trained to deal with special HWC situations.
 - Cooperation also needs to be established with disaster management institutions, with the possibility of creating a pool of NDRF experts/battalion with specialisation in handling critical cases of HWC.

- Each state is encouraged to engage with the state disaster management departments to develop a specialized unit of SDRF for HWC mitigation, apart from regular joint training of response teams of the forest department with response teams of disaster management, fire brigade and paramilitary forces.

Box 4: Cross-sector Cooperation and Inter-agency coordination for Effective Crowd management in HWC-related Emergencies

Crowd control continues to be a major challenge in HWC mitigation efforts, and therefore once the wild animal enters a human-dominated landscape, crowd control becomes the most important aspect to deal with. In such situations, where wild animals themselves feel insecure and threatened, their actions/reactions are largely as per their survival instincts. There are various causes and triggers for the uncontrolled and retaliatory behaviour of the crowd gathered at the conflict site, including an element of curiosity and a limited understanding of the behaviour and ecology of wild animals. Crowd behaviour can be unpredictable. It can vary from displaying a curiosity to see large animals (to see mega-mammals) to demonstrating irresponsible behaviours (getting too close to wild animals to click pictures or shoot videos to cover such incidents) and very aggressive behaviours (frenzied mobs trying to lynch an animal in retaliation). Sometimes, the crowd is hostile and can even harm forest officials/property and wild animals, due to panic and stress, especially if there is human death or injury caused by the wild animal.

Negative behaviour of a crowd/mob impacts the effectiveness of HWC mitigation measures. It can disturb/irritate the animal, which may result in the animal attacking the people in panic, resulting in human injury or even death. On the other hand, this may injure the wild animal or lead to severe stress to the animal. It can hamper rescue operations, especially if the wild animal is to be tranquilized. The animal is usually under severe stress in these situations, and additional stress poses further difficulties for the animal in coping with the drugs used to immobilize it chemically. The severe stress caused to the animal may hamper the induction process of immobilization and may disturb the tranquilization protocol. Sometimes the animal may also die due to shock or become more agitated during failed tranquilization efforts. In addition, situations of an uncontrolled or mismanaged crowd may lead to negative reporting by the media that highlights the situation of chaos and poor management.

Prudent local community behaviour can avoid crowding and ensure that the human beings as well as the animal in conflict are safe. A quick and well-coordinated response from law enforcement agencies can address the issue of HWC and crowd control effectively. In the forest fringe areas with a high population pressure and conflicting social interests within the community, timely action can avoid any mishaps in the field.

Effective crowd control and management is critical during HWC mitigation as:

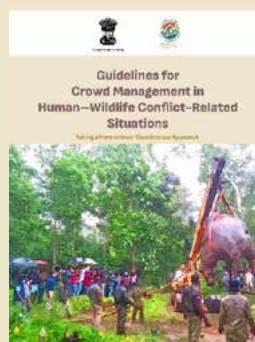
- it will allow the response teams to focus exclusively on their work and carry out the mitigation operation smoothly and efficiently.
- The immobilization and capture of the animal will be quick, and the possibility of stress in the animal will be minimized.
- Moreover, the media will also be able to cover the mitigation process properly without disturbing the rescue team or the wild animal.

Depending upon the situation, the crowd behaviour and availability of resources, various measures are being implemented in different states/ locations, some of which have led to successful crowd control initiatives/endeavours. There are some good practices to indicate that sensitization of local communities and training of community volunteers in crowd control have assisted in minimising the impact of the conflict situation on the ground. However, effective crowd management in human–animal conflicts still remains a challenge for most of the situations in the country, primarily due to limited coordination between the forest department, police, district administration and other relevant stakeholders over role-clarity and standard response procedures, limited capacities among rescue team members and other stakeholders to manage such situations and non-existence of common agreed protocols among key stakeholders.

Guidelines on 'Crowd Management in Human-Wildlife Conflict related situations' were developed under the Indo-German project on HWC Mitigation in India (2017-23) bringing together the senior decision-makers, division-level and field level staff from more than 20 forest division in India, experts and officials from the National Police Academy, NDRF, Centre for Disaster Management, Yashwantrao Chavan Academy of Development Administration (YASHADA), GoM, and civil defence experts. These guidelines get the overall context from the Wildlife (Protection) Act 1972, advisory to deal with human-wildlife conflicts (HWC) (MoEFCC 2021) and the National Human-Wildlife Conflict Mitigation Strategy and Action Plan 2021 (HWC-NAP). These guidelines take into consideration the existing policies, guidelines, advisories and good practices issued by the Government of India and various state governments in relation to crowd management.

