



सत्यमेव जयते

# INDIA'S NATIONAL WILDLIFE ACTION PLAN



2017-31





INDIA'S  
NATIONAL  
WILDLIFE  
ACTION  
PLAN





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*Indira Paryavaran Bhawan,  
Jor Bagh Road,  
New Delhi- 110 003*

*Website: [www.moef.nic.in](http://www.moef.nic.in)*

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*Design and Print  
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# MESSAGE





**Dr. Harsh Vardhan**

Ministry of Environment,  
Forest & Climate Change  
Government of India



I am very pleased to inform that India's roadmap reiterating our commitment to wildlife conservation has been further strengthened with the finalization of the National Wildlife Action Plan (NWAP) for the period 2017 to 2031. The current plan, not only, builds upon the experiences from the implementation of the previous two NWAPs, the first from 1983 to 2001 and the second from 2002 to 2016, but also calls for adopting a landscape approach for wildlife conservation which is an improvement over the previous protected area-centric approach. I am also glad that for the first time it recognizes the concerns relating to climate change impacts on wildlife, by integrating actions that need to be taken for their mitigation and adoption in wildlife management planning process.

Most importantly, the NWAP attempts to address conflicts between development and conservation and arrive at a win-win situation for both leading to the sustainable development. It is imperative to implement NWAP 2017-2031 not in isolation but as an essential process and tool for achieving progress towards Agenda 2030 and the Sustainable Development Goals.

I congratulate the efforts of the organizations, experts and members of civil society led by the Ministry of Environment, Forest and Climate Change in formulating the NWAP 2017-2031. I am sure to have all support from various segments of society for its effective and time-bound implementation in a participatory manner so that both conservation and inclusive growth can contribute to sustainable development.

**Dr. Harsh Vardhan**

12, October, 2017



# PREFACE

India, the land of Buddha and Mahavira, following the ethical principles of “Jivah Rakhshati Rakhshatah” (Protect life and be protected) has been conserving all creations of Mother Earth since time immemorial, thereby maintaining a fine and delicate balance between man and nature. However, with the rise in human populations, changed socio-political environment and increased materialistic aspirations, this balance has lately been disturbed and nature (including wildlife as its integral part), became a causality in the mid-1900s. For reversing this trend, efforts were initiated in the early years of independent India, when the Indian Board for Wild Life (IBWL) was constituted in 1952 under the chairmanship of Shri Jayachamaraja Wodeyar ex- Maharaja of Mysore State.

To reinforce the nation's faith in the conservation of forests and wildlife, the following two sections were inserted in 1976 through the 42<sup>nd</sup> amendment of the Indian constitution.

48A Protection and improvement of environment and safeguarding of forests and wildlife- The State shall endeavor to protect and improve the environment and to safeguard the forest and wildlife of the country.

51A Fundamental Duties- It shall be the duty of every citizen of India- (g) To protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures.

With a view to have a concerted approach to protection, conservation and management of wildlife throughout the country, a decision was taken at the XV meeting of the IBWL in 1982 to prepare a National Wildlife Action Plan. Accordingly, the first Action Plan (NWAP-1) was drafted and adopted in 1983. It was implemented from 1983 through 2001. On its completion and based on new concerns and challenges viz. increased commercial use of

natural resources, growth in human and livestock population, changes in the consumption patterns, rising interest in biodiversity conservation etc., the Plan was revised and a new Action Plan (NWAP-2) was put in place for the period 2002-2016.

Many ups and downs were witnessed during the second National Wildlife Action Plan period. The Wildlife (Protection) Act, 1972 was amended many times and the NBWL was accorded a statutory status under the Act. The nation has witnessed local extinction of Tigers from Sariska Tiger Reserve followed by Panna Tiger Reserve. Consequent to that on the basis of the recommendations of the tiger task force, a separate chapter was introduced in the Wild Life (Protection) Act, 1972 (amended in 2006) and National Tiger Conservation Authority (NTCA) and Wildlife Crime Control Bureau (WCCB) were created. Thankfully corrective measures were taken immediately and as a result things began to change for the better. Tiger populations, recorded as low as 1411 (range 1165-1657) in 2007 rose to 1706 (range 1520-1909) in 2011 and are now reported at 2226 (range 1945-2491) in the last count of 2014. The increase in population was not restricted to the tiger alone, but other species also exhibited similar upward trend.

Among protected area conservation, the removal of Chilika Lake from the Montreux Record (the threatened list of Ramsar sites) and retention of Manas Tiger Reserve in UNESCO heritage sites are some of the bright spots in the nation's conservation journey during this period.

As the NWAP -2 would cease being operative beyond 2016, the Standing Committee, on the suggestion of the NBWL, in its 26<sup>th</sup> meeting, directed to undertake a review of NWAP-2 and based on its evaluations and lessons learnt, prepare a Plan for the period 2017-2031. Accordingly, Ministry of Environment, Forest and Climate

Change, Government of India constituted a committee to review the National Wildlife Action Plan (2002-2016) and to develop a Plan for next 15 years (Annexure A). The Committee had its introductory meeting on 24/11/2014. It was in the second meeting, on 21/5/2015, that the structure of the report was decided and members were assigned different chapters for review. Subsequent meetings were held at different places to have interaction with Forest Officers/Wildlife wardens of various states. Details of the meetings are at Annexure B.

During the sixth meeting, held at Dehradun in October 2015, a drafting committee under the chairmanship of Shri S.S. Bist was set up. The drafting committee went through the chapters by various members and presented a draft for discussion at seventh meeting held at Ramnagar in Uttarakhand in January 2016. The draft was intensively deliberated and finalized by the members with the suggestion that it should be put on the website of the Ministry for seeking the comments of various stakeholders.

The comments of the stakeholders were considered and accepted/included/ modified/rejected (based upon the view taken by the committee) during its eighth and final meeting held for two days at Sasan Gir, Gujarat in February 2016, to arrive at the final draft. Editing of the approved draft was done by Shri Vivek Menon to maintain flow and other requirements in the text.

Thus this new National Wildlife Action Plan (NWAP-3) is presented herewith.

## HIGHLIGHTS OF NWAP 3

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1

For ease of monitoring and evaluation, the new plan has been drafted on – similar lines as the second plan. Most of the chapter headings of NWAP 2 have been retained as such. However, in view of the changed circumstances, a few chapters have been modified and a few new ones have been added.

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2

The Plan is based on the premise that essential ecological processes that are governed or strongly moderated by ecosystems are essential for food production, health and other aspects of human survival and sustainable development. It also keeps in focus the intrinsic value of nature and its manifold components. The maintenance of these ecosystems, which can be termed as 'Life Support Systems', is considered vital for all societies regardless of their stage of development.

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3

It also emphasizes on two other aspects of nature conservation *viz.* preservation of genetic diversity and sustainable utilization of species and ecosystems, which have a direct bearing on our scientific advancements and support to millions of rural communities.

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4

The Plan adopts a landscape approach in conservation of all wildlife *i.e.* uncultivated flora and undomesticated fauna that have an ecological value to the ecosystem and to mankind irrespective of where they occur.

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5

It accords special emphasis to recovery of threatened species of wildlife while conserving their habitats which include terrestrial, inland aquatic, coastal and marine ecosystems.

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6

It takes note of concerns relating to climate change on wildlife, by integrating actions to be taken for its mitigation and adaption into wildlife management planning.

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7

It underlines the fact that despite being one of 17 mega biodiversity countries of the world, national planning has not taken serious note of adverse ecological consequences of reduction and degradation of wilderness areas from the pressures of population, commercialization and development projects. Accordingly, the plan has brought to focus the alarming erosion of our natural heritage comprising of rivers, forests, grasslands, mountains, wetlands, coastal and marine habitats, arid lands and deserts.

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8

The Plan underscores the increasing need for people's support for conservation of wildlife and to this effect recommends strengthening the 'core- buffer- multiple use surround' structure with higher inputs for eco-development, education, innovation, training, extension, conservation awareness and outreach programs. Wildlife health and disaster management have received due attention in this Plan.

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# 9

Management of tourism in wildlife areas with related plough back mechanism, development of human resource and staff welfare has undergone a reorientation in the Plan.

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# 10

The plan is alive to communities, inhabiting forest lands and other wilderness areas, to be treated appropriately in the light of Forest Rights Act keeping in mind their inadequacy of resources and strong dependence on natural biomass resource.

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The plan takes note of and addresses the rising human animal conflict owing to shrinkage, fragmentation and deterioration of habitats generating animosity against wild animals and protected areas.

The formulation of the plan could not have been possible without the active support and valued contribution of all the members and good work done by the drafting committee as also the editorial work undertaken by the Wildlife Trust of India. A sincere thanks to all of them.

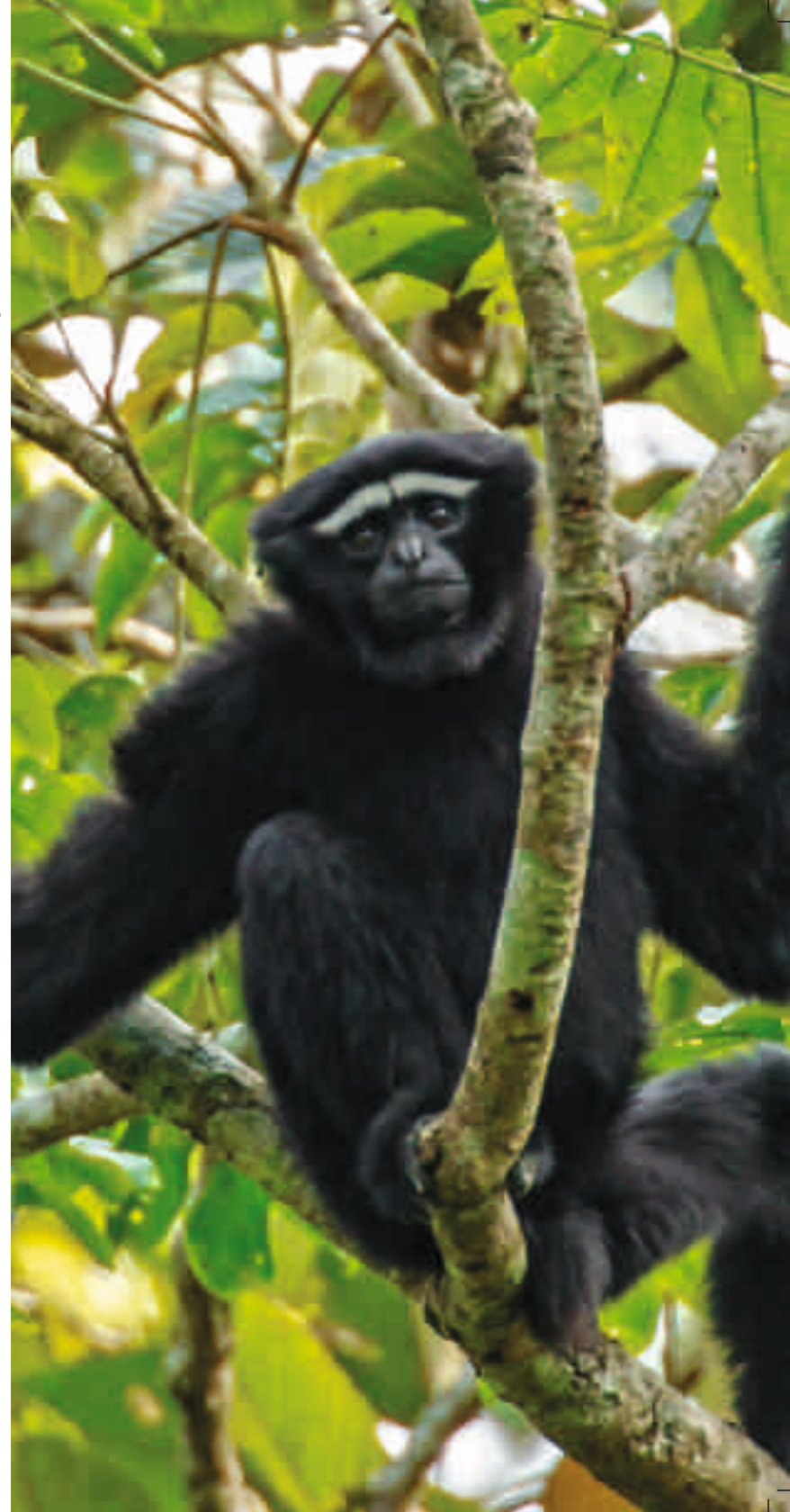
Ministry of Environment, Forests and Climate Change has provided all support through IG (WL) Dr. S.K. Khanduri and his team (Mr. S.P. Vashishth and Mr. C. Sasikumar) which is thankfully acknowledged. UNDP, through Mr. Damodar Pujari has also been providing active assistance in developing the plan, for which they deserve a big thanks.

Dr. G.S. Rawat and Dr. K. Sivakumar have been attending meetings on the direction and behalf of the Director, WII and have contributed immensely, which deserves appreciation.

Various state forest departments have contributed not only in providing the inputs for the document, but have also helped in conducting meetings at various places, which needs a special thanks.

Last but not the least, the comments of all the stakeholders have been extremely useful in improving the document; therefore their contribution is thankfully acknowledged.

**J.C. Kala**  
Chairman, NWAP



# MEMBERS OF THE NATIONAL WILDLIFE ACTION PLAN COMMITTEE

## ANNEXURE A

|     |                                                                                                                                             |                  |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1.  | <b>Shri J.C. Kala</b><br>Former Secretary to Government of India and DG Forests                                                             | Chairman         |
| 2.  | <b>Dr. Rajesh Gopal and Mr. B.S. Bonal</b><br>Member Secretary, National Tiger Conservation Authority                                       | Member           |
| 3.  | <b>Dr. V.B. Mathur</b><br>Director, Wildlife Institute of India, Dehradun                                                                   | Member           |
| 4.  | <b>Shri Vinay Luthra and Dr. Ravi Ralph</b><br>Chief Wildlife Warden, Government of Karnataka                                               | Member           |
| 5.  | <b>Shri C.N. Pandey and Dr. J.C. Pant</b><br>Chief Wildlife Warden, Government of Gujarat                                                   | Member           |
| 6.  | <b>Dr. Dibyabhanu Singh Chavda</b> , Jaipur                                                                                                 | Member           |
| 7.  | <b>Dr. Bibhab Kr. Talukdar, Aranyak</b> , Guwahati                                                                                          | Member           |
| 8.  | <b>Mr. V.B. Sawarkar</b><br>Former Director, Wildlife Institute of India, Dehradun                                                          | Member           |
| 9.  | <b>Shri S.S. Bist</b> , Former PCCF, West Bengal                                                                                            | Member           |
| 10. | <b>Shri. Vivek Menon</b><br>ED and CEO, Wildlife Trust of India, New Delhi                                                                  | Member           |
| 11. | <b>Dr. R. Sukumar</b><br>Indian Institute of Science, Bangalore                                                                             | Member           |
| 12. | <b>Additional Director General Forest (Wildlife) MoEFCC</b><br>(MoEFCC Office Memo No. F.No.12-1/2013WL-1 dated 22 <sup>nd</sup> May, 2014) | Member Secretary |
| 13. | <b>Shri D.C. Khanduri</b><br>Ex-Forestry Expert, NFC<br>(MoEFCC Office Memo No. F.No.12-1/2013WL- 1 dated 12 <sup>th</sup> Jan. 2015)       | Co-opted Member  |

## DETAILS OF THE MEETINGS HELD

## ANNEXURE B

| S No. | Date                       | Place     | Action                                                                                                                                         | Decision taken                                                                                                                                                                                                                                                                                                           |
|-------|----------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | 24 <sup>th</sup> Nov. 2014 | New Delhi | Introductory meeting                                                                                                                           | i) Will to review the progress of last plan.<br>ii) Members were assigned different states for coordination.                                                                                                                                                                                                             |
| 2     | 21 <sup>st</sup> May 2015  | New Delhi | Review of the progress                                                                                                                         | i) Structure of the report was finalised.<br>ii) Members were assigned various chapters for review and send their write-ups for the new action plan.                                                                                                                                                                     |
| 3     | 6 <sup>th</sup> July 2015  | Bengaluru | Interaction was held with the Chief Wildlife Wardens of Karnataka, Andhra Pradesh, Maharashtra, Tamil Nadu, Andaman & Nicobar, Goa and Kerala. | i) All the States/Union territories to submit the detailed note on various issues discussed during the meeting.<br><br>ii) Chief Wildlife Warden, Karnataka and NTCA to forward inputs for Chapter I & II.<br><br>iii) Mr. Pramod Krishnan (Kerala) to provide note on plough back mechanism                             |
| 4     | 27 <sup>th</sup> July 2015 | New Delhi | Interaction was held with the Chief Wildlife Wardens of Gujarat, Rajasthan, Haryana, Punjab, Delhi, Uttarakhand and Himachal Pradesh.          | i) All Chief Wildlife Wardens to forward a brief note on wildlife conservation in their states and suggestion for new action plan.<br><br>ii) Chief Wildlife Warden, Uttarakhand to forward a brief note on mobilisation of resources.<br><br>iii) Member Secretary NTCA to send a brief note on CZA and rescue centres. |
| 5     | 28 <sup>th</sup> Aug. 2015 | Guwahati  | Interaction was held with Chief Wildlife Wardens of Assam, Meghalaya, Mizoram, Nagaland and Arunachal Pradesh.                                 | i) All Chief Wildlife Wardens were requested to send a brief note on wildlife conservation in their states along-with the suggestions to be incorporated in the new plan.                                                                                                                                                |

| S No. | Date                                             | Place                   | Action                                                                                                                                                                                                                                           | Decision taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------|--------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6     | 26 <sup>th</sup> &<br>27 <sup>th</sup> Oct. 2015 | Dehradun                | The meeting took up detailed discussion, through point wise deliberations on all the chapters, except three draft of which had not been received till then, and finalised most of the issues that came up for the discussion during the meeting. | <p>i) Review and analysis of achievements and progress made under the present plan shall be briefly elucidated in the new plan.</p> <p>ii) A drafting committee under the chairmanship of Shri S.S. Bist, member, was constituted with the following as members:</p> <p><b>Shri D.C. Khanduri,</b><br/>Co-opted member</p> <p><b>Dr. K. Sivakumar, WII</b><br/><b>DIG Wildlife, MoEFCC</b></p> <p>iii) Preface to be added to the plan briefly mentioning broad outline and rationale of this plan.</p> <p>iv) Landscape level planning to run as central thread through all the chapters of the Plan.</p> <p>v) Chapter on climate change be discussed with proposed in-service training of APCCFs of the states.</p> |
| 7     | 11 <sup>th</sup> &<br>12 <sup>th</sup> Jan. 2016 | Ramnagar<br>Uttarakhand | The draft prepared by the drafting committee, was discussed in detail and after due deliberations the committee made necessary changes in the draft as per consensus arrived.                                                                    | <p>i) The plan will be based on the premises of mainstreaming the conservation necessities across the sector and activities.</p> <p>ii) There will a separate Chapter on Landscape Level Approach for wildlife conservation.</p> <p>iii) Chapter on restoration of degraded habitats outside PAs will be merged with the Chapter on Landscape Level Approach.</p> <p>iv) A separate Chapter on wildlife health will be drafted by WTI.</p>                                                                                                                                                                                                                                                                             |

| S No. | Date                                             | Place                | Action                                                                                                                                                                                                                                                                                                                                                                                                                                | Decision taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------|--------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |                                                  |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>v) Dr. Sukumar will make necessary changes in the Chapter on Climate Change.</p> <p>vi) Dr. G.S. Rawat will submit draft on rehabilitation of threatened species.</p> <p>vii) UNDP will submit a paragraph on status of medicinal plants.</p> <p>viii) Comments and inputs from various stakeholders will be requested through email and would be presented during next meeting.</p>                                                                                                                                                                                                                                                                                                                                                                                                |
| 8     | 19 <sup>th</sup> & 20 <sup>th</sup><br>Feb. 2016 | Sasan Gir<br>Gujarat | The comments received from various stakeholders, in response of placing the draft document on the website of the Ministry, were discussed threadbare and decision regarding their acceptance/ modification/rejection were decided unanimously, regarding the Chapters which had already been finalised and the authors of the remaining Chapters were requested to take similar action with respect to their Chapter and finalise it. | <p>i) All the authors who were to finalise their Chapters were requested to submit the final draft to the Chairman / drafting committee by 24<sup>th</sup> of February 2016.</p> <p>ii) The drafting committee will incorporate the decision taken with regard to the comments of the stakeholders on the finalised Chapters and will include the remaining chapters submitted by the various authors after due scrutiny and submit it to the Chairman as soon as possible.</p> <p>iii) The Chairman will review and finalize the draft before sending it to WTI for editing.</p> <p>iv) The WTI will edit it and submit it for the approval of the Chairman so that it could be finally submitted to the Ministry by 9<sup>th</sup> March, the last working day of the committee.</p> |



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1

# STRENGTHENING AND IMPROVING THE PROTECTED AREA NETWORK







## OVERVIEW AND OBJECTIVES

1. Protected Areas (PAs) are well defined geographical spaces, recognized, dedicated and managed through legal and other effective means to achieve the long-term conservation of nature with associated ecosystem services and cultural values. The PAs provide a wide range of social, environmental and economic benefits worldwide. In a rapidly changing world where natural ecosystems are under severe pressure, the PAs, when governed and managed effectively, can provide nature based solutions to environmental problems and serve as an integral component of sustainable development. Section 3.3 of the National Forest Policy, 1988 (NFP-1988) states: "For the conservation of total biological diversity, the network of national parks, sanctuaries, biosphere reserves and other protected areas should be strengthened and extended adequately".
2. At the beginning of the second National Wildlife Action Plan (NWAP) (2002-2016), there were only about 400 PAs covering an area around 1.56 lakh km<sup>2</sup> in the country. Presently, there are 733 PAs covering 1.60 lakh km<sup>2</sup> i.e., 4.89% of the geographical area of the country. The following table gives the break-up of various categories of PAs in the country.
3. In addition to the PA network mentioned above, the managed forests under the State Forest Departments (SFDs) also contribute towards wildlife conservation. India has over 20% of the total geographical area under managed forests and thus under effective nature conservation, thereby exceeding the target of 17% envisaged in the Aichi Target 11. But much more needs to be done

outside the PAs for wildlife conservation. For example, wildlife conservation needs to be made an integral part of the forestry working plans; additional resources need to be allocated to the SFDs; and the field staff needs to be trained and oriented for an integrated forest and wildlife management outside the designated PAs. Likewise, wildlife in the urban and other human dominated landscapes as well as in the marine and coastal areas needs more attention from the conservation agencies.

4. The previous NWAP had recommended a number of measures to strengthen the PA network and enhance their management effectiveness. These included: five-yearly review of the existing PA network in the country;

*Current status of the PA Network in India as on December, 2016*

| Protected Area               | Number     | Total Area (km <sup>2</sup> ) | %age of the Geographical Area of India |
|------------------------------|------------|-------------------------------|----------------------------------------|
| National Parks               | 103        | 40500.13                      | 1.23                                   |
| Wildlife Sanctuaries         | 537        | 118005.33                     | 3.59                                   |
| Conservation Reserves        | 67         | 2349.38                       | 0.07                                   |
| Community Reserves           | 26         | 46.93                         | 0.001                                  |
| <b>Total Protected Areas</b> | <b>733</b> | <b>160901.77</b>              | <b>4.89</b>                            |

*(Source: National Wildlife Database, WII)*









establishment of new PAs; development of guidelines and identification of sites for setting up Conservation Reserves and Community Reserves; implementation of the recommendations given in the Wildlife Institute of India's (WII) report on the PA network; completion of legal procedures for final notification of existing and new PAs; readjustments of boundaries of PAs, where required, in accordance with ecological and natural features; and preparation of scientifically and ecologically sound Management Plans for all PAs. There has been varying success in achieving these targets.

- 4.1 Several Conservation Reserves and Community Reserves have been notified, albeit their area is still very small. Several Wildlife Sanctuaries (WLS) have been upgraded to National Parks (NPs). Similarly, a number of PAs have been enlisted as Natural World Heritage Sites (NWHS) where globally significant species or ecosystems are being protected. Further, in compliance with India's commitment to the Convention on Biological Diversity (CBD) in respect of PAs, the Government of India has formulated 12 National Biodiversity Targets (NBT) in 2014, of which, Target 6 aligns with the Aichi Target 11 that deals with strengthening the PA network in the country (MoEFCC 2014).
- 4.2 The National Tiger Conservation Authority (NTCA) has been fulfilling its mandate within the ambit of the Wildlife (Protection) Act, 1972 (WPA-1972) for strengthening tiger conservation in the country by retaining an oversight through advisories/normative guidelines based on appraisal of population status of tiger, ongoing conservation initiatives and recommendations of specially constituted Committees. Several PAs have been notified as Tiger Reserves (TRs) since the initiation of the second NWAP. What started out as 9 TRs in 1973 has gone up to 50 (Kamlang TR in Arunachal Pradesh being the latest), covering an area of 71,027 km<sup>2</sup> (including core and buffer areas, the latter comprising non-PA areas also), which is 2.15% of the total geographical area of the country. 'Project Tiger' is a Centrally Sponsored Scheme (CSS) of the MoEFCC for providing financial support to the tiger range States for *in-situ* conservation of tigers in designated TRs. It is clear from the recent All India Tiger Estimation that the endangered tiger is on an assured path of recovery as the tiger numbers have risen to 2226 (range 1945-2491).
- 4.3 As stipulated in the previous NWAP, the Ministry of Environment, Forest & Climate Change (MoEFCC) has institutionalized a five-year periodic review of PAs on parameters such as status of management, protection, habitat restoration, diversity indices, conservation of threatened and indicator species, adequacy of infrastructure, staff and financial resources and socio-



 Vipin Kumar

economic status of local communities. Based on the aforesaid criteria, the WII has so far carried out 'Management Effectiveness Evaluation' (MEE) of 126 PAs. The findings of the MEE should be kept in view for improving the management of these PAs. The NTCA has also initiated MEE of all the TRs and, so far, three cycles of evaluation have been completed. The WII has published a manual entitled 'A Guide for Planning Wildlife Management in Protected Areas and Managed Landscape'. The WII has also prepared a manual for eco-development planning in and around PAs.

- 4.4 Conservation of threatened species and their habitats; control of poaching; research and ecological monitoring; and ensuring people's participation in wildlife conservation have been accorded high priority in the previous NWAP and the Wildlife Conservation Strategy, 2002 (WCS-2002). In order to encourage the field staff in effective management of PAs, the MoEFCC has instituted awards for meritorious work within PAs. Many SFDs and NGOs have also instituted awards to recognise the valuable contribution of the frontline staff to the cause of wildlife conservation.
5. Impacts of the Invasive Alien Species (IAS) on biodiversity can be direct, indirect, and cumulative. In PAs, the IAS impact the ecosystem functions and structure. The IAS also exert impacts at the level of individual species, communities or habitats. A National Policy is urgently required in India that should cover the regulation of introduced species and measures to control and eradicate the IAS. It is important to inventorise and map the IAS (both plants and animals) in the country especially in the PAs. Simultaneously, the SFDs and the PA managers need to work systematically on controlling spread of IAS,

based on current knowledge, practices and Standard Operational Procedures (SOPs) that already exist for well-studied invasive species.

