



Government of India



# Guidelines for Human—Elephant Conflict Mitigation

**Taking a Harmonious—Coexistence Approach**



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**Ministry of Environment, Forest and Climate Change**



Government of India



# **Guidelines for Human—Elephant Conflict Mitigation**

## **Taking a Harmonious—Coexistence Approach**

# Abbreviations

|         |                                                                      |         |                                                                         |
|---------|----------------------------------------------------------------------|---------|-------------------------------------------------------------------------|
| BMZ     | German Federal Ministry for Economic Cooperation and Development     | IUCN    | International Union for Conservation of Nature                          |
| CCTV    | Closed-circuit television                                            | JFM     | Joint Forest Management                                                 |
| CWLW    | Chief Wildlife Warden                                                | MoEF&CC | Ministry of Environment, Forest and Climate Change, Government of India |
| CZA     | Central Zoo Authority                                                | NDRF    | National Disaster Response Force                                        |
| DBT     | Direct Benefit Transfer                                              | NGO     | Non-governmental organisation                                           |
| DFO     | Divisional Forest Officer                                            | NTCA    | National Tiger Conservation Authority                                   |
| DLCC    | District-Level Coordination Committee                                | NTG     | National Technical Group                                                |
| EDC     | Eco-development Committee                                            | NWAP    | National Wildlife Action Plan                                           |
| EIA     | Environmental impact assessment                                      | OPs     | Operating procedures                                                    |
| EWRR    | Early Warning and Rapid Response                                     | PA      | Protected area                                                          |
| GIS     | Geographical information system                                      | PCCF    | Principal Chief Conservator of Forest                                   |
| GIZ     | Deutsche Gesellschaft für Internationale Zusammenarbeit              | PPE     | Personal protective equipment                                           |
| Gol     | Government of India                                                  | PRT     | Primary Response Team                                                   |
| HEC     | Human–Elephant conflict                                              | RFID    | Radio frequency identification                                          |
| HOFF    | Head of Forest Force (in a state)                                    | RRT     | Rapid Response Team                                                     |
| HWC     | Human–wildlife conflict                                              | SDRF    | State Disaster Response Force                                           |
| HWC-MAP | Human–Wildlife Conflict Management Action Plan                       | SFD     | State forest department                                                 |
| HWC-NAP | National Human–Wildlife Conflict Mitigation Strategy and Action Plan | SHG     | Self-help group                                                         |
| HWC-SAP | State-Level HWC Mitigation Strategy and Action Plan                  | SLCC    | State-Level Coordination Committee                                      |
| IFS     | Indian Forest Service                                                | SOPs    | Standard operating procedures                                           |
|         |                                                                      | WII     | Wildlife Institute of India                                             |
|         |                                                                      | WLPA    | Wild Life (Protection) Act, 1972                                        |

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# 1. ABOUT THE GUIDELINES

## 1.1 THE OVERALL CONTEXT

- The Guidelines on Human–Elephant Conflict (HEC) Mitigation get the overall context from the Wild Life (Protection) Act 1972, National Wildlife Action Plan (2017) <sup>1</sup>, Human–Elephant Conflict Guidelines (2017), Advisory to deal with human wildlife conflicts (MoEFCC 2021) and National Human–Wildlife Conflict Mitigation Strategy and Action Plan (HWC-NAP) <sup>2</sup>. HWC-NAP provides the overall conceptual and institutional framework for implementing the guidelines.
- This document takes into consideration the existing guidelines,<sup>3</sup> advisories and good practices on HEC mitigation <sup>4</sup> issued by Project Elephant and various state forest departments and builds on them to bring about a more holistic approach to HEC mitigation.

## 1.2 PURPOSE AND SCOPE

- These guidelines aim to facilitate a common understanding among key stakeholders on what constitutes effective and efficient mitigation of HEC in India, leading to co-existence, and to ensure standardisation in performing mitigation operations in the most effective and efficient manner, with minimum damage to humans and Elephants.
- These guidelines provide advice on mitigation measures to address HEC in the long term, as well as facilitate the development, assessment, customisation and evaluation of site-specific HEC mitigation measures that are effective and wildlife-friendly.
- These guidelines serve as a basis for overall long-term planning and coordination of HEC mitigation measures at the national, state and division levels.
- In general, these guidelines apply to all stakeholders involved in HEC mitigation and are not only limited to state forest departments (SFDs).

## 1.3 APPROACH

- The development and implementation of these guidelines is driven by a harmonious-coexistence<sup>5</sup> approach to ensure that both humans and Elephants are protected from the negative impacts of HEC.
- The guidelines address the issue of HEC, adopting a holistic approach. The holistic approach of the guidelines entails not only addressing the emergency situations arising due to immediate conflict situations but also addressing the drivers and pressures that lead to HEC; providing guidance on establishing and managing prevention methods; and reducing the impact of the conflict on both humans and Elephants.

- The development of these guidelines and the intended implementation are driven by a participatory approach. These guidelines are intended to facilitate participatory planning, development and implementation of HEC mitigation measures with key sectors and stakeholders at national, state and local levels.
- The guidelines reflect on the need for a landscape approach while formulating measures for mitigating HEC to ensure sustainable solutions as unless comprehensive and integrated HEC mitigation measures are implemented across the landscape, the problem is likely to only shift from one place to another.
- Efforts have been made to forge linkages with plans and guidelines of key relevant sectors for enhancing synergies and eliminating trade-offs at the field level.
- Taking a capacity development approach, the guidelines facilitate the implementation through provision of *Implementer's Toolkit*, which includes operating procedures (OPs), formats, checklists and other field implementation aids.

## 1.4 LEGAL AND POLICY FRAMEWORK FOR IMPLEMENTING THE GUIDELINES

- These guidelines should be read in conjunction with the existing relevant legal and regulatory frameworks, especially the Wild Life (Protection) Act 1972.
- The following laws are considered directly relevant for conservation when dealing with HEC:
  - Wild Life (Protection) Act, 1972
  - Prevention of Cruelty to Animals Act, 1960
- Sections 9, 11(1)(a) (2) (3), 12(bb), 29, 35(6) and 39(1)(a) of the WLPA 1972 are especially relevant when dealing with HEC.
- The Supplementary Framework to HWC-NAP on Legislative Framework <sup>6</sup> for HWC Mitigation in India is to be referred to for more details on the specific legal provisions related to HWC mitigation.
- Other important legislations that facilitate conservation when dealing with HEC include the Environment Protection Act, 1986; Indian Penal Code, 1860; Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006; Electricity Act, 2003; Railways Act, 1989; National Highways Act, 1956; and Disaster Management Act, 2005.

## 1.5 INSTITUTIONAL MECHANISM FOR IMPLEMENTATION OF THESE GUIDELINES

- The institutional mechanism outlined in HWC-NAP will be followed for implementing these guidelines.

<sup>1</sup> MoEFCC (2017). National Wildlife Action Plan (2017-35)

<sup>2</sup> National HWC Mitigation Strategy and Action Plan of India (2021-26), available from <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

<sup>3</sup> MoEFCC (2008). Guidelines for care and management of captive elephants. 8 January 2008. Project Elephant Division, Ministry of Environment, Forests and Climate Change, New Delhi. <http://moef.gov.in/division/forest-divisions-2/project-elephant-pe/new-guidelines/>

<sup>4</sup> MoEFCC (2017). Guidelines for Management of HECs. 2017. Project Elephant Division, Ministry of Environment, Forests and Climate Change, New Delhi. <http://moef.gov.in/wp-content/uploads/2019/08/01-HEC-guidelines.pdf>

<sup>5</sup> Standards/ Norms for Recognition of Elephant Rehabilitation/ Rescue Centres under Section 42 of Wildlife Protection Act, 1972 (F.No. 2-5/ 2006-PE [Vol. II]), Government of India, Ministry of Environment, Forest and Climate Change, Project Elephant Division. 29 Sept 2017. <[http://moef.gov.in/wp-content/uploads/2019/08/02-Standards-Norms-for-Elephant-Rehab.-2\\_compressed.pdf](http://moef.gov.in/wp-content/uploads/2019/08/02-Standards-Norms-for-Elephant-Rehab.-2_compressed.pdf)>

<sup>6</sup> MoEFCC (2020). Best Practices of HEC Management in India. 2020. Project Elephant Division, Ministry of Environment, Forests and Climate Change, New Delhi. <http://moef.gov.in/wp-content/uploads/2020/08/Best-Practice-Man-Animal-Conflict.pdf>

<sup>7</sup> 'Harmonious coexistence' is defined as a dynamic but sustainable state in which humans and wildlife adapt to living in shared landscapes, with minimum negative impacts of human-wildlife interaction on humans or on their resources and on the wildlife or on their habitats. The mitigation measures designed using this approach maintain a balance between the welfare of animals and that of humans in which both are given equal importance. Overlap in space and resource use is managed in a manner that minimises conflict.