An advisory to deal with human-wildlife Conflicts (MoEFCC, 2021) also recognizes that in HWC situations, dealing with a large number of people who quickly gather at one place to view wild animals or to prevent wild animals from entering their farms/habitations becomes a challenging task that hampers safe passage of wild animals or rescue work. The advisory recommends that state governments/UT administrations may review the situation, devise administrative mechanisms to ensure efficient coordination and cooperation of the law enforcing agencies to ensure the smooth handling of such situations. The advisory also highlights the fact that providing safe passage to the wild animals involved in HWC in human habitations is as important as taking care of the safety of the people present at the rescue site. This should be the topmost priority, and the local administration should ensure better crowd management during such circumstances.

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- The present and regular duties of the **Panchayat Raj Institutions (PRIs)** are related to civic amenities, welfare programmes on poverty alleviation such as, non- conventional energy, rural health and sanitation, elementary education. In addition, the maintenance of community assets like wells, tanks, reservoirs, adjoining catchments areas and protecting the wildlife, forest, biodiversity and other ecological sensitive areas are also important functions of these institutions. Therefore, mainstreaming Human Wildlife Conflict (HWC) Mitigation measures into local governance is one of the most crucial factors that will ultimately determine the success in HWC mitigation efforts being made by the Forest Sector. Infrastructure intervention such as toilets in each household will reduce the need to going out in the open during early morning or late evening hours. This will prevent accidental encounters with wild animals such as leopards, snakes, and elephants. Installation of lights in villages will enable the villagers to see their immediate surroundings and help prevent encounters with wild animals. The ministry could also formulate policy and guidelines with respect to safety practices such as clearing of bushes from the immediate vicinity of the houses, safe disposal of garbage etc to prevent HWC

Community-level (village/ward) Primary Response Teams (PRTs) should be formed at HWC hotspots, as the entry point for all community engagement work. Establishment and developing the capacity of PRTs should be in line with the Supplementary Framework to HWC-NAP on Establishment and Capacity Development of HWC Mitigation Response Teams.

The economic losses sustained by communities due to HWC are compensated not only by the ex-gratia received from the Government but also increased livelihood opportunities through the poverty alleviation schemes and alternate income generation initiatives by the **Rural Development and Panchayati Raj Department**.

Engagement of forest and rural development training institutions will facilitate sustained capacity development measures of Panchayat members, officers, farmers, women Self-Help- Groups, other community-based institutions and youth at conflict hotspots. The National and State training institutions will be encouraged to continuously innovate the curriculum, training material and training methods. Training institutions will be supported in maintaining a network of trainers and experts from other institutions and maintaining a pool of independent experts. Training institutions will also be integrated into the National HWC mitigation forum to receive policy advice. It will bring in enhanced effectiveness in their participation in planning, development and implementation of HWC mitigation measures at local level, in an inclusive manner.

Box 5: Tiger Watch and Village Wildlife Volunteers

Following the mitigation of poaching in Ranthambhore, the Tiger population rose exponentially. It soon became clear that the Tigers were not confined to the limits of the Tiger Reserve. An unprecedented 235 Km journey across the Trans-Chambal corridor into the neighboring state of Madhya Pradesh by an adventurous Tiger (T-56) laid the foundation for the Village Wildlife Volunteer Program supported by NGO Tiger Watch. The program has 4 stakeholders in the form of the local communities living in and around the protected area, the Forest Department, Tiger Watch Ranthambhore and the tourism industry.

The Village Wildlife Volunteers are engaged in:

- Wildlife Crime – Volunteers report, as well as attempt to prevent wildlife crimes in the making..
- Wildlife Monitoring.
- Human – Wildlife Conflict mitigation.

- **Agriculture department, agriculture research and extensions institutions** can intensify research on development of crops and cropping systems which are less attractive to wild animals, and yet economically viable; can support in generating awareness and supporting farmers in adopting to these crops and crop protection measures via Krishi Vigyan Kendra and other institutions. *Pradhan Mantri Fasal Bima Yojana* can be utilized for providing crop insurance as add-on coverage.
 - Efforts are being made to engage with farmers in HWC hotspots, together with the agriculture department and other agriculture research and extensions institutions, facilitating them in the development of crops and cropping systems which are less attractive to wild animals, are suitable for local climatic and edaphic conditions, and are economically viable.
 - Farmers will be supported in diversification into more types of crops, leading to reduced overall exposure and altered harvest time, combined with effective crop protection measures for reducing overall vulnerability. Similarly, affordable livestock protection measures (e.g. herding or stall feeding) need to be defined and promoted.
 - Only where these measures (alternate crops, crop and livestock protection) fail, despite sincere implementation, *ex gratia* for crop and livestock loss would be used as the last resort to reduce vulnerability of affected people, as per the established procedure and rules of the respective State Governments. Current challenges associated with compensation schemes would be systematically addressed through the National HWC Mitigation forum and working groups.
 - Furthermore, studies to facilitate a better understanding of the economics of losses due to HWC would be promoted, leading to more effective quantification to help in identifying appropriate compensation amounts.
- To effectively address and manage health emergencies during HWC mitigation and to operationalise a One Health approach to ensure the well-being of humans, animals and the environment, a coordinated effort of wildlife, veterinary and public health is required at the local level, bringing together field teams from these sectors, with the overarching cooperation with the district administration, rural development department.

