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MANAGEMENT EFFECTIVENESS EVALUATION OF TIGER RESERVES IN INDIA

Ministry of Environment, Forest & Climate Change

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

PROCESS & OUTCOMES

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FOREWORD

The Management Effectiveness Evaluation (MEE) Process is a global framework to evaluate the performance of protected areas. I am very happy to note that India is among the select countries in the world that has institutionalized the MEE process for its network of protected areas. India has not only independently assessed the effectiveness of 28 tiger reserves in 2005-2006, but has taken this process forward, by extending this evaluation in 2010-11 to all 39 tiger reserves and in 2014 to all 43 tiger reserves. The outcomes of these assessments are encouraging and despite all odds, our park managers and front-line staff are putting up a valiant effort to conserve our natural heritage. There has been an improvement in the overall MEE score of all 43 tiger reserves from 65 percent in 2010-11 to 69 percent in 2014, for which I would like to compliment all concerned. I understand that better protection is required for the five tiger reserves, located in the 'Red Corridor'. This is a daunting task, and I urge all sections of society to cooperate with us and support our forest and field staff.

I urge the field managers of all tiger reserves to closely monitor the performance of the 31 'headline indicators' customized around the conservation needs of India, to ensure the long-term conservation of our magnificent tigers and the biological diversity that tiger reserves harbour.

I take this opportunity to compliment the National Tiger Conservation Authority (NTCA), Wildlife Institute of India (WII), Chief Wildlife Wardens of all Tiger Range States and above all the park managers and the front-line staff for their valuable contribution in securing the conservation of our national animal.

Prakash Javadekar
Minister of State (Independent Charge)
Environment, Forests & Climate Change
Government of India

ACKNOWLEDGEMENTS

We would like to thank a large number of professionals for providing support for the evaluation of 43 Tiger Reserves across the country.

We are grateful to the officials and staff of the National Tiger Conservation Authority (NTCA), Ministry of Environment, Forest and Climate Change (MoEF&CC) for providing technical guidance and financial assistance to accomplish this exercise.

We would like to specially thank the Chief Wildlife Wardens of all 17 Tiger States and all the Field Directors and frontline staff of 43 Tiger Reserves for their valuable contribution in carrying forward the Management Effectiveness Evaluation (MEE) process.

We express our sincere appreciation for the professional support and untiring efforts of the Independent teams (Chairman's and members) constituted by the NTCA for the five clusters for the evaluation of Tiger Reserves (2013 to 2014).

We are especially indebted to the faculty members and staff of the Wildlife Institute of India for their valuable support in accomplishing the task.

The Team
WII, Dehradun

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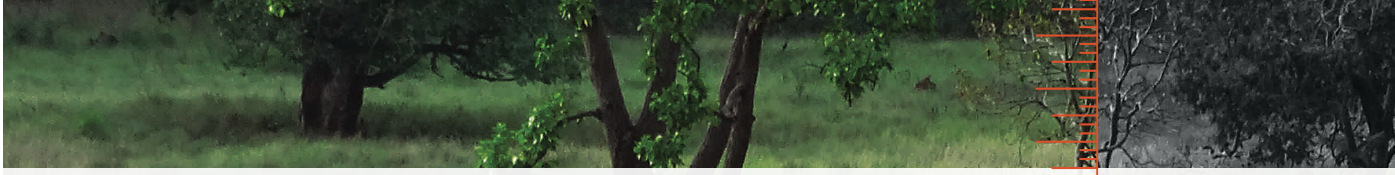

01

MANAGEMENT EFFECTIVENESS EVALUATION

Introduction 1.1

Protected areas (PAs) are the cornerstone of efforts to conserve biodiversity and the environment and provide associated recreational, economic and social benefits to humans. The number and total extent of PAs have been increasing exponentially over the last 50 years, and there are now more than 100,000 PAs covering some 11% of the earth's land surface (Chape et al. 2005, Leverington et al. 2008).

The success of protected areas as a tool for conservation is based around the assumption that they are managed to protect the values that they contain (Hockings et al. 2006). However, protected areas (PAs) face many challenges to their integrity that, unless addressed, can undermine the very objectives for which they were established (Mathur et al. 2011). Yet, many sites are under pressure from internal and external threats, and many are degraded (Carey et al. 2000).

Monitoring threats and activities affecting a PA and using the results to manage the challenges, threats and pressures is essential for improving conservation success. Assessing the effectiveness of management and using the results for adaptive management is at the core of good PA management. Assessments enable managers and stakeholders to reflect on their experience, allocate resources efficiently and plan for effective management in relation to potential threats and opportunities (Hockings et al. 2007). Evaluating the effectiveness of the management of these sites is one important way of ensuring that the investment of time and effort in establishing and managing PAs is delivering the benefits that society seeks.