<sup>8</sup> Supplementary frameworks to the HWC-NAP: <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

## 2. CONTEXT AND SITUATION

- The Indian Elephant (*Elephas maximus*) is a keystone species affecting habitats and ecosystems in significant ways, ensuring ecological balance and resulting ecosystem services for human well-being. Elephants are referred to as ecosystem engineers due to their transformative role in the ecosystems where they create water holes that are also used by other wildlife for their survival during dry season, clear understories to promote new plant growth in forests, and facilitate seed dispersal of several important tree species, due to their highly mobile nature.
- The Elephant is recognised as a National Heritage animal and is deeply rooted in our culture. India holds by far the largest number of wild Asian Elephants, estimated at about 29,964 <sup>7</sup>, this is nearly 60% of the population of the species. The Elephant is placed under Schedule I and Part I of the Indian Wild Life Protection Act (1972), which confers it the highest level of protection. However, Elephants and humans are now often in conflict in our country because of varied reasons.
- HEC refers to the negative interaction between humans and Elephants, leading to adverse impacts such as injury or loss of human lives, crop, livestock and other properties, or even their emotional well-being, and equally negative impacts on the Elephant or its habitats.
- The general drivers of HEC include a human population increase, changing lifestyle and economic aspirations, reduced appreciation of wildlife, climate change, disasters, land use change, policies in linear infrastructure, mining, urban development, habitat fragmentation, loss and degradation including local overabundance of Elephants. Among these, the increase in human population, land use change, changing lifestyle and economic aspirations, policies in linear infrastructure, mining, habitat fragmentation, loss and degradation have the greatest impact.
- The intensity of HEC is highly variable, ranging from very occasional to chronic, and depends on the density of Elephant populations; the nature of the interface between human areas and Elephant habitats; an irregular and diffuse boundary with a long perimeter; highly fragmented Elephant habitats interspersed with human-use areas; dispersing herds; railway tracks passing through forests with sizeable Elephant populations; etc.
- HEC is prevalent in many states and is particularly high, relative to the number of Elephants involved, in areas where Elephants have dispersed and areas that Elephants have colonised. It is estimated that approximately 500 persons and more than 100 Elephants are killed annually. Nearly 0.8 to 1 million ha of agriculture land may be impacted by crop damage due to Elephants, and nearly a million families are adversely affected due to HEC. The challenge extends to the transboundary Elephant populations of Bhutan, Nepal and Bangladesh.
- HEC mitigation so far has largely focused on the use of barriers, short-distance drives, and ex gratia payments or compensation for loss and damages. While these efforts have helped contain HEC, the problem continues to grow as a holistic approach has not been incorporated into the mitigation effort.

<sup>7</sup> MoEFCC (2017). Synchronized Elephant Population Estimation India 2017. Project Elephant Division, Ministry of Environment, Forests and Climate Change, New Delhi

## 3. ADDRESSING THE DRIVERS AND PRESSURES OF HEC

### 3.1 OVERVIEW

A major gap involves effective problem analysis to identify drivers and pressures of conflict which would allow appropriate selection of mitigation measures.

- An assessment of long-term outcomes and implications of all mitigation methods is needed to identify effective and Elephant -friendly mitigation measures to address HEC. For this, a systematic analysis of HEC mitigation methods should be done to assess their effectiveness and wildlife-friendliness in different types of conflict situations.
- This will facilitate the necessary customisation and adaption of the mitigation measures/combining two mitigation measures to achieve the best possible impacts in the field.

The HWC-NAP recommends a holistic approach to HWC mitigation by considering and addressing the thematic triangle of drivers–prevention–damage mitigation, these guidelines are prepared in line with the recommended holistic approach to bridge the current gap.

- The need to identify Elephant range areas and corridors in a state is the first step. Thereafter, in and around all such areas the drivers as aforementioned should be identified and addressing these drivers should be a priority in the state-level planning in order to avoid future impacts. Similarly, at the district-level planning, the impact of these drivers to be ascertained to avoid escalating HEC in the area.

Addressing the drivers and pressures includes responses that are directed towards:

- Management-relevant response for addressing the drivers and pressures
- Institutional capacity development for addressing the drivers and pressures

### 3.2 MANAGEMENT-RELEVANT RESPONSE FOR ADDRESSING THE DRIVERS AND PRESSURES

#### 3.2.1 ZONATION IN ELEPHANT RESERVES

- The current land use and land cover and inherited land use changes have caused Elephant habitats to become habitat islands of various sizes within a sea of human-use areas, thus creating areas where Elephants and humans compete for space and resources inside Elephant reserves.

- Elephants, because of their adaptability, have also exploited opportunities to occupy plantation crops such as tea and coffee and thus overlap with humans in human use areas. Elephants have also adapted to fragmented landscapes by transiting through human-use areas to use spatially separated habitat patches. Some have adapted to using small habitat patches, a few hectares in extent, as daytime refuges to forage on the agricultural crops in the surrounding areas at night.
- All these factors have created different types of conflict situations between humans and Elephants; such situations have varying degrees of management feasibility, viz, sometimes these are easily manageable, sometimes situations require significant intervention and sometimes there are situations where keeping Elephants in unviable habitat patches is not possible for various reasons.
- Zonation, a management entity, takes into consideration the fact that resources available are limited and if these are not prioritised and optimally used, the conflict will intensify and the overall conservation benefits will be minimised. Zonation will allow a science-based and pragmatic approach to landscape level planning for conservation and HEC mitigation. Zonation should be based on Elephant population viability analysis in each prescribed zone. The zonation suggested in these guidelines reinforces the recommendations made by the Karnataka Elephant Task Force (appointed by the Karnataka High Court) and can be as follows:
  - **Elephant Conservation Zones**, where primarily Elephant conservation takes priority over competing livelihood goals (a smaller subsection of our forests where human presence and resource extraction are absent): Areas where there is adequate habitat to support a viable Elephant population with no human settlements, and communities have no rights or dependencies on the forest. If any minor dependencies exist along the interface area, they should be such that they can be easily settled through negotiations.
  - **Elephant–Human Coexistence Zones**, where Elephant conservation and human livelihoods have to be balanced and reconciled (which would constitute the bulk of the forests): Areas where there is adequate habitat to support a viable elephant population where the movement of the Elephants is restricted to the interface area. There may or may not be human settlements inside the

forest, but communities have rights to resource extraction from the forests. The extraction of resources from the forests should be sustainable so that it does not degrade the Elephant habitat and escalate HEC.

- **Elephant Exclusion Zones**, areas where Elephants do not have adequate natural habitats and are dependent on crops for survival, and hence effective conflict mitigation would not allow Elephants to survive in such areas. In such areas concerns of human safety and livelihood take precedence over competing conservation concerns about Elephants, as Elephant populations in such areas may not be viable in the long term. Elephants in such areas need to be translocated, and after translocation, further colonisation of such areas should be stopped through proper HEC mitigation strategies.

### 3.2.2 MONITORING AND MANAGING HABITAT-RELATED DRIVERS AND PRESSURES

- There is a clear need to have a more holistic understanding of HEC and its implications for humans and Elephants. Monitoring and addressing habitat loss, fragmentation and degradation may play an important role in understanding and mitigating HEC. Therefore, the following measures should be envisaged:
- Mapping of existing drivers and pressures of conflict such as linear infrastructure, mining, encroachments, settlements within forests, and resource use by local communities.
- Ensuring that all forest boundaries are clearly demarcated and patrolled on regular basis including monitoring deemed forest areas, forests on revenue land and private forest areas that form part of the Elephant range.
- Managing Elephant habitats in regions where the bulk of the forests are under the management of district councils and local bodies (where the SFDs have restricted control) requires active participation of communities and proper land use planning by:
  - Mapping the Elephant distribution and numbers in community forest areas with a population and habitat viability analysis to determine where and what can be conserved
  - Mapping land tenure and identification of communities who are stakeholders in the land
  - Consultation with local communities to facilitate Elephant conservation

- Engaging various line departments who can facilitate in enhancing or improving livelihood options that reduce the extent and intensity of slash and burn agriculture and thus bring about Elephant-compatible land use
- Facilitating capacity development of the forest department, line departments, local communities and all key stakeholders
- Preparing, implementing and periodically updating long-term perspective plans such as state-level human-wildlife conflict mitigation strategies and action plans (HWC-SAP) and division-level HWC management action plans. A common framework for developing these plans is provided in the supplementary frameworks to the HWC-NAP<sup>8</sup>.
- Developing synergies and facilitating integrated land-use planning for effective implementation of planned measures, through the State-level Coordination Committees (SLCC), Multi-stakeholder Fora at the state level, Joint Working Groups with key departments and agencies at the landscape level, and the District-level Coordination Committees (DLCC).
- Developing innovative firefighting strategies and equipment, using RS technology, etc. and engaging the local community, especially the community-level Primary Response Teams (Community PRTs).
- Facilitating long-term studies to understand the impact of these measures in addressing the drivers in the landscapes

### 3.2.3 HABITAT RESTORATION AND RECLAMATION OF DIVERTED FOREST LAND

- Habitat restoration requires that the driver of habitat degradation be first addressed so that the process of degradation does not continue. The following measures are envisaged:
- SFDs should prioritise restoration in and around vulnerable areas and HWC hotspots.
- In highly degraded habitats the process of regeneration may be accelerated by interventions such as gap planting with native species, controlling soil erosion, ground water recharging, restoring grasslands and tree cover, etc.
- Many Elephant ranges have large monoculture plantations. They may not be optimal habitats for wildlife, and therefore the native vegetation needs to be restored by preparing ecologically sound plans in the interest of habitat improvement and HEC mitigation.