For HWC mitigation, as well as for One Health, Animal Husbandry Department is critical in providing the necessary technical support, especially when an animal capture or tranquillisation is required. For addressing situations of health emergencies during HWC and to ensure the health and safety of all personnel, Health Department, local hospitals and zoos are key institutions. Through training and deputation, each state will systematically develop a pool of wildlife veterinary experts to be made available to each division, especially for the HWC hotspots, to ensure the safe handling of wildlife capture operations. For long-term sustainability, the forest departments will have a separate cadre for wildlife veterinarians with expertise and knowledge of animal behaviour and handling of HWC animals. Qualified professionals and veterinarians with interest in wildlife would be recruited (from both the Animal Husbandry Department (AHD) and non-AHD cadres), modalities of which will be explored further.

The Ministry of Health has been implementing the 'National One Health Programme for Prevention and Control of Zoonotic Diseases' since the 12th Five-Year Plan in coordination with the Ministry of Fisheries, Animal Husbandry and Dairying and the Ministry of Agriculture. Under the programme, various initiatives are being undertaken, including capacity building of medical, veterinary and wildlife professionals, laboratory strengthening for diagnosis of zoonotic diseases in humans and animals and creating community awareness. State-level zoonosis committees comprising the human, animal and wildlife sectors have already been constituted in 34 states.

Box 6: Guidelines for Addressing Health Emergencies and Potential Health Risks Arising Out of Human-Wildlife Conflict Situations Taking a One Health Approach

To further strengthen the ongoing efforts by providing specific advice on addressing health emergencies arising due to HWC situations and taking a One Health approach in all measures relevant to HWC mitigation, guidelines have been developed jointly by the forest, agriculture and public health sector institutions in India, under the Indo-German Project on HWC Mitigation.

- The guidelines aim to facilitate a common understanding among key stakeholders on the measures and protocols to be implemented to address health emergencies arising out of human and animal injury during human-wildlife conflict-related situations and to address situations of potential health risks for humans, wildlife and domestic animals, taking a One Health approach

These guidelines provide measures to prevent and mitigate the negative impacts on people, domestic animals and wild animals that may arise due to health emergencies during HWC-related emergencies or during HWC mitigation operations.

- The guidelines serve as a basis for overall long-term planning and coordination of measures at the national, state and division levels.
- In general, the guidelines apply to all stakeholders relevant to addressing health emergencies and One Health and are not limited to the state forest departments.
- The guidelines will be able to bring in more effectiveness and efficiency when they are fully integrated into the Division-Level HWC Management Action Plans (HWC-MAP) and State-Level HWC Mitigation Strategy and Action Plans (HWC-SAP) and in the implementation plans of the National One Health Programme for Prevention and Control of Zoonotic Diseases' being implemented by the Ministry of Health & Family Welfare (MoHFW).

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- **Electricity department:** The electricity department may be engaged to insulate overhead wires, repair sagging wires, and prevent hooking and illegal live wires in farmlands.

Box 7: Anti Electrocutation Cell, West Bengal

Directed by the High Court of West Bengal, the West Bengal Forest Department has created anti-electrocutation cells that will ensure the insulation of overhead wires in range areas, repair sagging wires, and monitor illegal fences to prevent elephant deaths. The state electricity board is a key member of the cell and has been actively insulating overhead high-tension wires in elephant range areas in West Bengal. Furthermore, the state electricity board also takes prompt action against any complaints of sagging wires or illegal electric fences and live wires in farmlands. The cell also comprises the local police department as well as panchayat representatives for effective communication and coordination.

- **Ministry of Road, Transport and Highways, National Highways Authority of India:** Coordination between forest department, research organizations and Ministry of Road, Transport and Highways (MoRTH) would be crucial to offset any habitat fragmentation or degradation due to such infrastructure projects.