1.2 What is Management Effectiveness Evaluation (MEE)?

Assessment of management effectiveness has emerged as a key tool for PA managers and is increasingly being required by governments and international bodies. For example, the Convention on Biological Diversity (CBD) Programme of Work for Protected Areas calls on all State Parties to continue to expand and institutionalize management effectiveness assessments to work towards assessing 60% of the total area of PAs using various national and regional tools and report the results into the global database on management effectiveness maintained by the World Conservation Monitoring Centre of the United Nations Environment Programme (WCMC UNEP) (http://www.cbd.int/decision/cop/?id=12297). Evaluation of management effectiveness is generally carried out by assessing a series of criteria (represented by carefully selected indicators) against agreed objectives or standards.

Protected area (PA) management effectiveness evaluation (MEE) is defined as the assessment of how well PAs are being managed—primarily, whether they are protecting their values and achieving the goals and objectives agreed upon. The term 'management effectiveness' reflects three main themes of PA management:

- Design issues relating to both individual sites and PA systems
- The adequacy and appropriateness of management systems and processes
- Delivery of the objectives of PAs, including conservation of values.

Why do we need evaluation or/and assessment? 1.3

The need to evaluate PA management effectiveness has become increasingly well recognised internationally over the past one and a half decades. In both developed and developing countries it has been seen that declaration of PAs does not always result in adequate protection (Hockings and Phillips 1999, Hockings et al. 2000, Ervin 2003). Evaluation is necessary because PAs face many threats. However, evaluation is not simply a way of looking for problems; it is as important to identify when things are going well. Assessment of management effectiveness should include both issues within and/or beyond the control of individual managers. This approach facilitates a range of responses to threats and deficiencies in management, from site-based actions to broad political and policy reviews (Hockings et al. 2000).

There are many reasons why people want to assess management effectiveness (Hockings et al. 2000). These different purposes may require different assessment systems and varying degrees of detail. Funding bodies, policy makers and conservation lobbyists may use the results to highlight problems and to set priorities, or management agencies may use them to promote better management policies and practices. Managers may wish to use the results of evaluations to improve their performance or to report on achievements to senior managers, the government or external stakeholders (Hockings et al. 2006). Local communities and other stakeholders, including civil society, need to establish how far their interests are being taken into account. The increased emphasis on evaluation is in part due to changes in society, especially the increased demand for accountability, transparency and demonstrated 'value for money' (Hockings et al. 2006).

Broadly speaking, MEE can:

- Enable and support an adaptive approach to management
- Assist in effective resource allocation
- Promote accountability and transparency
- Help involve the community and build constituencies
- Promote the values of PAs.

In addition to these substantive benefits, the process of assessing management effectiveness can also deliver a number of procedural benefits. Improved communication and cooperation between managers and other stakeholders is a common outcome of evaluation processes. Managers also have an opportunity to 'step back' from the day-to-day concerns of their jobs and consider the issues and challenges that they face in a new light. Many managers have commented that they have derived the major benefits during the process rather than from any formal report written at the end of the exercise (Hockings et al. 2006).

In practice, evaluation results are usually used in more than one way. Information used by managers to improve their own performance (adaptive management) can also be drawn on for reporting (accountability) or can be used to improve the way funds and other resources are allocated either within a single reserve or across a PA system (resource allocation). Whatever purposes it may serve, evaluation should be seen primarily as a tool to assist managers in their work, not as a system for watching and punishing managers for inadequate performance. Evaluation must be used positively to support managers and be seen as a normal part of the process of management. Nonetheless, funding agencies, NGOs and others have a legitimate right to know whether a PA is achieving its stated objectives, and it should be

recognised that evaluation findings will inevitably also be used for advocacy. Recent experiences around the world have demonstrated that involving external stakeholders in the assessment process and transparent sharing of the results of assessment can help build cooperation and support for PAs (Hockings et al. 2006).

In recent years there has been a growing concern amongst PA professionals and the public that many PAs are failing to achieve their objectives and, in some cases, are actually losing the values for which they were established (Hockings et al. 2008). As a result, improving the effectiveness of PA management has become a priority throughout the conservation community. One important step in this process is the carrying out of an assessment of the current status and management of the PA to understand better what is and what is not working, and to plan any necessary changes as efficiently as possible (Hockings et al. 2008).