6. It is felt that in many States and Union Territories (UTs), where forest to people ratio is very low and there is high human dependency on natural ecosystems, creation of new NPs and WLS could be a big challenge and the only option is to go for other forms of PAs, viz. Conservation Reserves and Community Reserves and to go for landscape level conservation planning.
7. All the PAs in the country would need to follow a multi-pronged approach for effective management that includes anti-poaching activities; habitat management; outreach programmes; Human Resource Development (HRD); research and monitoring; mitigation of Human-Wildlife Conflict (HWC); Eco-Development Programme (EDP) for ensuring local support for conservation and adequate financial support.
8. The MoEFCC lays strong emphasis on the preparation of scientifically and ecologically sound Management Plans for the PAs. Many States have developed their own mechanism to prepare and review the Management Plans. The Chief Wildlife Wardens (CWLWs) of respective States/UTs coordinate the preparation of Management Plans. However, review process and implementation of the plans needs to be streamlined in most of the States/UTs. Management Plans of PAs should also be provided statutory backing on lines of the Tiger Conservation Plans (TCP) for TRs. Guidelines for preparation of TCPs on sound scientific criteria have already been prepared by the NTCA and the same can be adapted for other PAs as well.

 Navaneethan B.



## ACTION REQUIRED

Considering the inadequacy of the PA network in certain biogeographic zones; challenges of meeting the biomass needs of poor people; and need for much more effective and interactive monitoring of the PA network, the following actions and projects are recommended:

1. Undertake periodic review of the status of PAs and wildlife corridors in India.
2. Expedite the process of settlement of rights (including fishing rights) in the existing or proposed TRs and PAs as stipulated in the WPA-1972 as well as the Forest Rights Act, 2006 (FRA-2006).
3. Enhance the PA network by including terrestrial, inland water and coastal/marine areas of high conservation values and by integrating PAs into wider landscapes and seascapes in accordance with the Target 6 of the National Biodiversity Targets (NBTs).
4. Complete the process of demarcation of boundaries and zonation for effective management of TRs and PAs.
5. Prepare Integrated and Adaptive landscape based Management Plans for all the TRs and PAs.
6. Promote use of modern tools for monitoring and surveillance of highly sensitive TRs and PAs.
7. Develop a policy on Invasive Alien Species (IAS) and set up a mechanism for assessing, monitoring and managing the IAS inside TRs and PAs.
8. Secure wildlife corridors and also draw appropriate plans for their management including prevention of ecologically unsustainable activities.
9. Improve the capacity of the officers and the frontline staff for better monitoring and management of TRs and PAs.
10. Involve local communities in protection and sustainable management of TRs and PAs.
11. Provide a policy guideline for regulating livestock grazing inside TRs and PAs.

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## PRIORITY PROJECTS

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07

- 1.1.** Publish a periodic status report on the PA network and wildlife corridors in India, once every 10 years covering all the vital statistics and conservation values.

**Timing:** First status report to be published by 2021 and every 10 years thereafter.

**Responsibility:** MoEFCC, NTCA, SFDs and WII.

- 2.1.** Complete legal formalities including payment of compensation to the right-holders for facilitating final notification of existing or new TRs and PAs in a time-bound manner so as to avoid harassment of the local people. It is imperative that while establishing new TRs and PAs in future, SFDs should adopt a realistic approach regarding the rights of the people. For example, in many cases, the intended purpose of a PA may be better served by establishing a Conservation Reserve/Community Reserve rather than a NP or a WLS.

**Timing:** Ongoing and to be completed by 2025 for existing TRs and PAs.

**Responsibility:** MoEFCC, NTCA and SFDs.

- 2.2.** Undertake, in collaboration with suitable NGOs and Scientific Institutes, a review of the management of the TRs and PAs with a view to accommodate genuine needs of the local people in accordance with the provisions of the WPA-1972 and principles of scientific management and make appropriate provisions in the Management Plans.

**Timing:** To start in 2017 and to be completed by 2020.

**Responsibility:** MoEFCC, NTCA, SFDs, Scientific Institutes and suitable NGOs.

- 2.3.** Undertake a review of the past cases of relocations of villages from the TRs and PAs with regard to their impact on the relocated people as well as the retrieved habitats. The review should be used for developing good practices for future relocation projects.

**Timing:** To start in 2017 and to be completed by 2020.

**Responsibility:** MoEFCC, NTCA, SFDs, Scientific Institutes and suitable NGOs.

- 2.4.** Complete the process of determination of

forest rights and identification of Critical Wildlife Habitats (CWHs) within TRs and PAs in accordance with the FRA-2006 in a time-bound manner.

**Timing:** Ongoing and to be completed by 2022.

**Responsibility:** MoEFCC, SFDs, Ministry of Tribal Affairs (MoTA), State Tribal Affairs Departments, District Administration and Panchayats.

- 3.1.** Conduct a scoping study for establishment of new categories of PAs analogous to the IUCN's categories.

**Timing:** To start in 2018 and to be completed by 2020.

**Responsibility:** MoEFCC, SFDs, Scientific Institutes and suitable NGOs.

- 3.2.** Commission a feasibility study for enhancing the PA network by including terrestrial, inland water, coastal/ marine and mountain areas of high conservation values and by integrating PAs into wider landscapes and seascapes and taking advantage of the inventories already prepared by the MoEFCC and various Scientific Institutes.

- Timing:** To start in 2018 and to be completed by 2020.
- Responsibility:** MoEFCC, SFDs, WII, NCSCM, BoBP, other Scientific Institutes and suitable NGOs.
- 3.3.** Initiate steps for setting up new PAs and enhancing the coverage of existing PAs based on recommendations of the studies mentioned in 3.1 and 3.2 above and develop integrated landscape level conservation plans for such areas.
- Timing:** To start on completion of the studies (2020) and continue through the plan period.
- Responsibility:** MoEFCC, SFDs, WII and other Scientific Institutes and suitable NGOs.
- 3.4.** Align the PA network in accordance with the gap analysis done by the WII so that all the ecosystems and biogeographic zones are properly covered.
- Timing:** Ongoing and to be continued through the plan period.
- Responsibility:** MoEFCC, SFDs and WII.
- 3.5.** Identify potential areas in consultation with the SFDs and WII for enhancing the network of Tiger Reserves. In addition, tiger corridors, as identified by NTCA and WII should be secured and managed for ensuring long-term survival of tiger populations in the country.
- Timing:** Ongoing and to be completed by 2022.

**Responsibility:** MoEFCC, NTCA, WII and SFDs.

- 3.6.** Identify important wildlife habitats and sacred groves situated outside the administrative control of the SFDs in collaboration with suitable NGOs and Scientific Institutes and ensure their management using appropriate social, economic and legal means.
- Timing:** To start in 2018 and to be completed by 2023.
- Responsibility:** SFDs, SBBs, Scientific Institutes and suitable NGOs.
- 3.7.** A project for reviewing the WII's Report 'Wildlife Protected Area Network in India: A Review (2002)' with due regard to the impacts of climate change has been recommended in Chapter-VI (Integrating Climate Change in Wildlife Planning).
- 4.1.** Demarcate the boundaries of all the TRs and PAs properly on ground and carry out zonation for effective management.
- Timing:** Ongoing and to be completed by 2022.
- Responsibility:** MoEFCC, NTCA, SFDs, WII and other Scientific Institutes.
- 5.1.** Prepare/update Integrated and Adaptive Management Plans for all the PAs including the Wetland PAs (WPAs) and the Coastal and Marine PAs (CMPAs). Establish a Management Plan Development Cell at the headquarters of all SFDs for preparing Management Plans and periodically reviewing the management effectiveness of

the PAs. Tiger Conservation Plans (TCPs) of the remaining TRs should also be completed within the targeted period.

**Timing:** Ongoing and to be completed by 2020; review to be done every 5<sup>th</sup> year thereafter.

**Responsibility:** MoEFCC, NTCA, SFDs and WII.

- 5.2.** A project for reviewing the WII's 'Guide for Planning Wildlife Management in Protected Areas and Managed Landscapes' (2005) with due regard to issues relating to CCA and DRR has been recommended in Chapter-VI (Integrating Climate Change in Wildlife Planning).
- 6.1.** Set up Electronic Eye (E-eye) surveillance in highly sensitive TRs and PAs. Also initiate the use of drone/Unmanned Aerial Vehicle (UAV) technology as an airborne monitoring /warning system for better protection and monitoring of wildlife with due approval from Ministry of Home Affairs (MoHA), Ministry of Defence (MoD) and Directorate General of Civil Aviation (DGCA).
- Timing:** Ongoing and to be completed by 2025.
- Responsibility:** MoEFCC, NTCA and SFDs.
- 7.1.** A project for developing a National Policy on IAS and their management has been recommended in Chapter-II (Landscape Level Approach for Wildlife Conservation).
- 7.2.** Make suitable provisions in the Management Plans of TRs and PAs for assessing, monitoring and managing the IAS.





- 8.1.** Issue central guidelines for preparing Management Plans for wildlife corridors and regulating land-use change in the identified corridors. The SFDs should formulate and implement Management Plans for corridors based on the aforesaid guidelines with active participation of relevant stakeholders and also integrate these plans with the Working Plans / Management Plans.

**Timing:** Guideline to be issued by 2018 and the Corridor Management Plans to be prepared by 2021.

**Responsibility:** MoEFCC, NTCA, SFDs, WII and suitable NGOs.

- 9.1.** Projects for enhancing the capacity of the officers and the frontline staff working in TRs and PAs have been recommended in Chapter XIII (Development of Human Resources).
- 10.1.** Projects for ensuring people's support in protection and management of TRs and PAs have been recommended in Chapter XI (People's Participation in Wildlife Conservation).
- 11.1.** Develop policy guidelines, in consultation with the Ministry of Agriculture & Farmers Welfare (MoA) and the SFDs for regulating livestock grazing inside TRs and PAs (except NPs and Critical Tiger Habitats in TRs).

**Timing:** To start in 2017 and to be completed by 2019.

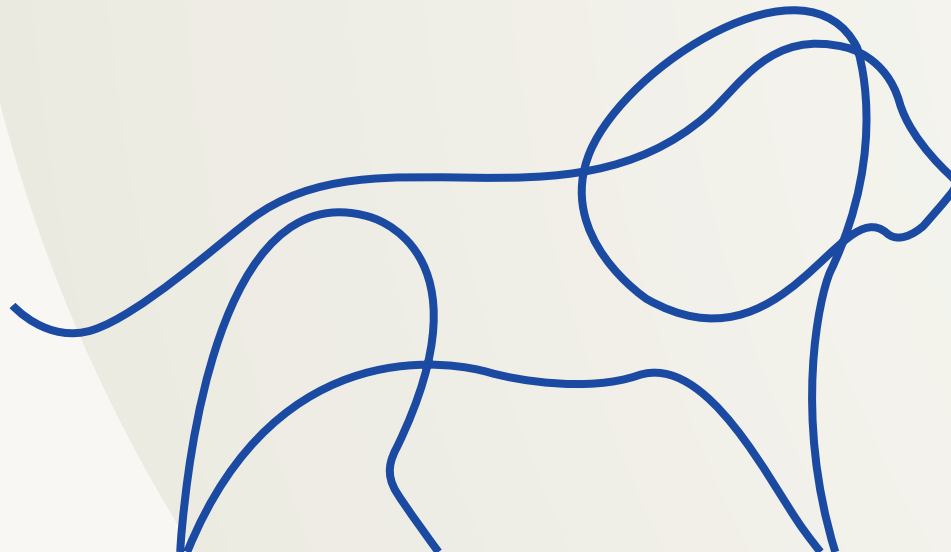
**Responsibility:** MoEFCC, MoA, NTCA and SFDs.





2.

# LANDSCAPE LEVEL APPROACH FOR WILDLIFE CONSERVATION







## OVERVIEW AND OBJECTIVES

1. It is increasingly recognized that wildlife conservation has to go beyond Protected Areas (PAs) to the larger landscapes in which these are embedded. A landscape is defined as 'a large tract of land constituted by a mosaic of interacting land uses with people and the impacts of their activities as the cornerstone of its management'. Landscape allows ecosystem level conservation actions at the existing internal smaller nested spatial scales of management/ administration such as PAs and territorial forest divisions as well as larger units to achieve conservation goals at the largest spatial scale possible in practical terms.
2. Landscape level conservation of species must be seen as maintaining or enhancing genetic exchanges between metapopulations and significantly improving the prospects of their long term persistence. Therefore, the plans must address species loss in the short-term and the reasons for such depletions in the long run.
3. Wildlife areas in India are largely interspersed with human habitations, power and irrigation related infrastructures, industrial estates and a variety of human activities. The PA network is central to conservation of wild biological diversity within such landscapes, generally acting as "source areas" to counter-balance the negativity of sink areas, including managed forests outside. Given that PAs and even production forests are embedded in a complex mosaic of land-use that is often human-dominated, the participation and cooperation of people is imperative for landscape-scale conservation to succeed.
4. The landscape approach becomes more significant in such mosaics where agro-practices, economic impoverishment and lack of awareness can put immense pressure on species in the wild - by illegal removal for subsistence or trade, or in competition for space.
5. Charismatic mega vertebrates such as elephant, tiger and lion lend themselves most readily to the landscape approach because of their requirements of land and resources for maintaining viable populations. Landscapes catering to their requirements also serve to protect the overall biological diversity of a region. The concepts of Tiger Landscapes, Elephant Landscapes, Bustard Landscape, the Greater Gir landscape for the Asiatic lion are gaining importance in recent years. Landscape approaches can extend to taxa beyond the mega-vertebrates.
6. Further, conservation of wildlife can not be seen isolated from the whole development of the region or landscape. Local governance systems, local land use patterns and land use systems, ecosystem-interfaces and socio-economic circumstances are mutually intertwined at the landscape level. Therefore, a mosaic approach to landscape planning needs to be developed in partnership with other agencies and stakeholders.







## ACTION REQUIRED

1. Identify and set boundaries for key landscapes; identify corridors; and describe land use, the ecological features and administrative units within the area.
2. Assess and evaluate status of all wildlife species and their habitats outside the PAs but within the landscape for objective management planning. Endemic and endangered species in need of conservation should be targeted for special recovery projects.
3. Secure corridors for large mammals. Elephant and tiger corridors across the country have been identified in several reports of the MoEFCC and researchers. These corridors need to be demarcated on ground and ecologically compatible land use need to be ensured for these areas.
4. Develop a strategy for managing stray feral animals such as dogs, cats etc. in and around wildlife habitats which threaten wildlife by attacking nests for eggs; killing small wildlife; and spreading pathogens like Canine Distemper Virus.
5. Put in place institutional systems for objective assessment and consultation at project formulation stage for ensuring that development projects as well as land-use practices in key wildlife habitats do not turn out to be drivers of conflict.
6. Develop and implement the 'National Policy on Invasive Alien Species' for both terrestrial and aquatic ecosystems to protect native biodiversity from the adverse impact of these species.

INDIA'S  
NATIONAL  
WILDLIFE  
ACTION  
PLAN



LANDSCAPE LEVEL  
APPROACH FOR  
WILDLIFE  
CONSERVATION



## PRIORITY PROJECTS

- 1.1. Initiate the task of identifying landscapes by using appropriate criteria.  
**Timing:** To start in 2017 and continue through the plan period.  
**Responsibility:** MoEFCC, SFDs, WII and other Scientific Institutes.
- 1.2. Prepare detailed land-use and land tenure maps of the identified landscapes showing boundaries of TRs and PAs; Reserve Forests in territorial forest divisions; revenue forests still held by government; corridors connecting the tracts of sub-units within the landscapes, especially those between PAs and forests outside PAs; common lands used for grazing and other purposes by local communities; water bodies; privately-owned lands, settlements and infrastructure; and other land categories peculiar to a given State. The biodiversity value of these lands, status of vegetation cover, and their role in habitat connectivity within the landscape should be assessed.  
**Timing:** To start immediately after identification of landscapes and to be completed within 3 years.  
**Responsibility:** MoEFCC, SFDs, WII and other Scientific Institutes.
- 2.1. Initiate action for establishment of baseline data and regular monitoring of different indicator species to monitor the wildlife habitat at landscapes level.  
**Timing:** Action for baseline data to start in 2018 and to be completed by 2020; monitoring to be done once in every 5 years thereafter.  
**Responsibility:** MoEFCC, SFDs, WII, ZSI, BSI, other Scientific Institutes, Universities and suitable NGOs.
- 2.2. A project for the periodic review of the conservation status of species using the IUCN Red Listing criteria has been recommended in Chapter-III (Conservation of Threatened Species).

**2.3.** A project for carrying out assessment of major wildlife taxa and publishing a status report has been recommended in Chapter-III (Conservation of Threatened Species).

**2.4.** Projects for initiating and implementing conservation plans and species recovery plans for critically endangered species and other priority species have been recommended in Chapter-III (Conservation of Threatened Species).

**2.5.** Set up long term monitoring protocol for the identified landscapes and stress-vulnerability mapping of the habitats possessing significant conservation value within the landscapes.

**Timing:** To start immediately after identification of landscapes and to be completed within 3 years.

**Responsibility:** MoEFCC, SFDs, WII and other Scientific Institutes.

**3.1.** Projects for management of wildlife corridors have been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

**4.1.** Develop and implement an appropriate multi-agency action plan based on assessment of status, vulnerability and impact of feral animals on conservation.

**Timing:** Action plan to be developed by 2019 and implementation to continue through the plan period.

**Responsibility:** MoEFCC, Ministry of Agriculture & Farmers Welfare (MoA), SFDs, State Animal Husbandry Departments, WII, Scientific Institutes and suitable NGOs.

**4.2.** A project for immunisation of livestock in and around TRs and PAs has been recommended in Chapter-VIII (Wildlife Health).

**5.1.** Make provision in the landscape plans for assessment of potential HWC drivers in the landscapes especially in context of ongoing or planned developmental projects as ascertained through Environmental Impact Assessment (EIA).

**Timing:** To start in 2017 and continue through the plan period.

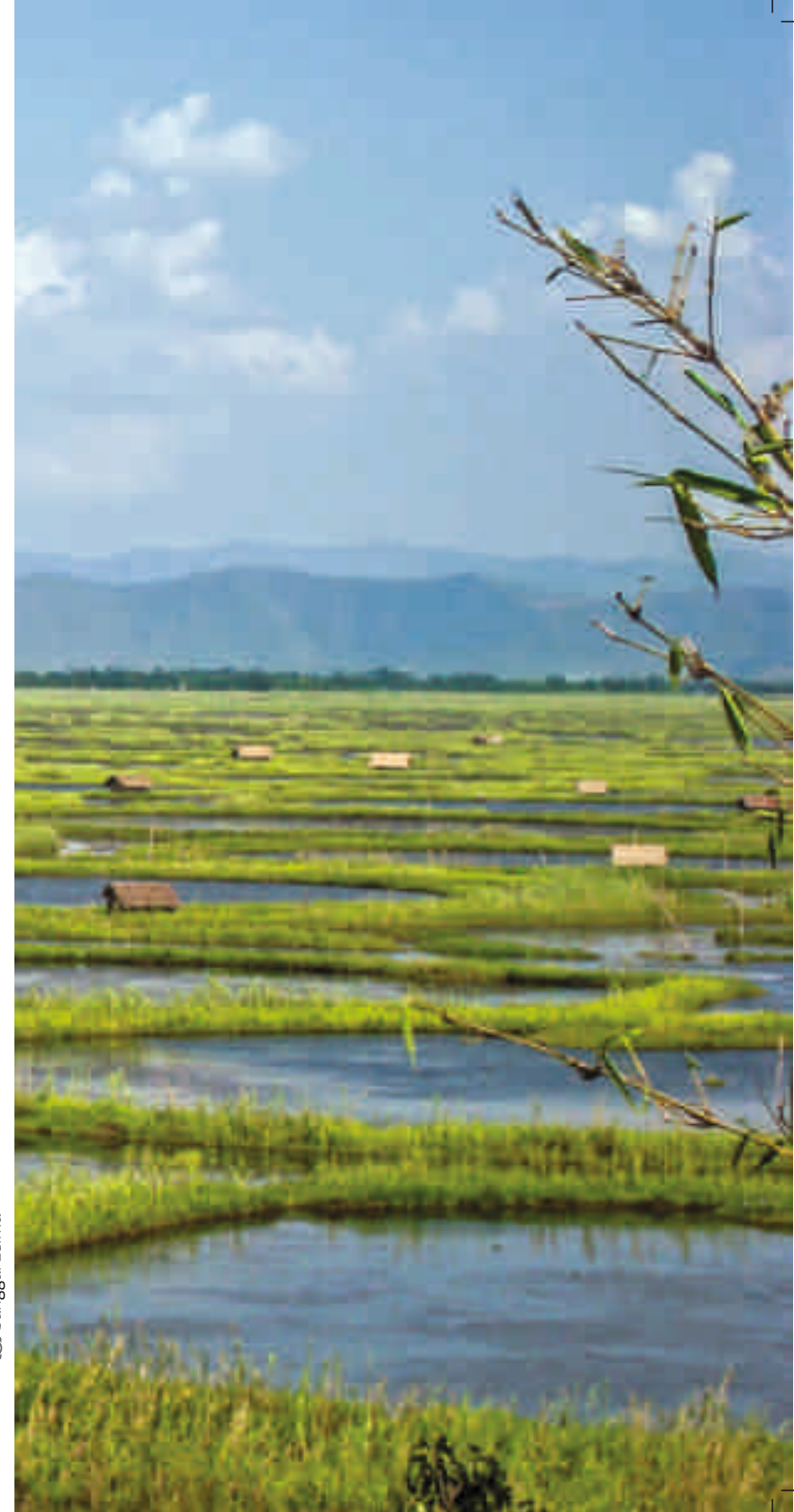
**Responsibility:** MoEFCC and SFDs.

**5.2.** A project for setting up National Environmental Appraisal & Monitoring Authority (NEAMA) to bring about reforms in EIAs of developmental projects has been recommended in Chapter XIV (Strengthening Research & Monitoring).

**6.1.** Develop and implement the 'National Policy and Action Plan on Management of Alien Invasive Species' for terrestrial and aquatic ecosystems to protect the native biodiversity and livelihoods of people from their adverse impacts.

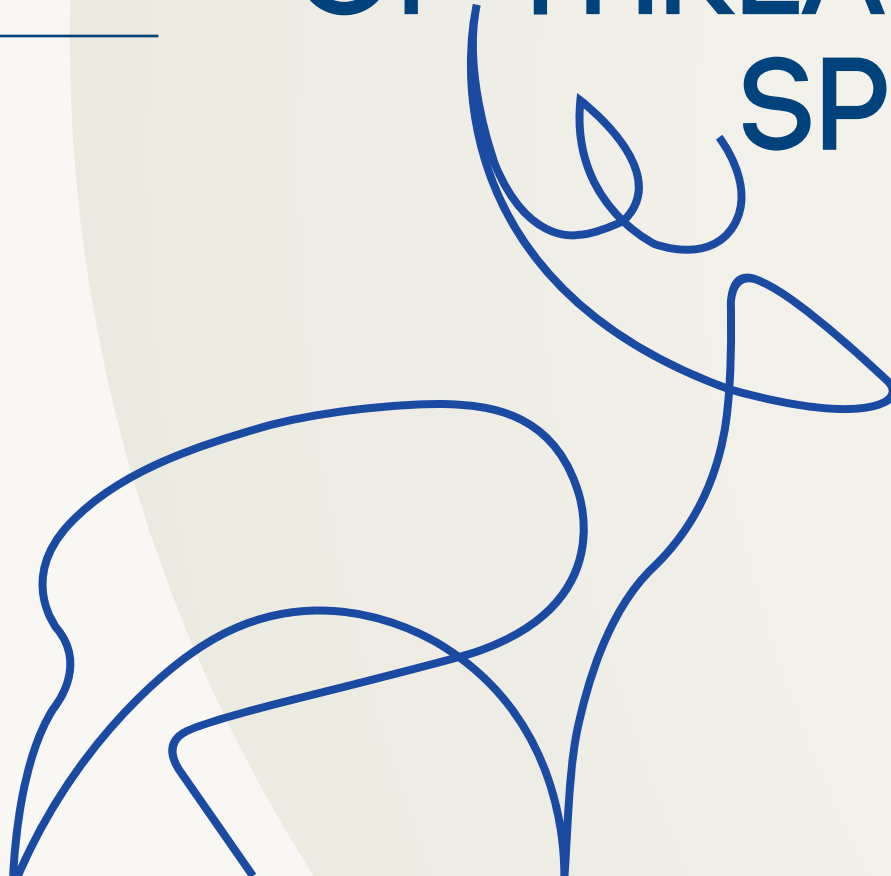
**Timing:** Policy and Action Plan to be prepared by 2019; implementation to continue through the plan period.

**Responsibility:** MoEFCC, MoA, SFDs, WII, ICFRE, NBFGR, CMFRI and suitable NGOs.



3.

# CONSERVATION OF THREATENED SPECIES









## OVERVIEW AND OBJECTIVES

1. Several species of flora and fauna in the country are highly threatened due to over exploitation, habitat degradation and loss. Such species, especially endangered and critically endangered, need immediate conservation measures by way of conducting status surveys, preparation of recovery plans, and identification and protection of critical habitats. In most of the cases in-situ conservation has to be given the highest priority backed by conservation breeding (*ex-situ* conservation) in case of species which are critically endangered.
2. During the NWAP (2002-2016), the MoEFCC, with technical support from research organizations, initiated several actions towards conservation of threatened species of fauna including status survey of highly threatened species such as Tibetan Antelope, Wild Yak, Hangul, Brow-antler Deer or Sangai, Wild Buffalo, Gangetic Dolphin, Lesser Florican, Bengal Florican, Great Indian Bustard, Nicobar Megapode, Dugong, Sea Turtles, and other coastal and marine species. Species recovery plans have been prepared for various terrestrial and aquatic species. Conservation breeding projects for threatened species such as vultures and pigmy hog have been implemented successfully in the country. Technical expertise for capture, translocation, and rehabilitation of large mammals including carnivores, Swamp Deer, Gaur, Rhinoceros and Elephants has been developed. Central Zoo Authority (CZA) has listed as many as 73 species of fauna for conservation breeding, of which 26 have been listed as priority species and guidelines have been developed for their captive breeding. Stud books have been prepared and maintained for several threatened and captive bred species.
3. Conservation of threatened species of flora, especially local endemics and highly traded species such as medicinal plants and orchids, has received relatively less attention so far. MoEFCC with the support from UNDP and GEF has recently completed a project on the conservation of globally threatened medicinal plants in some States and several Medicinal Plant Conservation Areas (MPCAs) have been established. In addition, a concept of Medicinal Plant Development Area (MPDA) for ex-situ conservation has been evolved.
4. Under the Centrally Sponsored Scheme (CSS) 'Integrated Development of Wildlife Habitat' (IDWH), the State Governments are encouraged to identify habitats for highly threatened species of flora and fauna outside the PAs and undertake conservation and long term monitoring of such habitats. There is a need for upscaling these efforts in the current NWAP.









