

1. Human–Wildlife Conflict – Environment

Amid rising human–wildlife conflict, Union Environment Minister Bhupender Yadav chaired high-level National Tiger Conservation Authority (NTCA) and Project Elephant meetings at Sundarbans Tiger Reserve, West Bengal to review conservation strategies and conflict mitigation.

Significance of the High-Level Conservation Meet

The meeting marked a strategic review of India's science-driven wildlife conservation framework, particularly for large megafauna such as tigers, elephants, and cheetahs. It reflected India's transition from reserve-centric conservation to landscape and coexistence-based governance, acknowledging that wildlife increasingly occupies human-dominated landscapes. The discussions reinforced India's global leadership in big cat conservation, while simultaneously addressing rising socio-political tensions caused by human–wildlife conflict.



Key Highlights of the Meet

Strengthening Science-Based Conservation- Emphasis on evidence-based wildlife management, integrating

1. Long-term ecological monitoring
2. Landscape connectivity modelling
3. Genetics-based population viability analysis

Recognition of India's tiger conservation model as globally replicable due to

1. Robust legal backing under the Wildlife Protection Act
2. Decentralised execution through States
3. Continuous scientific assessment via All India Tiger Estimation

Focus on Human–Wildlife Conflict (HWC)- Acknowledgement that conservation success itself has intensified conflict, as wildlife populations rebound. Formal review of the three-pronged conflict mitigation strategy

1. Prevention (early warning, corridor protection)
2. Rapid response (trained teams, tranquilisation, capture)
3. Compensation and community engagement

Special attention to tigers outside protected reserves, where governance gaps are highest.

Expansion of Flagship Projects

Project Cheetah expansion to

1. Gandhisagar Wildlife Sanctuary
2. Banni grasslands

Rationale

1. Creation of a meta-population structure
2. Reduction of ecological risk from single-site concentration

Parallel decisions on

1. Tiger translocation to improve genetic diversity
2. Prey augmentation in depleted landscapes

Elephant Conservation and Inter-State Coordination- Review of **Project Elephant** with renewed emphasis on

1. Protection of elephant corridors
2. Harmonisation of compensation norms across States

Joint operations between neighbouring States, especially in Southern India (Tamil Nadu–Karnataka–Kerala belt) Northeastern India (Assam–West Bengal–Arunachal corridor systems)

Monitoring, Capacity Building, and Global Engagement- Assessment of

1. Sixth cycle of **All India Tiger Estimation**
2. CAMPA-funded habitat restoration and anti-poaching infrastructure
3. Skill upgrading of frontline forest staff

Preparations for the Global Big Cat Summit, positioning India as

1. A norm-setter in wildlife governance
2. A provider of conservation expertise to African range countries

Tigers Outside Tiger Reserves (TOTR)



Institutional Framework- A national initiative of

1. Ministry of Environment, Forest and Climate Change
2. National Tiger Conservation Authority

Designed to address the **institutional blind spot** of non-reserve tiger landscapes.

Implementation Architecture

1. Timeframe- 2025-2028
2. Financial Outlay- ₹88.7 crore

Execution

1. Central coordination by NTCA
2. On-ground implementation by State Forest Departments

Pilot Phase Design- Coverage

1. 80 forest divisions
2. 10 States

Selection based on

1. Recurring human-tiger conflict data
2. Presence of dispersing sub-adult tigers

Conflict Mitigation Instruments- Early warning systems linked to Camera traps, Radio-collared individuals Rapid Response Teams Trained in crowd control, capture, tranquilisation. Community-level engagement Awareness campaigns, Behavioural advisories

Landscape-Level Coexistence Vision- Moves conservation beyond "fortress reserves". Integrates

1. Human safety
2. Livelihood security
3. Ecological sustainability

Aligns with global conservation thinking on shared landscapes.

Human-Wildlife Conflict (HWC)- Conceptual Understanding

Defined as negative interactions arising when human and wildlife resource needs overlap. Encompasses

1. Direct physical harm
2. Economic losses
3. Ecological degradation

Increasing globally due to Anthropocene-driven land-use change.