However, assessments should not primarily be about reporting on or judging the managers and/or frontline staff (Mathur et al. 2011). As important as reporting requirements are, assessment of management effectiveness should primarily be used to assist managers to work as effectively as possible. Monitoring threats and activities affecting a PA and using the results to manage challenges, threats and pressures are increasingly being seen as being at the core of good site management (Mathur et al. 2011). Assessments help managers and stakeholders reflect on their experience, allocate resources efficiently and plan for effective management in relation to potential threats and opportunities (Hockings et al. 2008).

1.4 The WCPA framework for assessing management effectiveness

The precise methodology used to assess effectiveness differs between PAs and depends on factors such as the time and resources available, the importance of the site, data quality and stakeholder pressures. The differing situations and needs for PAs thus require different methods of assessment. As a result, a number of assessment tools have been developed to guide and record changes in management practices.

A uniform theme has been provided to these assessments by the IUCN World Commission on Protected Areas (WCPA) Framework for Assessing the Management Effectiveness of Protected Areas (see Figure 1 for more information), which aims both to give overall guidance in the development of assessment systems and to encourage basic standards for assessment and reporting.

The WCPA Framework for Assessing Management Effectiveness is a system for designing PA management effectiveness evaluations with six elements: context, planning, inputs, processes, outputs and outcomes (Figure 1). It is not a methodology but is a guide for developing assessment systems.

The WCPA Framework sees management as a process or cycle with six distinct stages, or elements:

- It begins with establishing the context of existing values and threats,
- progresses through planning and
- allocation of resources (inputs)
- as a result of management actions (process) and
- eventually produces goods and services (outputs)
- that result in impacts or outcomes.

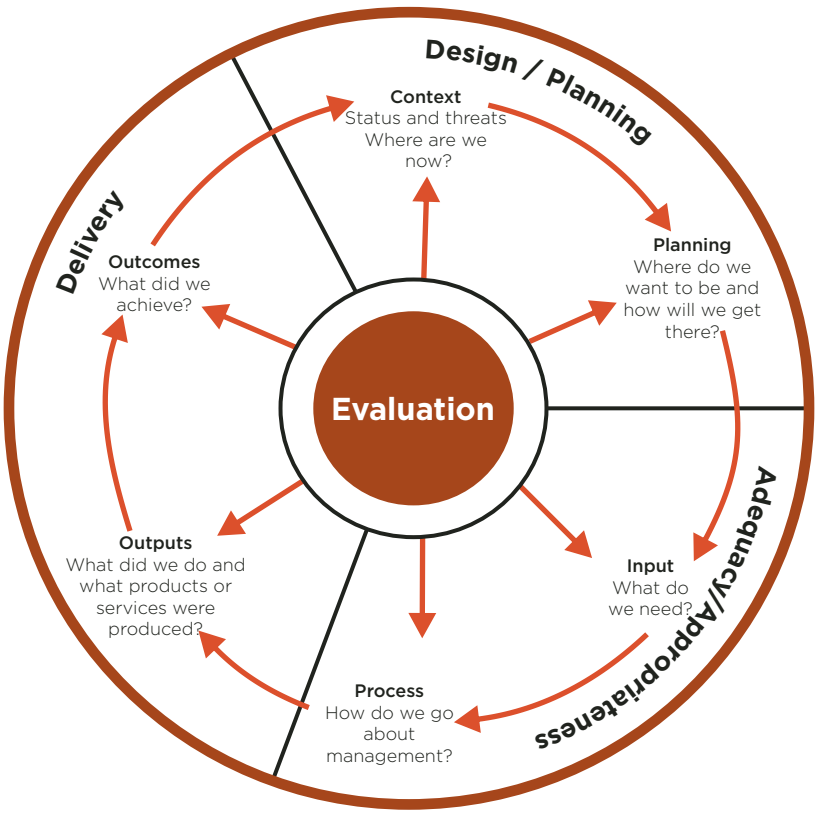

Figure 1. The WCPA Framework for Assessing Management Effectiveness

Note: *For more information on the WCPA Framework, see: Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. 2006. Evaluating Effectiveness: A Framework for Assessing Management of Protected Areas (2nd edn), World Commission on Protected Areas, IUCN, Gland, Switzerland. The framework can be downloaded from: http://www.iucn.org/themes/wcpa/pubs/ guidelines.htm#effect2*

Of these elements, the outcomes most clearly indicate whether the site is maintaining its core values, but the outcomes can also be the most difficult element to measure accurately. However, the other elements of the framework are all also important for helping identify particular areas where management might need to be adapted or improved.