<sup>8</sup> Supplementary frameworks to the HWC-NAP <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

- SFDs may work with mining project proponents to reclaim and restore old mining sites.
- In many regions across India, tea, coffee, rubber and cardamom estates within Elephant landscapes are unutilised; such areas can be restored/reclaimed for Elephant conservation.

### **3.2.4 REMOVAL OF INVASIVE PLANT SPECIES IN AND AROUND HEC HOTSPOTS INCLUDING VISTA CLEARANCE**

There may be suppression and reduction of indigenous plants due to the presence of invasive alien species in the area resulting in decreased habitat quality, leading to increased movement of Elephants outside the forested landscapes, subsequently leading to increased HEC. The following measures may be implemented:

- Mapping invasive species cover and abundance in the landscape and the herbivore use of the landscape and accordingly implementing habitat management plans.
- Exploring the use of remote sensing data for mapping and managing invasive species.
- Prioritising sites for intervention based on hotspots of invasive species spread, areas critical for the Elephant (and other herbivores) and conflict hotspots, to ensure efficient mitigation, given the scale of the problem, and the challenges involved in containing and eliminating invasive species over large landscapes.
- Clearing vistas along the boundaries of forests in close proximity of the habitations for avoiding accidental encounters.
- SFDs may facilitate Panchayats in making the HEC hotspots adequately lit, by installing street/solar lights.

### **3.2.5 SECURING ELEPHANT CORRIDORS**

Elephants have large home ranges, often with clear seasonal ranges and migration paths and fragmentation or blockage in their movement path will result in disruption causing conflict. In the document titled “Right of Passage – Elephant Corridors in India”, 101 corridors have been listed; however, there are likely to be additional corridors that need to be identified.

Hence, SFDs may start planning corridor conservation by taking into consideration the following:

- Initiate landscape level assessment of all constrictions in habitat and obstructions caused by linear infrastructure, using GIS and remote sensing tools to identify any new corridors. This should be supported by verification on the ground using the field staff.
- Corridor management strategies should be developed and incorporated into the working/management plans

and into the HWC Management Action Plans at division levels.

- Threats to the physical integrity (land use changes) of the corridor and to the free movement of Elephants (disturbances, degradation, etc) within the corridor should be identified and addressed.
- Corridors through tea/coffee estates which connect two or more large habitat patches should be secured.
- Restoration of habitats within the corridors, where possible, should be carried out.
- Support should be provided to PRTs and RRTs during the migration season.
- The feasibility of establishing community reserve or private conservancies should also be explored, with greater participation from community-based institutions and key stakeholders.
- In the case of private lands, the villagers may be incentivised to allow movement of Elephants.
- Awareness about Elephant ecology, behaviour and suitable mitigation measures to humans living in and around the corridor areas may be imparted, regularly.
- Address the issues of land tenure and land use in the corridor and existing linear infrastructure within the corridor area in order to secure its legal status and physical integrity.

### **3.2.6 REDUCE LIVELIHOOD DEPENDENCE OF HUMANS ON FORESTS**

Communities living in proximity to the forest are dependent on forest biomass (fuel wood, NTFP, livestock grazing, etc), which is the primary reason for them to enter the forest. Accidental encounters of humans with Elephants inside forest areas can be prevented to a large extent by reducing the dependence of humans on forests. The following indicative measures may be implemented:

- Facilitate management interventions for better livelihood opportunities through community-participatory approaches including various eco-development measures and livelihood improvement programmes.
- Reduce the dependency of fringe forest communities on forests (e.g., cattle grazing, fodder collection, fuelwood collection, non-timber forest produce (NTFP) collection, right of way) by participatory forest management.
- Improve animal husbandry practices (promoting stall-feeding practices or incentivising improved livestock breeds)
- Address livelihood needs of communities by skill development, poverty alleviation and alternate income generation schemes of the government.

- Facilitate cross-sector linkages for community development (coordination and cooperation with line departments).
- Facilitate cooperation to integrate HWC mitigation planning at the district level, through measures including, but not limited to, dovetailing HWC mitigation measures with schemes relevant to community development.

### **3.2.7 SCIENTIFIC POPULATION MANAGEMENT AT INTERFACE AREAS OR CONFLICT HOTSPOTS**

A local overabundance <sup>9</sup> of wildlife including Elephants could be due to various factors including habitat loss, degradation and fragmentation, and an increase in population. The Elephant population in fringe forest areas have become habituated to humans and therefore there may be a proper understanding of the spatio-temporal distribution, foraging and ranging patterns and use of human-dominated landscape. The following measures are envisaged:

- Implementation of a robust population monitoring protocol at HEC hotspots, using trained field staff or in collaboration with research institutes or local universities/colleges.
- The dispersing Elephant population that has colonised new areas may be assessed for impacts on the well-being of the people and the Elephants.
- Understand the population dynamics of Elephant herds in the tea estates and coffee plantations, which continue to remain there as resident populations, and changes in their behavioural attributes.

### **3.2.8 MANAGING TRANSBOUNDARY AND INTERSTATE ELEPHANT MOVEMENT**

- Some Elephant populations are known to regularly cross international and state boundaries. This occurs regularly on the international boundary with Nepal, Bangladesh, Bhutan and Myanmar. Elephant populations regularly cross interstate boundaries in many Elephant states such as Goa, Maharashtra, Northern Andhra Pradesh, Madhya Pradesh, Chhattisgarh, Bihar, Himachal Pradesh, Haryana, Manipur and Mizoram and within southern states. The following measures are envisaged:
- Within India, states sharing the Elephant landscape should meet at least annually and share information and plan for management of Elephants under the aegis of the National HWC Mitigation Forum using a common framework/approach to implement a coordinated strategy.
- As to the transnational management and conservation of Elephants between neighbouring countries, the states sharing international boundaries should follow the protocol as agreed between the nations and communicated by the MoEF&CC.

### **3.2.9 EFFECTIVE GARBAGE MANAGEMENT AND SAFE SANITATION AROUND ELEPHANT HABITATS**

Garbage is known to attract Elephants, and when garbage dumps are on the periphery or inside a village/town they create potential for accidental encounters between humans and Elephants. Unmanaged garbage may also habituate Elephants to moving and foraging in human-use areas, and as a consequence there may be high levels of conflict.

The vegetable and food waste generated in weekly markets in rural India and garbage thrown along roads and railway lines passing through forests attract Elephants. With a large number of humans moving around on foot or on two-wheelers, particularly in the evening after the rural markets, and Elephants also moving into the same area in the evening, accidental encounters happen. Accidental encounters also take place when truck drivers pass through forests, and also when they (truck drivers), and local people go into the forest for defecation, especially at dawn and dusk.

<sup>9</sup> Local overabundance refers to occurrence, in a habitat, excessive number of individuals of a species beyond the normal population density, due to a variety of factors.

The following are indicative measures to address the situation:

- Ensure sustainable and ecologically sound waste- and garbage disposal by town municipalities and village panchayats bordering Elephant habitats
- Undertake periodic inspection of the forest perimeter near villages/towns to ensure that poor disposal of waste and garbage is detected early and brought to the notice of relevant local authorities. Volunteers can be engaged for this.
- Aversion conditioning measures may be implemented, in areas where Elephants have started foraging inside the boundary of villages and towns in search of forage and have grown accustomed to feeding on garbage.
- Community awareness including signages etc should be implemented to facilitate effective participation from local communities in garbage management.
- SFDs may also coordinate with municipalities/panchayats on garbage management and explore the possibility of building toilets under the Swachh Bharat Mission to prevent accidental encounters at HEC hotspots.

### **3.3 INSTITUTIONAL CAPACITY DEVELOPMENT FOR ADDRESSING THE DRIVERS AND PRESSURES**

#### **3.3.1 STRENGTHENING THE ROLE OF KEY STAKEHOLDERS**

Local communities bear the direct brunt of loss of crops and human lives and other economic losses as a direct or indirect result of HEC. This has a direct impact on the wildlife and its habitat. The long-term engagement with local communities and other key stakeholders can be institutionalised and continued by adopting the following measures:

- Facilitate the establishment and effective steering of State-Level Coordination Committees (SLCC), a landscape-level multi-stakeholder forum, and District-Level Coordination Committees (DLCCs) to strengthen the inter-agency and cross-sector coordination and engagement of key stakeholders required for HEC.
- SFDs may support the community-level (village/ward) Primary Response Teams (PRTs) 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.

- Establish a platform where all community members, people's representatives and government agencies can interact and find solutions to mitigate conflict.
- Briefing of forest user groups, workers of tea and coffee plantations before every work season about Elephant risk and safety issues
- A campaign for creating awareness of Elephant may be instituted and communities also need to be educated to take responsibility in managing HEC. There is also a need to extend educational and awareness programmes for the development agencies, railways, power, irrigation, highways, mining companies, tourism industry, district administration, etc
- Plan and implement training programmes and other capacity development measures, extension programmes with school and college students, engage with women's self-help groups, Village Forest Committees (VFCs), Eco-development Committees (EDCs), Large Area Multipurpose Society (LAMPs), forest user groups, etc The EDCs/VFCs formed by the SFD in villages abutting the forest area in the periphery and zone of influence may be made functional and their sustainability ensured by accrual of benefits and incentives.
- Carrying capacity studies may be conducted to assess the tourism potential in the HEC hotspots.
- HEC mitigation measures should be developed with an inclusive and participatory approach.
- Ensure the participation of key stakeholders to ensure integration of traditional and local knowledge and experiences into the development of division-level HWC Management Action Plans (HWC-MAPs).