## ACTION REQUIRED

1. Identify endangered and critically endangered species of flora and fauna, conduct status surveys and prepare species recovery plans in a time bound manner.
2. Expedite preparation and implementation of recovery plans for priority species.
3. Develop capacity for *ex-situ* conservation and multiplication of threatened taxa.
4. Prepare a comprehensive plan for conservation of endangered/ critically endangered plants and establish more MPCAs/MPDAs/ Botanical Gardens/PAs in different parts of country.
5. Identify critical habitats for threatened species of flora and fauna outside the PA network and prepare their restoration/recovery plans involving local community institutions.



## PRIORITY PROJECTS

- 1.1. Review and update the list of endangered and critically endangered species of flora and fauna and complete Red Listing of endemic species of India.  
**Timing:** To start in 2017 and to be completed by 2020.  
**Responsibility:** MoEFCC, WII, ZSI, BSI, other Scientific Institutes and suitable NGOs.
- 1.2. Conduct status survey of Red Listed and other Data Deficient species; publish a status report on Wildlife of India providing assessment of major wildlife taxa, their populations, area of extent and causes of threat; and update every five years.  
**Timing:** Status survey to start in 2018; first status report to be published by 2020 and every 5 years thereafter.  
**Responsibility:** MoEFCC, SFDs, WII, ZSI, BSI and other Scientific Institutes.
- 2.1. Prepare and execute species recovery plans for the priority species. Initiate measures for safeguarding genetically pure populations from future genetic contamination and for phasing out genetic swamping where such swamping has occurred.  
**Timing:** To start in 2017 and continue through the plan period.  
**Responsibility:** MoEFCC, SFDs, WII, Scientific Institutes and suitable NGOs.
- 2.2. Identify suitable alternative homes for species having one or two isolated populations such as Jerdon's courser (*Rhinoptilus bitorquatus*), Batagur turtle (*Batagur baska*), Asiatic lion (*Panthera leo persica*), etc., and prepare conservation plans for the same.  
**Timing:** To start in 2018 and to be completed by 2021.



**Responsibility:** MoEFCC, CZA, SFDs, WII, Scientific Institutes and suitable NGOs.

- 3.1. Develop a cadre of trained Wildlife Biologists and Botanists and build their capacity in *ex-situ* conservation/ conservation breeding. Develop capabilities of planned breeding and reintroduction of captive bred populations of identified endangered species in accordance with the IUCN guidelines.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, CZA, WII, ZSI, BSI, other Scientific Institutes and suitable NGOs.

- 3.2. Develop a centralized database of available information for identified species that leads to their successful *ex-situ* conservation and restoration in natural habitats.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, CZA, NBRI and SFDs.

- 4.1. Establish new MPCAs, MPDAs and Botanical Gardens for the globally threatened medicinal plants in their natural habitats. This may also include PAs for plant species.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, National Medicinal Plants Board (NMPB), State Medicinal Plants Boards (SMPBs), BSI and other Scientific Institutes.

- 5.1. A project for identification, protection and management of habitats for threatened species of flora and fauna outside the PA

network has been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

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4.

# CONTROL OF POACHING AND ILLEGAL TRADE IN WILDLIFE







## OVERVIEW AND OBJECTIVES

1. With a rich diversity of flora and fauna, India has always been a target of the illegal wildlife trade as a source country. Illegal trade has emerged as one of the most serious threats to wildlife. The international trade in wildlife and its derivatives is an organized and established global criminal activity with hubs and trade routes spanning countries and continents.
2. India's biodiversity ranges from the charismatic Asian elephants, tigers, rhinos, lions, four species of bears and leopards to lesser known mammals like the pangolin and the river dolphin, to myriad other forms of life that includes snakes, butterflies, gharials, whale sharks, sea cucumbers, etc. A large number of wildlife species are of great economic importance and losing them to poachers and smugglers is a direct loss to the country's natural wealth. Reckless poaching of wild animals is also known to disturb the natural balance between predators and prey-animals in forests leading to escalation in human-wildlife conflict (HWC). The wildlife smugglers are also known to have connection with other illegal activities such as arms trafficking, drugs pedalling, etc. There are also reports of extremists and insurgents indulging in smuggling of wildlife to raise funds for procuring arms. In a nutshell, the crime against wildlife does not only affect the survival of the target species in the wild but it also impacts the economy, development and security of the country.
3. India is a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The country is obliged to undertake necessary steps to prevent illegal trade or transfer of wildlife and wildlife articles which are prohibited or regulated under provisions of CITES.
4. Although the wildlife protection laws and policies of the country are among the stringent in the world, yet their implementation leaves a lot to be desired. The conviction rate in wildlife crime cases is very low and does not serve as an effective deterrent to wildlife poachers and smugglers. Efficient application of laws is necessary to ensure reduction in levels of wildlife crime across the country. To make this a reality, appropriate policies need to be evolved and put in place urgently.
5. Establishment of the National Wildlife Crime Control Bureau (WCCB) during the previous NWAP was a major step for protection of wildlife in India. However, investigation of wildlife crimes in the country is not yet up to the mark. The capacity of the wildlife managers and the frontline staff charged with the responsibility to investigate wildlife crimes needs major improvement by way of organizing capacity building programmes in various aspects of investigation and documentation of wildlife related offences. As technologies such as internet and mobiles are being used effectively by crime syndicates, the wildlife crime investigators also need to be equipped with matching skills, fit to carry out technology-based investigations leading to busting of networks behind these crimes.
6. Local abundance of certain species of wild animals in some parts of the country also increases the chances of human-wildlife conflicts (HWC) in the fringe areas of forests. If not addressed on time with suitable measures, HWC can lead to retaliatory killing of wild animals by the harassed people. Timely







payment of compensations by the SFDs to the victims for any loss of life or damage to property and crops can help in assuaging the public resentment. This should be complemented by installation and maintenance of wildlife barriers wherever required.

 Subharanjan Sen



## ACTION REQUIRED

1. Strengthen capacity of frontline field staff to protect wildlife through training and proper equipping to increase focused crime prevention, patrolling and reporting. Such measures may include formation of special protection and intelligence units with dedicated information networks; deploying modern technology for surveillance and enforcement; and improving forensic support for dealing with wildlife crimes.
2. Establish fast track special courts/benches for dealing with forests and wildlife crimes.
3. Engage and network with the Customs, Police, Paramilitary Forces, Coast Guard, Postal and Courier services and other agencies that can play a key regulatory role in preventing wildlife offences.
4. Promote international cooperation to combat organized wildlife crime.





## PRIORITY PROJECTS

- 1.1.** Initiate a special drive to fill up frontline staff vacancies in SFDs, particularly in TRs and PAs. Based on assessment of the staff requirement, organise to hire dynamic and trained personnel on contract for protection of vulnerable wildlife habitats that are severely understaffed.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC, NTCA and SFDs.

- 1.2.** Enhance the investigation skills of the frontline staff and their capacity to effectively collect, package and dispatch the samples from the field for further forensic analysis.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, WCCB, SFDs, WII and suitable NGOs.

- 1.3.** Provide State-of-the-Art logistics, weapons, communication tools, incentives and other support-system to the frontline forest staff to ensure effective protection of wildlife in remote and vulnerable areas. Ensure implementation of Law Enforcement Monitoring tools like M-STRIPES and SMART in all TRs, PAs and other sensitive wildlife areas to strengthen on-ground patrolling and other protection measures.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, WCCB and SFDs.

- 1.4.** A project for deployment of Electronic Eye and UAVs in highly sensitive TRs and PAs has been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

- 1.5.** Enhance protection activities through a time tested multi-tiered system of active foot patrols; routine and intelligence-based mobile patrols; strategically located camps, check-posts and barriers; specialized tracking of intrusions; anti-snare perambulation; use of camera traps in important corridors to ensure protection of transient wildlife population; etc.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC, NTCA, WCCB and SFDs.

- 1.6.** Assess the effectiveness of protection measures undertaken by the SFDs in TRs and PAs to combat wildlife crime. Replicate best practices in other areas.

**Timing:** First round of assessment to be completed by 2020; to be repeated every 5 years thereafter.

**Responsibility:** MoEFCC, NTCA, WCCB, SFDs and WII.

- 1.7.** Form special investigation units in TRs and PAs with recent and recurrent history of wildlife poaching and trafficking. Empower the units with appropriate weapons, training, investigation powers (e.g. access to technical surveillance records and data monitoring) and create a network with other operational entities with credible standing across the country through WCCB for improved and institutionalized coordination.

**Timing:** To start in 2017 and to be completed by 2022.

**Responsibility:** MoEFCC, NTCA, WCCB and SFDs.

- 1.8.** Conduct national level audit of wildlife trade using scientific methods to understand the change in global and Indian wildlife trade patterns and ensure that appropriate preventive measures are in place to counter any adverse change without delay.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, WCCB and suitable NGOs.

- 1.9.** Establish a network of State-of-the-Art wildlife forensic laboratories in the country.





Existing facilities in the Central Forensic Science Laboratories (CFSs) and the State Forensic Science Laboratories (SFSs) may be upgraded to deal with wildlife crimes wherever possible.

**Timing:** To start in 2018 and to be completed by 2023.

**Responsibility:** MoEFCC, MoHA, WCCB, WII, SFDs, State Home Departments, CFSs and SFSs.

- 2.1.** Establish fast track special courts/benches to ensure expeditious trials of wildlife and forest crimes.

**Timing:** Special courts / benches to be established by 2022.

**Responsibility:** MoEFCC, Ministry of Law & Justice (MoLJ), State Law Departments and SFDs.

- 3.1.** Engage and network with the Customs, Police, Paramilitary Forces, Coast Guard, Postal and Courier services and other agencies that can play a key regulatory role in preventing wildlife offences. Ensure operational cooperation and information exchange between various enforcement agencies under the guidance of WCCB and set up databank on wildlife crime accessible to nodal officers of all enforcement agencies.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, MoHA, WCCB, SFDs, State Home Departments, Paramilitary Forces, Customs and other relevant Departments and Agencies.

- 3.2.** Engage with the BSF, SSB, ITBP and Coast Guard to undertake joint operations for curbing wildlife trafficking through international borders.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, WCCB, SFDs, BSF, SSB, ITBP and Coast Guard.

- 3.3.** Establish a mechanism to monitor beyond seizures and confiscation of economically important plants and their derivatives involved in illegal trade.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, WCCB, BSI, IFGTB, DRI, Customs and SFDs.

- 4.1.** Establish a specific mechanism for facilitating interface with the international enforcement networks like South Asia Wildlife Enforcement Network (SAWEN), ASEAN-Wildlife Enforcement Network, International Consortium on Combating Wildlife Crime (ICWC), CITES, INTERPOL, United Nations Office on Drugs and Crime (UNODC) etc. for exchanging information on and initiating joint action against mafias indulging in cross-border trafficking in wildlife.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, WCCB and CBI.





5.

# WILDLIFE HEALTH MANAGEMENT









## OVERVIEW AND OBJECTIVES

1. With shared use of forests by communities and wildlife; human population explosion; habitat fragmentation; and land-use changes that force wild animals to come into frequent contact with humans, 'Wildlife Health' has become an important issue for wildlife managers. Wildlife health management, which traditionally comprised treating the sick and wounded animals and taking care of wild animals in captivity, has now expanded to rehabilitating the rescued or displaced animals in the wild; carrying out health assessment of wild animals for the purpose of translocation and reintroduction; maintaining surveillance for both endemic and emerging infectious diseases; and taking preventive measures against any potential spread of zoonotic diseases due to interactions between wild animals, humans and livestock. Veterinarians have not only become an integral part of teams attending to wildlife emergencies but they also play an important role when it comes to alleviating stress and improve welfare aspects of the displaced wildlife.
2. Emerging infectious diseases are a concern not only to humans but also to the conservation and welfare of wildlife species. Recent emergence of the tiger as a new host for Canine Distemper; geographic spread of Endotheliotropic Herpes Virus (EEHV) among elephants; and reports of goat pox or mange in goat-antelopes in the North-Eastern India are some examples which reiterate the need for urgent measures for protecting the Indian wildlife against diseases.
3. Chemical immobilisation is an indispensable tool whether it is rehabilitation of a displaced wild animal, or disease investigation that requires invasive procedures, or management of an animal involved in human-wildlife conflict (HWC). While syringe projectors have been made available in almost every PA, India is far behind in making the latest tranquilizing drugs available to wildlife veterinarians.
4. The subject of euthanasia among the wild animals has remained a sensitive subject. The IUCN has begun to differentiate euthanasia from mercy killing, the former being the act of putting an end to the misery of terminally ill animals, and the latter dealing with the issue of putting apparently healthy animals to sleep for reasons of space, lack of proper centres, resources and personnel. There is an urgent need to define these terms in the Indian context and identify the relevant procedures as well as implementing agencies to address the welfare of suffering animals.
5. The wildlife health programme for the country as proposed in the NWAP (2017-2031) is based on the requirements and objectives described in the foregoing paragraphs.









## ACTION REQUIRED

1. Integrate the practice of disease surveillance with the regular watch & ward and monitoring regime in TRs, PAs and general forests. Documentation and reporting of any unusual mortalities or behavioural aberrations in animals and peculiarities in the forest profile, like necrosis, wilting, pest attack etc., are to be part of this practice.
2. Build capacity of veterinarians of the SFDs and those of the State Animal Husbandary Departments located in the forest bearing districts, in wildlife health management and in dealing with HWC. Establish and strengthen centres for wildlife rescue/ rehabilitation and disease surveillance in and around PAs.
3. Promote research on the ecology of diseases that affect free ranging wildlife—including emerging wildlife diseases of both zoonotic and non-zoonotic importance.
4. Ensure proper implementation of the provisions of the Wildlife (Protection) Act, 1972 (WPA-1972) relating to immunisation against communicable diseases of livestock kept in or within 5 kms of a PA. Similar programmes need to be extended to other sensitive wildlife areas.





## PRIORITY PROJECTS

- 1.1.** Develop and implement a Standard Operational Protocol (SOP) for integrating the practice of disease surveillance in the regular watch & ward and monitoring regime in TRs, PAs and general forests. This should include documentation and reporting of any unusual mortalities or behavioural aberrations in animals and peculiarities in the forest profile, like necrosis, wilting, pest attack etc. This should also provide for analysis of data and management actions for dealing with the problems. The SOP may be made a part of the Management Plans and Working Plans.

**Timing:** SOP to be developed by 2019; follow up action to continue through the plan period.

**Responsibility:** MoEFCC, NTCA, MoA (Department of Animal Husbandry, Dairying & Fisheries), SFDs, State Animal Husbandary Departments, IVRI, WII, ICFRE and SFRIs.

- 1.2.** Establish well-equipped wildlife rehabilitation cum disease surveillance centres supervised by trained wildlife veterinarians in all TRs and selected PAs.

**Timing:** To start in 2018 and to be completed by 2023.

**Responsibility:** MoEFCC, NTCA and SFDs.

- 1.3.** Develop and maintain a GIS based national database on wildlife diseases (reports, prevalence and epizootics) using reports

coming from various field and regional level disease surveillance centres.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, WII, IVRI and various field and regional level disease surveillance centres.

- 2.1.** Develop capacity of veterinary universities and colleges in the area of wildlife health management. Set up a Center of Excellence (CoE) on wildlife health. Incorporate rescue and rehabilitation of displaced wild animals and wildlife orphans in the curricula of wildlife and forestry training centres and also in Management Plans of TRs and PAs.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, MoA, NTCA, Veterinary Council of India (VCI), IVRI, Veterinary Universities, WII, SFDs and State Animal Husbandry Departments.

- 2.2.** Establish suitably equipped Mobile Units supported by trained veterinarians in districts having high levels of HWC to attend to wildlife emergencies, rescue and rehabilitation, and to provide wildlife health support.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, State Animal Husbandry Departments, local Veterinary Universities and Colleges, and suitable NGOs.

- 2.3.** Make the latest drugs for chemical capture of wild animals available to all zoos and the wildlife rehabilitation cum disease surveillance centres through a central nodal agency.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC, NTCA, CZA and SFDs.

- 2.4.** Establish a practical and legally binding protocol on the subject of mercy killing and euthanasia of wild animals based on the advice of a committee of experts drawn from the wildlife and the veterinary sciences.

**Timing:** Protocol to be established by 2019; implementation to continue through the plan period.

**Responsibility:** MoEFCC, AWBI, SFDs, WII and Scientific Institutes.

- 3.1.** Initiate long-term studies to establish the role of infectious or non-infectious diseases as the cause for the decline or fluctuations in threatened wild animals.

**Timing:** To start in 2018 and to be completed by 2023.





**Responsibility:** MoEFCC, SFDs, WII, IVRI, local Veterinary Universities and Colleges and suitable NGOs.

- 3.2.** Investigate into the epidemiology and ecology of goat pox or mange reported among the goat antelopes (goral and serow) from the States of Mizoram and Sikkim.

**Timing:** To start in 2018 and to be completed by 2023.

**Responsibility:** MoEFCC, SFDs of Mizoram and Sikkim, WII, IVRI and local Veterinary Universities and Colleges.

- 3.3.** Monitor the prevalence of EEHV and tuberculosis among wild and captive elephants and initiate measures to prevent their spread.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII, IVRI and local Veterinary Universities and Colleges.

- 4.1.** Initiate a coordinated immunisation programme for livestock living in and around TRs, PAs and other sensitive wildlife areas along with a monitoring mechanism in

coordination with State Animal Husbandry Departments, local Veterinary Universities and Colleges, Panchayats and suitable NGOs. Regular vaccination also needs to be carried out for domestic dogs to prevent them from being a carrier of Canine Distemper Virus.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, SFDs, State Animal Husbandry Departments, local Veterinary Universities and Colleges, Panchayats and suitable NGOs.

 Ranjan Laha









6.

# MITIGATION OF HUMAN-WILDLIFE CONFLICT







## OVERVIEW AND OBJECTIVES

1. Human-Wildlife Conflict (HWC) has been increasing at local and regional scales in the country in recent decades. Such conflicts include loss of cultivated crops, livestock, property such as houses; transmission of diseases by wildlife to people and livestock; and loss of human lives both indirectly and directly (Sukumar 1994, 2016; Treves 2009). Such conflict situations generally lead to growing antipathy among the people towards wildlife conservation resulting in retaliatory killings or injuries to animals.
2. The primary causes of HWC include the loss, degradation and fragmentation of many wildlife habitats, thereby increasing the chances of Asian elephants (*Elephas maximus*) and many other wild animals moving out of natural habitat and encountering cultivation and people. The substantial recovery of once dwindling populations of ungulates such as Blackbuck (*Antelope cervicapra*) and Nilgai (*Boselaphus tragocamelus*) outside forests has also resulted in increased conflict in agriculture landscapes. Highly productive crops that provide more palatable and nutritious forage also promote conflicts with herbivores. Adverse climatic events such as droughts have been implicated in increased conflicts between lions and people (Saberwal *et al.* 1994) as well as elephants and people (Sukumar 1994).
3. It is important to understand that HWC is largely a human-induced phenomenon, combined with the species-specific behavioural ecology of animals and external environmental factors. Thus, all conflict mitigation measures should be developed on the basic premise of meaningful engagement with and the participation of all primary stakeholders, especially local communities.
4. Welfare of the wild animals involved in conflicts should not be lost sight of while planning mitigation measures. Wild animals should not be captured physically unless absolutely required as and when they pose a distinct danger to human lives or serious threat to property and crops. Decisions about whether to release the animal in another area or retain it in captivity should be based on a scientific understanding of animal behaviour and experience with earlier management actions. The most desirable course of action would be to put an animal back into the wild. These decisions, however, should be species-specific and context-specific. Wild animals impaired by grievous injuries or otherwise incapacitated should not be released into the wild but maintained in a lifetime care facility. With the exception of juveniles, other released animals must be monitored to the extent possible using modern technological aids in order to determine the success or otherwise of relocation.







## ACTION REQUIRED

1. Identify and document the range of conflicts for the wildlife species that regularly come into conflict with people. Develop national, regional and State level databases for all wild animals involved in HWC to document frequencies of conflicts, quantum of damage to human life and property, and wildlife deaths due to conflict.
2. Draw up comprehensive, science-based species-specific and region-specific, conflict-mitigation plans that can help in prevention of HWC situations and reduce the adverse impacts on both humans and wildlife. These plans should focus primarily on scientific management of wildlife populations as well as land-use practices that aid and abet conflicts in and around PAs as well as urban, semi-urban and rural landscapes. These plans should be jointly developed by forest managers, scientists, community leaders as well as communication experts. These should consider and address human practices that promote conflict as well as incorporate traditions, beliefs and practices that allow for conflict resolution or enhancement of human-tolerance for wild animals.
3. Constitute a well-trained and adequately equipped workforce in the State Forest Departments (SFDs) to actively address HWC situations in situ, especially those involving dangerous large mammals.
4. Create a Centre of Excellence (CoE) for HWC mitigation, under the aegis of the MoEFCC, to address, develop and implement long-term and short-term measures to reduce the adverse impacts of such conflicts.
5. Formulate and implement extensive education and awareness programmes to reduce the growing animosity among people towards wild animals involved in conflict situations, as well as to enlist their help in mitigating conflicts.
6. Encourage community participation in the HWC mitigation, by equipping them and training them in appropriate mitigation methods, as well as educating them to avoid mob formation and harassment of wild animals during operations by the wildlife managers and experts.



## PRIORITY PROJECTS

- 1.1. Conduct surveys to collect primary and secondary data on HWC at the national, regional and State levels, and to prioritise species and areas for focussed interventions.  
**Timing:** To start in 2017 and continue through the plan period.  
**Responsibility:** MoEFCC, SFDs, Scientific Institutes and suitable NGOs.
- 2.1. Ascertain population status and trends for various species involved in intensive conflict situations with people, and develop population management strategies for the various prioritised species and regions, where other mitigation measures are found to be inadequate.  
**Timing:** To start in 2017 and continue through the plan period.  
**Responsibility:** MoEFCC, SFDs and Scientific Institutes.
- 2.2. Develop national and regional conflict-mitigation plans for prioritised species and regions, in tandem with associated strategic plans under the NWAP.  
**Timing:** To start in 2017 and continue through the plan period.  
**Responsibility:** MoEFCC, SFDs, Scientific Institutes and suitable NGOs.
- 2.3. Streamline the official procedure for payment of ex-gratia relief to the victims of HWC to ensure that the relief is disbursed immediately with minimal paperwork and hindrances.  
**Timing:** To start in 2017 and continue through the plan period.  
**Responsibility:** SFDs.
- 2.4. Put in place arrangements so that the persons injured by wild animals receive quick and proper medical treatment and rehabilitation support including wheelchairs, prosthetic limbs and plastic surgery whenever required.  
**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** SFDs, State Health Departments and suitable NGOs.

- 3.1. Set up trained and well equipped Conflict Mitigation Squads in the selected regions comprising carefully screened forest personnel; and develop and implement a comprehensive training and capacity enhancement programme for the squads for quick and effective response.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** SFDs and suitable NGOs.

- 4.1. Establish a Centre of Excellence (CoE) for HWC mitigation under the aegis of the MoEFCC that caters to various priority projects recommended in this chapter. This CoE should serve as a central hub to coordinate among and network across SFDs, Local Bodies (Panchayats, Municipal Corporations, Municipal Committees and Cantonment Boards), Scientific Institutes and NGOs for planning and implementing focussed programmes for mitigating HWC across the country.

**Timing:** CoE to be established by 2018 and continue through the plan period.

**Responsibility:** MoEFCC, WII and reputed NGOs.

- 5.1. Projects for carrying out awareness campaign on issues relating to HWC have been recommended in Chapter XII (Conservation Awareness and Outreach).

- 6.1. Constitute a network of Primary Response Teams (PRTs) consisting of local community persons which address conflict situations in situ and form a bridge between the larger community and the SFD. PRTs should be constituted through extensive consultation with the Local Bodies and public representatives, and should be trained, equipped and incentivised adequately.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** SFDs, Local Bodies and suitable NGOs.

- 6.2. Institutionalise participation of the Local Bodies in the management of HWC, such as formation of Local Wildlife Squads / PRTs; construction and maintenance of barriers and fences; promotion of alternative cropping practices among villagers; distribution of relief to the victims of HWC; and organisation of eco-development activities in the villages affected by HWC.

**Timing:** To start in 2017 and to be completed by 2020.

**Responsibility:** SFDs, Local Bodies and suitable NGOs.

- 6.3. Identify, validate, promote and disseminate Indigenous Traditional Knowledge (ITK) available in various parts of the country for dealing with the HWC and promoting peaceful co-habitation with wild animals.

**Timing:** To start in 2017 and to be completed by 2020.

**Responsibility:** SFDs, Scientific Institutes and suitable NGOs.





7.



# CONSERVATION OF INLAND AQUATIC ECOSYSTEMS







## OVERVIEW AND OBJECTIVES

1. India is a signatory to the Ramsar Convention on wetlands for conserving their biodiversity and wise use and extending their scope to a wide variety of habitats, including rivers, lakes and numerous man-made wetlands. Government of India has identified a number of wetlands under its conservation programme and provides financial and technical assistance to the State Governments for various conservation activities through approved Management Action Plans. The National Environment Policy, 2006 (NEP-2006) recognises the numerous ecological services provided by wetlands and emphasizes developing a national inventory of such wetlands and the need for setting up a legally enforceable regulatory mechanism for the identified wetlands.
2. Under the the National Wetland Conservation Programme launched in 1987, the MoEFCC has issued guidelines for conservation and management of wetlands and identified about 122 wetlands for protection. Out of these, 26 wetlands covering a total area of 6,771.31 km<sup>2</sup> are listed as Ramsar Sites.
3. Despite their significant use to human well-being, wetlands are the most threatened and rapidly degrading ecosystems in India. The biotic and abiotic threats are varied and include habitat destruction and encroachments through drainage and landfill; fragmentation of rivers due to hydro-projects; diversion of rivers or alteration of flow; over-exploitation of fish resources; discharge of waste water and industrial effluents; uncontrolled siltation; invasive species infestation; ill-effects of fertilizers and pesticides; sand and boulders mining; and other such anthropogenic pressures. Research suggests that one-third of the Indian wetlands have already been wiped out or severely degraded although some wetlands have been recognized as a part of the PA network.
4. Although some of the major rivers flow through various terrestrial PAs, yet little attention is paid to the health of these rivers and their biodiversity. Similarly, linkages between rivers across adjoining landscapes, wetlands, sea, etc. are critical to the overall ecological balance of this ecosystem.
5. Compared to the terrestrial ecosystem, the proportion of threatened species present in the Indian inland wetlands is higher. Several fish such as species of mahseer, Indian torrent catfish, Manipur osteopoma, Assamese kingfish, freshwater giant sting ray etc. are highly threatened. Similarly, populations of the better known threatened wetland species including gharial, mugger, Gangetic dolphin, Indus dolphin, otters, water buffalo, swamp deer, etc. are also declining. Therefore, it is important to set up 'freshwater biodiversity safe zones' in India together with suitable species recovery programmes for the threatened fauna and flora.
6. The Aichi Strategic Plan for Biodiversity (2011–2020) has set out a series of targets where protection and conservation of inland wetlands including rivers and their biodiversity is an important priority. It recommends that inland water be conserved through effectively and equitably managed, ecologically representative and well-connected systems of PAs and other effective area based conservation measures.