Over the past 10 years, numerous assessment systems have been developed, most based at least to some extent on the WCPA Framework. They vary from simple questionnaire-type approaches suitable for individual PAs, through workshop-style approaches aimed at whole PA systems, to detailed monitoring systems. The approach described here is a fairly detailed monitoring and evaluation system, suitable for sites of particular importance (Hockings et al. 2008).

MEE across the world and India 1.5

Evaluation of PA management effectiveness did not gain real momentum until after the issue was highlighted at the 1992 World Parks Congress, in Caracas, Venezuela.

Since then, more than 40 methodologies have been developed and applied to the assessment of the management effectiveness of PAs (Leverington et al. 2008). In response to these initiatives, work on management effectiveness assessment has become an increasingly common component of PA management worldwide. Evaluations have now been undertaken in over 6000 PAs, and the pace of this work is accelerating (Leverington et al. 2008). International organisations working with PAs, such as IUCN and its WCPA, the World Bank, the Global Environment Facility and NGOs such as WWF and the Nature Conservancy have taken a lead in both promoting the importance of management effectiveness as an issue and in providing the technical development and support needed to underpin this effort.

India has also made a beginning in evaluating the management effectiveness of its national parks, wildlife sanctuaries, tiger reserves (TRs) and world heritage sites (Mathur 2008). The MEE of national parks and wildlife sanctuaries was initiated in 2006, and till 2014, 125 sites have been evaluated. Three Natural World Heritage sites in South Asia, namely Keoladeo National Park, Rajasthan (https://cmsdata.iucn.org/downloads/keoladeo_eoh_second_assessment_oct07.pdf), Kaziranga National Park, Assam (https://cmsdata.iucn.org/downloads/kaziranga_second_eoh_assessment_nov07.pdf) and Chitwan National Park, Nepal (https://cmsdata.iucn.org/downloads/chitwan_eoh_second_assessment_oct07.pdf) were evaluated in 2002-2007. Project Tiger carried out the management effectiveness assessment of 28 TRs in 2006 and 39 TRs in 2010 (http://www.wii.gov.in/protected_download/publications/research reports/2011/tiger/mee_tiger_2011 or http://projecttiger.nic.in/WriteReadData/PublicationFile/mee_tiger_2011.pdf). The 43 TRs in India were evaluated in 2014 and details are presented in this report. The MEE rating scorecard of all the 43 TRs in form of filled in questionnaires are given in the enclosed CD.

1.6 Assessment process for tiger reserves in India

The 43 Tiger Reserves were grouped in five landscape clusters for the MEE process (Annexure I). Five independent expert MEE committees were constituted (Annexure II) in order to ensure that the assessment process was credible. A technical manual, Management Effectiveness Evaluation (MEE) of Tiger Reserves in India, was prepared (Mathur et al. 2014) to guide the MEE process. A Wildlife Institute of India (WII) team provided technical backstopping to the MEE process (Annexure III). Considering the growing importance of addressing issues relating to climate change, carbon capture, preventing carbon loss and encouraging further carbon capture in TRs, two additional criteria were developed (Annexure IV). These criteria have not been included in the formal process of MEE of TRs, but the information gathered will be used to sensitize the conservation community about the significance of these issues and to plan the next steps for addressing them.

The independent expert MEE teams visited all the 43 TRs for MEE according to the prescribed assessment criteria and completing the MEE scorecard. The outcomes of the MEE process were discussed with the Field Directors of TRs and Chief Wildlife Wardens of 17 tiger range states.

In addition to the specially customised 31 'Headline Indicators' for India, the MEE teams have also assessed the Strengths, the Weaknesses and the Immediate Actionable Points in respect of each Tiger Reserve and these are presented in Chapter 3 of this report. **The attached CD contains the filled in questionnaires of all 43 TRs included in evaluation in 2014.**