Tools for stakeholder engagement may be developed.

#### **3.3.2 COMMUNITY AWARENESS AND COMMUNICATION MEASURES TO REDUCE THE RISK OF ACCIDENTAL ENCOUNTERS AND RETALIATION**

Encounters with Elephants often take place in low light conditions, early in the morning or late in the evening, or when people enter the forests for NTFP or firewood collection, or Elephants enter the crop fields or get attracted by country liquor stored in houses. Knowledge of these factors can help prevent such encounters.

To facilitate effective engagement of local communities and various stakeholders in mitigation of HEC, it is extremely important to plan and implement awareness and sensitisation measures, taking a participatory approach.

- Appropriate community awareness and communication measures may be implemented at HEC hotspots, and their impacts may be assessed periodically to ensure that the awareness and communication measures are locally customised.
- The local communities at HEC hotspots may be advised to store grains in the granaries in pucca or underground structures. If necessary, communal granaries can be opted for.
- The local communities at HEC hotspots may be advised to avoid brewing indigenous liquor, which attracts wild Elephants to villages. Appropriate measures may be devised, together with the local administration, to implement this measure.
- Tools for developing, implementing and customising community awareness and communication measures may be developed.
- A standardised criterion for assessing the effectiveness and wildlife-friendliness of mitigation measures should be developed and used.
- The following research areas may be given higher priority for research and monitoring at HEC hotspots and the results from such studies may be consolidated at the national level to support further revision of these guidelines and strengthen the HEC mitigation measures:
  - Elephant responses to land use changes (mining, linear infrastructure) inside the forest
  - Elephant responses to changing cropping patterns and land use changes outside the forest
  - Differences between crop-foraging and non-crop foraging Elephants to understand what factors influence crop foraging behaviour
  - Status of Elephant populations along with demographic parameters
  - Impact of local overabundance on the habitat, population and HEC and impacts on other species
  - Efficacy of HWC mitigation tools and Elephants' responses to different methods (RRT/PRT interventions, barriers/deterrents, habitat interventions, etc)
  - How different mitigation measures impact Elephants (change in resource use, health and HEC)
  - Monitoring the efficacy of community capacity building exercises and how the threat perception has changed.

### 3.3.3 SYSTEMATIC RESEARCH AND MONITORING ADDRESSING HEC

HEC mitigation is a challenging issue, especially when adequate data on Elephant population density, Elephant demography, social and ranging behaviour of Elephants and its ecology are not available. Currently the data for assessing the impact of HEC are limited to the number of compensation claims paid, number of humans killed or injured, and the number of Elephants killed. There is, therefore, a need to constantly develop a knowledge base of subjects such as habitat usage, habitat connectivity, corridors, preferred or suitable habitat, home range, behaviour, attractions along the habitat and their movement paths.

Therefore, the following research topics are prioritised, which are expected to answer the existing management questions:

- Data on indirect costs of HEC (for example, abandoning agriculture due to HEC or human well-being, including stress, fear and restrictions on normal daily activities) may be gathered.
- Recording and analysing the data on long-term adverse impacts of HEC on Elephants (in terms of stress, reduction in reproductive fitness, loss of genetic diversity, etc.) and socio-economic impacts on families and communities may be done.
- SFDs may involve research institutions, non-governmental organisations (NGOs) and experts in carrying out result-oriented research on HEC status and mitigation measures besides undertaking in-house research.

### 3.3.4 FACILITATING CAPACITY DEVELOPMENT MEASURES TO DEVELOP THE REQUIRED COMPETENCIES FOR ADDRESSING HEC IN THE MOST EFFECTIVE AND EFFICIENT MANNER

Facilitating capacity development of SFDs, other line departments, local communities and all key stakeholders to ensure that a holistic approach can be followed.

#### Training of the field staff and response teams

- The SFDs should ensure that all response team personnel from forest and other line departments and agencies are brought under a systematic approach to capacity development, in line with the *Supplementary Framework to HWC-NAP on Establishment and Capacity Development of HWC Mitigation Response Teams*<sup>10</sup>

<sup>10</sup> Supplementary Framework to HWC-NAP on Establishment and Capacity Development of HWC Mitigation Response Teams available from <https://moef.gov.in>

- Arrangement for deployment of personnel and quick action on cognizance of conflict cases may be strengthened in each division
- The SFDs may sensitise all response teams and relevant personnel from forest and other line departments and agencies to the One Health approach, which can be used for planning and implementing measures related to occupational health and safety and humane treatment of animals in conflict.
- Regular and systematic training programmes on critical operations such as rescue, capture and translocation should be conducted jointly with other key relevant departments, in the form of mock-drills and simulation trainings.
- Advanced trainings on animal welfare issues should be conducted for all personnel of the RRTs.
- Competencies of members of RRTs to be reviewed on a regular basis and the curriculum for their training to be fine-tuned and updated regularly, in line with the Supplementary Framework to HWC-NAP on Establishment and Capacity Development of HWC Mitigation Response Teams.
- The arrangement for deployment of personnel and quick action on cognizance of conflict cases may be strengthened in each division.

#### **Training and support to *mahouts* and assistants**

- SFDs may build the capacity of mahouts, incorporating learnings from Elephant behavioural studies for guiding *koonkie* Elephants in dealing with conflict mitigation.
- Trainings for mahouts from different states may be conducted, preferably in local languages, and developing trainers.
- States conducting regular trainings can act as regional hubs for imparting training to the other states in training the mahouts of *koonkie* Elephants.
- A database of experienced mahouts of *koonkie* Elephants may be developed and linked to the National HWC Mitigation Database.
- Steps may be envisaged for improving the service conditions of mahouts.

#### **Training and support for daily wage workers/anti-poaching watchers**

- SFDs may provide appropriate support and systematic training to daily wage workers and anti-poaching watchers on key HEC operations handled by them.
- Steps may be taken to improve their service conditions.

#### **Support the local population in human safety by preventing accidental encounters with Elephants**

- SFDs may facilitate, encourage and seek support from local NGOs, volunteers, schools, etc to implement safety measures, aiming at preventing human–Elephant encounters. These measures may include guiding people to watch for signs of Elephant presence during crepuscular period (around dawn and dusk), and how to respond when they encounter an Elephant. Regular trainings in local schools and colleges, and also possibly during village meetings at HEC hotspots, can be organised to train people on such safety measures.
- Tools for such safety measures may be elaborated.

### **3.3.5 MEASURES TO STRENGTHEN CROSS-SECTOR AND INTER-AGENCY COOPERATION FOR HEC MITIGATION**

Cross-sectoral cooperation for HEC mitigation entails that multiple stakeholders from different sectors and domains be engaged, at national, state, landscape and district/forest division-levels. Key stakeholders for HEC mitigation may include State Forest Department, and other line departments, viz., Agriculture, Revenue, Animal Husbandry, Police, Public Works, Health and Family Welfare, Education, Electricity Boards; private sector (tea or coffee plantations), and agencies viz., Railways, National Highway Authority of India, as well as wildlife conservation and development NGOs, farmers' cooperatives and agricultural research institutions are relevant when dealing with conflict and conflict mitigation

#### **Following measures are envisaged:**

- State-level Coordination Committees (SLCC), landscape-level multi-stakeholder fora, and District-level Coordination Committees (DLCC), may be used to strengthen inter-agency coordination required for HEC, and district specific operational mechanism may be developed to address specific needs for HEC mitigation.

- Safety audits may be conducted each year, if feasible, to ensure that all members of the community act responsibly in case of HEC, and to facilitate inter-agency cooperation.
- Maintaining information and data on HEC cases with reference to the developments in the area that may have bearing on conflict cases, may be used for discussions in the DLCC.

### 3.3.6 MEASURES TO STRENGTHEN THE SYSTEM OF KNOWLEDGE MANAGEMENT ON HEC MITIGATION

To ensure effective and sustainable HEC mitigation measures, it is essential that field experiences, learnings, field-evidence and conceptual advances are not only

shared across key stakeholders and landscapes, but such knowledge is also documented to be utilised for future strategies and plans on HEC mitigation.

- National HWC Mitigation Forum, Landscape-level multi-stakeholder forum, and appropriate Working Groups may be used to share field experiences, learnings, evidence and conceptual advances, within the forest department, across stakeholders, and across landscapes.
- Measures may be put in place to systematically document field experiences, learnings, field-evidence and conceptual advances on HEC mitigation, to inform the future strategies and plans on HEC mitigation.

## 4. DEPLOYING MEASURES TO PREVENT HUMAN–ELEPHANT CONFLICTS

### 4.1 DIFFERENTIAL MITIGATION APPROACH FOR DIFFERENT HEC LOCATION SCENARIOS

HEC can be effectively addressed by understanding the type of conflict, the site of occurrence, and its overall impact on humans and Elephants.

### 4.2 IDENTIFICATION OF HEC HOTSPOTS

“HWC Hotspots” are areas with actual or predicted repeated occurrence of HWC incidents resulting in crop-loss, livestock death, human death and injury, wildlife death and injury over temporal and spatial scales. It can be static (repeated in the same place or time) or dynamic (shift in space and time over years). In addition to count statistics, the magnitude of the incidents is subjected to interpolation or extrapolation techniques to define the hotspots in space and time.