7. In all 371 species of migratory birds have been reported in India. Of these, 175 species are long distance migrants using the Central Asian Flyway (CAF) area, which includes central Siberia, Mongolia, the Central Asian republics, Iran and Afghanistan, the Gulf States and Oman, and the Indian Subcontinent. The populations of most of threatened migratory birds in the region are decreasing. It is expected that India would support CAF in the region by conserving her wetlands in an appropriate manner.
8. In India, there is multiple governance framework and structures that administer the wetlands. While these are intended to have positive outcomes, the overlapping jurisdictions, divergent mandates and limited coordination hinders multiple agencies from working effectively in managing wetlands. An assessment on management effectiveness of a few Ramsar wetlands by the WII concluded that there was little inter-sectoral coordination among various stakeholders who manage wetlands. Further, it was found that protection; catchment area treatment; control of invasive species; reduction of resource dependence; treatment of sewage and pollutants; awareness generation and nature education; integrated planning and ecotourism are among some of the activities that needed strengthening. There is also a need to recognize the livelihood dependency of people who live in and around wetlands. Accordingly, all wetlands need to be managed sustainably with participation of stakeholders.
9. Scientific research is needed to address the issue of environmental flows, as any change in the natural flow of a river can have serious consequences for habitat specialist species, many of which are endemic and threatened. Further, keystone and flagship species connected with wetlands need to be identified to help garner local, regional and international support for conservation and to generate funds for research.

K. Ramesh



## ACTION REQUIRED

1. Identify 'Ecologically Significant Freshwater Biodiversity Safe Zones in India' and strengthen the inland Wetlands Protected Area (WPA) network and its management in the country with active participation of stakeholders.
2. Establish a 'National Wetland Mission of India' recognizing the importance of biodiversity conservation for sustaining the livelihoods of people for a longer term.
3. Promote integrated and sustainable management of wetlands and their biodiversity.
4. Maintain environmental flows of rivers (both water and sediments) to sustain the overall ecological functions.
5. Undertake cumulative and strategic impact assessments to harmonize conservation with development in the context of freshwater biodiversity conservation.
6. Prepare guidelines for management of aquatic invasive species in India.
7. Establish State level Wetland Authorities to strengthen the Central Wetland Regulatory Authority.
8. Develop a National Wetland Biodiversity Register.
9. Strengthen the assessment and monitoring of wetland biodiversity and its habitats, especially of migratory birds and other threatened fauna and flora.
10. Establish the National Wetland Information System.
11. Strengthen the capacity of the wetland managers to promote the management of wetlands in accordance with the Ramsar Convention.
12. Discourage indiscriminate exploitation and promote wise use of wetland resources.
13. Promote inter-sectoral coordination to effectively manage wetlands and their resources.





## PRIORITY PROJECTS

- 1.1.** Identify 'Ecologically Significant Freshwater Biodiversity Safe Zones' in the country and include these areas in the PA network as either Community Reserve or Conservation Reserve as the case may be.

**Timing:** To start in 2018 and to be completed by 2020.

**Responsibility:** MoEFCC, SFDs, WII, SACON, NBFGR, other Scientific Institutes, Universities and suitable NGOs.

- 2.1.** Establish 'National Wetland Mission' in collaboration with the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR), on the lines of the Clean Ganga Mission covering all fresh water ecosystems of India, to support clean environment, water and livelihoods of people over the long term.

**Timing:** The Mission to be established by 2018.

**Responsibility:** MoEFCC, MoWR, NITI Aayog and Governments of States / UTs.

- 3.1.** A project for preparation and updating of Management Plans of all PAs including Wetland PAs (WPAs) has been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

- 3.2.** Amend the Wildlife (Protection) Act, 1972 (WPA-1972) suitably to promote sustainable

use of wetland resources in protected wetlands with active participation of local communities.

**Timing:** The WPA-1972 to be amended as soon as possible.

**Responsibility:** MoEFCC.

- 3.3.** A project for carrying out 'Management Effectiveness Evaluation' (MEE) for all PAs including WPAs has been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

- 4.1.** Assess the environmental status of all rivers in the country and initiate action for maintaining the minimum environmental flow (both water and sediments) in them to sustain the overall ecological functions and restore the connectivity between up and down streams.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, MoWR, NIH, IITs, WII and suitable NGOs.

- 4.2.** Initiate action for restoration of degraded wetlands (including rivers) and treatment of catchment areas and, where such activities have already been undertaken, strengthen the projects and manage water pollution as per standards.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, MoWR, SFDs, State Pollution Control Boards (SPCBs) and suitable NGOs.

- 5.1.** Conduct 'Cumulative Impact Assessment' to harmonize major developmental projects in rivers with conservation of wetland biodiversity and socio-economic status at basin levels.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII, Scientific Institutes, Universities and suitable NGOs.

- 6.1.** A project for developing and implementing a National Policy and Action Plan for the Invasive Alien Species (IAS) for both terrestrial and aquatic ecosystems has been recommended in Chapter-II (Landscape Level Approach for Wildlife Conservation).

- 7.1.** Constitute Wetland Authorities in States and UTs to strengthen wetland conservation and rational use of wetlands. All State Wetland Authorities should be coordinated by the Central Wetland Regulatory Authority.

**Timing:** The authorities to be set up by 2020.

**Responsibility:** MoEFCC, State/UT Governments and SFDs.

INDIA'S  
NATIONAL  
WILDLIFE  
ACTION  
PLAN



CONSERVATION  
OF INLAND  
AQUATIC  
ECOSYSTEMS





- 8.1.** Develop a National Wetland Biodiversity Register.

**Timing:** To start in 2018 and to be completed by 2023.

**Responsibility:** MoEFCC, NBA, SBBs, Scientific Institutes and suitable NGOs.

- 9.1.** Undertake periodic monitoring of the wetland biodiversity and its habitats, especially of migratory birds and other threatened fauna and flora.

**Timing:** To start in 2018 and to be completed by 2022; to be repeated every 5 year thereafter.

**Responsibility:** MoEFCC, WII, SACON, ZSI, BSI, other Scientific Institutes, Universities and suitable NGOs.

- 10.1.** Upgrade the ENVIS Centre on Wetland Ecosystems including Inland Wetlands at the SACON to create 'National Wetland Information System' covering entire gamut of issues related to wetlands in India and their biodiversity.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC and SACON.

- 11.1.** A project for building capacity of the officers and field staff of SFDs and other relevant Departments / Agencies to promote integrated management of wetlands has been recommended in Chapter-XIII (Development of Human Resources).

- 12.1.** Projects for promoting sustainable wetland tourism have been recommended in Chapter-X (Management of Tourism in Wildlife Areas).

- 12.2.** Initiate special breeding programmes for threatened fish species such as orange-finned and golden mahseer. Adequate care should be taken to prevent any genetic contamination or deterioration during these breeding and restocking programmes.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, State Fisheries Departments, SFDs, ICAR and suitable NGOs.

- 12.3.** Undertake measures for reviving the population of native species of fish by removal of blue-finned mahseer in the

Cauvery and exotic trout in the Himalayan rivers through angling or other suitable means to reduce the population of these undesirable species. This should go hand in hand with the release of captive stocked orange-finned and golden mahseer in Cauvery and the Himalayan rivers respectively.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, State Fisheries Departments, SFDs, ICAR and suitable NGOs.

- 13.1.** Identify agencies that have overlapping mandates concerning wetlands and develop strategies for coordination of activities that support the overarching objective of conservation of wetlands and wetland biodiversity. Such coordinated strategies need to be included in the Wetland Management Plans.

**Timing:** To start in 2017 and to be completed by 2019; management planning /updating to continue as per the planning calendar.

**Responsibility:** MoEFCC, MoWR, SFDs and relevant departments of the States/UTs.

- 13.2.** Assess the synergy between wetland conservation and the National Mission for Clean Ganga.

**Timing:** To start in 2017 and to be completed by 2018.

**Responsibility:** MoEFCC, MoWR and WII.





8.

# CONSERVATION OF COASTAL AND MARINE ECOSYSTEMS









## OVERVIEW AND OBJECTIVES

1. Indian coastline extends over a length of 7,517 km of which the peninsular coast of the mainland accounts for 5,423 km and the coastlines of Andaman, Nicobar and Lakshadweep Islands make up the rest of 2,094 km. It is estimated that nearly 250 million people live within a 50 km wide swathe along the coastline of India. Therefore, the ecological services of the marine and coastal ecosystems of India play a vital role in sustaining India's economic growth.
2. Coral reefs are critical to the fisheries and protect the coasts from wave action and erosion. However, they are undergoing rapid destruction due to a number of factors including destructive fishing techniques; overfishing by small boats; reef mining; siltation and sedimentation; marine pollution with contaminants, sewage and solid waste disposal; fresh water dilution; sub-aerial exposure and disease; and irresponsible tourism such as snorkeling and reef walking. Additionally, global warming, the consequent climate change and rising sea levels are posing a severe threat to already stressed coral reefs.
3. Mangroves are effective barriers against cyclones and are important for fisheries. They are restricted to the intertidal zone along the coasts and provide habitats to a number of species such as the critically endangered tiger, the Eurasian otter, marine turtles, the estuarine crocodile and a large number of crustaceans and fishes. Overexploitation for timber and fuelwood, shrimp culture, inland water diversion, clearing for development and for other land uses have reduced the extent and quality of mangroves significantly.
4. Seagrass meadows are considered marine equivalent of rainforests in terms of diversity. These are threatened by turbidity due to sedimentation; excess nutrients from farms and domestic waste leading to eutrophication; discharge of oil, thermal and chemical effluents from industries; artificial beach stabilization and dredging; sea walls and revetments; port, harbour and jetty development; boating and fishing by dragnets.
5. Salt marshes are affected by inland pollutants and toxic chemicals such as lead, mercury and aluminum from industrial effluents which pose grave risks to flora, fauna and human health. Excess nutrients from farmlands lead to eutrophication. Accumulation of dredged material alters flooding regime, soil type and also plant and animal communities. Since salt marshes combine terrestrial and marine elements, they are threatened by invasive species from both systems.
6. Sand dunes are threatened for a variety of reasons such as being cleared for illegal infrastructure; incidental planting of green belts; sand mining; and destruction of sea turtle nesting sites and trampling of vegetation during recreational activities.
7. Coastal wetlands are associated with deltas, lagoons, estuaries and sheltered bays. They are threatened with change in river water discharge and rising sea levels affecting salt marshes and mudflats. The Rann of Kutch is so threatened with submergence. Mudflats constitute significant habitats of an estimated 76 species of resident and migratory waterfowls.









8. Coastal and marine ecosystems suffer degradation by habitat conversion to other forms of land use; overexploitation of species and associated destructive harvesting practices; the spread of invasive alien species (IAS) and impacts of agricultural, domestic and industrial sewage and waste. Further, barriers in linkages between land and sea such as altering flow of sediments and freshwater from rivers to sea have drastically changed ecological functioning of coastal ecosystems. These factors along with climate change—as stated before—have serious implications for coastal population and their well-being.
9. India has taken several steps towards achieving the Aichi Biodiversity Targets, especially Target No. 11 (at least 10% of coastal and marine areas are conserved under the PA network) and Target No. 14 (ecosystems that provide water, health, livelihoods and well-being are restored and safeguarded). Towards achieving these two targets, 106 coastal and marine sites have been identified and prioritized as Important Coastal and Marine Biodiversity Areas (ICMBAs) by the WII, 62 along the west coast and 44 along the east coast. These sites have also been proposed as conservation or community reserves to increase participation of the local communities in governance. More efforts are required to secure and strengthen community participation in the management of the CMPA network in India.
10. Conservation efforts in the marine environment have so far been restricted to the territorial waters of the country, while the vast range of ecosystems in the Exclusive Economic Zone (EEZ) has received scant attention. As a signatory to the United Nations Convention on the Law of the Sea (UNCLOS), the country has an obligation to conserve the marine living resources of its EEZ. Many biodiversity hotspots (e.g. Angria Bank) off the coast of Maharashtra in the EEZ face potential risks due to human activities like trawler fishing; exploration and exploitation of geological resources; shipping related activities; etc. Currently, there are no enabling provisions in the WPA-1972 to declare Marine Protected Areas beyond the territorial waters, nor are there any programmes in place to conserve the unique biodiversity of the EEZ.
11. So far, there has been no systematic assessment of the conservation status of most of the coastal and marine species of India. This is largely due to a lack of required data on the status and distribution of most of the marine species in the country and also lack of technical capacities to undertake such assessments. It is important to strengthen our capacity to assess and monitor the coastal and marine biodiversity for sustainable resource use as well as for effective conservation.
12. Coastal ecosystems are amongst some of the ecosystems most vulnerable to climate change and invasive species. It is imperative to investigate, quantify and monitor the impacts of climate change on the marine biodiversity and its possible relationship with invasive species. It is important to have climate change adaptation (CCA) plans in place for the coastal and marine PAs and a policy for managing marine invasive species. Coordination among all the organizations that work for conservation of threatened marine species and the welfare of coastal communities is essential. Demographic changes are also being witnessed among coastal communities due to a constant inflow of people following droughts in adjoining areas which adds to pressures on the coastal habitats.
13. Management and conservation of coastal and marine biodiversity is different from the terrestrial biodiversity management. Therefore, it is important to develop a specialized field-based programme in Marine Ecology at the higher education level based on the models established by the M.Sc. course in wildlife science at the WII and at National Centre for Biological Sciences (NCBS). Further, development of human resources to manage the CMPAs of India is essential as per the model recently established by WII in collaboration with GIZ. Such capacity building also needs to involve participants from sectors other than the SFDs such as fisheries, tourism etc.
14. Fisheries, aquaculture, seaweeds and mangroves are among the major areas for scientific research. So far, most of the research carried out in India has considered marine biodiversity as commercial products and largely neglected their ecological role. Moreover, recent threats in the form of climate change, invasive species, marine pollution and faster economic development are posing major challenges to conservation of marine biodiversity that need to be addressed. The importance of long-term scientific research and generation of ecological information on species and habitats can hardly be overstressed for successful management of CMPAs in the country.



## ACTION REQUIRED

1. Establish a 'Coastal and Marine Ecosystem Cell' to strengthen the conservation and management of coastal and marine biodiversity in all coastal States and UTs.
2. Strengthen the Coastal and Marine Protected Area (CMPA) network and its management in the country with active participation of stakeholders, both in governance and decision making.
3. Develop a common action plan for all coastal States and UTs integrating 'Climate Change Adaptation' (CCA) and 'Disaster Risk Reduction' (DRR) with shared responsibility into all sectors of governance and keeping the needs and aspirations of the local communities in focus.
4. Undertake 'Coastal and Marine Habitats Restoration Programme', especially for mangroves, coral reefs, seagrass beds, intertidal zone, sand dunes, lagoons, etc., so that livelihood opportunities of coastal communities are enhanced and they are also protected from impacts of various natural disasters and climate change.
5. Initiate programmes for long term studies and monitoring of threatened coastal and marine species, mitigation of human-marine species conflicts as well as rescue and rehabilitation of marine species.
6. Undertake cumulative and strategic impact assessments to harmonize development with conservation in the context of coastal and marine biodiversity.
7. Prepare guidelines for management of marine invasive species in India.
8. Expand the management intervention and protection to biodiversity rich areas outside the territorial waters but within the EEZ of India.
9. Establish a special centre for strengthening the knowledge management system of coastal and marine biodiversity and their conservation in India in coordination with a network of related organizations.
10. Ensure a 'clean coastal and marine environment in India' by preventing sea pollution including underwater noise.
11. Strengthen the field-based capacity to promote integrated and sustainable management of coastal and marine biodiversity. Training institutes should tailor their training curricula to meet needs of professionals of SFDs and all other Departments /Agencies at all levels of responsibilities to manage coastal and marine ecosystems.

 Aditi Nair





## PRIORITY PROJECTS

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CONSERVATION  
OF COASTAL  
AND MARINE  
ECOSYSTEMS

- 1.1.** Establish 'Coastal and Marine Ecosystem Cells' for conservation and management of coastal and marine biodiversity in each of the maritime States and UTs.

**Timing:** All the Cells to be set up by 2020.

**Responsibility:** MoEFCC and SFDs.

- 2.1.** A project for identifying coastal and marine areas of high conservation values and bringing them under the PA network has been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

- 2.2.** A project for preparing and implementing integrated Management Plans for all CMPAs in the country has been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

- 2.3.** Amend the Wildlife (Protection) Act, 1972 (WPA-1972) suitably to promote integrated and sustainable management of CMPAs with active participation of the coastal communities.

**Timing:** The WPA-1972 to be amended as soon as possible.

**Responsibility:** MoEFCC.

- 2.4.** Initiate steps in coordination with the Ministry of Agriculture and Farmers Welfare (MoA) to amend the Indian Fisheries Act, 1897 and the

State Fisheries Acts for promoting long term sustainable fisheries in the country; for recognising the importance of coastal and marine biodiversity and CMPAs; and for safeguarding the rights of traditional fishing communities.

**Timing:** The fisheries laws to be amended as soon as possible.

**Responsibility:** MoEFCC, MoA, and State Governments.

- 2.5.** Initiate action for empowering the forest officers suitably under S.19 of the Environment (Protection) Act 1986 (EPA-1986) to enable them to take cognizance of violations in the Coastal Regulation Zones (CRZs).

**Timing:** Empowerment to be done by 2019.

**Responsibility:** MoEFCC, SFDs, concerned Ministries/Departments/ Agencies under the Central Government and State Governments.

- 2.6.** A project for carrying out periodic 'Management Effectiveness Evaluation' (MEE) in all CMPAs has been recommended in Chapter-I (Strengthening and Improving the Protected Area Network).

- 3.1.** A project for developing a common action plan for all coastal States and UTs for integrating CCA and DRR has been

recommended in Chapter VI (Integrating Climate Change in Wildlife Planning).

- 4.1.** Develop and implement 'Coastal and Marine Habitats Restoration Plans', especially for mangroves, coral reefs, seagrass beds, intertidal zone, sand dunes, sea turtle nesting beaches, lagoons and rocky-shores, so that livelihood opportunities of coastal communities are enhanced and they are also protected from various natural disasters and climate change impacts.

**Timing:** Development of Plans to start in 2018 and to be completed by 2021; implementation to continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII, CMFRI, NCSCM, NIO, NCAOR, NIOT, other Scientific Institutes, Universities and suitable NGOs.

- 5.1.** Initiate and conduct long term research and monitoring programmes to understand migration patterns, breeding and feeding habitat requirements of threatened migratory marine species for their effective conservation, and also to mitigate human-marine species conflicts.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, Coast Guard,



- Fisheries Survey of India, WII, CMLRE, CMFRI, NCSCM, NIO, NIOT, NCAOR, other Scientific Institutes, Universities and suitable NGOs.
- 5.2.** Establish 'Marine Mammals Rescue and Release Teams' in States/UTs with required logistic and technical support. Build capacity of such teams.
- Timing:** To start in 2018 and to be completed by 2021.
- Responsibility:** MoEFCC, SFDs, WII, CMLRE, CMFRI and suitable NGOs.
- 6.1.** Conduct cumulative and strategic impact assessments to harmonize major development projects in coastal, marine and adjoining landscapes with conservation concerns for coastal and marine biodiversity at seascape- landscape interfaces of ecosystems.
- Timing:** To start in 2017 and continue through the plan period.
- Responsibility:** MoEFCC, SFDs, WII, Scientific Institutes, Universities and suitable NGOs.
- 7.1.** A project for developing and implementing a National Policy and Action Plan on the IAS for both terrestrial and aquatic ecosystems has been proposed in Chapter-II (Landscape Level Approach for Wildlife Conservation).
- 8.1.** Identify and manage ecologically and biologically significant marine biodiversity areas outside the Territorial Waters but within the EEZ of India.
- Timing:** To start in 2018 and continue through the plan period.

- Responsibility:** MoEFCC, SFDs, State Fisheries Departments, BoBP, Coast Guard, Indian Navy, CMLRE, NIO, NCAOR, NIOT, CMFRI, FSI, ZSI, WII, SAC and suitable NGOs.
- 8.2.** Amend the WPA-1972 and other laws governing the EEZ suitably to enable project under 8.1 above.
- Timing:** The concerned laws to be amended as soon as possible.
- Responsibility:** MoEFCC and the concerned Ministries / Departments of the Central and State Governments.
- 9.1.** Establish a National Centre for developing and managing a 'Digital Knowledge Management and Support System' for sustainable management of coastal and marine biodiversity of India, in coordination with a network of related organizations.
- Timing:** The Centre to be established by 2020.
- Responsibility:** MoEFCC, WII, CMFRI, CMLRE, FSI, NCSCM, ZSI, NIO, NIOT, other Scientific Institutes, Universities and suitable NGOs.
- 10.1.** Develop and implement guidelines for prevention and mitigation of marine pollution including underwater noise pollution to promote clean coastal and marine environment in India and to help in restoration of fisheries as well as threatened marine species and their habitats.
- Timing:** Guidelines to be developed by 2019; implementation to continue through the plan period.
- Responsibility:** MoEFCC, SFDs, CMFRI, CMLRE, FSI, ZSI, NIO, other Scientific Institutes, Universities and suitable NGOs.

- 10.2.** Initiate steps for ensuring synergetic action with the National Mission on Coastal Areas (NMCA) to promote clean coastal and marine environment in India.
- Timing:** To start in 2018 and to be completed by 2020.
- Responsibility:** MoEFCC.
- 11.1.** A project for the capacity building of the officers and frontline staff of the SFDs and other relevant Departments and Agencies for managing coastal and marine ecosystems has been recommended in Chapter-XIII (Development of Human Resources).
- 11.2.** Initiate a specialized field-based programme in 'Marine Conservation Biology' at the higher education level with an emphasis on rigorous scientific research, taxonomy and conservation, based on the models established for the M.Sc. courses in wildlife science at the WII and the NCBS.
- Timing:** To start in 2019 and continue through the plan period.
- Responsibility:** MoHRD, MoEFCC, WII and NCBS.



9.

# INTEGRATING CLIMATE CHANGE IN WILDLIFE PLANNING









## OVERVIEW AND OBJECTIVES

1. The Earth's climate has changed notably over the past century because of anthropogenic greenhouse gas emissions, with an increase of 0.85 °C in mean global temperature recorded between 1880 and 2012. Projections by the Intergovernmental Panel on Climate Change (IPCC) indicate further warming of 1.1–2.6 °C under a relatively mild greenhouse gas emissions scenario, and 2.6–4.8 °C under a strong emissions scenario by the period 2081–2100 relative to the period 1986–2005 (IPCC 2014).
2. Climate change is expected to make major impacts on global biodiversity through drivers such as carbon dioxide fertilization of plants; changes in fire frequencies; insect and pathogen attacks; latitudinal and altitudinal shifts in species distributions; and altered community interactions resulting in changes in species abundances. Climate change models also project increase in sea levels and in sea surface temperature, in addition to oceanic acidification, with consequences for coastal and marine biota. Freshwater ecosystems such as rivers, lakes and inland wetlands would also be impacted.
3. As a megadiverse country, India with over one-fifth of the land under forest cover and a long coastline can thus be expected to experience significant impacts of climate change. In the Indian context, we thus need to evaluate the impacts of climate change on a variety of aquatic ecosystems such as mangroves, intertidal zones, coral reefs, rivers and streams, marshlands, lakes and so on. About one-third of the forested area of India is projected to be impacted by climate change to the extent that they could change in character to another type before the end of the century. The spread of invasive alien species (IAS) and changes in fire regimes could further exacerbate the situation. India also has a large human population with growing needs for energy and natural resources for the economic well-being of a substantial proportion below the poverty line. Therefore, an adequate understanding of the likely impacts of future climate change on these ecosystems is imperative to plan for strategies to promote climate change adaptation and resilience in natural ecosystems to change, as well as undertake mitigation measures.
4. Climate Change Adaptation (CCA) is defined as 'adjustment in natural or human system in response to actual or anticipated climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities'. The adaptation options include changing human consumption patterns and lifestyles; taking recourse to technology or engineering interventions for protection against climate impacts; adopting risk management strategies such as early warning systems; developing financial instruments such as insurance; and promoting ecosystem-based practices. Disaster Risk Reduction (DRR) is a systematic approach to preventing and reducing the damage from natural hazards. It is essential for working with CCA and is one of the best links for promoting biodiversity conservation and sustainable environmental resource management. Mitigation specifically refers to reduction in carbon emissions as, for instance, using clean energy from wind, solar, water and atomic sources; carbon offsets for balancing emissions with absorption, and by carbon trading.







5. The most natural way of building adaptive capacity of natural ecosystems is to ensure that species of plants and animals are able to disperse to more suitable habitat niches in tune with a changing climate. India's PAs have been designed in the past when climate change was hardly a criterion for wildlife conservation, and this is the time to make judicious changes based on a more robust understanding of climate change impacts.



## ACTION REQUIRED

1. Promote climate change-specific research. This should include long term monitoring and assessment of change in distribution of vegetation types and major species and functional processes such as phenology, as well as biota in freshwater and coastal/marine ecosystems. Vulnerability mapping of habitats need to be carried out for factors like fires, epidemics, drought and other environmental stresses.
2. Include the 'Climate Change Adaptation' (CCA) and 'Disaster Risk Reduction' (DRR) measures in the management planning process. Optimisation of habitat profiles needs to become top priority of the management planning.
3. Review the management strategies to synchronise them with relevant policies, laws and international treaties and to make them responsive to the evolution of country's position on climate change.
4. Develop a common action plan integrating CCA and DRR with shared responsibility into all sectors. The State Coastal Zone Management Plans required to be prepared under the CRZ provisions (MoEFCC 2011) would pave the way for such synergy. It is crucial to involve local communities with due regard to their knowledge and capacities.
5. Integrate CCA and DRR suitably with Management plans for TRs, PAs (including WPAs and CMPAs) and zoos. Accordingly, there is also a need to review the WII's Management Planning Guidelines for PAs and Managed Landscapes (Sawarkar 2005).
6. Review the existing Biogeography Report of the WII which provides a basis for planning for the PA Network in India (Rodgers *et al.* 2002).
7. Initiate a programme for carrying out anticipatory or assisted planting/regeneration along ecological gradients with respect to climate change. An active policy of assisted migration of wildlife species may also be needed in many cases.







## PRIORITY PROJECTS

- 1.1.** Develop a network for data collection for assessment of the impact of climate change on all ecosystems with respect to their ecological services and incorporate the findings in the Tiger Conservation Plans (TCPs) of TRs and Management Plans of PAs with adaptive or mitigation measures. Assessments of change in distribution of vegetation types and major species and functional processes such as phenology would also be helpful in conservation planning at species level and at times for assisting distribution in new and more suitable ranges.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, SFDs, Scientific Institutes, Universities and suitable NGOs.