Box 8: Elevated Corridor and Underpasses

The Kanha-Pench landscape in Madhya Pradesh is a vital stronghold of tigers in Central India. The proposed expansion of National Highway 44 was set to impact the connectivity between these forests by fragmenting the Kanha-Pench Corridor. However, the MoRTH, in collaboration with the Wildlife Institute of India and MOEFCC, designed an elevated road with wildlife corridors. The structure ensured the free movement of vehicles as well as wildlife species and thereby helped prevent HWC.

Another project of an elevated wildlife corridor has commenced in Uttarakhand-Uttar Pradesh adjacent to Rajaji Tiger Reserve. The 28 km project on NH72A will be critical to minimising habitat fragmentation and ensuring free movement for wildlife and people.

- **Municipal Cooperations:** Garbage disposal has severe implications for HWC mitigation and management especially for species that persist close to human settlements in peri-urban or rural areas. For instance, dogs and pigs are attracted to garbage dumps. Leopards are attracted to such places due to the easy availability of food, and hence HWC may be exacerbated. On the other hand, timely disposal of garbage will prevent the aggregation of dogs and pigs in this area and hence will not attract leopards to the area. Similarly, in many western countries, bears are attracted to garbage bins and in the process, come into conflict with people. Bear proof garbage bins have been used successfully in many areas to prevent bear entry into human habitations.
- **Civil society organisations** play a prominent role in HWC-related awareness generation, research, testing of innovative mitigation methods and supporting the implementation of the interventions in a participatory manner, to ensure sustainability and effectiveness. Civil society organisations, especially conservation NGOs and animal welfare organizations, will be encouraged and facilitated to take a more prominent role in HWC-related research, testing of innovative mitigation methods and supporting the implementation of the interventions in a participatory manner, to ensure sustainability and effectiveness
- **Private Sector:** Private sector companies need to be supported to develop and adopt innovative technologies, strategies, and approaches to foster wildlife-friendly production, processing and marketing, especially in the ecotourism, plantation, agriculture and industry sectors, where a landscape approach would be essential to avoid habitat fragmentation, by restoration of natural habitat connectivity and ecological processes, to ensure reduction in HWC. Donor agencies need

be facilitated and encouraged to address HWC in their programmes either as direct interventions, or by adopting safeguards to avoid escalation of HWC in their intervention areas.

- **Coffee plantations:** Coffee plantations have high biodiversity value and can harbour large-bodied wildlife such as elephants, gaur, leopards and even tigers in some cases. Such plantations may play a vital role in HWC mitigation and biodiversity conservation. The plantation may ensure adequate safety practices are followed by human casualties and direct encounters with potentially-dangerous wildlife. The plantation, collaboration with NGOs and the forest department could help make the workers aware of Dos and Don'ts to avoid conflict. Additionally, the estates could invest in solar fences to protect the housing areas from depredation by elephants and leopards. The roads for daily use may be lit with solar lights to avoid accidental encounters with wildlife.
- **Tea plantations:** Tea plantations in Southern and North-Eastern India host populations of leopards and are used by elephants regularly. Hence, the conflict levels among people are also high in certain areas. Leopards are common across tea plantations in Assam, West Bengal, Himachal Pradesh, Kerala and Tamil Nadu. Sudden encounters with people lead to human injuries. Death of leopards and livestock damage are common consequences in cases of retaliation. Tea estates in states like Assam, West Bengal, and Tamil Nadu highly use elephant labour. As elephants move through these plantations, accidental encounters with people lead to human casualties. Damage to buildings to access stored food and liquor is also common. Hence, tea plantation management could play a key role in HWC mitigation by banning the brewing of country liquor, ensuring the adoption of safety practices, illuminating the roads used by the workers and enclosing housing areas with solar fences. The plantation management may collaborate with local and regional NGOs and the forest department to ensure these steps are implemented well. Furthermore, the tea plantations could also take steps to ensure the free movement of wildlife, such as elephants and leopards, through their estate. Livestock loss due to leopards is also common, and livestock protection measures may be adopted in these estates by the plantation management in collaboration with NGOs and the Animal Husbandry Department.
- **Tea/Coffee/Farm Associations:** In a vast landscape, where multiple tea/coffee plantations are located, engagement with tea planters and coffee planters' associations may be more strategic. The associations may be involved in taking collective decisions to minimise HWC. Common fund pools may be created to repair buildings damaged by elephants or to ensure the treatment of victims of direct encounters with elephants/ leopards. Insurance programs for livestock may be aided by the associations to reduce conflict. In West Bengal, the Indian Tea Association actively engages with the forest department and local NGOs to manage HWC in their affiliated estates.
- Promotion of community-based ecotourism and private conservancies outside the protected areas may enable local communities to offset the costs of wildlife presence. The development of other wildlife-friendly livelihood development activities (social, economic and ecologically sustainable) shall be evaluated.
- **Wildlife Research Institutions:** For effective planning of HWC mitigation measures, wildlife research in the country must address critical issues related to HWC. To ensure that HWC mitigation-related information is being collected from the field and the results being used for developing innovative HWC mitigation measures, management-oriented research and regular monitoring will be promoted at all HWC hotspots. Cooperation partnerships will be encouraged between the forest departments, universities, research institutions and researchers to ensure sustainability. Inter- and transdisciplinary research to understand the drivers of HWC and monitor their trends in India are the priorities.
- **Media:**
The media can play an important role in HWC mitigation, as it not only reports on the conflict but also creates awareness of what is the holistic approach to HWC mitigation, what is already being done and what more needs to be done, if provided with the relevant information. Media can highlight how wildlife and humans can co-exist with mutual benefits, and how conservation interventions are crucial for maintaining a healthy ecosystem and resulting ecosystem services that are the foundation of livelihoods and overall well-being of humans.