Identifying conflict hotspots that could also provide a direction towards the drivers of conflict, is critical to provide site-specific solutions to mitigate human–Elephant conflict. Conflict hotspots of HEC can be mapped through geo-spatial assessments, by using both primary data and secondary data including time-series data. The hotspots can be identified and mapped as follows:

- **Incident hotspot:** Frequency of occurrence of incidences over past specific years such as previous five or ten years, mapped over the target area. The data include number of incident of injury and death, attack/ killing of domestic animals.

- **Vulnerability Hotspot:** Cumulative index by overlaying past incidents, vulnerability of local community and potential risk of the area.

The following assessment are envisaged:

- Database to be created by involving frontline SFD staff, researchers, research institutions, veterinary professionals and others for the identification and assessment of the hotspot.
- Predictive modelling based on the field data and Geographic Information System (GIS) analysis, may be carried out by trained personnel.

### 4.3 EFFECTIVE USE OF EARLY WARNING AND RAPID RESPONSE SYSTEM AT HEC HOTSPOTS

Since it is inevitable to prevent the wildlife and humans from using the same space in many situations, early warning systems and rapid response teams are important for timely action to prevent the conflicts and to reduce the impacts due to such incidents. However, with Elephants, some conflict situations require high intensity interventions.

A system of “Early Warning and Rapid Response (EWRR)” should be established and used to enhance the overall efficiency of mitigation efforts in the field. EWRR is a set of tools, processes and personnel competencies needed for the timely and meaningful generation and dissemination of alert information to individuals, communities and establishments at risk, for optimal preparedness and response and at the appropriate time to reduce the likelihood of injury, death or crop damage.

EWRR would structurally include an HWC Mitigation Hub/ Control Room, and a system of three-tiered response teams, viz, Division-level Rapid Response teams (Division RRT), range-level Rapid Response Teams (Range RRT) and village/ward level Primary Response Teams of local community (Community PRT). The following steps should be taken up under the EWRR system, in line with the *Supplementary Framework to HWC-NAP on Establishment and Capacity development of HWC Mitigation response Teams*<sup>11</sup>.

The system of early warning and rapid response can be used for detecting early conflict case with Elephants and for ensuring appropriate response in cases of HEC.

#### 4.4 MONITOR AND DOCUMENT 'POTENTIAL ELEPHANTS-IN-CONFLICT' IN THE LANDSCAPE

Potential Elephant-in-conflict is/are individuals/ herds that are likely to enter in a HEC situation, owing to their movement pattern/ other behaviour.

Monitoring of potential Elephants-in-conflict in the forest-agriculture interface area can be carried out, as a preparedness and prevention measure, to ensure that their movement in the human-dominated landscape does not lead to an emergency situation. Following are some examples of such monitoring methods:

- Monitoring the movement of potential Elephants/ herds-in-conflict in the landscape, by recording direct observations, indirect evidence such as hoof prints and dung (to generate presence-absence data), and foraging signs in crop fields. Interviewing local villagers can reveal Elephant presence and movement patterns.
- Spatial and temporal movements, and behaviour of straying individuals from known Elephant herds monitored using camera traps and radio collars.
- Updates on the status of Elephants in potential conflict areas, especially on migration/ movement patterns, collected.
- SFDs may develop an identification database of identified individual and known herds of Elephants, their movement pattern within human-dominated landscapes, and the conflict that is thereby generated; this will help identify aggressive and individual Elephants with high potential for conflict

#### 4.5 AN INTEGRATED APPROACH TO MANAGING POTENTIAL ELEPHANTS-IN-CONFLICT

There are three key elements in most HEC situations: the Elephant, humans (settlement) and the attractant for the Elephant (such a palatable crop). Sometimes removal of one of these elements in the conflict is required to resolve an intractable situation.

- Addressing high conflict Elephant/s: Male Elephants in particular are prone to higher levels of conflict and some of them become habituated to humans and the different methods they use to protect crop. The following measures are envisaged:
  - SFDs may develop an identification database of identified individual and known herds of Elephants, their movement pattern within human-dominated landscapes, and the conflict that is thereby generated; this will help identify aggressive and individual Elephants with high potential for conflict. SFDs should identify the high conflict individual/s from this database.
  - SFDs should test aversion conditioning to train habituated males who have the ability to breach barriers to avoid human use areas through radio collaring of such males so that systematic intervention is possible.
  - Necessary capture, translocation (if required) to be carried out as per the Guidelines and OP with related monitoring protocols. Translocation is one of the tools available for addressing high conflict individual or even pocketed populations. Animals which are captured may be rehabilitated in a suitable habitat or to be brought into captivity depending upon the situation.
- Addressing settlements inside the forest in HEC hotspots: When settlements inside the forests face very severe HEC and also have other problems based on the remoteness of their location, they may be willing to be resettled outside the forest in order to avoid HEC and to have access to a better livelihood and living conditions. In such situations the SFDs should facilitate voluntary resettlement, as per the protocols of the Government of India.
- Addressing the attractant for Elephants:
  - Identification of non-palatable crops by the farmers / agriculture department with due consideration to their socio-economic-cultural aspects

11 Supplementary frameworks to the HWC-NAP <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

- The low economic return from non-palatable crop may be addressed by facilitating assured pricing mechanism, value addition and marketing linkages.

#### **4.6 MANAGING DISPERSING ELEPHANTS**

Elephants which have strayed out of the forest and have been driven back to their natural habitat and also Elephants which colonise new areas, pose a very significant challenge to the managers. The following measures may be envisaged:

- Such Elephants should be monitored based on individual identification and tracking through radio-telemetry.
- Population-habitat viability analysis should be conducted for long-term scientific population management and HEC mitigation.
- Evaluation of the outcome of past dispersals is necessary to determine the effectiveness of the mitigation measures.
- Ensure regular monitoring and review by the Chief Wild Life Warden of the situation in all potential HEC conflict hotspots.

#### **4.7 JUDICIOUS USE OF BARRIERS, TAKING A LANDSCAPE APPROACH**

Barriers are primarily used to regulate the movement of Elephants, and poorly designed barrier can have adverse impact on conservation. Barriers are not fool-proof, so there may be breaches and occasionally some Elephant may be able to overcome them and enter human use areas.

Following principal types of barriers are currently used to prevent Elephant entering human-dominated areas:

- Elephant Proof Trench (EPT)
- Solar powered electric fences
- Rubble walls
- Other types – railway girders / tracks, steel channels / ropes / bars etc

When planning and establishing barriers, following to be considered

- Adopting a landscape approach during planning and execution so as not to disrupt natural movement of the Elephants in the landscape. This may be applicable to the following situations

- Construction of barriers around forest areas to keep Elephants inside the forest. Such barriers are not advisable around small forest blocks (few sq. km in size) because such forests cannot provide all the space and food requirements and confines the Elephant population, compromising their long-term genetic viability. It may be moderately useful around large forest blocks but extremely difficult to completely encircle forest blocks.
- Barriers constructed across the landscape between two states / districts / countries. It is rather impossible to create effective barriers at landscape-level ensuring movement of the Elephants across ecological landscapes and not be confined to administrative units.
- Barriers constructed around the settlement to be protected such as village / enclave. This would be most effective for protection of crops but it can be used only in specific situations wherever there is a compact area but not so around large enclaves.
- Creation of site-specific quality barriers using a participatory approach from designing monitoring and maintenance by systematic engagement of communities is essential.
- Barrier should only be used at the interface between human use areas and forests.
- Barriers with sharp spikes that have potential to injure Elephants, wildlife, livestock and humans should be avoided.
- When barriers are to be developed, a map should be prepared showing location of Elephant groups, seasonal migration patterns of Elephants and locations of Elephant corridors including location of proposed Elephant barriers.
- Barriers may be created only if the boundary is “hard” (clear and sharp demarcation between forest and human landscape), fairly straight without much convolution and not broken by roads, river or large stream for making them more effective.

#### 4.8 JUDICIOUS USE OF OTHER EXCLUSIONARY MEASURES, TAKING A HARMONIOUS-COEXISTENCE APPROACH

Beating of drums or tin can, kerosene torch (mashal), swinging fireball and shouting are the most common repellent measures, but their effectiveness is low in most situations. The following measures may be envisaged:

- Innovative local repellent techniques like honey-bee boxes, chilly ropes etc may be piloted, and customised to enhance their effectiveness, while ensuring their wildlife-friendliness.
- New repellent methods may also include sound of bees and carnivores, use of drones etc besides deterrents like trip / sensor-based alarm system.
- Community-based institutions may be engaged by the SFDs together with wildlife experts / organisations, in motivating, training and hand-holding the community in use of exclusionary measures.

#### 4.9 SUPPORT LOCAL POPULATION IN CROP-GUARDING METHODS

Guarding crops at night from any safe structure is one of the most effective early warning and deterrent method. Crop-guarding involves deterring Elephants by chasing and driving them using noise (i.e., shouting, beating drums or tins or using firecrackers/torches). Guarding crops at night is suitable in low-conflict areas. The following measures may be envisaged:

- Developing Community-based-conflict-management (CBCM) measures, especially in North Eastern Region, as a means of empowering the community to share the responsibility of HEC mitigation with the Forest Department through JFMC / EDC / Gram Sabha considering their vital stake and for eliciting more rapid response.
- Community PRTs and farmer groups may be engaged to ensure that besides preventive measures, traditional crop-guarding methods are encouraged, with the involvement of the local community/farmers.
- Awareness-building and training should be carried out on the proper usage of firecrackers and fire torches such that do not harm the Elephants, nor become fire hazards and on various aspects of the crop-guarding techniques.