MANAGEMENT EFFECTIVENESS EVALUATION

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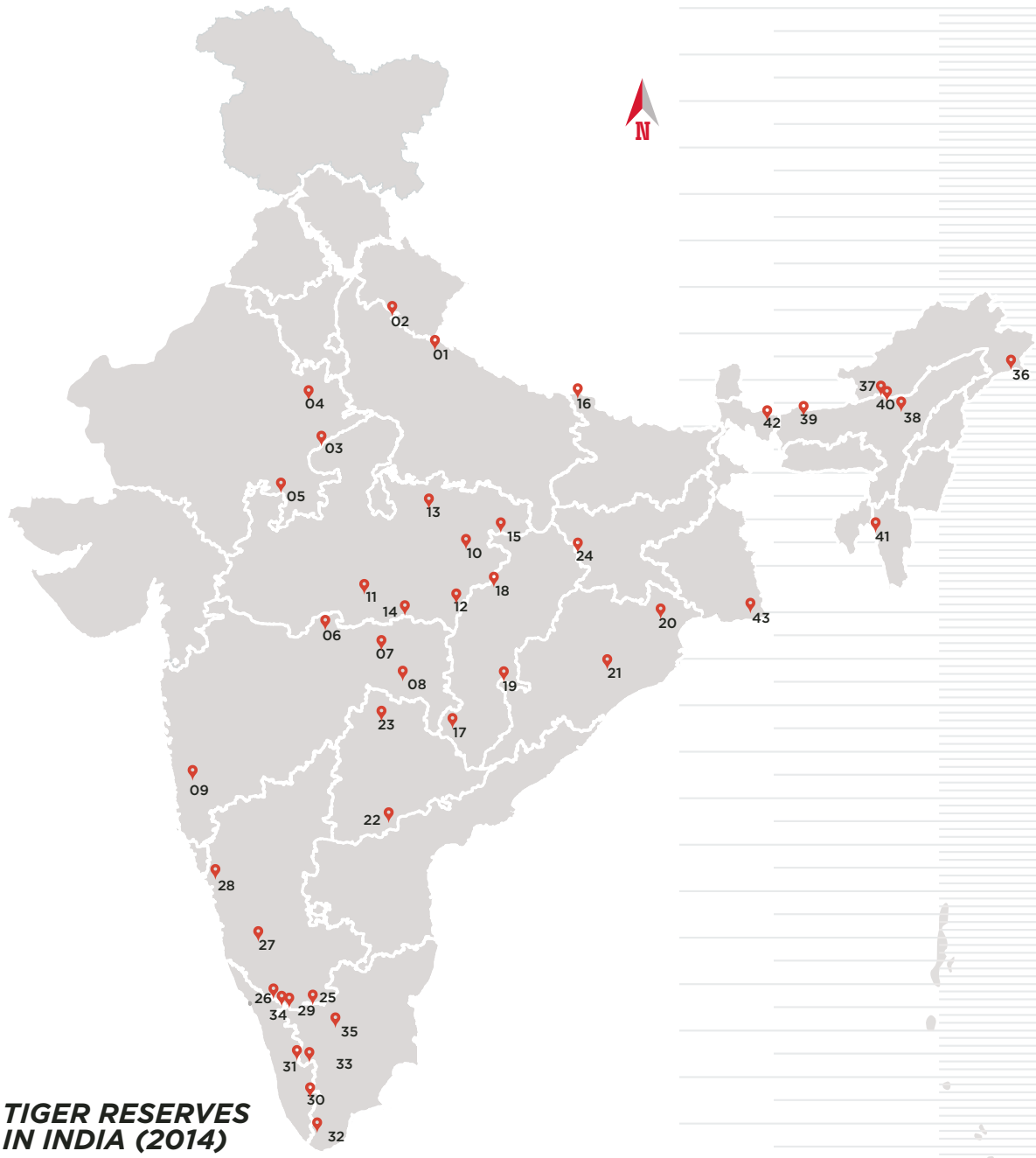

TIGER RESERVES IN INDIA (2014)

1 Dudhwa
2 Corbett
3 Ranthambore
4 Sariska
5 Mukundara Hills
6 Melghat
7 Pench - MH
8 Tadoba - Andhari
9 Sahyadri
10 Bandhavgarh
11 Satpuda
12 Kanha
13 Panna
14 Pench - MP
15 Sanjay - Dubri
16 Valmiki
17 Indravati
18 Achanakmar
19 Udanti-Sitanadi
20 Simlipal
21 Satkosia
22 Nagarjunsagar -Srisailam
23 Kawal
24 Palamau
25 Bandipur
26 Nagarahole
27 Bhadra
28 Dandeli-Anshi
29 Bilgiri Ranganatha Temple
30 Periyar
31 Parambikulam
32 Kalakad-Mundanthurai
33 Annamalai
34 Mudumalai
35 Sathyamanglam
36 Namdapha
37 Pakke
38 Kaziranga
39 Manas
40 Nameri
41 Dampa
42 Buxa
43 Sundabans

1.7 Assessment criteria for tiger reserves in India

For assessment of each of the six elements of the MEE framework, 31 criteria (headline indicators) were identified. Explanatory notes, wherever needed, were provided to guide the assessment process. The scores, along with observations (remarks), provide a better understanding of the situation in the field.