Currently, while reporting and communicating on wildlife, media largely focuses on current crises events deemed 'news-worthy' by them, such as emergency situations arising due to the conflict between humans and wild animals. This, sometimes, induces the public to develop negative sentiments or opinions towards wildlife. With its wide reach, the media can help create a positive attitude towards the issue, and help stakeholders collectively arrive at sustainable and holistic solutions for HWC mitigation. At present, most of the good practices in forest-media cooperation on HWC mitigation largely exist due to individual efforts. To ensure that the forest-media cooperation is institutionalized, a systematic strategy for engagement is required.

The National Human-Wildlife Conflict Mitigation Strategy and Action Plan of India (HWC-NAP) highlights the role of media as a key stakeholder that can play a significant role in taking the desired

message on HWC mitigation to the public. It further states that even though over the last decade, there has been a shift to issue-oriented media coverage, the media largely covers HWC only when an incident occurs.

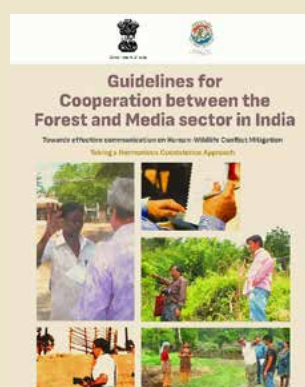
Box 9: Guidelines to facilitate effective Cooperation and a common Understanding on HWC mitigation between forest and media sectors

To facilitate the cooperation and a common understanding between forest and media sectors, 'Guidelines for Cooperation between the Forest and Media sector in India: Towards effective communication on Human-Wildlife Conflict Mitigation, taking a Harmonious Coexistence Approach' provide the required guidance to facilitate a constructive dialogue between wildlife managers and media professionals, agreement on guidelines, and identification of anchoring points for engaging media as partners in HWC mitigation.

These guidelines intend to facilitate a systematic engagement between media and the forest sector, in terms of dialogue and joint capacity development measures at the institution level, subsequently working towards a common goal of harmonious coexistence between humans and wildlife in the country. Realizing the significance of effective and clear communication on the issue of human-wildlife conflict (HWC) mitigation, appreciating the significant role that media plays, and recognizing the need for cooperation between forest and media sectors, these guidelines aim to facilitate a common understanding of human-wildlife conflict mitigation communication and reporting in a holistic manner.

This holistic approach entails not only media persons covering the emergency situations arising due to HWC, but also covering the approaches and measures to address the drivers and pressures that lead to HWC, establishment and management of prevention methods, and measures to reduce the impact of HWC on humans and wildlife, in their media products. • The guidelines provide advise on the development, assessment, customization and evaluation of instruments and processes that ensure effective cooperation between forest and media sectors.

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- **Railways:**

The Railway ministry could collaborate with research agencies and the MOEFCC to plan railway expansion by minimizing habitat fragmentation. Furthermore, early warning devices for LOCO pilots may be designed to prevent accidental deaths of elephants on railway tracks, especially since elephant features in the icon of the Indian Railways

Box 10: Plan Bee and Elephant Cell

The Railways department, in a unique initiative, installed loudspeakers at railway gates that are situated in elephant habitats/ranges. The loudspeakers played bee noise, a sound the elephants are averse to as they are afraid of bees. The initiative was started to scare away elephants from railway tracks, and the sound was played before the approach of any train.

In West Bengal, a coordination cell has been formed between the Forest Department and the Railways to share information regarding elephant presence near tracks. On observing any elephant movement near the tracks, the forest department passes on the information to the railways. The railways, in turn, pass on the information to the loco pilot for speed restriction. Furthermore, the railways have imposed strict speed restrictions for trains passing through forest areas in West Bengal.