- Early warning bulk SMS Alerts along with pulsating warning lights on towers, that warns of Elephant presence in the area may be developed.
- Farmers can be supported in developing effective and sustainable crop-guarding practices by various incentive mechanisms and subsidised funding under district-level government schemes such as Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).
- A compendium on good practices on crop guarding techniques may be developed for use by the local community.

#### 4.10 ADDRESSING ZONOTIC AND OTHER EMERGING DISEASES, ADOPTING A ONE HEALTH <sup>12</sup> APPROACH

The response teams and other stakeholders, at HWC hotspots, are vulnerable to a variety of Zoonotic disease that can be transmitted from different animals, apart from the risk that exists for disease transmission domestic animals and wildlife; and between human-domestic animals:

- Veterinary capacities and infrastructure may be upgraded, to facilitate disease monitoring in Elephant populations (e.g., for anthrax, rinderpest, foot-and-mouth disease), both from an Elephant conservation point of view, and from zoonotic diseases spreading to livestock and human populations.
- To reduce biotic pressure on forests and prevent the spread of zoonotic diseases, it is encouraged to keep high yielding cattle and stall-feed them
- A well formulated Wildlife Health Management and Disease Surveillance Plan may be developed at every division/Protected Area (PA).
- All personnel involved with capture operations may be trained, vaccinated and equipped.
- The basic approach should be to integrate the concept of 'One Health', which links human and animal health in a shared environment, into all the operations and HEC mitigation measures in the field.

<sup>12</sup> One Health is a collaborative, multi-sectoral and trans-disciplinary approach—working at the local, regional, national and global levels—with the goal of achieving optimal health outcomes, recognising the interconnection between people, animals, plants and their shared environment.

## 5. ADDRESSING THE EMERGENCY SITUATIONS ARISING DUE TO HEC

Emergency or Crisis situations can be defined as situations that are sudden, unexpected, have the potential to be serious/are serious in nature and therefore require immediate intervention in time and space, from concerned stakeholders, to minimise loss of lives and assets. The response to such emergencies involves prompt handling of situations, ensuring reduced vulnerabilities of humans and Elephants.

An indicative list of the potential emergency situations on a priority basis is as follows:

- i. A human is killed/injured
- ii. Elephant/abandoned calves are injured and need rescue
- iii. Property is damaged
- iv. Elephant has entered human use areas (agriculture field or settlement areas)
- v. Livestock is injured/ dead
- vi. Elephant death due to retaliatory action by humans / train collision
- vii. Crop damage
- viii. Sighting of Elephant in the vicinity of agricultural land or settlement

Key response procedures should be established, and actions promptly implemented/ undertaken for addressing emergency situations. Detailed step-by-step guidance should be developed as “Operating Procedures for Addressing Emergency Response Situations”

The key emergency response procedures may be elaborated, and should include the following:

### 5.1 PREPAREDNESS MEASURES – BEFORE AN EMERGENCY SITUATION ARISES

#### 5.1.1 ESTABLISHMENT OF EMERGENCY RESPONSE MECHANISM

A strong institutional mechanism is required, to respond to emergency situation arising due to HEC. This starts with detection of incident, communication to Control Room and information dissemination to the officials and staff in the command-and-control hierarchy, including forest and civil administration, for initiation of appropriate response actions. The divisional forest office coordinates action by rushing RRTs to the incident site. The field support

operations to be structured around the following key operational stages, for synchronisation of activities to meet the emergency:

- Monitoring and situational awareness.
- Mitigation Hubs/Control Room/helplines to receive and disseminate information.
- RRT/ PRT personnel, veterinary team, drug and equipment, mobility and communication to address the emergency situation, effectively and efficiently.

#### 5.1.2 INTRA- AND INTER-AGENCY COORDINATION AND COOPERATION

- Procedures may be laid down in each forest division/ district, in line with these guidelines, and in line with the institutional framework suggested under the HWC-NAP, to ensure timely coordination amongst the various response teams from forest department and other agencies, under the DLCC consisting of District Magistrate/District Collector; Police, Fire Services, Animal Husbandry Department, Health Department, SDRF, NDRF, Paramilitary Forces, etc and local community, especially local Panchayat leaders and village Community PRTs.

#### 5.1.3 PREPAREDNESS OF RESPONSE TEAMS

- Operating Procedures may be laid down in detail to ensure that the capacities and capabilities of the various response teams (Community PRTs, RRTs) are established and facilitated in their capacity development through trainings and other measures, including trainings on occupational health and safety.
- Operating Procedures may be laid down with specifications to ensure that each response team is sensitised and equipped with appropriate and adequate response equipment and personal protective equipment (PPE kits), in view of effective zoonotic diseases and pandemic prevention, management and control.

### 5.2 MEASURES DURING AN EMERGENCY SITUATION

#### 5.2.1 IDENTIFICATION OF THE ELEPHANT-IN-CONFLICT

Identification of individual or group of Elephants-in-conflict to be characterised into casual (opportunistic) or repeated

(obligatory) crop foraging individuals/groups, which may result from Elephants with their natural movement adjoining the periphery of the forest, or Elephants which exclusively move within the crop lands due to the attractions, resulting in their localisation. The following steps may be taken for identifying the Elephant that causes conflict:

- The movement area of the Elephant in conflict may be demarcated or mapped.
- Follow the track marks and other distinct signs to confirm and track the presence and absence of Elephants.
- Investigate all conflict-related incidents within the region.
- Deploy a number of cameras at strategic locations depending on their predictable movement.
- Investigate the existing camera trap database if available and identify the individual based on the distinct morphological identification features.

### **5.2.2 OTHER KEY RESPONSE ACTIONS DURING AN EMERGENCY**

- Operating Procedures may be laid down to receive, channelise and disseminate information at the onset of any emergency, from site of the incident, to related forest officials, HWC Mitigation Hub and further information dissemination, to requisition related response action at the emergency site.
- Specifications may be detailed for mobilisation, activation and deployment of response teams on ground to respond to the emergency situation.
- Adequate arrangements may be made to provide first aid to the person facing a health emergency condition, and then his/her quick transfer to the nearest available

equipped hospital should be facilitated. It is also critical to ensure occupational safety and health of the forest department personnel before, during and after any response operation.

- During an HEC situation, it is very essential to maintain public order and tranquillity through effective crowd management. SOPs indicating the specific roles and responsibilities of the forest department officials, District Magistrate/administration, police department, fire department, emergency services (NDRF, SDRF, paramilitary forces), health department, animal husbandry department, relief/revenue Department; first responders, specialised responders and other volunteers in crowd management should be laid down clearly, and these should be agreed to by all the stakeholders.
- The role of the media, before, during and after HEC situations should be discussed to ensure they participate effectively in crowd management and other mitigation measures.

### **5.3 MEASURES AFTER AN EMERGENCY SITUATION**

- Operating Procedures may be laid down for reporting and process documentation of the response operation, including detailed on step-wise response actions taken and challenges faced, further Insights into the conflict and its future management, key follow up actions that need to be taken, if any, to resolve the issue (incident), management of animal if a capture was required, and assessment of the need to monitor the location for a few days to discourage any retaliatory actions

## 6. REDUCING THE IMPACT OF HEC ON HEALTH AND OVERALL WELL-BEING OF THE AFFECTED HUMANS

Humans living in Elephant range areas are familiar with its habits and behaviour and are accustomed to Elephant presence in the area. Although they are aware of how to react to the situations, many a times, things go beyond control and marginal farmers face losses due to HEC. Moreover, due to dispersal and colonisation of Elephants in new areas, people are not familiar with Elephants and are less tolerant of the damage caused in conflict.

A major response to HEC has been compensation for losses, but little evidence exists to support the claims that these schemes have an impact on people's attitude or the impact on the conservation of wildlife. Moral hazard, optimisation and leveraging of compensation schemes are a challenge.

Measures, which may encourage people to work towards harmonious co-existence, include participatory planning, awareness and communication for change the threat perceptions, integrating HEC mitigation into poverty alleviation programs and community-based natural resource management, and other site-appropriate stakeholder engagement measures, such as.

- Compensation for economic loss from damage to crops by Elephant activities, or personal injury or risk from Elephant encounters, is meant to increase community tolerance towards Elephants
- Insurance schemes require participants to pay a premium, for insurance against economic loss. This premium is determined based on the risk associated with HWC/HEC. The challenges of high premiums charged (due to high risk) have been addressed in some areas, by supplementing premiums with government or non-governmental funding support, community financing (e.g., through ecotourism), or better risk evaluation. Dialogue with insurance sector may be initiated for providing insurance cover for damages due to HEC. Modalities may vary for such programme from place to place based on assessment of risk by the Insurance companies. Feasibility may be explored at the state level
- Performance payments for community support for conservation may also be explored as an instrument, where the EDCs / VFCs can be provided funds for conservation-linked performance payments, and experiences and learnings can be shared back, for further refinement of these guidelines
- Conservation Easement may be a good instrument

for mitigation of conflict, which could be explored by incentivising conservation for mitigation of conflict and as an innovative mechanism, where farmers can be compensated for keeping these areas fallow for part of the year for wild animals or no/reduced gain from the farming income. Experiences and learnings can be shared back, for further refinement of these guidelines.