1 Context

1.1 Are the values of the TR well documented, assessed and monitored?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Values not systematically documented, assessed and monitored	Poor			
Values generally identified but not systematically assessed and monitored	Fair			
Most values systematically identified, assessed and monitored	Good			
All values systematically identified, assessed and monitored	Very good			

*Values would also include ago-morphological, historico-cultural and faunal and floral species.

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

1.2 Are the threats to TR values well documented and assessed*?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Threats not systematically documented or assessed	Poor			
Threats generally identified but not systematically assessed	Fair			
Most threats systematically identified and assessed	Good			
All threats systematically identified and assessed	Very good			

*This assessment should be based on the number, nature and extent of threats.

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

1.3
Is the 'Core Area' of the TR free from human and biotic interference?

Assessment criteria*

Condition	*Category*[*]	*(Tick ✓)*	*Reference document(s)*	*Remarks*
The core area has extensive human and biotic interference.	Poor			
The core area has some human and biotic interference.	Fair			
The core area has little human and biotic interference.	Good			
The core area has no human and biotic interference.	Very good			

*This assessment should be based on the efforts made by the TR management to address issues related to human settlements/villages inside the core area, such as livestock grazing, cultivation, encroachments, resource extraction and the dependence of the livelihoods of the local communities, and should reflect the overall interference due to all these factors. The issue of 'unified control' of the core and buffer zones under the Field Director should also be taken into account.

[*] ***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

1.4
Has the TR complied with the four statutory+ requirements (SR) along with the tripartite MoU and three standard operation procedures (SOPs)?

Assessment criteria*

Condition	*Category*[*]	*(Tick ✓)*	*Reference document(s)*	*Remarks*
None of the four SRs are complied with, and there is no compliance with the tripartite MoU and three SOPs.	Poor			
Two of the four SRs, 50% of the conditions of the tripartite MoU and SOPs are complied with.	Fair			
Three of the four SRs, 75% of the conditions of the tripartite MoU and SOPs are complied with.	Good			
All four SRs, 100% of the conditions of the tripartite MoU and SOPs are complied with.	Very good			

*The statutory requirements are (1) legal delineation and notification of core and buffer areas; (2) establishment of a tiger conservation foundation; (3) development of a tiger conservation plan; and (4) constitution of a state-level steering committee under the chairmanship of the Chief Minister. Tripartite Agreement (TA) refers to an agreement between the Field Director, state government and NTCA. The 3 SOPs are related to (i) straying of tigers in human-dominated landscapes, (ii) tiger mortality and (iii) disposal of carcasses.

[*] ***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2 Planning

2.1 Status of Tiger Conservation Plan (TCP) +

Assessment criteria*

Condition	*Category*+	*(Tick ✓)*	*Reference document(s)*	*Remarks*
No TCP in place	Poor			
The TCP is under preparation.	Fair			
The TR has a relevant TCP.	Good			
The TR has a comprehensive and relevant TCP, duly approved by the NTCA.	Very good			

*The scientific content and the participatory processes used in the preparation of the TCP should be taken into account in assessing the quality of the TCP.

+***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.2 Does the TR safeguard the threatened biodiversity values?

Assessment criteria*

Condition	*Category*+	*(Tick ✓)*	*Reference document(s)*	*Remarks*
The TR does not safeguard the threatened biodiversity values.	Poor			
The TR safeguards a few threatened biodiversity values.	Fair			
The TR safeguards a large number of threatened biodiversity values.	Good			
The TR safeguards all threatened biodiversity values.	Very good			

*Remarks need to elaborate on the kind of safeguards and how they work or are intended to work.

+***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.3 Are stakeholders given an opportunity to participate in planning process?

Assessment criteria*

Condition	*Category*+	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Little, if any, opportunity for stakeholder participation in planning	Poor			
Stakeholders participate in some planning	Fair			
Stakeholders participate in most planning processes	Good			
Stakeholders routinely and systematically participate in all planning processes	Very good			

*The results of participation must show in the field and not be merely reported as a routine exercise.

+***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.4
Are habitat management programmes systematically planned, relevant and monitored and do they contribute effectively to the conservation of the tiger and other endangered species?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
The habitat management programmes are entirely ad hoc.	Poor			
There are a limited number of planning and monitoring programmes in place for habitat management.	Fair			
The habitat management programmes are generally planned and monitored.	Good			
The habitat management programmes are thoroughly planned and monitored.	Very Good			

*This assessment should be primarily based on habitat management programmes for species that are threatened (IUCN categories), that are habitat specialists and that make seasonal movements. It should be wide ranging, with an emphasis on the breeding and rearing habitats, and may include factors such as food, water and shelter (all connotations). The structure and composition of the habitat, unique patches of vegetation, sensitive sites, sources of water and their distribution are integral to the assessment. Corridors within the buffer zone are critical—for example, all riparian habitats. Have these been addressed? Is there a planning process in place? The management practices dealing with invasive species such as Lantana and Mikania should be examined.