- 1.2.** Assess the vulnerability of habitats, inter alia, through pattern of forest/ grassland fire frequencies as a consequence of a changing climate, and formulate fire and other disaster risk reduction and management strategies to minimise or avoid adverse impacts on wildlife habitats and species.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs and Scientific Institutes.

- 1.3.** Undertake research on animal responses to climate change, emerging zoonotic diseases and the threats of hybridisation so that appropriate adaptation plans are drawn for species and areas.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, Scientific Institutes, Universities and suitable NGOs.

- 2.1.** Undertake vulnerability assessment of all landscapes with respect to risks linked to climate change. DRR and CCA measures can then be planned more objectively. The assessment can also be very helpful in planning of development projects in the landscapes, with specific risk management measures being derived from collection and collation of data on hazards and may include integration of relief and rehabilitation and climate proofing.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, Scientific Institutes, Universities and suitable NGOs.

- 3.1.** Undertake a review to harmonize the existing national and international policies in connection with climate change and impacts in India, so that a more robust climate change

adaptation plan can be drafted at the national level.

**Timing:** To start in 2018 and to be completed by 2020.

**Responsibility:** MoEFCC and Scientific Institutes.

- 4.1.** Develop a specific action plan for all States and UTs integrating CCA and DRR with shared responsibility into all sectors which would pave the way for synergy among all stakeholders and keeping in focus the needs and aspirations of the local communities and requirements of biodiversity conservation. In case of PAs, the provisions as relevant to the area need to be reflected in Management Plans.

**Timing:** To start in 2018 and to be completed by 2020.

**Responsibility:** MoEFCC, SFDs, National Disaster Management Authority (NDMA), State Disaster Management Authorities (SDMAs); concerned Departments/Agencies of the States/UTs and Scientific Institutes.

- 5.1.** Integrate CCA and DRR in all Management Plans of TRs, PAs (including the WPAs and CMPAs) and zoos as well as the Coastal Zone Management Plans to be prepared under the provisions of the CRZ Notification.

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**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, CZA, SFDs, WII, Scientific Institutes, zoos and suitable NGOs.

- 5.2.** Review the WII's 'A Guide to Planning Wildlife Management in Protected Areas and Managed Landscapes' with due regard to issues relating to CCA and DRR.

**Timing:** To start in 2018 and to be completed by 2021.

**Responsibility:** WII.

- 6.1.** Review the WII's Report 'Wildlife Protected Area Network in India: A Review' with due regard to the impacts of climate change.

**Timing:** To start in 2018 and to be completed by 2021.

**Responsibility:** MoEFCC, SFDs and WII.

- 7.1.** Initiate a programme for anticipatory planting and assisted regeneration for maintaining the optimum profile of forests along ecological gradients for ensuring resilience for absorbing the shock of changing environment. It is important that this programme is based on solid scientific understanding and not arbitrary choices of species and areas to plant.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, ICFRE and other Scientific Institutes.

- 7.2.** Initiate a programme for assisted migration of wildlife. A more active policy of assisted migration of wildlife species due to climate change may be needed in many cases, especially in highly fragmented landscapes and coastal areas.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, Scientific Institutes and suitable NGOs.





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# MANAGEMENT OF TOURISM IN WILDLIFE AREAS







## OVERVIEW AND OBJECTIVES

1. Eco-friendly and regulated wildlife-based tourism (also referred to as eco-tourism) has the potential to be a vital conservation tool as it helps win public support for wildlife conservation. However, in recent years mushrooming of tourism facilities has led to overuse, disturbance and serious management problems in a number of PAs.
2. In case of any conflict between tourism and conservation interests of a PA, the paradigm for decision must be that tourism exists for the PAs and not vice versa, and that demands of tourism must be subservient to and in consonance with the conservation interests of PA. While revenues earned from tourism can help the management of the PA, maximization of income must never override the main goal of tourism viz. to educate the visitor and create in them a respect for nature.
3. The MoEFCC, NTCA and some of the SFDs have framed guidelines for making tourism in TRs and PAs eco-friendly and educative, but the implementation of these guidelines offers a lot of scope for improvement.
4. As stipulated by the National Tourism Policy-2002, eco-tourism must primarily involve and benefit local communities. Goals set for the MoEFCC in the 12<sup>th</sup> Five Year Plan (2012-17) include promotion of eco-tourism and building capacity of Joint Forest Management Committees (JFMCs) for management of eco-tourism. Long term plans for each PA and forest lands outside PAs should be framed to diversify tourism activities to lesser known PAs and non-PAs, thereby reducing pressure of tourism on iconic PAs. One of the monitorable targets set for the 12<sup>th</sup> Plan is to prepare Integrated Eco-tourism District Plans covering 10% of all potential PAs by 2017. There is a great scope for enhancing the coverage of PAs, including wetland PAs (WPAs) and coastal / marine PAs (CMPAs) by eco-tourism.
5. The objective of wildlife tourism should be to inculcate amongst the visitors empathy for nature and to provide a communion with nature, rather than to merely ensure maximum sightings of charismatic wild animals. Related activities, such as birding, hiking, trekking, plant-hunting and culture tourism, need to be promoted. Students of all levels must be encouraged to visit PAs and participate in conservation activities therein, and these educative processes should be facilitated through concessions and park interpretations.
6. Regular monitoring of the impacts of tourism is needed. The parameters for such an evaluation should include ecological effects on the habitat, animal behaviour as well as secondary effects caused by changes in lifestyles and cultures of local populations. Representatives from local communities, local NGOs and field personnel should be a part of eco-tourism committees that monitor and regulate tourism activities in the area. These committees should help develop tourism and conservation plans and strategies.
7. Strict guidelines for conservation of energy and water, and disposal of waste and sewerage need to be laid down and implemented for existing and new







tourism facilities. New tourist residential facilities and eateries must be established outside PAs and all possible efforts should be made to relocate the ones existing inside PAs to suitable sites outside.



## ACTION REQUIRED

1. Identify potential tourism areas including zoos, safari parks, etc.
2. Prepare tourism plans based on the prescribed guidelines for promoting sustainable ecotourism in TRs, PAs (including WPAs and CMPAs) and the mountain eco-systems.
3. Develop standards and guidelines to prevent damage to wildlife and habitats, in particular to mountain vegetation, wetlands and marine habitats including coral beds.
4. Frame rules and regulations for visitors' conduct which should be widely publicised among tourists and tourism agencies as well as prominently displayed on public notice boards in all tourism sites.
5. Create a cadre of local communities who can be trained as nature guides and strengthen the capacity of the local communities and the tourism agencies for managing responsible and sustainable tourism.
6. Institutionalise a mechanism for ploughing back a part of the income generated from wildlife tourism for management of TRs and PAs and eco-development of the local communities.



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## PRIORITY PROJECTS

- 1.1.** Identify, compile and maintain data regarding the potential tourism areas which may include lesser known PAs, forestlands outside PAs, zoos, safari parks, etc.

**Timing:** To start in 2017 and to be completed by 2019; to be updated regularly thereafter.

**Responsibility:** MoEFCC, NTCA, CZA, SFDs and State Tourism Departments.

- 2.1.** Bring in a mechanism for implementation of sustainable tourism in Wildlife Areas, WPAs, CMPAs and the mountain eco-systems, in accordance with the prescribed guidelines. Construction or expansion of tourism facilities must not be allowed within the limits of TRs and PAs and efforts should be made to shift out the existing ones.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, Ministry of Tourism (MoT), SFDs and State Tourism Departments.

- 2.2.** Prepare tourism plans for all TRs, PAs (including WPAs and CMPAs) forestlands and the mountain eco-systems either as a part of existing Management Plans / Working Plans or separate ones.

**Timing:** To start in 2017 and to be completed by 2022.

**Responsibility:** MoEFCC, NTCA and SFDs.

- 3.1.** Develop impact assessment techniques and standards that can be used by wildlife managers to evaluate negative impacts of tourism on soil, water resources, vegetation, animal life, sanitation, cultural environment, etc.

**Timing:** To start in 2017 and to be completed by 2019.

**Responsibility:** MoEFCC, NTCA, SFDs, Scientific Institutes and suitable NGOs.

- 3.2.** Assess the impact of tourism on TRs, PAs (including WPAs and CMPAs), forestlands and

the mountain eco-systems and integrate its outcomes in the successive eco-tourism plans.

**Timing:** Impact assessment to start in 2019 and to be completed by 2021; to be repeated every 5 years thereafter.

**Responsibility:** MoEFCC, NTCA, SFDs, Scientific Institutes and suitable NGOs.

- 3.3.** Develop best practices guidelines to promote sustainable wetland tourism including angling such as catch-and-release, water sports and other tourism related activities.

 K. Sivakumar







**Timing:** Guidelines to be developed by 2018; implementation to continue through the plan period.

**Responsibility:** MoEFCC, SFDs, State Tourism Departments, Scientific Institutes and suitable NGOs.

- 3.4.** Develop stringent standards for waste disposal, energy and water consumption, construction plans and materials used therein.

**Timing:** To start in 2017 and to be completed by 2020.

**Responsibility:** MoEFCC, NTCA, SFDs, Scientific Institutes and suitable NGOs.

- 3.5.** Impose a ceiling on the number of tourists and vehicles permitted to enter TRs and PAs keeping in mind individual characteristics of the TR or PA. The wildlife managers must be empowered to use their discretion in closing off certain sensitive areas of the TR or PA (e.g., an area where a tiger has littered recently).

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, and SFDs.

- 4.1.** Frame rules and regulations for visitors' conduct in TRs, PAs (including WPAs and CMPAs), forestlands and the mountain eco-systems.

**Timing:** Rules to be framed by 2018 and implementation to continue through the plan period.

**Responsibility:** MoEFCC, MoT, NTCA, SFDs and State Tourism Departments.

- 4.2.** Strengthen visitors' safety guidelines in TRs, PAs (including WPAs and CMPAs), forestlands and the mountain eco-systems and ensure their compliance.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** SFDs, NTCA, SFDs and State Tourism Departments.

- 5.1.** Conduct capacity building programmes for office bearers / members of JFMC, Forest Development Agencies (FDAs), Village Forests, Vana Panchayats and Local Bodies in management of eco-tourism facilities including homestays in TRs, PAs (including WPAs and CMPAs), forestlands and the mountain eco-systems.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** SFDs, State Tourism Departments and suitable NGOs.

- 5.2.** Conduct suitable orientation programmes for tourism agencies.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** SFDs, State Tourism Departments and suitable NGOs.

- 5.3.** A project for training and engagement of nature guides in PAs has been recommended in Chapter XII (Conservation Awareness and Outreach).

- 6.1.** Make rules to ensure that all hotels/ privately-run tourism facilities within a radius of 5 km from the boundary of a TR/PA contribute a fixed percent of their turnover to

the TR/PA and the monies thus collected are utilized for upkeep of the area and eco-development of the local communities.

**Timing:** Rules to be framed as soon as possible.

**Responsibility:** MoEFCC, MoT, NTCA and State Governments.

- 6.2.** Put in place a legal mechanism for ploughing back of revenue generated from tourism in management of TRs, PAs (including WPAs and CMPAs), forestlands and the Himalayan ecosystem.

**Timing:** Legal mechanism to be set up as soon as possible.

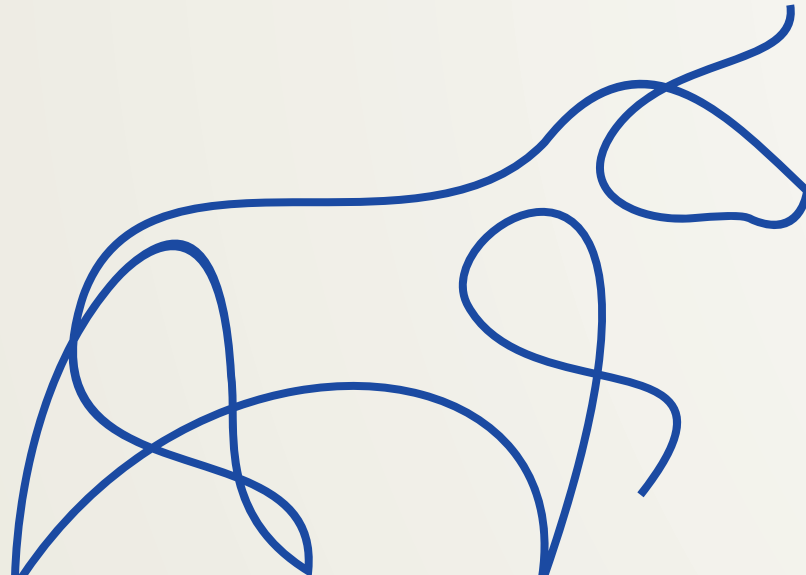
**Responsibility:** MoEFCC, MoT, NTCA and State Governments.







# PEOPLE'S PARTICIPATION IN WILDLIFE CONSERVATION









## OVERVIEW AND OBJECTIVES

1. The Indian Forest Act (IFA), 1878 (later replaced by the IFA-1927) and various provincial Forest Acts adopted Reserved Forests (RFs) and Protected Forests (PFs) as the basis for forest management in the country which sought either to exclude or to curtail existing rights of the local people over forests. The Wildlife (Protection) Act, 1972 (WPA-1972) also introduced an exclusionary model of wildlife management in the form of National Parks and Sanctuaries.
2. The exclusionary models of forest and wildlife management, however, made the local people hostile towards the State Forest Departments (SFDs) and impacted negatively on conservation. A Task Force was appointed in 1981 on the initiative of the Indian Board for Wildlife to suggest ways for eliciting public support for wildlife conservation. The Task Force recommended adoption of a 'Core-Buffer-Multiple Use Surround' structure for each PA; initiation of educational and awareness programmes for schools; involvement of media; and orientation programmes for the decision makers. All these recommendations were incorporated in the first National Wildlife Action Plan (NWAP) launched in 1983.
3. The 42<sup>nd</sup> Constitutional Amendment (1976) prescribed fundamental duties for the Indian citizens—one of the duties being “to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures”. On 1<sup>st</sup> June 1990, the Government of India (GoI) issued an advisory to all State Governments for setting up Joint Forest Management Committees (JFMCs) for involving local communities in protection of forests. During the 10<sup>th</sup> Five Year Plan (2002-07), the GoI extended the concept of JFM to Forest Development Agencies (FDAs) and linked it with the National Afforestation Programme.
4. The NWAP (2002-2016) included a component for enlisting public support and participation in wildlife conservation and recommended a number of priority projects. Some SFDs have made significant progress in implementing these projects.
5. A significant development during the recent years has been the enactment of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, also referred to as the Forest Rights Act, 2006 (FRA-2006). The FRA-2006 aims at assigning certain rights to the eligible Scheduled Tribes and other traditional forest dwellers, which include the right to cultivate forest land as well as other traditional and customary rights like grazing, fishing and collection of NTFPs but exclude hunting. The FRA-2006 applies to all forest lands including PAs. It is apprehended that the individual and community rights sought to be bestowed upon the Scheduled Tribes and other traditional forest dwellers may dilute the sanctity of PAs and other sensitive conservation areas; enhance anthropogenic pressure on wildlife habitats; escalate HWC; and adversely impact the effectiveness of JFM. It may be recalled that a similar conflict of interests between the SFDs and JFMCs on one side and the *Panchayats* and *Gram Sabhas* on the other side has also arisen after the promulgation of the *Panchayat* (Extension to Scheduled Areas) Act, 1996







(PESA-1996) which seeks to assign ownership of NTFPs in the tribal areas listed in Schedule-V of the Constitution to *Panchayats* and *Gram Sabhas*.

6. As the foregoing discussion would reveal, public support is no longer a matter of choice but an absolute necessity in the emerging scenario of wildlife management in the country. The current NWAP aims at building, enhancing and sustaining people's support and participation in wildlife conservation.



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## ACTION REQUIRED

There is some unfinished agenda from the NWAP (2002-16), which need to be continued. A substantial part of natural habitats in the country is outside the administrative control of the SFDs and the owners / managers of such habitats should be brought into the mainstream of wildlife conservation. Keeping the aforesaid factors in view, the following actions have been identified under the NWAP (2017-31):

1. Consolidate and improve upon the achievements made towards ensuring people's support and participation in wildlife conservation during the earlier NWAPs.
  - i. Attempts should be made for reviving, strengthening and expanding the existing institutions like the JFMCs, FDAs, Village Forests and *Vana Panchayats* which provide a convenient platform for the SFDs to seek public co-operation.
  - ii. The WPA-1972 envisages establishment of Advisory Committees for Sanctuaries (S.33B) and Management Committees for Conservation Reserves (S.36B) and Community Reserves (S.36D) for ensuring public participation in management of PAs. But the prescribed Committees are yet to be set up in a large number of PAs.
  - iii. S.4(1)(bb) of the WPA-1972 also envisages appointment of Honorary Wildlife Wardens (HWLWs). The State Governments should appoint adequate number of HWLWs in each district—particularly for each sensitive wildlife zone in non-forest areas. The HWLWs should be selected keeping in view their acceptability among the local community; their commitment towards wildlife conservation; and their potential to help the forest staff in the field, particularly in controlling crowds.
  - iv. A large number of wildlife habitats in the country, including wetlands and wildlife corridors, are under the control of the Autonomous Councils, tribal communities, private entities and government agencies other than the

- SFDs. It is advisable to formally recognise the owners / managers of such habitats as wildlife managers.
2. Address the factors which adversely impact public support and attitude towards wildlife conservation.
    - i. Long delays in settlement of rights and payment of compensation to the right-holders in PAs have been recognised as a major source of alienation of the local people from wildlife conservation. In many cases, the PA boundaries also include human-habitations and crop-lands having no direct value for wildlife and, thus, cause harassment of the local people.
    - ii. The FRA-2006 provides a fresh opportunity for identifying and recognising genuine rights of the tribal people and other traditional forest dwellers over PAs and other forest areas. Sections 2(b) and 4(2) of the FRA-2006 also provide for identification of Critical Wildlife Habitats (CWH) within PAs over which forest rights may be modified or resettled. Delays in determination of rights and CWH lead to bitter relationship between the local people and the SFDs.
    - iii. Advantage should be taken of S.5 of the FRA-2006 which empowers the forest right-holders and *Gram Sabha* to protect wildlife and biodiversity.
    - iv. The SFDs should take advantage of such stipulations of the WPA-1972 as facilitate accommodation of the genuine needs of the local people within PAs. Such enabling sections include: S.33(d); S.26A (1) (proviso) read with S.35(1) (proviso); S.26A (2) read with S.35(1) (proviso); S.18A (2); and S.29 (proviso) read with S.35(6) (proviso).
    - v. Constant conflict with the wild animals along with inadequacy of mitigation measures and compensatory mechanism further accentuates the alienation of local people from wildlife conservation. It is necessary to put in place effective measures for mitigation of HWC as well as judicious and timely payment of ex-gratia relief to the affected people. It is also advisable to involve the affected people in planning and implementing mitigation strategies, particularly in setting up Local Wildlife Squads / Primary Response Teams (PRTs) and construction / maintenance of barriers and fences. There is a need for recognising and encouraging indigenous knowledge for dealing with HWC. There is also a need for promoting such lifestyles and practices as enhance people's tolerance for and ensure peaceful co-existence with wild animals.
  - vi. People, in general, are sceptical of the PAs for fear of displacement from their homes and crop-lands. A number of villages have been shifted out of PAs, particularly TRs, since the 1970s either for fulfilling the legal requirements of a National Park or for reducing anthropogenic pressure on the core area of TRs. Relocation of villages from TRs and PAs may also be required to protect the people from HWC and facilitate their access to developmental activities. But forcible relocations or poorly executed resettlement projects have only resulted in the ill-will of the affected people towards wildlife conservation. There is a need to review the whole gamut of relocation of villages to make it voluntary and people friendly.
  3. Revive, extend and sustain people's stake in wildlife conservation with due regard to relevant laws and without compromising with the scientific basis for conservation.
    - i. People must have a stake in wildlife conservation as a motivation for supporting and participating in government-run conservation programmes. The most important stake of the local people is the benefit directly accruing to them in the form of products of daily needs from PAs, forests and other conservation areas (e.g. wetlands). JFMCs, Village Forests and *Vana Panchayats* provide an opportunity for sharing usufructs from forests and PAs with the local people.
    - ii. It is also necessary to help people develop intellectual or sentimental stakes in wildlife conservation through awareness and outreach programmes.





- iii. Eco-development has been used during the earlier NWAPs as an effective tool for building local people's stake in PAs and it should be continued during the current NWAP with necessary improvements. The WII has prepared a manual for preparation of Eco-development Projects (EDPs). Many lessons have also been learnt in the past while executing EDPs in various States, in particular the projects sponsored by the World Bank and other international funding agencies, and these lessons should be put to use while planning and executing new projects. For example:
  - EDP should not be confined to TRs, NPs and WLS but also extended to other important Conservation Areas, such as Conservation and Community Reserves, Biodiversity Heritage Sites, Elephant Reserves, important wetlands, recognized wildlife corridors, etc.
  - EDP should be implemented in collaboration with the people's institutions like JFMCs, FDAs, Village Forests, *Vana Panchayats*, *Gram Sabhas* and Local Bodies, based on a written agreement spelling out the role, duties and obligations of the SFD and the selected institution.
  - EDP should be based on micro-plans prepared jointly by the SFD and the selected institution through Participatory Rural Appraisal (PRA) techniques. Necessary technical support for micro-planning can be obtained from suitable NGOs and Scientific Institutes.
  - The micro-plans should be based on Conservation Area Mutual Impact Assessment (CAMIA), i.e. assessment of the positive and negative impacts of the Conservation Area on the people and vice versa. The objective of the EDP should be to maximize the positive impacts and minimize the negative impacts.
  - The activities selected through micro-plans should be subjected to Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) with the help of suitable NGOs and Scientific Institutes. It must be ensured that the benefits of the EDP are not usurped by the dominant sections of the society. The specific interests of the women should be accommodated in the EDP. Attention should also be paid to rehabilitation of communities having a history of indulging in forest and wildlife crimes.
  - Priority should be given to creation of community assets which can generate income and livelihood opportunities on a sustained basis. Self-Help Groups (SHGs) should be given priority over individuals.
- The beneficiaries should also be encouraged to contribute a part of the expenditure in cash, kind or labour to inculcate in them a sense of belonging to the assets created. In particular, the selected institution should be encouraged to set up a development fund out of the income derived by its members from the Conservation Area or from the assets created through the EDP so as to ensure maintenance and growth of such assets.
- There should be a mechanism for joint monitoring and evaluation of the EDP by the SFD and the selected institution as well as for resolution of conflict, if any.
- iv. Eco-tourism provides yet another opportunity for the people to have a stake in wildlife conservation. The National Tourism Policy-2002 stipulates that eco-tourism should help in eliminating poverty, in ending unemployment, in creating new skills, in enhancing the status of woman, in preserving cultural heritage, in encouraging tribal and local craft, and in improving overall environment and facilitating growth of a more just and fair social order. However, in practice, most of the benefits of eco-tourism are usurped by the private tourism operators and resort-owners, and the role of the local people is confined to merely serving as guides, cooks or porters. There is a great scope for increasing the participation of JFMCs, FDAs, Village Forests, *Vana Panchayats* and Local Bodies in management of eco-tourism in PAs and other Conservation Areas and for ploughing back a part of the income generated from eco-tourism into EDP in the region.
- v. The employment opportunities provided by the SFDs also serve as an incentive for the local people to participate in wildlife conservation. A great amount of traditional knowledge and skills useful for forest and wildlife management exists among the tribal communities, which needs to be identified and harnessed by the SFDs.
4. Build capacity of the wildlife managers as well the local people to work together for wildlife conservation.
  - It is necessary to build capacity of the officers and staff of the SFDs and Autonomous Councils; functionaries and members of JFMCs, FDAs, Forest Villages, *Vana Panchayats*, *Gram Sabhas* and Local Bodies; HWLWs; forest right-holders and other stakeholders to work together for wildlife conservation through formal training courses and informal orientation/sensitisation programmes.





## PRIORITY PROJECTS

**1.1.** Initiate a review of the JFMCs, FDAs, Village Forests and *Vana Panchayats* in the States/ UTs in collaboration with the SFDs, suitable NGOs and Scientific Institutes. Further measures to improve the quality and coverage of the aforesaid institutions in forests and PAs should be taken on the basis of the proposed review which should, in particular, address the following issues:

- i. Extending the scope of JFMCs, FDAs, Village Forests and *Vana Panchayats* to wildlife conservation within and outside PAs—particularly in mitigation of HWC; implementation of EDP; management of eco-tourism activities; preparation of Working Plans/ Management Plans/Micro-plans/People's Biodiversity Registers (PBR), enumeration of wild animals; and protection against poaching of wild animals and smuggling of wildlife products.
- ii. Preferential treatment in terms of employment and usufruct sharing to those members of the JFMCs/FDAs/Village Forests/*Vana Panchayats* who live below the poverty line.
- iii. Promotion of women's participation in conservation of forests and wildlife.
- iv. Resolution of conflict between JFMCs /

FDAs/ Village Forests / *Vana Panchayats* and Panchayat Raj Institutions (PRIs) over usufruct sharing from forests in the context of the PESA-1996 and FRA-2006.

- v. Integration of JFMCs and BMCs in the forest areas in the context of the Biological Diversity Act, 2002 (BDA-2002).
- vi. Providing legal backing to JFMCs.
- vii. Enhancing the coverage of Village Forests/*Vana Panchayats* under the provision of S.28 of the IFA-1927 or other relevant Acts.

**Timing:** Review to start in 2017 and to be completed by 2019; follow up action to start in 2020 and to be completed by 2023.

**Responsibility:** MoEFCC, SFDs, State Panchayat Departments, National Biodiversity Authority (NBA), State Biodiversity Boards (SBBs), selected NGOs and Scientific Institutes.

**1.2.** Set up Management /Advisory Committees in all the PAs in a time-bound manner and make them functional. It is advisable to amend the WPA-1972 for facilitating the establishment of Advisory Committees for National Parks as well.

**Timing:** To start in 2017 and to be completed by 2018; WPA-1972 to be amended as soon as possible.

**Responsibility:** SFDs and MoEFCC.

**1.3.** Appoint adequate number of HWLWs in each district. In deserving cases, entrust the HWLWs with responsibility of supervising the Local Wildlife Squads / Primary Response Teams (PRTs); overseeing the working and maintenance of barriers, fences and other devices meant for mitigating HWC; helping in verification of claims for ex-gratia relief; assisting in preparation of micro-plans for the JFMCs; and monitoring the implementation of EDP.

**Timing:** To start in 2017 and to be completed by 2018.

**Responsibility:** SFDs.

**1.4.** A project for formation of Environmental Cells in the Autonomous Councils has been recommended in Chapter XII (Conservation Awareness and Outreach). A project for providing protection to important wildlife habitats, corridors and sacred groves situated outside the administrative control of the SFDs using appropriate social, economic and legal means has been recommended in Chapter I (Strengthening and Improving the Protected Area Network).