### 6.1 ADDRESSING THE SITUATION OF LOSS OF HUMAN LIFE

The dimensions of human death are many folds. It's not simple to fathom the loss of human life to the family of the victim. The primary assumption behind *ex gratia* is that the loss of life of any individual cannot be compensated. Therefore, any amount paid to the family of the victim is mere consolation or a kind of solatium.

The following measures may be implemented to effectively address the situation:

- Part of the *ex gratia* payment may be made immediately to the victim's family/heirs and the balance payment may be made at the earliest.
- The payments to the victim's family should be made into their bank accounts.
- In the HEC hotspots, a revolving fund may also be established, at the division-level, to ensure availability of funds for providing immediate relief to the victim/family.
- Possibility of setting up of foundations in the territorial divisions, for extending sustainable support to the victim, can also be explored. The minimum *ex gratia* payment may be kept in conformity with the Gajah (Elephant Task Force) <sup>13</sup> recommendation by various states.

### 6.2 ADDRESSING THE HEALTH AND OVERALL WELL-BEING OF THE AFFECTED HUMANS

- In the case of injury, as a result of encounter with Elephant, the victim needs to be immediately hospitalised and *ex gratia* should be paid, as per the state government norms.
- Professional counselling through qualified psychiatrists/ health workers will be useful to check the effects of such traumatic incidents.

13 Rangarajan, Mahesh, Ajay Desai, R Sukumar, PS Easa, Vivek Menon, S Vincent, Suparna Ganguly, BK Talukdar, Brijendra Singh, Divya Mudappa, Sushant Chowdhary and AN Prasad. Gajah. Securing the Future for Elephants in India. The Report of the Elephant Task Force,

- The SFDs and other government agencies/ institutions may organise some counselling sessions for such victims and support them in coming out of this psychological impact.

### 6.3 ADDRESSING THE SITUATION OF PROPERTY DAMAGE

*Ex gratia* for property damage does not generally consider the cost of repairing and the costs of temporary fixes that are needed prior to repairs. The poor are affected more as their houses are of low value and damages do not consider the fact that the main costs is actually labour that the family provides in reconstruction and not the cost of materials themselves.

- Property insurance should be the ultimate goal. Awareness and adoption of options regarding property insurance should be given priority. However, till the system is fully established, present system of payment of compensation should be continued and enhanced by factoring in the hidden costs and losses. Compensation for damage to property (including buildings) should be in accordance with the state government rules, and may be made at the earliest.
- Mobile application-based system may be developed, to evaluate the loss of property and *ex gratia* paid to the property owner.
- Elephant may enter urban areas and semi-urban area close to the forest, which may create panic amongst residents. The following measures may provide relief and assistance to the community. SFDs may coordinate with the respective resident welfare associations for *ex gratia* payment in the event of loss of property and human injury

### 6.4 ADDRESSING THE SITUATION OF CROP DAMAGE AND LIVESTOCK INJURY/LOSS

The long-term impacts of assessment of crop compensation amount are complex. While payment of inadequate compensation to farmers will lead to resentment among humans, leading to adverse impact on wildlife conversation due to retaliatory killings. Payment of compensation is equally challenging as it might also lead to laxity in crop protection by the farmers, and inhibit possible innovations for crop guarding.

- Ministry of Agriculture and Farmers Welfare have included the crop loss by activities of wild animals under its flagship scheme *Pradhan Mantri Fasal Bima Yojana* (PMFBY), which can be used as an important HWC mitigation instrument. However, till the system is formally established in remote forest areas, the existing system of direct payment of compensation to farmers should be continued.

The process of settling crop or property loss compensation should be transparent and simplified. Mobile apps may be used for collecting the information and processing of claims of farmers, after crop losses from Elephant activities, to ensure efficiency and transparency in the system. Experiences and success-story sharing across states can facilitate further improvements in the system.

- Farmers may be encouraged, facilitated through community-based institutions, to explore solutions such as change in cropping pattern, use of non-palatable crops etc.
- Collaborative efforts can be made to promote market-based arrangements for alternate crops, wherever feasible. Community Primary Response Teams (PRTs) may be engaged to facilitate this process in their respective villages/ areas of operations.
- Site-specific studies may be conducted to find out appropriate crops that are non-palatable to Elephants, in collaboration with agricultural institutions.
- Ensure sufficient delegation at field-level for deciding and disbursing *ex gratia*/compensation for its effective use for addressing possible trauma due to HEC
- Livestock loss or injury, as a result of encounter with Elephant, are not common. However, cattle tethered near or in Elephant movement paths may be at risk. SFDs may coordinate with Animal Husbandry Department for providing livestock insurance coverage in HWC hotspots. To reduce conflict and risk of loss of livestock inside the forest areas, it is encouraged to stall feed the livestock in HWC hotspots.

### 6.5 ADDRESSING THE SITUATION OF LOST LIVELIHOOD OPPORTUNITIES

- HEC may deprive humans of their jobs, or reduce their ability to raise income, and thus diminish their capacity to make a living. *Ex gratia* and compensation in an important coping mechanism, but specific measures may be required to ensure long-term sustainability of livelihoods at the HWC hotspots. Following measures may be planned and implemented, with cross-sector cooperation:
- Systematic assessments of the extent and scale of lost livelihood opportunities and other indirect impacts, due to HEC, may be conducted
- Development of skills for alternative non-land/non-farming-based income generation opportunities
- Creation of self-help groups (SHG) for facilitating small businesses that adopt alternative non-land / non-farming based livelihoods.

## REDUCING THE IMPACT OF HEC ON THE HEALTH AND WELL-BEING OF ELEPHANTS

Indian laws take a very strong stand on animal welfare. There are enough provisions in national and state laws to avoid and prevent cruelty and harm to animals.

- All the care should be taken to address the issues of Animal Welfare and Animal Rights as enshrined in the Constitution (Article 48A and 51A(g)), and as per the statutory provisions made under the Indian Penal Code (Sections 428 and 429), Prevention of Cruelty to Animals Act of 1960 (Section 11(1)(h) and Section 11(1)(d)), Motor Vehicles Act 1978 (Transport of Animal) Rules, 2001) and guidelines issued by the MoEF&CC.

### 7.1 ADDRESSING THE HEALTH OF ELEPHANTS DURING CAPTURE AND POST-CAPTURE OPERATIONS

Capturing of Elephants can be for different purposes, for example capture can be for radio-collaring to be used for research purposes, or for early warning and rapid response treatment of injured Elephants or rescuing abandoned calves, or removal of Elephant from conflict space for the purpose of translocation or bringing it into captivity.

Operating procedure (OP), providing step-by-step procedure and approach for tracking and capturing Elephant/s as a mitigation measure, may be developed. Separate Operating Procedures for radio-collaring, treatment and transport to be developed to ensure animal health and safety during such operations.

Post-capture management of Elephants includes knowing the position of the captured animal (captured through immobilisation), monitoring physiological parameters and transportation of the animal. Currently, most of the capture of Elephants is done through immobilisation.

- The first & foremost thing after immobilisation of the Elephant is to restrain it securely in a comfortable position to maintain airway.
- Following drug induction, the Elephant should be approached (from the rear) keeping safety in mind.
- Post capture health examination and monitoring of the immobilised Elephant is mandatory.
- The physiological parameters (temperature, respiration, pulse and colour of mucous membrane) need constant monitoring, as these are likely to be compromised during chemical capture.
- Any significant deviation in normal physiological parameters should be dealt with appropriately.

#### Health Examination post capture & Critical monitoring of the immobilised Elephant:

- Once the Elephant is properly positioned, the Veterinarian should examine its health status and monitor its vital signs (pulse, respiration rate, temperature, blood oxygen level etc). Accordingly, it may be decided whether the radio collaring or capture operation will continue or the animal needs to be revived due to some complication/health emergency and released.
- A checklist of parameters may be elaborated.

#### Transportation post capture:

- The animals should be transported in specially designed vehicles or large containers (for long distance) or on foot (for short distance).
- The vehicle should be designed considering the animal's weight, adequate ventilation options (containers), sound non-slippery floor, provision of drainage to facilitate disposal of waste etc.
- The animal needs to be appropriately secured in the vehicle and necessary transport considerations should be in place during transit.
- Alternatively, the animal can be hoisted on the vehicle using slings/ropes/belts taking due anatomical and physiological considerations strictly under veterinary supervision and using a skilled crane operator.
- Stops en-route should be pre-planned and identified well in advance aimed at achieving the shortest journey time possible and ensuring safety and wellbeing of the animal.
- The animal needs to be regularly monitored for signs of discomfort or stress during the entire journey period by veterinary professional, and the Elephant maintained in a sedated state.
- Koonkies, if available, should be used in moving / pushing the animal into the vehicle/ container.

#### Food and water during transportation

- It is better to avoid provisioning of feed and water during overnight transport and efforts should be made to reach the destination (release site/ Elephant camp/ designated facility) as early as possible taking due care of vehicle speed and halting destinations.
- Water should be made available to the animal during transportation especially on hot journeys exceeding 6

hr. Water should also be at hand to control possible hyperthermia of recumbent animals.