- **Non-Governmental Organizations:** National Level NGOs may play an important role in the capacity building of other sectors and actors. Such NGOs also provide key infrastructural inputs for local-level conflict mitigation. These inputs could range from vehicles for Rapid Response Teams, Fences and Barriers for highly affected villages, and funds for other HWC mitigation interventions. Local-level NGOs could partner with the Forest Department and act as a bridge between government agencies and local communities for the effective implementation of HWC mitigation and action plans.

Box 11: Right of Passage: National Elephant Corridors Project by Wildlife Trust of India

Over the years, WTI has evolved four approaches for securing and protecting elephant corridors in the country:

- **Private Purchase Model:** With our implementation partners we directly purchase the land, rehabilitate affected local people, and transfer the land to the relevant state forest department for legal protection.
- **Community Securement Model:** Community-owned lands are set aside through easements or bilateral benefit-sharing models.
- **Government Acquisition Model:** The focus here is on policy advocacy work and providing national and state governments with technical assistance and 'soft hands' for the acquisition of key corridors.
- **Public Securement Model:** This model envisages the creation of a network of empowered local stakeholders called Green Corridor Champions that ensure every corridor is monitored in perpetuity. Local communities are engaged through public campaigns and spot interventions.

Other Activities under this program include:

- Prioritising the securement of corridors that require the purchase of land or setting aside of land by local communities.
- Conducting policy advocacy with the Government of India and state governments to allocate resources for corridor securement, and providing them technical assistance and 'soft hands' NGO interfaces with local communities wherever appropriate.
- Running a national-level public campaign and setting up a network of Green Corridor Champions (GCC) all across India, thereby institutionalizing the involvement of community-based organisations (CBOs) in protecting and securing elephant corridors. GCCs will work in partnership with WTI to sensitise local communities about the importance of corridors and, with the judicious and appropriate use of social, economic and technical interventions, and the vital support of local governments, help in monitoring and securing these corridors.


More information about this program may be accessed at <https://www.wti.org.in/projects/right-of-passage-national-elephant-corridors-project/>

5. Capacity development of key stakeholders to facilitate an enabling environment

- Human resources, infrastructure and finance are the foundation for ensuring effective and efficient implementation of strategies and action plans sustainably. To strengthen the HWC mitigation measures, vertical and horizontal coordination will be streamlined. The issues surrounding HWC and the capacities and competencies required to effectively and efficiently mitigate the conflict are complex. To cater to this demand, it is planned to establish a National Consortium on Human-Wildlife Conflict Mitigation, consisting of key national organisations, with the secretariat at the MoEFCC in the form of an 'HWC Mitigation Cell'. The consortium organisations will collaborate on the capacity development of key stakeholders through training, faculty development programmes, the establishment of facilities with state-of-the-art equipment for simulation training, support states in developing and implementing state-level strategies and action plans, facilitating multi-stakeholder dialogue at the national and state levels, undertake trans- and multi-disciplinary research on HWC mitigation; and assist the central ministries in inter-country dialogue and international cooperation on HWC Mitigation. This consortium may eventually pave the way for a dedicated national institution on human-wildlife conflict mitigation in India with state-of-the-art facilities.

- Engagement of forest and rural development training institutions will facilitate sustained capacity development measures of panchayat members, officers, farmers, women, Self-help Groups, other community-based institutions and youth at conflict hotspots. The national and state training institutions will be encouraged to innovate the curriculum, training material and training methods. Training institutions will be supported in maintaining a network of trainers and experts from other institutions and maintaining a pool of independent experts. Training institutions will also be integrated into the national HWC mitigation forum to receive policy advice. It will bring enhanced effectiveness in their participation in the planning, development and implementation of HWC mitigation measures at the local level in an inclusive manner
- At the national level, a pool of wildlife professionals is to be developed within the forest sector, who will be trained on HWC mitigation on a regular basis and will be posted in HWC hotspots in India. Provisions should be made for the inclusion of non-forest service experts to monitor and evaluate the mitigation measures, mainstream HWC into other sectors, manage the multi-stakeholder forum, capacity development and overall human resources management. On a priority basis, every conflict hotspot division in India will have a wildlife veterinary officer and community engagement expert
- Efforts are being made via the national working group on capacity development to integrate HWC/wildlife issues into the curriculum of agriculture, veterinary, urban development and tribal development training institutions at national and state universities. Efforts will also be made to integrate the HWC curriculum into rural development and Panchayati Raj Institutions to facilitate the training of the panchayats, community-based institutions, leaders and Primary Response Teams on HWC mitigation measures. Training institutions will also be integrated into the national HWC mitigation forum to receive policy advice. It will bring enhanced effectiveness in their participation in the planning, development and implementation of HWC mitigation measures at the local level in an inclusive manner.
- Effectiveness and sustainability of all HWC mitigation strategies and plans depend on successful involvement and commitment at all levels of decision-making. While the national government remains the central actor by providing overall enabling policy and institutional environment, state-level authorities play a crucial role in addressing HWC at the field level. In this context, to operationalise the implementation of the National HWC Strategy and Action Plan (HWC-NAP), it is imperative that the state governments develop State HWC Strategy and Action Plans (HWC-SAP).
- At the division level, a holistic and competencies-based capacity development system for strengthening the competencies of key stakeholders, including a three-tiered system of response teams and inter-agency teams is critical. Establishment and capacity development of Primary Response Teams (PRTs) can be anchored at panchayats and technically supported by the forest department, agriculture department and public health department, which is key to supporting effective mitigation of HWC in long-term and in emergency situations.