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.5
Does the TR has an effective protection strategy (PS)* and security plan and security audit (SA) in place?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
The TR has no PS and SA.	Poor			
The TR has an ad hoc PS and SA.	Fair			
TR has a generally relevant PS and SA but these are not very effective.	Good			
The TR has a comprehensive and very effective PS and SA.	Very Good			

*This assessment takes, inter alia, into account the nature of threats, the number and locations of patrolling camps, foot and mobile patrolling, needs related to the available manpower, difficulties on account of the terrain, practicability of area coverage and readiness to contain specific threats with the necessary support and facilities. The constitution and functioning of a special tiger protection force (STPF), number of offences reported, arrests made, prosecution initiated and conviction achieved should be taken into account.

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.6
Has the TR been effective in mitigating human–wildlife conflicts?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
There are significant human–wildlife conflicts, significant but they are poorly addressed.	Poor			
The TR has been able to mitigate a few human–wildlife conflicts.	Fair			
The TR has been able to mitigate many human–wildlife conflicts.	Good			
The TR has been effective in mitigating all human–wildlife conflicts.	Very Good			

*The assessment should take into account the number of incidences reported, the compensation paid and its timeliness.

⁺***Score:*** Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10

2.7
Is the TR integrated into a wider ecological network/ landscape according to the principles of the ecosystem approach?

Assessment criteria*

Condition	*Category**	*(Tick ✓)*	*Reference document(s)*	*Remarks*
The TR not integrated into a wider network/landscape.	Poor			
Limited attempts have been made to integrate the TR into a network/landscape.	Fair			
The TR is generally quite well integrated into a network/landscape.	Good			
The TR is fully integrated into a wider network/landscape.	Very Good			

*The assessment needs to consider the scope of opportunities that exist at the landscape scale. Have any attempts been made and what are these? Have all the important corridors been identified? What actions are planned/have been implemented for their security? Have the forest working plans and Forest Development Corporation plans within the identified landscapes taken cognizance of such new requirements? These should have been reflected in the TCPs. Is there any effort to rationalize the land use around the TR? Is any effort being made to plan and use 'smart green infrastructure'?

Score: *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3 Inputs

3.1
Are the personnel adequate, well organized and deployed with access to adequate resources in the TR*?

Assessment criteria*

Condition	*Category**	*(Tick ✓)*	*Reference document(s)*	*Remarks*
A few of the personnel are explicitly allocated, but they are poorly supported for TR management.	Poor			
Some of the personnel are explicitly allocated for TR management, but they are not adequately supported and systematically linked to the management objectives.	Fair			
Some of the personnel have fair support and are explicitly allocated towards achievement of specific management objectives of the TR.	Good			
The personnel are adequate, appropriately supported and explicitly allocated towards achievement of specific management objectives of the TR.	Very Good			

*This assessment should, inter alia, be based on the number of personnel allocated for attainment of the objectives of the TR at the range, round, beat and patrolling camp levels or as relevant to the needs (sanctioned posts vis-à-vis the existing personnel and needs beyond the sanctioned strength—it is possible that posts have last been sanctioned several years back and did not account for the current needs).

Score: *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.2
Are the resources (vehicles, equipment, buildings, etc.) adequate, well organized and managed with required access?

Assessment criteria*

Condition	*Category**	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Few, if any, resources explicitly allocated for TR management	Poor			
Some resources explicitly allocated for TR management but not systematically linked to management objectives	Fair			
Some resources explicitly allocated towards achievement of specific TR management objectives	Good			
Adequate resources explicitly allocated towards achievement of specific TR management objectives	Very Good			

*There are a variety of resources. These may be segregated into immovable (structures) and movable categories, and each further may be considered under the essential and desirable categories. It is best to start with what the minimum needs are to attain each objective, what is available and the manner of use/deployment. The proportions of the 'essentials' and 'desirables' along the importance gradient of objectives will serve as pointers for score categories. Specific remarks will be vitally important.

* ***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.3
Are financial resources other than those of the state linked to priority actions and are funds adequate, released in a timely manner and utilized?