## 7.2 RELEASE ESSENTIALS

- Relocated Elephants should be fitted with GPS-based collars to monitor their movement with the option of recapturing them in case they again come into conflict.
- The site of release should be at sufficient distance (typically of the order of 200-300 km or greater) such that it is unlikely that the Elephant would be familiar with the new site and attempt to go back to the place of capture.
- “Soft release” options can also be experimented with; this would involve keeping the animal in a stockade for some limited time period at the proposed site of release before letting it free.
- The animals should be monitored for any transport injuries or any other health-related issues following release.
- The release sites should have proper off-loading facility and release should be done with the least possible stress on the Elephants.
- Following release in native habitats, it is necessary to monitor the behaviour of the animal/s and its interaction with the other herbivores
- The animal should be monitored post-release, for injuries, wounds, ill-health and disease such as nervous, locomotive or digestive disturbance by team of veterinary professionals, biologist and manager during the initial period.
- There is also a need for long-term monitoring of the health of the released individual/ population.
- In some instances, the best option or the only option may be to retain the captured Elephant or Elephants in captivity, especially if the animal has killed people or the risks of release into the wild are too high. If Elephants are retained in captivity, it is essential to consider their proper welfare and utilisation.
- In case destined for captivity, the animal should be held in fenced enclosure/ Kraal. This would provide chances for animal to recover from anaesthetics, in getting acclimatised to their surroundings at new destination and provide opportunities for intensive monitoring and veterinary management.

In case the Elephant is required to be kept in captivity, the space provided to the Elephant should be as per the guidelines issued by the Project Elephant division, MoEFCC.

- Proper sanitation and hygiene should be maintained to avoid chances of infection
- Adequate balanced food and water should be made available along with mineral and vitamins supplements as per the health status of the Elephant.
- Health Screening: A general health screening once a week should be done and a thorough health examination should be done at least once in a month. Bi-monthly foot dip, foot care and nail trimming should be carried out to prevent foot problems. In case of suspicion of some serious health condition, samples should be collected and sent to institutes like Indian Veterinary Research Institute (IVRI) etc. for more advanced investigations.

## 7.3 REHABILITATION OF THE CAPTURED ELEPHANT

- In the case of Elephant brought into captivity temporarily for treatment, their release post treatment should take into consideration their past record in conflict.
- Elephants that have a record of high conflict cannot be released back as they are more habituated to humans when compared to the Elephants not causing serious conflict, which can be released back with adequate monitoring.
- States having wild Elephant population may envisage at least one Elephant rescue and rehabilitation centre and should follow CZA guidelines for their management.
- Chief Wildlife Wardens should ensure that Rescue and Rehabilitation Centres for Elephants as well as housing facilities for captive Elephants are maintained properly to avoid complaints about cruelty/ ill treatment of Elephants.

## **7.4 MANAGING ORPHANED/STRAY ELEPHANT CALVES-IN-CONFLICT**

An Elephant calf, in the wild, is orphaned due to several reasons and special care is required to handle it, as follows

- The rescued calf should be raised under guidance of a veterinarian by an experienced senior/dedicated mahout. It should be handled only by one mahout with full precautions about hand hygiene and hygiene of the room/enclosure in which the calf is housed.
- For young calves below the age of 1 year, the constant presence (24 x 7) of the mahout is critical as stress of separation can very adversely affect its survival. If there are adult female Elephants in the facility and one of them is tolerant to the calf, then the calf should be raised in its presence as the female will act as a foster mother.
- The calves should not be exposed to humans as they have a weak immunity and may contract the diseases quickly.

## **7.5 RADIO COLLARING OR TAGGING (RFID-MICROCHIP) AN ELEPHANT**

Elephants may be radio collared before release. Radio collars are important for HEC mitigation with the objective of understanding ranging behaviour and other information.

- Ranging behaviour studies will help to better understand how and why certain Elephants come into conflict and help the development of customised conflict mitigation measures including RRT deployment, aversion conditioning, barriers, community awareness about preventive behaviours/actions, etc. These studies will also help to ascertain the effectiveness of mitigation methods and also in understanding how Elephants respond to these methods and how these methods impact Elephants.
- Radio collaring may also facilitate enhancing the effectiveness and efficiency of the response teams, as using real-time location information from satellite collars can help RRTs to intervene early and stop Elephants from coming into conflict.
- It is useful to radio collar an injured Elephant to monitor it systematically for medical intervention over an extended period of time.
- Radio Frequency Identification Device (RFID) may be used for tagging captured wild Elephants brought to captivity

## **7.6 HEALTH AND WELL-BEING OF PRIVATE AND TEMPLE ELEPHANTS**

- There are several instances of private Elephants and temple Elephants not being managed properly and going out of control, often during processions, due to loud music, crackers and presence of large crowd etc. The captive Elephants need to be managed as under:
- As far as possible, Elephants may be kept away from the congested places and large crowds. Assembly of Elephants in temples or other public places should not be permitted unless the organisers have taken adequate measures to deal with any emergency. It should be ensured that the Elephants, particularly bulls, participating in public functions are manned only by trained and experienced mahouts.
- A dossier should be maintained of all Elephants including their behaviour in the crowd and public functions. Operating Procedures (OPs) should be drafted for tackling such situations. Rapid response teams should be formed by the Forest Department in big cities to tackle such situations.
- Captive Elephant welfare committees should be constituted at State and District levels to ensure welfare and humane treatment of captive Elephants, particularly in private custody.
- Chief Wildlife Wardens should periodically monitor ownership certificates/ microchips of Elephants.
- Guidelines for care and management of captive Elephants issued by the MoEF No. 9-5/2003 PE dated 8.1.2008 for transportation, housing, care, feeding, work etc should be strictly followed including maintenance of necessary records and registers.

## 8. USE OF LEARNINGS FROM THE GUIDELINES TO FURTHER STRENGTHEN INSTITUTIONAL AND POLICY FRAMEWORK ON HEC MITIGATION IN INDIA

These guidelines are expected to serve as a capacity development instrument, given that a robust and structured feedback mechanism will be put in place, to document the feedback coming from implementation of them.

- The feedback from use of these guidelines may, therefore, be consolidated, to form the basis for

fine-tuning these mitigation measures, and also understanding capacity needs for effectively implementing the mitigation measures.

- In the long term, the consolidated feedback may also be used in further reviewing the capacity development strategies, HWC-MAPs, HWC-SAPs, and HWC-NAP.

## 9. PROCESS OF DEVELOPMENT, PILOT TESTING OF THESE GUIDELINES AND CONSULTATION PROCESS

- A dedicated framework of experts (Annexe 1) was formed, consisting of representatives from Government agencies, SFDs, research institutions, civil society institutions, International organisations and independent wildlife policy experts as members of the core team. The experts were a mix of scientists, wildlife managers, policy experts, and capacity development experts.
- A common understanding was developed on the overall purpose, scope, approach and methodology.<sup>14</sup> The experts implemented different roles in the drafting and editing process, viz. Coordinating Lead Authors, Lead Authors, Contributing Authors, and Review Editors. The Author Group worked on developing these Guidelines during July 2019- August 2021, while consulting a larger group of experts and stakeholders via workshops, meetings and consultations. The authors reviewed the existing documents and guidelines available from the MoEF&CC and different states, and relevant information and recommendations were brought into this new document. A National Technical Group (NTG), consisting of experts from MoEF&CC, Wildlife Institute of India (WII), *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), and independent wildlife and

policy experts, was formed for overall steering and facilitation of the process. A 'Working Group on Pilot Implementation of Guidelines and HWC-NAP' was formed to facilitate planning and implementation of pilot testing, consultations and final editing of draft guidelines and HWC-NAP. Detailed terms of reference of each of this category was provided and meetings and workshops of the author groups were facilitated under the Indo-German Cooperation Project on Human-Wildlife Conflict Mitigation.

- The draft guidelines and HWC-NAP were pilot tested at selected HWC hotspots in India, to test and receive feedback on the feasibility and acceptability of the recommendations expressed in the Guidelines, using structured process and tools. Based on the feedback received during fortnightly meetings and one to one consultations with managers, the draft of the guidelines was revised.
- A Committee was constituted by MoEFCC in December 2022, consisting of officials from MoEFCC, and the state forest departments of Bihar, Haryana, Karnataka, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal to review and finalize the guidelines.

## 10. MONITORING AND EVALUATION OF GUIDELINES

- This set of guidelines is not a static document; rather, it is a living document. It will keep abreast of the various developments in field implementation methods and wildlife research. For this, the feedback from field practitioners and other wildlife experts may be analysed to assess the specific elements and sections that need to undergo changes. A review of the guidelines is planned to take place every 5 years

from 2023 onwards. However, a mid-term review process in 2024 may be desirable. In the long term, the review cycle of these guidelines can be aligned with the review cycle of HWC-NAP.

- Detailed mechanism, templates and guidance used for collating information and feedback on the use of these guidelines may be developed.

14 Approach paper: <https://indo-germanbiodiversity.com/pdf/publication/publication19-04-2021-1618808050.pdf>

# ANNEXE 1

## NATIONAL TECHNICAL GROUP (NTG)

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