5.1 Indicative capacity development measures for cross-sector teams:

- Workshops and training on community-based HWC mitigation measures and HWC-safe livelihoods for/ and with panchayats, farmers and various community-based institutions, such as women's Self-Help Groups (SHGs), Biodiversity Management Committees (BMCs), Eco- Development Committees (EDCs), Joint Forest Management Committees (JFMCs) and others.
- Technical manuals on establishing and maintaining mitigation measures.
- Joint training of personnel from key departments and agencies, on HWC mitigation, with a focus on handling emergency situations.
- System of regular simulations/ drills on HWC situations specific to the landscape
- Workshops on key issues relevant to reducing the vulnerability of local communities to HWC, including the process of crop damage assessment, alternate crops, etc.



LOCAL FOREST OFFICER



6. Way forward: Anchoring points for cooperation between forest and other sectors

Realizing that the mechanism and processes needed to ensure effective and efficient implementation of HWC-NAP and the guidelines are as important as the development of the documents themselves, the following measures have been put in place, and need to be operationalised:

6.1 A dialogue platform at the National and state-level, for equal and effective participation of key sectors for HWC mitigation and One Health

The chances of effective cross-sector cooperation on HWC mitigation will enhance manifold if all the key relevant ministries, departments and agencies are engaged in a constructive dialogue. The web-based national Knowledge and Data Portal on HWC Mitigation can be used as an instrument to facilitate such dialogue and advancement of joint knowledge on effective and sustainable approaches to HWC mitigation in the country.



6.2 Developing state-level HWC mitigation strategy and action plans, using the common framework, taking a One Health approach

The effectiveness and sustainability of all HWC mitigation strategies and plans depend on the successful involvement and commitment of key stakeholders, at all levels of decision-making. While the union government, through MoEFCC, provides an overall enabling policy and institutional environment, state-level authorities play a crucial role in addressing HWC at the field level. In this context, to operationalise the implementation of the HWC-NAP, it is imperative that the state governments develop HWC-SAPs.

6.3 Developing division-level HWC-MAPs, taking a One Health approach

HWC-MAP facilitates bottom-up feedback to the state- and national-level strategies and action plans on good practices in HWC mitigation. This integration of field knowledge and experiences into the national- and state-level plans will ensure that the approach taken by the national and state governments is reflected in the local-level planning and implementation.

6.4 Capacity development of key stakeholders to contribute to effective implementation

Implementation of training courses for key stakeholders using the specialized competencies-based training curriculum 'Holistic Approach to Human-Wildlife Conflict Mitigation in India' will ensure effective field implementation of HWC-NAP and the guidelines, and facilitate continuous innovation in HWC mitigation measures.

6.5 Indicative measures in wildlife management to be implemented through a One Health approach

Preventive and management measures for zoonotic and other emerging diseases; raising awareness among local communities on prevention of disease in domestic animals; raising awareness on wildlife diseases that are communicable to humans and livestock; effective disease surveillance and reporting system, including standardised protocols; coordination between wildlife, veterinary and public health agencies and professionals in field identification and sample collection; systematic and effective capacity development measures by taking an inclusive approach and bringing together key training institutions not only from the wildlife, veterinary and public health sectors but also rural development and Panchayati Raj Institutions (PRI).

Long-term sustainability in a One Health approach in the context of wildlife management and protected area management can be achieved only when the training institutions deliver joint training programs, and integrate a module/ course on One Health in their existing curricula (Khera et al. 2022).