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- 1.5.** Initiate steps for equipping the forest officers and staff working under the Autonomous Councils with powers, responsibilities and facilities for managing wildlife on par with their counterparts in the SFDs. The owners / managers of wildlife habitats under the control of communities, private entities and government agencies should be appointed as HWLWs and delegated powers under S.50 (prevention and detection of offences) and S.55 (prosecution of offenders) of the WPA-1972. They should prepare and implement Management Plans and Working Plans for the areas under their charge.

**Timing:** To start in 2017 and to be completed by 2020; preparation and implementation of Management Plans / Working Plans to continue through the plan period.

**Responsibility:** SFDs, Autonomous Councils, SBBs, suitable NGOs and Scientific Institutes.

- 1.6.** A project for formation of Environmental Cells in the Local Bodies has been recommended in Chapter XII (Conservation Awareness and Outreach). A project for involving the Local Bodies in the management of HWC has been recommended in Chapter IX (Mitigation of Human-Wildlife Conflict).

- 1.7.** Undertake a project for compilation of case studies of people's participation in wildlife conservation from across the country. The experience gained through such case studies should be distilled into key learning points to help in making effective strategies for future.

**Timing:** To start in 2017 and to be completed by 2019.

**Responsibility:** MoEFCC, SFDs, WII, IGNFA, CASFOS and selected NGOs.

- 2.1.** Projects for rationalisation of the PA-boundaries and liberal treatment of the people's rights have been recommended in Chapter I (Strengthening and Improving the Protected Area Network).

- 2.2.** A project for early finalisation of forest rights and CWH within PAs under the FRA-2006 has been recommended in Chapter I (Strengthening and Improving the Protected Area Network). Attempts should also be made to complete the process of determination of rights in forest areas outside PAs.

- 2.3.** Initiate negotiation with the forest right-holders and *Gram Sabhas* and enter into Memorandum of Understanding (MoU) with them to facilitate their participation in management and protection of forests and wildlife and to ensure that the natural resources are utilised in a sustainable and equitable manner with minimum impact on wildlife.

**Timing:** To start in 2017 and to be completed by 2022.

**Responsibility:** SFDs, State Tribal Affairs Departments, *Gram Sabhas* and suitable NGOs.

- 2.4.** A project for accommodating the genuine needs of the local people within PAs in accordance with the WPA-1972 has been recommended in Chapter I (Strengthening and Improving the Protected Area Network). Projects for alleviating the grievances of the local people regarding HWC have been

recommended in Chapter IX (Mitigation of Human-Wildlife Conflict). A project for reviewing and streamlining the process of relocation of villages from TRs and PAs has been recommended in Chapter I (Strengthening and Improving the Protected Area Network).

- 3.1.** A project for strengthening JFMCs, Village Forests and *Vana Panchayats* has been recommended in Para 1.1. Similarly, a project for accommodating genuine needs of the local people within PAs in accordance with the WPA-1972 has been recommended in Chapter I (Strengthening and Improving the Protected Area Network). Projects for developing and nurturing intellectual and sentimental stakes of the people in wildlife conservation have been recommended in Chapter XII (Conservation Awareness and Outreach).

- 3.2.** Bring all the PAs and other important Conservation Areas in the country under the ambit of the EDP. The MoEFCC should increase financial support for EDP under various Centrally Sponsored Schemes (CSS). The SFDs should network with District Administration, Local Bodies, development agencies, corporate bodies and NGOs to ensure funds for the implementation of micro-plans. The SFDs should identify all such schemes launched by the Central and State Governments and rural development agencies as, with suitable adjustments, can serve the objectives of eco-development of the selected areas or the selected SHGs.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC, SFDs, District Administration, Local Bodies, development agencies, corporate bodies, suitable NGOs and Scientific Institutes.

- 3.3. Projects for promoting local people's stake in wildlife conservation through eco-tourism have been recommended in Chapter X (Management of Tourism in Wildlife Areas).
- 3.4. Promote employment opportunities for the local communities in forestry works. The previous NWAP had recommended amendment of recruitment rules in the States / UTs with a view to give priority to the local communities in appointment of forest guards and other frontline staff. It also recommended giving preference in employment to the local people, particularly the poor and the landless, in seasonal works such as fire protection, road repair, improvement of habitat, eco-tourism, etc. All these programmes should be continued during the current NWAP as well.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** SFDs.

- 4.1. A project for the capacity building of the officers and staff of the SFDs, Autonomous Councils and other stakeholders has been recommended in Chapter XIII (Development of Human Resources).

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# CONSERVATION AWARENESS AND OUTREACH







## OVERVIEW AND OBJECTIVES

1. Soon after Independence, the Government of India (GOI) realized the importance of public awareness as a tool for conserving forests and wildlife. The GOI initiated *Vana Mahotsava*, an annual tree-planting festival, in 1950 as a step towards making the people forest-conscious. Another step for creating public consciousness towards wildlife was taken in 1955 in the form of the Wildlife Day upgraded to the Wildlife Week since October 1957. Conservation education in India got a boost in 1980 when the first International Conference on Environmental Education (EE) was organized in New Delhi.
2. The first National Wildlife Action Plan (NWAP) launched in 1983-84 included the subject under the title 'Wildlife Education and Interpretation'. The NWAP (2002-16) continued with the theme under the title 'Conservation Education and Protected Area Interpretation'. A major boost to EE came from the Hon'ble Supreme Court which, in its judgment delivered on 18<sup>th</sup> December 2003 in Writ Petition No 860 of 1991, directed all the States and educational agencies in the country to introduce environment as a compulsory subject in all classes in schools up to the higher secondary level from the academic year 2004-05. As a result, EE now forms a part of the school-curricula in all the States and UTs.
3. Performance review of the NWAP (2002-16) has produced many useful lessons which should be kept in mind while deciding actions and priority projects for the current NWAP. For example, shortage of qualified teachers and absence of the component of outdoor activities /camping programmes in the school-curriculum have been identified as major gaps in the EE programme in schools. Weaknesses were also noticed in the interpretation programmes in the PAs. It has also been the experience that target group-specific and issue-specific awareness programmes were more effective than run-of-the mill kind of programmes. Need for expanding the scope of some of the projects was also felt. Problems regarding lack of co-ordination among implementing agencies and resource-crunch have also been noticed during the previous NWAPs.
4. India, at present, is in the midst of great socio-economic changes which are bound to have significant impacts on the wildlife conservation scenario in the country. One way to ensure that such impacts don't turn negative is that of nature-literacy. It is, therefore, imperative that the strategy of conservation awareness and outreach continues to be an integral part of the NWAP (2017-31).
5. The former Department of Environment (now a part of the MoEFCC) had launched its flagship scheme, viz. the 'Environmental Education, Awareness and Training' in 1983-84 with the following basic objectives:
  - To promote environmental awareness among all sections of the society;
  - To spread environment education, especially in the non-formal system among different sections of the society;
  - To facilitate development of education/training materials and aids in the formal education sector;
  - To promote environment education through existing educational/scientific/ research institutions;





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- To ensure training and manpower development for environment education, awareness and training;
- To encourage non-governmental organizations, mass media and other concerned organizations for promoting awareness about environmental issues among the people at all levels;
- To use different media including films, audio, visual and print, theatre, drama, advertisements, hoarding, posters, seminars, workshops, competitions, meetings etc. for spreading messages concerning the environment and awareness; and
- To mobilize people's participation for preservation and conservation of environment.

The aforesaid objectives are still relevant and form the basis of the current NWAP.

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## ACTION REQUIRED

Keeping in view the experience gained through the previous NWAPs and challenges of the emerging scenario of wildlife management in the country, the following actions have been identified under the NWAP (2017-31):

1. Develop and promote infrastructure and capacity for Conservation Education, Nature Interpretation and Outreach (CENIO) in the country.
2. Continue, improve and expand formal environmental education programme in schools.
3. Improve and expand facilities for informal environmental education in the country.
4. Continue, improve and expand use of media and technology for carrying out CENIO in the country.

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## PRIORITY PROJECTS

- 1.1.** Set up an Advisory Group on CENIO at the national level. The Advisory Group should consist of representatives of relevant Ministries, SFDs, Corporate Sector, subject matter experts, civil society groups, academics and the news media. The Advisory Group will advise the MoEFCC on matters relating to CENIO—particularly in respect of the contents and quality of the educational and publicity material and training programmes; monitor the implementation of the priority projects; provide co-ordination among different departments and agencies entrusted with the implementation of these projects, and ensure synergy with the nature education component of the National Biodiversity Action Plan (NBAP) and other such plans.

**Timing:** The Advisory Group to be set up by 2018.

**Responsibility:** MoEFCC.

- 1.2.** Set up similar Advisory Groups in the States and UTs.

**Timing:** The concerned Advisory Groups to be set up by 2019.

**Responsibility:** SFDs.

- 1.3.** Initiate dialogue with all Armed Forces and Para-Military Forces in the country urging them to set up Environment Cells. The

MoEFCC should also initiate dialogues with all Ministries, Departments, Agencies and corporate bodies approaching it for environmental and forest clearance to set up Environment Cells and include conservation education in their Action Plans.

**Timing:** To start in 2017 and to be completed by 2019.

**Responsibility:** MoEFCC, Armed Forces, Paramilitary Forces, concerned Ministries, Departments, Agencies and corporate bodies.

- 1.4.** Initiate dialogue with the State Police; relevant State Government Departments (e.g. Agriculture, Animal Husbandry, Education, Tourism, Tribal Affairs, PWD, etc.); Autonomous Councils, Local Bodies (Panchayats, Municipal Corporations, Municipal Committees and Cantonment Boards) and State Universities urging them to set up Environment Cells and to include conservation education in their Action Plans.

**Timing:** To start in 2017 and to be completed by 2019.

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**Responsibility:** SFDs, Police, concerned Departments, Autonomous Councils, Local Bodies and State Universities.

- 1.5. Organise orientation programmes for the officers managing the aforesaid Environment Cells with support of the WII and the Centres of Excellence (*viz.* CEE and CPREEC).

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII, CEE and CPREEC.

- 1.6. Set up media cells in all the SFDs. The MoEFCC has a Media Cell. Some SFDs also have Publicity Cells. The remaining SFDs should also set up Media Cells. These Media Cells should liaise with the news media; keep watch over the media reports; do follow-ups on complaints and criticism; undertake documentation; and respond promptly to negative and inaccurate reports. The officials manning the Media Cells should be properly trained with the help of CMS or other suitable media experts to equip them with necessary skills to discharge their duties efficiently.

**Timing:** To start in 2017 and to be completed by 2018.

**Responsibility:** SFDs, CMS and suitable media experts.

- 1.7. Set up Education & Outreach Cell in all zoos and Education Officer in all large and medium zoos in the country in accordance with the Recognition of Zoo Rules, 2009. The CZA should provide necessary guidance and support to the zoos for this purpose.

**Timing:** To start in 2017 and to be completed by 2019.

**Responsibility:** CZA and zoos.

- 1.8. Projects for building capacity of forest officers of various ranks—particularly those working in PAs and Autonomous Councils; education officers of zoos; and candidates interested in pursuing a career as Nature guides in a PA or a zoo with regard to CENIO techniques have been recommended in Chapter XIII (Development of Human Resources). The SFDs and zoos should prefer only such persons for deployment as Nature Guides in TRs, PAs and zoos as have passed the prescribed certificate course. Similarly, the SFDs should prefer only such staff for posting in Nature Interpretation Centres (NICs) in TRs and PAs as have attended a training programme in CENIO.

- 1.9. Prepare a Master Plan for development of existing Nature Interpretation Centres (NICs) and creation of new NICs in PAs.

**Timing:** To start in 2018 and to be completed by 2020.

**Responsibility:** WII, CEE and CPREEC.

- 1.10. Initiate steps, based on the above Master Plan, for setting up NICs in all TRs and PAs in the country. The funds for this purpose may be provided under appropriate Centrally Sponsored Schemes (CSS) of the MoEFCC or from the State CAMPA. In case a particular SFD is unable to provide regular and trained staff for managing the NICs, it should work out partnerships with suitable Scientific Institutes or NGOs.

**Timing:** To start in 2019 and to be completed by 2023.

**Responsibility:** MoEFCC, SFDs, Scientific Institutes and suitable NGOs.

- 1.11. Prepare a Master Plan for development of existing Natural History Museums (NHMs) and creation of new NHMs in all districts of the country.

**Timing:** To start in 2018 and to be completed by 2020.

**Responsibility:** NNHM.

- 1.12. Initiate a scheme, based on the above Master Plan, for setting up NHMs in all districts of the country. The NHMs can either be set up as branches of the National Natural History Museum (NNHM), or as extension of a zoo, a Vana-Vigyan Kendra or a Scientific Institute. Suitable NGOs and corporate bodies should also be permitted to set up or sponsor a NHM. The CZA should provide necessary guidance and support to zoos for this purpose.

**Timing:** To start on completion of the Master Plan (2020) and to be completed by 2025.

**Responsibility:** MoEFCC, SFDs, NNHM, CZA, selected zoos, Vana-Vigyan Kendras (ICFRE), Scientific Institutes, corporate bodies and suitable NGOs.

- 1.13. Prepare Action Plans for CENIO in SFDs, Autonomous Councils, PAs, zoos, NHMs, ENVIS Centres and Eco-clubs in conformity with the current NWAP. These Action Plans should identify the specific target groups and specific issues and tailor the awareness strategy accordingly. Help should be taken

from suitable NGOs for developing and implementing such strategies. The Joint Forest Management Committees (JFMCs) and the Biodiversity Management Committees (BMCs) should also be involved in implementing these Action Plans. Publicity materials should be prepared for a specific target group or a specific issue in an appropriate language in consultation with the communication experts. The CZA should provide necessary guidance and support to zoos for this purpose.

An illustrative but not exhaustive list of 'Specific Target Groups' is given below:

1. Tribal groups indulging in traditional hunting or poaching.
2. Snake charmers and professional animal trappers
3. Farmers affected by human-wildlife conflict
4. Judiciary
5. Media persons
6. Political leaders
7. Elephant owners (Temples and individuals)
8. Livestock-owners and graziers
9. Tea estates / coffee estates on the fringe of forests
10. Mining industries in and around forests
11. Fishermen
12. Train drivers
13. Tourists
14. Tribal groups engaged in shifting cultivation

An illustrative but not exhaustive list of the 'Specific Issues' is given below:

1. Akhand Shikar (Tribal hunting) as practiced in Odisha, Jharkhand and South West Bengal.
2. Illegal wildlife trade
3. Cruelty to animals
4. Superstitions about medicinal properties of wildlife products
5. Forest fires
6. Grazing in PAs
7. Better agricultural practices to mitigate crop-depredation by wild animals
8. Better animal-husbandry practices to mitigate cattle lifting by carnivores
9. Protection of dolphins, turtles and endangered species of fish during fishing
10. Wild animal mortalities on railway tracks
11. Responsible tourism in PAs
12. Ill-effects of polythene
13. Ill-effects of herbicides

**Timing:** Preparation of Action Plans to start in 2018 and to be completed by 2020 (within one year of establishment for the new NHMs); follow-up action to continue through the plan period.

**Responsibility:** SFDs, Autonomous Councils, PAs, CZA, zoos, NHMs, ENVIS Centres and Eco-clubs.

- 1.14. Initiate a project for compilation of case studies of conservation education from across the country. The experience gained through such case studies can be distilled into key learning points which will help in making effective strategies for future.

**Timing:** To start in 2018 and to be completed by 2020.

**Responsibility:** MoEFCC, SFDs, WII, CEE, CPREEC and selected NGOs.

- 2.1. Repeat the survey undertaken by Bhartiya Vidyapeeth Institute of Environmental Education and Research (BVIEER) for the MoEFCC in the late 1990s to assess the contents of EE in the school text books. This is important to assess the present status of EE in schools including quality of teachers and the text books. Further measures to improve the quality of formal EE in schools should be taken on the basis of this survey.

**Timing:** To start in 2018 and to be completed by 2020; follow up action to continue through the plan period.

**Responsibility:** MoEFCC, MoHRD and BVIEER.

- 2.2. Intensify the teachers training programmes of the CEE and the CPREEC and include as many schools as possible. The MoEFCC and SFDs should also seek collaboration with suitable NGOs to boost up training programme in EE for school teachers—particularly in the rural areas.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** CEE, CPREEC and the selected NGOs.

- 2.3. Encourage the corporate bodies to sponsor EE programme in schools under Corporate Social Responsibility (CSR)—particularly in rural areas, by improving infrastructure and providing study material. The MoEFCC and SFDs should also provide help to schools





situated on the forest-fringe under eco-development programmes (EDPs).

**Timing:** To start in 2017 and to be completed by 2022.

**Responsibility:** MoEFCC, SFDs and selected corporate bodies.

- 3.1. Intensify the ongoing programmes of informal EE. The MoEFCC, NNHM, CEE and CPREEC should intensify their existing programmes of informal EE like National Green Corps, National Nature Camping Programme, etc. for children and the youth—particularly those from the rural and tribal areas. The PAs should also chalk out excursions and camping programmes through the NICs for the children and youth from the forest-fringe villages. The zoos and NHMs should chalk out special programmes for the children and youth from the urban areas. Construction of NHMs in all districts of the country as proposed in Para 1.12 is likely to boost up informal EE—particularly in the urban areas. The CZA should provide necessary guidance and support to zoos for this purpose.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC, SFDs, CZA, NNHM, CEE, CPREEC, zoos and NHMs.

- 3.2. Continue with the ongoing extension programmes of the MoEFCC, such as Green Haat, Science Express-Biodiversity Special (SEBS), etc. The SFDs should undertake similar programmes by setting up 'Green Stalls' in local fairs and mobile exhibitions on nature conservation on motor vehicles.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC and SFDs.

- 3.3. Continue with the CMS-VATAVARAN festivals on environment and wildlife which have been quite effective in increasing nature-literacy—particularly among the urban population. The SFDs should organise similar festivals in districts in collaboration with the MoEFCC and the CMS.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC, SFDs and CMS.

- 3.4. Promote EE through the adult-literacy programmes in collaboration with the MoHRD and State Education Departments. Help may be taken from the CEE and CPREEC for developing suitable study material. The NHMs, NICs, zoos and the NGOs engaged in adult-literacy programmes should be involved in promoting environmental awareness among the neo-literates. The CZA should provide necessary guidance and support to the zoos for this purpose.

**Timing:** Preparation of study material to start in 2018 and to be completed by 2020; implementation to start in 2020 and continue through the plan period.

**Responsibility:** MoEFCC, MoHRD, CZA, SFDs, State Education Departments, CEE, CPREEC, NHMs, zoos and selected NGOs.

- 3.5. Set up a network of the student ambassadors for enlisting the support of communities. Four Natural World Heritage Sites (NWHS) in India, viz. Keoladeo NP, Nanda Devi NP, Kaziranga

NP and Manas NP have formed a network of NWHS ambassadors, comprising mainly students from the nearby schools, to reach out to the neighbouring communities for enlisting their support for these PAs. Similar programme may be replicated in other PAs in the country with the support of the corporate bodies as a part of CSR.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs and selected corporate bodies.

- 4.1. Generate a body of copyright free and reliable conservation information and make it available on the MoEFCC's website as recommended in the previous NWAP. The MoEFCC may seek collaboration with the CEE and the CPREEC for this purpose.

**Timing:** Ongoing and to be completed by 2019.

**Responsibility:** MoEFCC, CEE and CPREEC.

- 4.2. Undertake a similar exercise in the state languages.

**Timing:** To start in 2018 and to be completed by 2019.

**Responsibility:** SFDs.

- 4.3. Promote the use of electronic media in nature awareness programmes. The MoEFCC and the SFDs should continue with the use of electronic media for CENIO and also explore the use of social media.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** MoEFCC and SFDs.



- 4.4. Set up an exclusive channel 'DD-Prakriti' in collaboration with the Ministry of Information and Broadcasting (MoIB) and the Doordarshan for promoting awareness about nature conservation in the country.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoIB, Doordarshan and MoEFCC.

Dimpi Patel



INDIA'S  
NATIONAL  
WILDLIFE  
ACTION  
PLAN



CONSERVATION  
AWARENESS  
AND OUTREACH

13

# DEVELOPMENT OF HUMAN RESOURCES









## OVERVIEW AND OBJECTIVES

1. Effective management of wildlife and biodiversity in and outside the Protected Areas (PAs) is a key challenge for a highly populated country such as India. An expanding array of external threats continually tests the abilities of wildlife managers to maintain the integrity of the PAs and ecosystems for which they are responsible. Such threats include demand for bio-resources (both for subsistence and commercial use) as well as global-scale environmental changes (*e.g.*, climate change, desertification, invasive species, etc.) and localized catastrophic events (*e.g.*, earthquakes, tsunamis, etc.). Wildlife managers are also required to deal with the challenges posed by regional economic developments and human livelihood concerns. The modern wildlife manager must rise to the challenge of a truly integrated approach to management that applies principled decision-making based on the use of sound science from a wide range of ecological and social science disciplines. This in turn calls for continuous capacity building of the wildlife managers to enhance their leadership skills and technical abilities for responding effectively to different threats and challenges.
2. Although wildlife conservation and PA management in India have been strengthened in the recent past, yet these components are still neglected in relation to other components of forest management such as commercial plantations and harvesting of timber and Non-Timber Forest Products (NTFPs). Further improvement in the wildlife sector would greatly depend upon the professional quality of personnel and a meaningful policy of Human Resource Development (HRD). Wildlife postings should preferably be given to forest officers trained in wildlife management and they should be provided with adequate career advancement opportunities.
3. Efforts are currently underway in securing and strengthening community participation in the management of PAs including the wetland PAs (WPAs) and the coastal & marine PAs (CMPAs). In this context, capacity building programmes that would cater to the specific needs of the species, ecosystems and stakeholders are required to be institutionalized at WII, IGNFA, CASFOS and State-level Forestry Training Centres (SFTCs). At appropriate levels, skills for crime detection and policing; species and habitat recovery; landscape management; GIS and related technology; communication and community development must be imparted.
4. Indian universities should initiate undergraduate and graduate courses in wildlife biology and EIA techniques. The WII should expand its mandate by training the trainers who will further build capacity in wildlife management and science in India. The SFTCs should also initiate wildlife management courses. The paucity of officers and funds with the SFDs is a major constraint for under-utilisation of the WII's training programmes and inadequate training facilities for frontline staff in the SFTCs.







## ACTION REQUIRED

1. Review and revise the existing mechanisms of recruitment, training and career development of wildlife managers working in PAs or outside so as to strengthen and sustain a professional wildlife cadre.
2. Give thrust to current and fresh capacity building efforts, with special focus on WII and emphasis upon scientific and human aspects of conservation. Build capacity of existing SFTCs for imparting basic wildlife training to the frontline staff working in PAs or elsewhere.
3. Undertake training and orientation programmes for personnel of other Departments and Services whose work has a bearing upon forest and wildlife conservation.
4. Arrange exclusive capacity building programmes for the management of Wetland PAs (WPAs) and coastal/marine PAs (CMPAs) for officers and field staff of SFDs, fisheries and allied Departments and Agencies as proposed in Chapter-IV (Conservation of Inland Aquatic Ecosystems) and Chapter V (Conservation of Coastal and Marine Ecosystems).
5. Build capacity of the wildlife managers as well as the local people to work together for wildlife conservation as proposed in Chapter XI (People's Participation in Wildlife Conservation).
6. Build capacity of forest officers of various ranks—particularly those working in TRs, PAs and Autonomous Councils; faculty members of SFTCs; education officers of zoos; and potential nature guides for zoos, PAs and NICs—in Conservation Education, Nature Interpretation and Outreach (CENIO) techniques as proposed in Chapter XII (Conservation Awareness and Outreach).
7. Promote welfare of the frontline staff and their families.



## PRIORITY PROJECTS

- 1.1. Review the recruitment process for IFS and SFS officers through appropriate screening to identify candidates interested in nature and wildlife, and improve the existing personnel management policies for the country.  
**Timing:** To start in 2017 and to be completed by 2020.  
**Responsibility:** MoEFCC and SFDs.
- 1.2. Set up and maintain database for wildlife-trained officers by MoEFCC at the national level and SFDs at the State level. All senior posts dealing with wildlife management must be held by wildlife-trained officers. MoEFCC should monitor and constantly pursue with State Governments, linking, if necessary, the flow of Central assistance in the entire forestry sector with such compliance.  
**Timing:** To start in 2017 and continue through the plan period.  
**Responsibility:** MoEFCC and SFDs.
- 1.3. Put in place appropriate mechanism for reporting the performance of the officers and staff of territorial divisions through CWLW and giving proper incentives for their contribution to effective management of wildlife.  
**Timing:** Required mechanism to be put in place by 2018 and to continue through the plan period.  
**Responsibility:** SFDs.
- 2.1. Upgrade syllabi of various training and academic programmes offered by WII (Advanced Post Graduate Diploma, Certificate and Master of Science) to cover full range of wildlife management. An illustrative but not exhaustive list of topics which require special attention is given below:
  - Conservation of wildlife in relation to climate change and other natural disasters.



- Landscape based conservation planning and management.
- Conservation and management of threatened species and small fragmented populations.
- Management of wildlife corridors.
- Habitat amelioration and management of invasive alien species (IAS).
- Integrated management of coastal and marine PAs and biodiversity.
- Application of modern IT techniques including use of GIS in combination with remote sensing.
- People's participation in preparation and implementation of Management Plans and Eco-development Plans for TRs and PAs; management of eco-tourism and benefit-sharing issues.
- Pre-validated techniques derived from ethnic knowledge for use in wildlife management.
- Capacity building for the purpose of harnessing ethnic knowledge and developing IPRs to benefit local communities.
- Scientific policing, wildlife crime investigation and forensic skills.



- Integration of National and International Policies and Laws.
- Best practices of HWC mitigation and damage control.

**Timing:** To start in 2017 and to be completed by 2020.

**Responsibility:** MoEFCC and WII.

- 2.2.** Initiate schemes for providing financial assistance for capacity building programmes for the wildlife managers of various ranks at the WII and SFTCs.

- Place adequate grant with WII to fully meet the cost of training for the Diploma course (IFS and SFS officers) and the Certificate course (Forest Rangers) so that lack of funds does not stand in the way of the SFDs from deputing required number of trainees.
- Increase the number of Hari Singh Fellowships (IFS Probationers) so that more young officers could attend the Advanced Diploma Course at WII.
- Provide 100% incremental Central assistance to States and UTs for



strengthening infrastructure and training faculty at SFTCs for imparting training to frontline staff and other stakeholders in wildlife management and allied topics. WII should assist the SFTCs in developing syllabi, preparing study material and training of trainers.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, SFDs and WII.

- 2.3.** Upgrade the curricula of training institutes to meet professional requirements of forest officers of various levels with regard to landscape based conservation planning and management.

**Timeline:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, ICFRE, WII, SACON, IGNFA, CASFOS and SFTCs.

- 2.4.** Build capacity of the officers and staff of selected zoos, captive breeding centres, TRs and PAs in enclosure designing; animal husbandry; breeding techniques and raising of young ones; and reintroduction and monitoring techniques.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, CZA, SFDs, WII, Scientific Institutes, Universities and suitable NGOs.