Causes of Human-Wildlife Conflict

Habitat Fragmentation- Forest diversion for mining, dams, roads, and urbanisation disrupts

1. Animal movement
2. Breeding patterns

Corridor loss forces wildlife into settlements.

Agricultural Expansion- Crops act as high-calorie attractants for

1. Elephants
2. Wild boars
3. Nilgai

Linear Infrastructure- Over 150 elephant corridors intersected by ~700 roads and rail lines. Leads to

1. Train hits
2. Road kills
3. Behavioural stress in animals

Climate Change- Erratic rainfall alters

1. Food availability
2. Water sources

Pushes wildlife towards human habitations.

Decline of Prey Base- Overgrazing and habitat degradation reduce natural prey. Predators shift to livestock and humans.

Impacts of Human-Wildlife Conflict

Impacts on Humans

1. Loss of life and injury- Over 1,500 elephant-related deaths (2019–22).
2. Economic losses- Crop damage, livestock depredation. Maharashtra incurs ₹10,000–40,000 crore annually.
3. Livelihood insecurity- Disproportionate burden on marginal farmers.
4. Psychological trauma- Chronic stress in areas like the Sundarbans.
5. Public health risks- Zoonotic spillovers (e.g., Nipah virus in Kerala).
6. Social unrest- Protests against wildlife governance failures.

Impacts on Animals

1. Retaliatory killings- Poisoned carcasses, Explosive baits (“avuttukaay”).
2. Accidental mortality- Electrocuting, illegal fencing.
3. Genetic isolation- Reduced gene flow. Example- Low genetic diversity of Asiatic lions.
4. Behavioural changes- Habituation to humans. Increased aggression.
5. Mob violence- Vigilante killings of conflict animals.

Legal and Institutional Framework in India

Legal Provisions

1. Wildlife Protection Act, 1972.-Vermin declaration (area- and time-specific).
2. Disaster Management Act, 2005-Enables rapid compensation and relief.
3. State-level amendments- Kerala's 2025 amendment allowing swift action.

Institutional Measures

1. NTCA- TOTR, tiger dispersal management.
2. Project Elephant (1992)- Corridor protection, compensation.
3. RE-HAB Project (KVIC)- Bee-fencing as a non-lethal deterrent.

Compensation and Insurance- Ex-gratia payments for

1. Death
2. Injury
3. Crop and livestock loss

Supreme Court-mandated ₹10 lakh compensation. Inclusion of wildlife damage under PMFBY.

Technology-Based Interventions

1. AI-based systems - “Gajraj” for railway detection.
2. Radio-collaring- Real-time tracking of conflict-prone animals.

3. GIS mapping- Identification of conflict hotspots.

Global Best Practices in Coexistence

1. India (Bishnoi community)-Faith-based conservation.
2. Amazon (Kayapo tribes)- Zoning and buffer forests.
3. Africa (Maasai Lion Guardians)- Incentivised coexistence.
4. Bhutan- Conflict mitigation aligned with Gross National Happiness.
5. Sri Lanka- Village-level fencing models.

Way Forward- Mitigation Strategies

1. Smart Infrastructure- Eco-ducts and wildlife underpasses. Example- NH-44 through Pench Tiger Reserve.
2. Early Warning Systems- AI cameras, SMS alerts. Valparai model reduced fatalities to near zero.
3. Non-Lethal Deterrents- Bio-fencing. Acoustic "digital beehives" in Mudumalai.
4. Community-Led Conservation- Primary Response Teams from villages. Builds trust and rapid response capacity.
5. Habitat Restoration- Removal of invasive species (Lantana). Restoration of native fodder species.

Conclusion

Human-wildlife conflict is no longer a peripheral environmental issue but a core governance and development challenge. Effective resolution demands

1. Science-based planning
2. Community participation
3. Landscape-level governance
4. Technological integration

Initiatives like TOTR signify India's shift towards coexistence-oriented conservation, balancing human security with biodiversity protection—an approach increasingly relevant for the Global South.

Source- <https://www.thehindu.com/sci-tech/energy-and-environment/human-wildlife-conflict-bhupender-yadav-chairs-meetings-to-review-measures-discuss-project-updates/article70422920.ece>