The Indo-German project on HWC mitigation is implementing the following measures during 2021–23) Assisting states with aligning their Human–Wildlife Conflict Mitigation Strategies and Action Plans with the One Health approach; 2 Developing the capacities of wildlife veterinary experts and field response teams to address the challenges due to zoonotic diseases; and 3 Operationalising occupational health and safety guidelines for personnel involved in rescuing and handling wildlife and in wildlife health management in the context of COVID-19 risk reduction.

6.6 Strengthening cross-sector research on issues relevant to a holistic approach to HWC mitigation

Planning and designing effective and wildlife-friendly HWC mitigation measures using a harmonious coexistence approach, to ensure continued delivery of ecosystem services for sustained agriculture production and well-being of farmers.

6.7 Coordination of field-level response teams and awareness measures for Panchayats, farmers and women

This system of “Early Warning and Rapid Response (EWRR)” is expected to enhance the overall efficiency of mitigation efforts in the division. Early warning aims to the reduction of time of information reaching to the management so that appropriate decision can be taken thereafter to mitigate the HWC incidences. Since it is inevitable to prevent the wildlife and humans from using the same space, role of response teams for timely action to prevent the conflicts and to reduce the impacts due to such incidents is expected to remain one of the important foundation blocks of the human wildlife conflict mitigation strategy in india for the years to come. A tiered system of response, including a HWC Mitigation Hub, division-level and range-level Rapid Response Teams and community-based Primary Response teams are proposed to be facilitated and capacitated. The issues surrounding HWC are complex. So are the capacities and competencies required to effectively and efficiently mitigate the conflict. There is increasing expectations by the public from the forest personnel with regard to the performance and ability to respond to HWC situations. This results in a disproportionately high burden on the field response teams, is they are not appropriately equipped, trained and protected. Capacity Development of the Rapid Response Teams, through competencies-based trainings are proposed to be an important pillar of this strategy.

Risk or threat perception by humans is influenced by several factors, including cultural values, histories and ideologies, knowledge of animal behaviour, novelty of risk and several other factors. Awareness and information on animal behaviour, how to safeguard oneself, and an appreciation of the landscape are expected to encourage behaviours among humans that are expected to change their risk perception, reduce exposure of humans to wild animals, and thus reduce the conflict.

Awareness and communication measures for the local communities and other key stakeholders, including effective media engagement, are proposed to be an important priority and central theme to all efforts

Box 12: The NGO “The Intersector Project” prepared an “Intersector Toolkit” (The Intersector Project 2018) with the four stages Diagnosis, Design, Implementation and Assessment.

The NGO “Intersector Project”¹ developed an “Intersector Toolkit”² for practitioners from government, business, and non-profit sectors to diagnose, design, implement, and assess successful intersector collaborations. While collaborations differ in their goals, scope, and size, practitioners from any sector can use these tools to navigate their challenges. The Intersector Project focuses on collaborations characterized by shared decision-making processes among sectors. This often results in joint programme or service design and delivery, jointly-conceived policies or policy recommendations, and other activities where the resources and expertise of multiple sectors are leveraged in service of a shared vision and where decision-making authority is shared among partners

Box 13: Key elements for successful cross-sectoral collaboration for mainstreaming HWC

- Conducive policy guidelines - Government advisories
- Trust building
- Participatory decision-making
- Standard operating procedures
- Networks of information and experience
- Allocation and budgeting in district plans
- Sensitizing and Capacity building
- Documentation of good practices should be incorporated in the sectoral planning
- Monitoring of implementation

Cross-sectoral collaboration often does not take place because such cross-sectoral engagement has not been an integral part of the routine mandate of the institutions. This gets further complicated when there are conflicting interests between these institutions. Especially collaboration between villagers and public administration often does not work. The villagers do not trust the “authorities” because of earlier experiences. These experiences may be felt or real. Incentives can be a good basis for gaining trust. Good examples can be the use of alternative crops that are non-palatable for elephants, where Forest Departments collaborate with communities and supports them with new technology and know-how. Besides reducing the HWC incidents, the Forest Departments create income-generating measures for the communities. This builds trust.

Cooperation between public administrations also often is difficult. The ministries, for example, may compete for land for forests, agriculture or mining. These examples show that the second step should be participatory decision-making. Governmental organisations cooperate with inter-ministerial and inter-departmental bodies like working groups, committees or boards. The collaboration usually only works if mutually beneficial relationships are established. Standard operational procedures help, for example of the procedures of different agencies. Besides intersectoral activities establishing networks of information and experience sharing is crucial. This helps to avoid overlapping activities. Joint drills and training ensure that all involved departments share a common understanding of the issue..

¹ <http://intersector.com/>

² The Intersector Project. The Intersector Toolkit: Tools for Cross-Sector Collaboration

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