- 2.5.** Build capacity of officers and frontline staff of various TRs and PAs in collection of basic data on wildlife populations, use of modern tools, sample collection, identification of flora and fauna.



WII Photo Library

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, SFDs, ICFRE, WII, SACON, IGNFA, CASFOS and SFTCs.

- 2.6.** Arrange training for the officers and frontline staff of various TRs and PAs, para-taxonomists and volunteers in recording basic data on species (identity, presence/absence), phenology of plants, habitats, IAS, occurrence and intensity of fire and climatic variables.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, SFDs, ICFRE, WII, SACON, IGNFA, CASFOS, SFTCs, Scientific Institutes and suitable NGOs.

- 3.1.** Conduct regular sensitisation workshops for District Collectors; officers of PWD, Irrigation, Panchayat and Rural Development, etc.; Police Officers; legislators; members of judiciary; and NGOs on biodiversity conservation; landscape level integration of development and PA management; control of poaching and illegal trade in flora and fauna; etc. The objective of these workshops, which should be based on case studies, should be to convince the participants that conservation-based development is feasible and that it would also benefit local people.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII, IGNFA, IIFM and CASFOS.

- 3.2. A project for capacity building of the wildlife veterinarians has been recommended in Chapter-VIII (Wildlife Health).
- 3.3. A project for capacity building of office bearers / members of JFMC, FDAs, Village Forests, Vana Panchayats and Local Bodies in management of eco-tourism facilities has been recommended in Chapter-X (Management of Tourism in Wildlife Areas).
- 4.1. Organise exclusive capacity building programmes for the integrated management of Coastal, Marine and other wetland PAs in India for the officers and frontline staff of the SFDs as well as other allied Departments and Agencies, such as Fisheries, Coast Guard, Tourism, etc. Suitable experts from the Government, Research Institutes, Universities and suitable NGOs may be engaged for developing the training curricula and study material for orientation courses, regular courses and refresher courses as well as for imparting training to the trainees. Scuba diving may be a part of all the training courses. Frontline staff may be trained in the designated SFTCs within the respective States/UTs. Training for the Range Officers and other senior officers may be arranged through the WII, IGNFA, CASFOS, SACON or other suitable institutions.
- Timing:** To start in 2017 and continue through the plan period.
- Responsibility:** MoEFCC, SFDs, WII, SACON, IGNFA, CASFOS, SFTCs, Scientific Institutes and suitable NGOs.
- 5.1. Build the capacity of the officers and staff of the SFDs and Autonomous Councils;

functionaries and members of JFMCs, FDAs, Forest Villages, *Vana Panchayats*, *Gram Sabhas* and Local Bodies; HWLWs; forest right-holders and other stakeholders to work together for wildlife conservation through formal training courses and informal orientation/sensitisation programmes.

- A. The WII, IGNFA, CASFOS and SFTCs should include / strengthen courses on community participation in forestry and wildlife management in their regular training curriculum for the freshly recruited officers and field staff of various ranks (including those under the Autonomous Councils) and also organize regular refresher courses for the serving officers and field staff. These training programmes / refresher courses should, in particular, be designed to develop skills in the use of PRA techniques for micro-planning; formulation of EDP including EIA & SIA; management of relocation and rehabilitation projects; effective communication; conflict resolution; inter-departmental co-ordination; networking and fund-raising; etc.
- B. The SFTCs should organize short-term training programmes for the HWLWs; non-official members of advisory/management committees of PAs; functionaries of JFMCs, FDAs, Forest Villages, *Vana Panchayats*, *Gram Sabhas* and Local Bodies; and managers / owners of wildlife habitats not under the administrative control of the SFDs. An illustrative but not exhaustive list of topics for the proposed training programmes is given below:
- Duties and responsibilities of HWLWs
  - Protection of wildlife against poaching,

illegal trade, electrocution, poisoning, cattle-borne diseases, etc. (including procedure for seizure, arrest and prosecution under the WPA-1972)

- Introduction to relevant provisions of laws (e.g. IFA-1927, WPA-1972, FCA-1980, BDA-2002, PESA-1996, FRA-2006)
  - Information about relevant government orders and schemes for the benefit of the local communities [e.g. usufruct-sharing for JFMC members, ex-gratia relief for victims of HWC, subsidies for SHGs, marketing support for NTFPs, insurance schemes for tribals/ farmers/livestock owners; rewards / honours instituted by the MoEFCC and SFDs; public grievance-redressal system of the SFDs including authorities appointed under the Right to Information Act, 2005; etc.]
  - Management of eco-development and eco-tourism projects
  - Basics of Micro-plans / Working Plans/ Management Plans / PBR
  - Management of HWC [including legal provisions, Standard Operational Procedures (SOPs), maintenance of barriers/fences, alternative cropping and community crop-guarding]
  - Responsible and sustainable exercise of Forest Rights
- C. The SFDs should, with the help of suitable NGOs and Scientific Institutes, organize combined orientation/sensitization programmes for the field-level forest staff and members of JFMCs, FDAs, Forest Villages,





*Vana Panchayats, Gram Sabhas* and Local Bodies as well as forest right- holders and other groups of stakeholders. Such programmes should be conducted in PAs and forest divisions as frequently as possible on suitable topics, including those mentioned in Para B above. The sensitization programme can also be carried out through study-tours to the model sites of community participation within the State and adjoining States.

**Timing:** Ongoing and to continue through the plan period.

**Responsibility:** SFDs, WII, IGNFA, CASFOS, SFTCs, Scientific Institutes and suitable NGOs.

- 6.1. Organize capsule courses on CENIO for senior forest officers—particularly PA managers, and education officers of zoos. The WII should also include CENIO in its diploma and certificate programme on wildlife management. The CZA should provide necessary guidance and support to the zoos for this purpose.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII, CZA and zoos.

- 6.2. Develop course contents and reading material for short term training programme on CENIO for subordinate forest officers of different ranks and a certificate course for the Nature Guides. Organise capacity building programmes for the faculty members of SFTCs to enable them to conduct the aforesaid training programme and certificate course.

**Timing:** To start in 2017 and to be completed by 2020.

**Responsibility:** SFDs, WII, CEE, CPREEC and SFTCs.

- 6.3. Organize at the SFTCs short term training programmes on CENIO for the subordinate forest staff—particularly the staff of TRs, PAs and Autonomous Councils, and certificate courses for the candidates interested in pursuing a career as a Nature Guide in a TR, PA or a zoo. The CZA should provide necessary guidance and support to the zoos for this purpose.

**Timing:** To start in 2018 and continue through the plan period.

**Responsibility:** SFDs, Autonomous Councils, CZA, WII, SFTCs, zoos, CEE and CPREEC.

- 7.1. Formulate and implement welfare schemes for the frontline staff and their families, particularly with regard to proper housing, education and health. Devise appropriate insurance schemes to deal with mortality / disability of frontline staff in the course of their duty. All wildlife postings must be treated like non-family stations (like in the army) and facilities like special allowances, quarters for family and hostels for children at nearby towns should be provided.

**Timing:** To start in 2020 and continue through the plan period.

**Responsibility:** MoEFCC and SFDs.







14



# **STRENGTHENING RESEARCH AND MONITORING**









## OVERVIEW AND OBJECTIVES

1. With the reduction and fragmentation of natural habitats resulting in increased stress on ecosystems and plant and animal populations, there is an urgent need for formulating conservation strategies and Management Plans for the target species and PAs backed by sound scientific research. Climate change and recurring extreme weather events have added new dimensions to the problems in the form of habitat alteration, emergence of diseases, rapid spread of Invasive Alien Species (IAS) and forest fires (Corlett 2012, IPCC 2014). This calls for in-depth research on all endangered, keystone, flagship, and umbrella species of wildlife and their habitats so as to develop long-term conservation strategies.
2. During the 1980s, most of the wildlife research in the country centred around natural history and ecology of a few endangered and charismatic species. The scope of wildlife research since then has broadened considerably to encompass all wildlife, their habitats, interaction with humans and the ecosystem processes at local as well as landscape levels, covering a wide range of themes including animal-habitat interactions to ecosystem functioning, evolutionary processes and molecular biology. The decade of the 1990s and 2000s also saw a steady increase in the number of institutions, both governmental and non-governmental, undertaking wildlife research in the country. During the previous NWAP, considerable ecological information has been generated on selected species such as Asian Elephant, Tiger, Leopard, Great Indian Bustard as well as communities of plants, mammals, birds, and herpetofauna, to name a few. On the other hand, very few studies have been carried out in the area of valuation of ecosystem services from the PAs, watershed functions and soil ecological processes and moisture regimes.
3. MoEFCC (2006) has prepared guidelines for conducting research on wildlife in PAs with a view to generate scientific knowledge, both for its own sake and in order to formulate conservation planning for the target species and ecosystems. A few well established PAs, such as Kaziranga, Corbett, Kanha and Periyar, have identified priority areas of research. However, in most of the PAs there is a lack of adequate funding and institutional mechanisms to execute research. Efforts at long-term ecological monitoring in the wildlife areas / PAs are rather few in the country.
4. In addition to advanced research on various species, basic information and knowledge is required on little-known species, ecosystems and priority landscapes for conservation planning and future monitoring. Some of the basic steps required in this direction include setting up weather monitoring stations in PAs; developing a web-enabled National Wildlife Information System (NWIS) giving regular updates on the PA coverage, status of the species and habitats; publishing high resolution maps in GIS domain on vegetation and land use using satellite imagery; mapping distributions of selected species of plants and animals of ecological and conservation importance; determining abundances or relative abundances of target species of plants and animals; documenting the effects of management interventions such as habitat







restoration, creating waterholes or removal of invasive species; determining the efficacy of enhanced protection efforts towards populations of target species and their habitats; assessing ecosystem services from PAs, patterns of flows of goods and services, and dependence of local communities on these services; developing strategies for reducing park-people conflicts and sustaining ecological services.

 Basudev Tripathy



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STRENGTHENING  
RESEARCH AND  
MONITORING



## ACTION REQUIRED

1. Constitute the National Wildlife Research Coordination Committee (NWRCC), visualized by the previous NWAP, with the revised mandate of reviewing research outputs, information gaps and prioritizing areas of further research. This committee may also suggest financial requirements for wildlife research in the country and review the existing guidelines (MoEF 2006) for conducting wildlife research through wider participation of scientists across various disciplines and scientific institutions in the country. There is a need to bring out regular updates on the conservation status of endangered species and their habitats.
2. Set up Wildlife Research Advisory Committees (WRACs) in all States and UTs and come up with the priority areas of research – both basic and applied. SFDs should set up baseline data on the land use, land cover and vegetation types and commission ecological studies focussing on distribution of key faunal species, status of wildlife habitats, vegetation types, human ecology and other topics directly relevant to management of PAs and wildlife in general.
3. Bring about reforms in the review process and improve transparency pertaining to Environmental Impact Assessments (EIAs) of developmental projects and land use changes in the country. Impact assessment approaches should be refined to capture the 'big picture' of impacts from multiple projects and on a regional level and larger contiguous landscapes including wetlands and wildlife habitats. Sector level impact assessments must replace EIAs of projects in key sectors such as energy (specially hydro and nuclear power), mining, transportation and coastal development where strategic planning would be more relevant to avoid impacts and discourage efforts of patchwork mitigation of impacts of individual projects.
4. Develop institutional mechanisms to monitor the populations of endangered species and their habitats in all biogeographic regions of the country.



## PRIORITY PROJECTS

- 1.1.** Constitute the National Wildlife Research Coordination Committee (NWRCC).

**Timing:** NWRCC to be set up by 2017.

**Responsibility:** MoEFCC.

- 1.2.** Publish a State-of-the-Art report on wildlife research in the country, giving key findings and conservation implications, information gaps and priority areas of research.

**Timing:** First report to be published by 2019; to be published every 5 years thereafter.

**Responsibility:** MoEFCC, NWRCC and Scientific Institutes.

- 1.3.** Finalize and publish guidelines for conducting research in wildlife areas in the country.

**Timing:** Guidelines to be published by 2018.

**Responsibility:** MoEFCC and NWRCC.

- 1.4.** Review and amend Wildlife (Protection) Act of 1972 (WPA-1972) appropriately to encourage and facilitate research and monitoring within the PAs. Amendments to the Act are needed whereby scientific research is recognized as important, desirable and an integral activity in PAs and other natural habitats.

**Timing:** The WPA-1972 to be amended as soon as possible.

**Responsibility:** MoEFCC and SFDs.

- 1.5.** Mobilize and allocate more financial resources for wildlife research and monitoring for priority areas of research.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC and SFDs.

- 2.1.** Set up Wildlife Research Advisory Committee (WRAC) in each State and UT so as to streamline and prioritize wildlife research.

**Timing:** WRACs to be set up by 2018.

**Responsibility:** SFDs.

- 2.2.** Strengthen State Forest Research Institutes (SFRIs), in the States and UTs, where these exist, in the area of wildlife research and monitoring with support from WII and other Scientific Institutes.

**Timing:** Start in 2017 and to continue through the plan period.

 Sharmila Jayaram







**Responsibility:** SFDs, SFRIs, WII and other Scientific Institutes.

- 2.3. Build up in each PA a database in GIS domain of basic ecological parameters relating to vegetation and land-use patterns, plant and animal populations, and environmental factors such as climate.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, Scientific Institutes and selected NGOs.

- 2.4. A project for building capacity of frontline staff in collection of basic data on wildlife populations, use of modern tools, sample collection and identification of flora and fauna has been recommended in Chapter-XIII (Development of Human Resources).

- 2.5. Projects on research and monitoring relating to wildlife diseases have been recommended in Chapter-VIII (Wildlife Health).

- 3.1. Set up an independent National Environment Appraisal and Monitoring Authority (NEAMA) to bring about reforms in the review process and improve transparency pertaining to Environmental Impact Assessments (EIAs) of developmental projects in the country. NEAMA should also monitor the compliance of necessary mitigation measures.

**Timing:** NEAMA to be set up by 2018.

**Responsibility:** MoEFCC.

- 3.2. Commission studies on the impacts of various industries, mines and other developmental projects on wildlife habitats (both land and aquatic), Eco-Sensitive Areas (ESAs) and





movement of endangered species and measures for mitigation of adverse impacts.

**Timing:** To start in 2018 and to be completed by 2021.

**Responsibility:** MoEFCC, SFDs, WII and Scientific Institutes.

- 4.1. Develop institutional mechanisms to carryout long term ecological monitoring and effects of conservation initiatives on the species and habitats.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII and other Scientific Institutes.

- 4.2. Strengthen the long term ecological monitoring activities initiated in a few TRs and PAs by allocating more financial and human resources to such programmes.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, NTCA, SFDs, WRACs, WII and other Scientific Institutes.

- 4.3. A project for capacity building of the frontline staff of PAs, para-taxonomists and volunteers in recording basic data on species, phenology of plants, habitats, IAS, intensity of fire and climatic variables has been recommended in Chapter-XIII (Development of Human Resources).

- 4.4. A project for monitoring of threatened species has been recommended in Chapter III (Conservation of Threatened Species).

- 4.5. A project for long term research and monitoring of threatened migratory marine species has been recommended in Chapter-V (Conservation of Coastal and Marine Eco-systems)

 K. Sivakumar



15.

**IMPROVING  
COMPLIANCES  
OF DOMESTIC  
LEGISLATIONS AND  
INTERNATIONAL  
CONVENTIONS**







## OVERVIEW AND OBJECTIVES

1. Legislations and international conventions provide an enabling environment for implementing and evolving policy and programmes either through government interventions and regulations or by providing scope of non-government interventions.
2. Wildlife conservation is closely linked to some basic components of the national economy viz. land, water, ecosystem services and climate regulation, biodiversity, livelihood and also food security. Therefore, conservation of forests and wildlife must be regarded as integral part of economic development and natural security of the nation and should be the thrust area of the legislations and global interactions of the country.
3. The government must flag the concerns of conservation and ensure pragmatic implementation of the relevant laws, particularly in view of a very large range of stakeholders in forest and wildlife conservation.
4. Increasing globalisation of the issues relating to sustainable development, conservation of biodiversity and sustainable use of bio-resources makes it obligatory that domestic legislations should be adapted for facilitating achievement of global objectives.





## ACTION REQUIRED

1. Undertake a review of the Wildlife (Protection) Act, 1972 (WPA-1972), and related laws with focus on conservation and protection of wildlife as well as regulations related to management and sustainable use. This should, inter alia, include review of schedules and the legal provisions which enable wildlife managers to be associated with regional planning outside the PAs for pursuing landscape approach and ensuring participation of the people.
2. Improve compliance of international conventions relating to wildlife and natural habitats. India is a party to several important international conventions, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Wetlands (Ramsar Convention), Convention on Migratory Species (CMS), Convention on Biological Diversity (CBD) etc. and has also entered into Memoranda of Understanding (MoUs) with a number of countries on several cross-border issues of conservation. It is important to ensure integration of these conventions and MoUs with existing wildlife and environmental Laws. There is also a need for putting in place subject-specific technical groups of advisors for assisting the MoEFCC, NBWL or other statutory agencies to deal with conservation issues of international significance. It is necessary to develop a mechanism for evolving science and knowledge-based national strategies and decisions on matters of global importance.
3. Initiate action for harmonization of wildlife laws with other related laws. Environmental laws are largely regulatory in nature while the forest and wildlife laws cover not only regulations, but also provide for enabling environment for management of forests and wildlife areas. There is a need for carrying out 'Biodiversity Impact Assessment' for all such projects in the vicinity of forests and PAs as they may have adverse impact on forest and wildlife ecosystems. There is also a need for streamlining the present model of declaration of Eco-Sensitive Zones (ESZ) around PAs under the Environmental Protection Act, 1986 (EPA-1986) to enable the wildlife managers to have a better say in identification and management of ESZ. Compliance with the provisions of the Forest Rights Act, 2006 (FRA-2006) is now a pre-requisite for notification of PAs and taking up projects for relocation of villages from PAs. It is, therefore, necessary to establish a database of all individual and community rights in forests as well PAs granted under the FRA-2006.







## PRIORITY PROJECTS

- 1.1.** Carry out the review of the WPA-1972 with focus upon, inter alia, restructuring of the schedules; regulatory provisions relating to capture and handling of problem animals based on sound scientific principles; regulation of trade of faunal and floral species based on precautionary and fair trade principles; and participation of communities in wildlife conservation based on equitable sharing of benefits of conservation between public at large and local communities.

**Timing:** The WPA-1972 to be amended as soon as possible.

**Responsibility:** MoEFCC.

- 1.2.** Provide for a legal mandate within the forest and wildlife laws to enable interactions of forest and wildlife managers with the neighbouring communities and local democratic institutions and ensure that the local development policies and plans take into account conservation concerns, ecosystem services and economic opportunities available from forests.

**Timing:** Concerned laws to be amended as soon as possible.

**Responsibility:** MoEFCC and SFDs.

- 1.3.** Make provisions in the WPA-1972 for identification of extended habitats and migratory routes of wild animals based on

scientific studies, and for regulating developmental activities in such landscapes to ensure compatibility with conservation values and consultations with the affected people.

**Timing:** The WPA-1972 to be amended as soon as possible.

**Responsibility:** MoEFCC.

- 1.4.** A project to amend the WPA-1972 suitably to promote sustainable use of wetland resources in protected wetlands has been recommended in Chapter IV (Conservation of Inland Aquatic Ecosystems).

- 1.5.** A project to amend the WPA-1972 suitably to promote integrated and sustainable management of CMPAs has been recommended in Chapter V (Conservation of Coastal and Marine Ecosystems).

- 1.6.** A project to amend the WPA-1972 and other laws governing the EEZ suitably for identification and management of ecologically and biologically significant marine biodiversity areas outside the Territorial Waters but within the EEZ of India has been recommended in Chapter V (Conservation of Coastal and Marine Ecosystems).

- 1.7.** A project to amend the WPA-1972 for facilitating the establishment of Advisory

Committees for National Parks has been recommended in Chapter XI (People's Participation in Wildlife Conservation).

- 1.8.** A project to review and amend the WPA-1972 appropriately for encouraging and facilitating research and monitoring has been recommended in Chapter XIV (Strengthening Research and Monitoring).

- 1.9.** A project to amend the Indian Fisheries Act, 1897 and State Fisheries Acts to promote long term sustainable fisheries in the country has been recommended in Chapter-V (Conservation of Coastal and Marine Ecosystems).

- 1.10.** A project for empowering the forest officers and staff working under the Autonomous Councils for managing wildlife on par with their counterparts in the SFDs has been recommended in Chapter-XI (Peoples' Participation in Wildlife Conservation).

- 1.11.** A project for empowering the Forest Officers suitably under S.19 of the EPA-1986 for enabling them to take cognizance of violations in the CRZ has been recommended in Chapter-V (Conservation of Coastal & Marine Eco-systems).

- 1.12.** A project to establish special courts for ensuring expeditious trials of wildlife and forest crimes has been recommended in





Chapter VII (Control of Poaching and Illegal Trade in Wildlife).

- 2.1. Make appropriate provisions in the WPA-1972 to ensure full compliance with the CITES.

**Timing:** The WPA-1972 to be amended as soon as possible.

**Responsibility:** MoEFCC.

- 2.2. Prepare and implement action plans in respect of all the agreements entered by India under the provisions of the CMS in respect of Raptors, Marine Turtles, Dugong, Siberian Cranes and various flyways, especially the Central Asian Flyways (CAF).

**Timing:** To start in 2019 and continue through the plan period.

**Responsibility:** MoEFCC.

- 2.3. Set up technical advisory groups at the national level for advising the Central Government on matters relating to negotiation and implementation of all conservation-based international conventions signed by India.

**Timing:** Advisory groups to be set up by 2018.

**Responsibility:** MoEFCC.

- 3.1. Provide for mandatory Biodiversity Impact Assessment for all the activities (in addition to those already notified under the EIA Notifications issued under the EPA-1986) in the vicinity of forests and PAs, which may have adverse impact on forest and wildlife ecosystems.

**Timing:** Required legal provisions to be made as soon as possible.

**Responsibility:** MoEFCC

- 3.2. Review the present model of declaration of eco-sensitive zones (ESZ) around PAs under EPA-1986 to take into account ecological imperatives for identification of area and role of wildlife managers in implementing the regulations. Separate rules, in accordance with the recommendations of the NBWL, should be formulated for identification of ESZ including the criteria for declaration and activities to be regulated or prohibited in such identified zones.

**Timing:** Review to start in 2017 and to be completed by 2018; necessary rules to be formulated by 2020.

**Responsibility:** MoEFCC and SFDs.

- 3.3. Establish a database capturing all individual and community rights in forests as well PAs granted under the FRA-2006 so that the processes of notification of PAs and activities like relocation of villages are not hampered on grounds of non-compliance with the FRA-2006.

**Timing:** Database to be set up by 2018 and updated through the plan period.

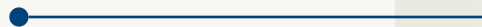
**Responsibility:** MoEFCC and SFDs.



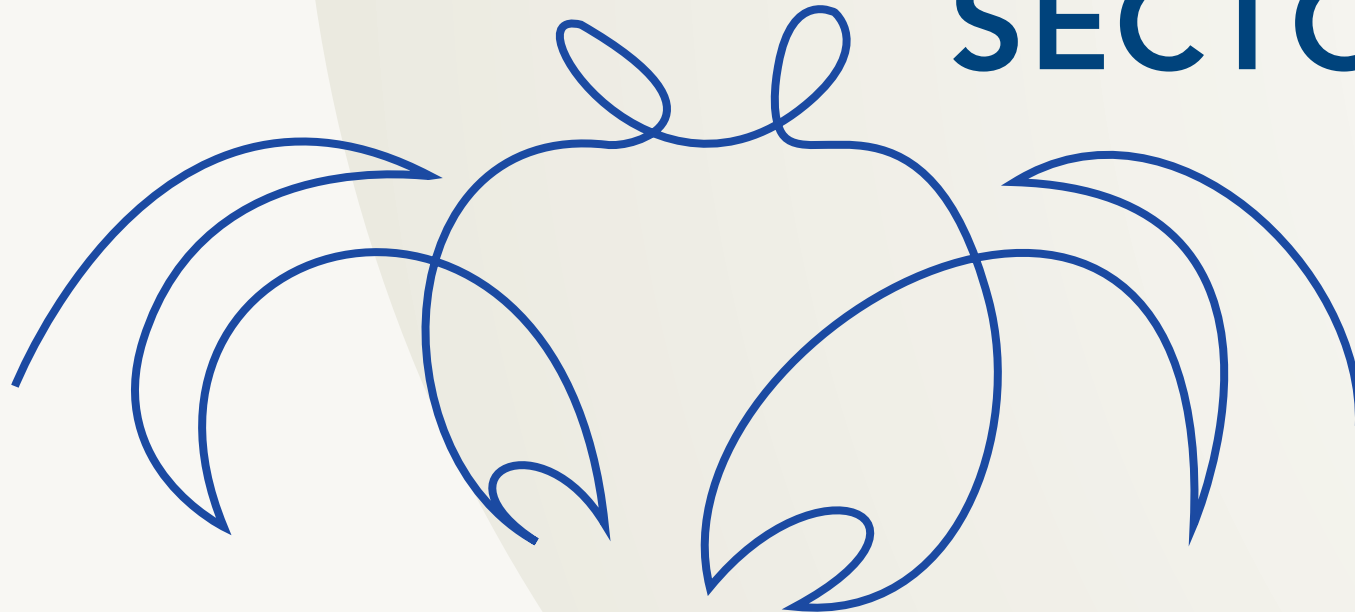




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# ENSURING SUSTAINED FUNDING FOR WILDLIFE SECTOR







## OVERVIEW AND OBJECTIVES

1. Conservation of wildlife and its habitat plays an important role in maintaining ecosystem services; sustaining flow of life-support benefits for local communities; and ensuring richness of biodiversity. People, businesses and industries all rely on ecosystem services and biodiversity for their well-being and development and would stand to incur significant costs and losses if these are degraded. Ensuring sustained funding for wildlife conservation is, therefore, sine qua non for improving the socio-economic status of the people of India. This is a point which need to be articulated strongly and unambiguously to the policy makers and fund managers in the government and the non-government sectors.
2. The wildlife sector in India has traditionally been supported largely by the financial investments made by the Central Government. This support needs to be continued and expanded further.
3. The Fourteenth Finance Commission has added 'state of forests' to the overall eligibility criteria for devolution of the central tax revenue resources to the States with a weightage of 7.5%. This implies that the States with more and better forests (and wildlife) will now get larger share of the untied funds from the central tax revenue. The State Governments have the discretion of allocating these additional untied resources to the wildlife sector.
4. Some States follow the policy of ploughing back the fees collected from tourists visiting PAs and various financial mechanisms are being followed for this purpose. The remaining States need to follow a similar policy.









## ACTION REQUIRED

1. Develop strong economic justification for seeking adequate funds for conservation of forests and wildlife through a robust study project with support of the Scientific and Management Institutes to highlight the indispensability of the forest and wildlife as the basic requirement for maintaining ecosystem services, in terms of soil conservation and regeneration; recharging of underground and surface water systems; and food, health and economic security of the country. Also strengthen Van Vigyan Kendras, Nature Interpretation Centres (NICs), Natural History Museums (NHMs), etc. in States and UTs for spreading awareness about economic potential of wildlife and forests.
2. Ensure optimum utilization of eco-tourism potential of PAs, forestlands and other wildlife areas, not only for sensitising the public at large towards nature's contribution to economy, but also for augmenting resources for forest and wildlife management through suitable plough-back arrangements for the tourism revenue.
3. Explore the feasibility of participation of private sector in conservation programmes. There is scope for integrating conservation-oriented practices in the corporate projects based on natural resources; launching 'Corporate Environmental Responsibility' (CER) programme on the lines of the 'Corporate Social Responsibility' (CSR) programmes; and seeking direct corporate support for targeted conservation campaigns. There is a scope for the corporate partnership in the wildlife conservation programmes which have the potential but face resource constraints (e.g., construction of safaris, NICs and NHMs; eco-development of communities living on the fringe of TRs and PAs; environmental education in schools; etc.)
4. Explore the scope of investment from extra budgetary sources like CAMPA fund, MGNREGS, community development programmes, etc. for wildlife conservation. The State Governments receiving additional untied resources on the basis of the 'state of forests' criterion prescribed by the Fourteenth Finance Commission have the discretion of allocating such funds to the wildlife sector. The SFDs should also identify all such schemes and programmes launched by the Central and State Governments and rural development agencies as, with suitable adjustments, can serve the objectives of eco-development of the selected areas or the selected SHGs. Policies may be formulated for earmarking funds under such schemes and programmes in forestry sector proportionate to the land area under forests or PAs.





## PRIORITY PROJECTS

- 1.1.** Initiate a landscape-based economic valuation study with support of the Scientific and Management Institutes to highlight the indispensability of the forest and wildlife as the basic requirement for maintaining ecosystem services, and thereby develop strong economic justification for seeking adequate funds for conservation of forests and wildlife.

**Timing:** To start in 2018 and to be completed by 2023.

**Responsibility:** MoEFCC, SFDs, Scientific Institutes, IIFM and other suitable Management Institutes.

- 1.2.** Projects for strengthening public awareness and outreach programmes through NICs, NHMs, Van Vigyan Kendras etc. have been recommended in Chapter-XII (Conservation Awareness and Outreach).
- 2.1.** Projects for identification of potential tourism areas including lesser known PAs, forestlands outside PAs, zoos, safari parks, etc. and for ploughing back revenue from tourism into PA management and community development have been recommended in Chapter-X (Management of Tourism in Wildlife Areas).
- 2.2.** Initiate steps on priority basis for posting adequate field staff in PAs and for their

capacity building in order to realise the full economic potential of PAs.

**Timing:** To start in 2017 and continue through the plan period. Responsibility: MoEFCC, NTCA and SFDs.

- 3.1.** Initiate a feasibility study regarding participation of private sector in conservation programmes in and outside TRs and PAs within the existing legal framework and without compromising with the interests of the local communities.

**Timing:** To start in 2018 and to be completed by 2020; follow up action to continue through the plan period.

**Responsibility:** MoEFCC, NTCA, SFDs and selected Management Institutes.

- 4.1.** Institutionalise mechanism for receiving regular investment from extra budgetary sources like CAMPA, MGNREGS, etc. for wildlife conservation programmes. A fixed percentage of the additional untied resources received by the State Governments on the basis of the 'state of forests' criterion prescribed by the 14th Finance Commission may also be earmarked for the wildlife sector.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, Ministry of Rural

Development (MoRD), SFDs, State Finance Departments and District Rural Development Agencies (DRDAs).

- 4.2.** A project for identification of schemes and programmes launched by the Central and State Governments and rural development agencies which can serve the objectives of eco-development of the communities living in and around PAs and other sensitive wildlife areas has been recommended in Chapter-XI (People's Participation in Wildlife Conservation).

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC and SFDs.





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# INTEGRATING NATIONAL WILDLIFE ACTION PLAN WITH OTHER SECTORAL PROGRAMMES







## OVERVIEW AND OBJECTIVES

1. There are multiple governance frameworks and structures in India that administer various ecosystems including coastal and marine zones. Overlapping jurisdictions, contradictory mandates and limited coordination hinders multiple agencies from working effectively towards conservation of wildlife and management of natural resources. It is, therefore, important to integrate the National Wildlife Action Plan (NWAP) with sectoral programmes of other Ministries and Departments. The emphasis in the current NWAP is on adopting a landscape approach and securing people's participation for wildlife conservation. The challenge here lies in reconciling the needs of the people for livelihood and development with that of conservation. In this scenario, harmony among the National Development Agenda, National Biodiversity Conservation Strategy and the NWAP is an imperative and not a choice. These three, along with other related Action Plans, must be recognised as vital national developmental priorities.
2. In context of the Aichi Targets, the road map for implementation of the new National Biodiversity Action Plan (NBAP) has identified the MoEFCC and 23 other Ministries and Departments of the Government of India (GoI) for achieving the National Biodiversity Targets (NBTs). A coordinated approach by the concerned Ministries and Departments is important for ensuring sustainability of development and natural assets of the country.
3. The Sustainable Development Goals (SDGs) are a new, universal set of 17 Goals and 169 Targets that the United Nations member countries including India are expected to use to frame their agendas and enabling policies. The SDGs are a universal call for action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 Goals provide clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large. India is committed to achieving the Sustainable Development Goals and NITI Aayog has been entrusted with the role to co-ordinate 'Transforming our world. The 2030 Agenda for Sustainable Development' (called as SDGs).









## ACTION REQUIRED

1. Manage NWAP (2017–2031) as an essential process and tool for achieving Agenda 2030 and Sustainable Development Goals (SDGs)
2. Highlight the mandates of various Ministries, Departments and other sectoral institutions in the context of the NWAP. An appropriate mechanism for monitoring the progress and ensuring effective coordination among various Ministries, Departments and institutions needs to be set up in the MoEFCC.
3. Initiate action for mainstreaming of conservation concerns of biodiversity into sectoral strategies, plans and programmes, particularly of the sectors dealing with natural resources. Production sectors such as agriculture, fisheries, forestry, infrastructure, mining, petroleum, tourism etc. need to be involved in assessment and management of impact on and of wildlife at the planning stage and integrating elements of conservation and sustainable use in their action plans.
4. Initiate regular consultations with the major stakeholder groups, particularly those involved in decision-making or policy-setting, on the issues relating to conservation and development. Such groups may include Parliamentarians; State Legislators; Members of Parliamentary and Legislative Committees; Members of Judiciary; various Ministries; State Biodiversity Boards; NHAI, Railways, Army etc. Similarly, briefing sessions should be held with Chief Ministers, Finance Ministers, Home Ministers and Agriculture Ministers of States and UTs.





## PRIORITY PROJECTS

 WII Photo Library

- 1.1.** Set up an institutional mechanism in NITI Aayog to manage NWAP (2017–2031) and NBSAP as these are essential processes and tools for achieving Agenda 2030 and Sustainable Development Goals (SDGs).

**Timing:** Mechanism to be set up by 2018; follow-up action to continue through the plan period.

**Responsibility:** NITI Aayog and MoEFCC.

- 2.1.** Set up an institutional mechanism in MoEFCC for sensitizing and effectively coordinating with various Ministries, Departments and institutions of the Central and the State Governments as regards implementation of the NWAP.

**Timing:** Mechanism to be set up by 2017; follow up action to continue through the plan period.

**Responsibility:** MoEFCC.

- 2.2.** Initiate action by the concerned Ministries, Departments and institutions on various projects and programmes in conformity with the NWAP. Some specific projects and programmes are listed below.

- A.** Ministry of Agriculture & Farmers Welfare (MoA) and the State Agriculture Departments to initiate projects for mitigation of crop-depredation and livestock-depredation by wild animals; promotion of alternative



cropping in areas seriously affected by HWC; extension of the National Crop Insurance Scheme to damage by wild animals; and control of invasive alien species (IAS) including exotic fish. MoA should undertake a review of the Indian Fisheries Act, 1897 with a view to conserve wetland, coastal and marine biodiversity. Close collaboration between MoA, State Animal Husbandry Departments, MoEFCC and SFDs is required for regulation of grazing by livestock in PAs; immunisation of livestock in the neighbourhood of PAs; surveillance and control of wildlife diseases; and capacity building of veterinarians in wildlife health management.

- B.** Ministry of Rural Development (MoRD) and Ministry of Panchayati Raj (MoPR) to promote eco-development and livelihood opportunities in the fringe areas of PAs and other sensitive wildlife areas; strengthen JFMCs; and help in capacity building of Panchayats to deal with HWC.

- C.** Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR) to promote minor irrigation projects in the vicinity of PAs and other sensitive wildlife areas relying on check dams, ponds, wells and other appropriate water harvesting units as an alternative to large irrigation

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PROGRAMMES





projects. Close collaboration between the MoWR and MoEFCC is required for setting up National Wetland Mission; ensuring synergy between National Mission for Clean Ganga and wetland conservation; and maintaining the minimum environmental flow in all rivers of the country.

- D. Ministry of Micro, Small and Medium Enterprises (MoMSME) to provide support for training, value addition and marketing of forest-based products for enhancing livelihood opportunities in the neighbourhood of PAs and other sensitive wildlife areas.
- E. Ministry of New and Renewable Energy (MoNRE) to promote alternative energy solutions and technologies in the areas on the fringe of PAs and general forests as an alternative to fuel wood.
- F. Ministry of Road Transport and Highways (MoRTH) and Ministry of Railways (MoR) to integrate concerns for security of wild animals and corridor connectivity in their projects at the planning stage and adopt appropriate designs and technological solutions to deal with the expected problems.
- G. Ministry of Human Resource Development (MoHRD) and the State Education Departments to strengthen environmental education programme in schools and also incorporate it in adult-literacy programme. MoHRD may also initiate courses in 'Marine Conservation Biology' in colleges and universities.
- H. Ministry of Petroleum and Natural Gas (MoPNG), Ministry of Coal (MoC), Ministry of Steel (MoS) and Ministry of Mines (MoM) to integrate concerns for PAs, sensitive wildlife

areas and corridor connectivity in their projects at the planning stage. Further, eco-friendly technologies and designs need to be developed and used. Proper rehabilitation of degraded and abandoned mining areas should also be done.

- I. Ministry of Home Affairs (MoHA) to strengthen wildlife crime investigation and prosecution system in the country by vesting the paramilitary forces along the international borders with the specific responsibility of protecting wildlife against poaching and smuggling and gathering intelligence on wildlife crimes. MoHA should also empower the SFDs and WCCB with the legal powers to act as police organisations and help in improving wildlife forensic facilities. National and State Disaster Management Authorities (NDMA and SDMA) should develop specific Action Plans for all States and UTs integrating Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR).
- J. Ministry of Tribal Affairs (MoTA) and the State Tribal Affairs Departments to expedite the process of determination of forest rights under the FRA-2006. Close collaboration between the MoTA and MoEFCC is required for declaration of Critical Wildlife Habitats (CWHs) and ensuring participation of Gram Sabhas and forest-right holders in management and protection of forests and wildlife.
- K. Ministry of Defence (MoD) to facilitate involvement of Army, Navy and Coast Guard in wildlife conservation programmes. The Armed Forces may help in monitoring the endangered species in the far-flung areas and protecting them against poaching and

smuggling. The Indian Navy and the Coast Guard may also help in monitoring the threatened marine species within the EEZ and protecting them against illegal trade.

- L. Ministry of Finance (MoF) and the State Finance Departments to declare wildlife conservation as a 'priority sector'; provide adequate funds for anti-poaching works, mitigation of HWC and eco-development of communities living on the fringe of PAs and general forests; authorise ploughing back of revenue from wildlife tourism; and facilitate corporate funding in the wildlife sector.
- M. Ministry of Tourism (MoT) and the State Tourism Departments to promote eco-tourism in lesser known PAs and forestlands outside PAs; help in capacity building of the local communities to manage tourism; and introduce best practices for controlling pollution in the tourism sites.
- N. Ministry of Law & Justice (MoLJ) and the State Law Departments to set up fast-track courts for speedy disposal of forest and wildlife cases.
- O. Ministry of Information & Broadcasting (MoIB) to intensify awareness programmes on forest and wildlife conservation and to start a new channel "DD-Prakriti" on Doordarshan.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC and concerned Ministries/Departments/ Institutions.

- 2.3. Set up a mechanism for monitoring and reporting on progress of implementation of the NWAP.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC, SFDs, WII, Scientific Institutes, and suitable NGOs.

- 3.1. Initiate interaction with all the Ministries and Departments of the Central and State Governments dealing with natural resources so that they adopt a policy of carrying out biodiversity impact assessment of their projects or programmes at the planning stage.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC.

- 3.2. Review the process of wildlife impact assessment of projects by the Expert Appraisal Committees and ensure public participation in the reporting and evaluation process.

**Timing:** To start in 2017 and to be completed by 2018; follow up action to continue through the plan period.

**Responsibility:** MoEFCC.

- 4.1. Initiate a regular programme of interactions with major functionaries in judiciary, legislature and executive, particularly those involved in decision-making or policy-setting, so that the concepts, concerns and stakes of conservation of wildlife and biodiversity are kept up to date.

**Timing:** To start in 2017 and continue through the plan period.

**Responsibility:** MoEFCC.



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## LIST OF ABBREVIATIONS

|                 |                                                                                   |                 |                                                       |
|-----------------|-----------------------------------------------------------------------------------|-----------------|-------------------------------------------------------|
| <b>ASEAN</b>    | : Association of Southeast Asian Nations                                          | <b>CMLRE</b>    | : Centre for Marine Living Resources & Ecology        |
| <b>AWBI</b>     | : Animal Welfare Board of India                                                   | <b>CMPA</b>     | : Coastal and Marine Protected Areas                  |
| <b>BDA-2002</b> | : Biological Diversity Act, 2002                                                  | <b>CMS</b>      | : Convention on Migratory Species                     |
| <b>BMC</b>      | : Biodiversity Management Committee                                               | <b>CMS</b>      | : Centre for Media Studies                            |
| <b>BoBP</b>     | : Bay of Bengal Programme                                                         | <b>CoE</b>      | : Centre of Excellence                                |
| <b>BSF</b>      | : Border Security Force                                                           | <b>CPREEC</b>   | : C.P. Ramaswami Aiyar Environmental Education Centre |
| <b>BSI</b>      | : Botanical Survey of India                                                       | <b>CRZ</b>      | : Coastal Regulation Zone                             |
| <b>BVIEER</b>   | : Bharti Vidyapeeth Institute of Environmental Education and Research             | <b>CSR</b>      | : Corporate Social Responsibility                     |
| <b>CAF</b>      | : Central Asian Flyway                                                            | <b>CSS</b>      | : Centrally Sponsored Scheme                          |
| <b>CAMIA</b>    | : Conservation Area Mutual Impact Assessment                                      | <b>CWH</b>      | : Critical Wildlife Habitat                           |
| <b>CAMPA</b>    | : Compensatory Afforestation Management and Planning Authority                    | <b>CWLW</b>     | : Chief Wildlife Warden                               |
| <b>CASFOS</b>   | : Central Academy for State Forest Service                                        | <b>CZA</b>      | : Central Zoo Authority                               |
| <b>CBD</b>      | : Convention on Biological Diversity                                              | <b>DGCA</b>     | : Directorate General of Civil Aviation               |
| <b>CBEC</b>     | : Central Board of Excise & Customs                                               | <b>DRDA</b>     | : District Rural Development Agency                   |
| <b>CBI</b>      | : Central Bureau of Investigation                                                 | <b>DRI</b>      | : Directorate of Revenue Intelligence                 |
| <b>CCA</b>      | : Climate change adaptation                                                       | <b>DRR</b>      | : Disaster Risk Reduction                             |
| <b>CEE</b>      | : Centre for Environment Education                                                | <b>EDP</b>      | : Eco-development Programme / Project                 |
| <b>CER</b>      | : Corporate Environmental Responsibility                                          | <b>EE</b>       | : Environmental Education                             |
| <b>CFSL</b>     | : Central Forensic Science Laboratory                                             | <b>EEHV</b>     | : Elephant Endotheliotropic Herpes Virus              |
| <b>CENIO</b>    | : Conservation Education, Nature Interpretation and Outreach                      | <b>EEZ</b>      | : Exclusive Economic Zone                             |
| <b>CITES</b>    | : Convention on International Trade in Endangered Species of Wild Fauna and Flora | <b>EIA</b>      | : Environmental Impact Assessment                     |
| <b>CMFRI</b>    | : Central Marine Fisheries Research Institute                                     | <b>ENVIS</b>    | : Environmental Information System                    |
|                 |                                                                                   | <b>EPA-1986</b> | : Environmental Protection Act, 1986                  |
|                 |                                                                                   | <b>ESA/ESZ</b>  | : Eco-Sensitive Area/ Eco-Sensitive Zone              |



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|                      |                                                                                                   |               |                                                                        |
|----------------------|---------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------|
| <b>FCA-1980</b>      | : Forest (Conservation) Act, 1980                                                                 | <b>IPCC</b>   | : Intergovernmental Panel on Climate Change                            |
| <b>FDA</b>           | : Forest Development Agency                                                                       | <b>IPR</b>    | : Intellectual Property Right                                          |
| <b>FRA-2006</b>      | : Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 | <b>IT</b>     | : Information Technology                                               |
| <b>FSI</b>           | : Forest Survey of India                                                                          | <b>ITBP</b>   | : Indo-Tibetan Border Police                                           |
| <b>GEF</b>           | : Global Environmental Facility                                                                   | <b>ITK</b>    | : Indigenous Traditional Knowledge                                     |
| <b>GIS</b>           | : Geographical Information System                                                                 | <b>IUCN</b>   | : International Union for Conservation of Nature and Natural Resources |
| <b>GIZ</b>           | : Gesellschaft für Internationale Zusammenarbeit                                                  | <b>IVRI</b>   | : Indian Veterinary Research Institute                                 |
| <b>GOI</b>           | : Government of India                                                                             | <b>JFM</b>    | : Joint Forest Management                                              |
| <b>HRD</b>           | : Human Resource Development                                                                      | <b>JFMC</b>   | : Joint Forest Management Committee                                    |
| <b>HWLW</b>          | : Honorary Wildlife Warden                                                                        | <b>MEE</b>    | : Management Effectiveness Evaluation                                  |
| <b>HWC</b>           | : Human Wildlife Conflict                                                                         | <b>MNREGS</b> | : Mahatma Gandhi National Rural Employment Guarantee Scheme            |
| <b>IAS</b>           | : Invasive Alien Species                                                                          | <b>MoA</b>    | : Ministry of Agriculture & Farmers Welfare                            |
| <b>ICAR</b>          | : Indian Council of Agricultural Research                                                         | <b>MoC</b>    | : Ministry of Coal                                                     |
| <b>ICWC</b>          | : International Consortium on Combating Wildlife Crime                                            | <b>MoD</b>    | : Ministry of Defence                                                  |
| <b>ICFRE</b>         | : Indian Council of Forestry Research & Education                                                 | <b>MoEFCC</b> | : Ministry of Environment, Forests & Climate Change                    |
| <b>ICMBA</b>         | : Important Coastal and Marine Biodiversity Areas                                                 | <b>MoF</b>    | : Ministry of Finance                                                  |
| <b>IDWH</b>          | : Integrated Development of Wildlife Habitat                                                      | <b>MoHA</b>   | : Ministry of Home Affairs                                             |
| <b>IFA-1878/1927</b> | : Indian Forest Act, 1878/1927                                                                    | <b>MoHRD</b>  | : Ministry of Human Resources Development                              |
| <b>IFGTB</b>         | : Institute of Forest Genetics and Tree Breeding                                                  | <b>MoIB</b>   | : Ministry of Information and Broadcasting                             |
| <b>IFS</b>           | : Indian Forest Service                                                                           | <b>MoLJ</b>   | : Ministry of Law and Justice                                          |
| <b>IGNFA</b>         | : Indira Gandhi National Forest Academy                                                           | <b>MoM</b>    | : Ministry of Mines                                                    |
| <b>IIFM</b>          | : Indian Institute of Forest Management                                                           | <b>MoNRE</b>  | : Ministry of New & Renewable Energy                                   |
| <b>IIT</b>           | : Indian Institute of Technology                                                                  | <b>MoPNG</b>  | : Ministry of Petroleum & Natural Gas                                  |
| <b>INTERPOL</b>      | : International Criminal Police Organisation (ICPO)                                               |               |                                                                        |

|                  |                                                                           |
|------------------|---------------------------------------------------------------------------|
| <b>MoPR</b>      | : Ministry of Panchayati Raj                                              |
| <b>MoR</b>       | : Ministry of Railways                                                    |
| <b>MoRTH</b>     | : Ministry of Road Transport & Highways                                   |
| <b>MoS</b>       | : Ministry of Steel                                                       |
| <b>MoMSME</b>    | : Ministry of Micro, Small & Medium Enterprises                           |
| <b>MoT</b>       | : Ministry of Tourism                                                     |
| <b>MoTA</b>      | : Ministry of Tribal Affairs                                              |
| <b>MoU</b>       | : Memorandum of Understanding                                             |
| <b>MoWR</b>      | : Ministry of Water Resources, River Development & Ganga Rejuvenation     |
| <b>MPCA</b>      | : Medicinal Plant Conservation Area                                       |
| <b>MPDA</b>      | : Medicinal Plant Development Area                                        |
| <b>M-STrIPES</b> | : Monitoring System for Tigers – Intensive Protection & Ecological Status |
| <b>NBA</b>       | : National Biodiversity Authority                                         |
| <b>NBAP</b>      | : National Biodiversity Action Plan                                       |
| <b>NBFGR</b>     | : National Bureau of Fish Genetic Resources                               |
| <b>NBRI</b>      | : National Botanical Research Institute                                   |
| <b>NBT</b>       | : National Biodiversity Targets                                           |
| <b>NBWL</b>      | : National Board for Wildlife                                             |
| <b>NCAOR</b>     | : National Centre for Antarctic and Ocean Research                        |
| <b>NCBS</b>      | : National Centre for Biological Sciences                                 |
| <b>NCERT</b>     | : National Council of Education, Research & Training                      |
| <b>NCSCM</b>     | : National Centre for Sustainable Coastal Management                      |
| <b>NDMA</b>      | : National Disaster Management Authority                                  |
| <b>NEAMA</b>     | : National Environmental Appraisal and Monitoring Authority               |
| <b>NEP-2006</b>  | : National Environment Policy, 2006                                       |
| <b>NGO</b>       | : Non-Governmental Organisation                                           |
| <b>NHAI</b>      | : National Highway Authority of India                                     |
| <b>NHM</b>       | : Natural History Museum                                                  |

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| <b>NIC</b>        | : Nature Interpretation Centre                         |
| <b>NIH</b>        | : National Institute of Hydrology                      |
| <b>NIO</b>        | : National Institute of Oceanography                   |
| <b>NIOT</b>       | : National Institute of Ocean Technology               |
| <b>NITI Aayog</b> | : National Institution for Transforming India Aayog    |
| <b>NMCA</b>       | : National Mission on Coastal Areas                    |
| <b>NMPB</b>       | : National Medicinal Plants Board                      |
| <b>NNHM</b>       | : National Natural History Museum                      |
| <b>NP</b>         | : National Park                                        |
| <b>NTCA</b>       | : National Tiger Conservation Authority                |
| <b>NTFP</b>       | : Non-Timber Forest Product                            |
| <b>NWAP</b>       | : National Wildlife Action Plan                        |
| <b>NWHS</b>       | : Natural World Heritage Site                          |
| <b>NWIS</b>       | : National Wildlife Information System                 |
| <b>NWRCC</b>      | : National Wildlife Research Coordination Committee    |
| <b>PA</b>         | : Protected Areas                                      |
| <b>PBR</b>        | : People's Biodiversity Register                       |
| <b>PESA-1996</b>  | : Panchayat (Extension to Scheduled Areas) Act, 1996   |
| <b>PF</b>         | : Protected Forest                                     |
| <b>PRA</b>        | : Participatory Rural Appraisal                        |
| <b>PRI</b>        | : Panchayat Raj Institutions                           |
| <b>PRT</b>        | : Primary Response Team                                |
| <b>PWD</b>        | : Public Works Department                              |
| <b>RF</b>         | : Reserved Forest                                      |
| <b>S.</b>         | : Section                                              |
| <b>SAC</b>        | : Space Application Centre                             |
| <b>SACON</b>      | : Salim Ali Centre for Ornithology and Natural History |
| <b>SAWEN</b>      | : South Asia Wildlife Enforcement Network              |
| <b>SBB</b>        | : State Biodiversity Board                             |
| <b>SDMA</b>       | : State Disaster Management Authority                  |

|                 |                                                   |
|-----------------|---------------------------------------------------|
| <b>SEBS</b>     | : Science Express-Biodiversity Special            |
| <b>SFD</b>      | : State Forest Department                         |
| <b>SFRI</b>     | : State Forest Research Institute                 |
| <b>SFS</b>      | : State Forest Service                            |
| <b>SFSL</b>     | : State Forensic Science Laboratory               |
| <b>SFTC</b>     | : State-level Forestry Training Centre            |
| <b>SHG</b>      | : Self Help Group                                 |
| <b>SIA</b>      | : Social Impact Assessment                        |
| <b>SMART</b>    | : Spatial Monitoring and Reporting Tool           |
| <b>SMPB</b>     | : State Medicinal Plants Board                    |
| <b>SOP</b>      | : Standard Operational Procedure / Protocol       |
| <b>SPCB</b>     | : State Pollution Control Board                   |
| <b>SSB</b>      | : Sashastra Seema Bal                             |
| <b>TCP</b>      | : Tiger Conservation Plan                         |
| <b>TR</b>       | : Tiger Reserve                                   |
| <b>UAV</b>      | : Unmanned Aerial Vehicle                         |
| <b>UNCLOS</b>   | : United Nations Convention on the Law of the Sea |
| <b>UNDP</b>     | : United Nations Development Programme            |
| <b>UNODC</b>    | : United Nations Office on Drugs & Crime          |
| <b>UT</b>       | : Union Territory                                 |
| <b>VCI</b>      | : Veterinary Council of India                     |
| <b>WCCB</b>     | : Wildlife Crime Control Bureau                   |
| <b>WCS-2002</b> | : Wildlife Conservation Strategy, 2002            |
| <b>WII</b>      | : Wildlife Institute of India                     |
| <b>WLS</b>      | : Wildlife Sanctuary                              |
| <b>WPA</b>      | : Wetland Protected Area                          |
| <b>WPA-1972</b> | : Wildlife (Protection) Act, 1972                 |
| <b>WRAC</b>     | : Wildlife Research Advisory Committee            |
| <b>ZSI</b>      | : Zoological Survey of India                      |



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Director, Wildlife Institute of India, Chandrabani,  
Dehradun (Uttarakhand), INDIA

Email: [dwii@wii.gov.in](mailto:dwii@wii.gov.in);  
**Tel:** +91-(0)135-2640910(Off.);  
**Fax:** +91-(0)135-2640117