Assessment criteria*

Condition	*Category**	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Resource allocation is ad hoc, funds are inadequate and seldom released in time and not utilized.	Poor			
Some specific allocation for management of priority action. Funds are inadequate and there is some delay in release, partially utilised.Some resources explicitly allocated	Fair			
Comprehensive planning and allocation that meets the most important objectives. Generally funds released with not much delay and mostly utilised.	Good			
Comprehensive planning and allocation of resources for attainment of most objectives. Funds generally released on time and fully utilised.	Very Good			

*Obtain details of funds released by NTCA and their utilization by TR in the last 3 years and indicate them under 'Remarks'. Also comment on the problems associated with fund allocations and their utilization.

* ***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.4
Are financial resources from the state linked to priority action and funds adequate, released in a timely manner and utilised for the management of the TR?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Resource allocation is ad hoc, funds are inadequate, seldom released in time and not utilised.	Poor			
Some specific allocation for management of priority action. Funds are inadequate, there is some delay in release, partially utilised.	Fair			
Comprehensive planning and allocation that meets the most important objectives. Generally funds released without much delay and mostly utilised.	Good			
Comprehensive planning and allocation of resources for attainment of most objectives. Funds generally released on time and fully utilised	Very Good			

*Obtain details of funds released by state and their utilisation by TR in the last 3 years and indicate them under 'Remarks'. Also comment on the problems associated with fund allocation and utilisation.

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.5
What extent of the resources is provided by NGOs?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
NGOs contribute nothing for the management of the TR.	Poor			
NGOs make some contribution to the management of the TR, but opportunities for collaboration are not systematically explored.	Fair			
NGOs' contributions are systematically sought and negotiated for the management of some TR-level activities.	Good			
NGOs' contributions are systematically sought and negotiated for the management of many TR-level activities.	Very Good			

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

Process 4

Assessment criteria*

4.1 Does the TR have manpower resources trained in wildlife conservation for effective TR management?

Condition	*Category*˚	*(Tick ✓)*	*Reference document(s)*	*Remarks*
No trained officers and frontline staff in the TR	Poor			
Some trained officers and a few trained frontline staff members posted in the TR	Fair			
All trained officers and a fair number of trained frontline staff members posted in the TR	Good			
All trained officers and mostly trained frontline staff posted in the TR	Very Good			

*Indicate the percentage of trained staff members in various categories. The number and thematic areas of the internal training programmes organised in the TR in the last 3 years may be taken into account. Has the TR prepared a 'Staff Development Plan'? Is it being implemented?

˚***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

Assessment criteria*

4.2 Is TR staff management performance linked to achievement of management objectives?

Condition	*Category*˚	*(Tick ✓)*	*Reference document(s)*	*Remarks*
No linkage between staff management performance and management objectives	Poor			
Some linkage between staff management performance and management objectives, but not consistently or systematically assessed	Fair			
Management performance for most staff members is directly linked to achievement of relevant management objectives.	Good			
Management performance of all staff members are directly linked to achieve-ment of relevant management objectives.	Very Good			

˚***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4.3
Is there effective public participation in TR management and does it show by making a difference?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Little or no public participation in TR management	Poor			
Opportunistic public participation in some of the relevant aspects of TR management	Fair			
Systematic public participation in most of the relevant aspects of TR management	Good			
Comprehensive and systematic public participation in all important and relevant aspects of TR management	Very Good			

**The involvement of NGOs/NGIs in population estimation may be taken into account.*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4.4
Is there a responsive system for handling complaints and comments about TR management?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Ad hoc approach to handling complaints	Poor			
Complaint handling system operational but not responsive to individual issues and with limited follow-up	Fair			
Coordinated system logs and responds effectively to most complaints	Good			
All complaints systematically logged in coordinated system and timely response provided with minimal repeat complaints	Very Good			

**Does the TR maintains a suggestions register? What actions are taken to deal with suggestions?*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4.5
Does the TR management address the livelihood issues of resource-dependent communities, especially women?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
No livelihood issues are addressed by the TR management.	Poor			
A few livelihood issues are addressed by the TR management.	Fair			
Substantial livelihood issues are addressed by the TR management.	Good			
Livelihood issues of resource-dependent communities, especially women, are addressed effectively by the TR managers.	Very Good			

**The number of man-days generated in the last 3 years may be taken into account. Are funds received from district agencies and other sources? Provide details of funds received in the last 3 years.*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4.6
Has the TR planned and implemented voluntary village relocation from the core/Critical Tiger Habitat (CTH)?

Assessment criteria*

Condition	*Category*˟	*(Tick ✓)*	*Reference document(s)*	*Remarks*
No planning and no implementation	Poor			
Plans have been made but no implementation	Fair			
Plans have been made and some implementation is in progress.	Good			
Plans have been made and are being actively implemented/no human habitation in the CTH	Very Good			

˟Assessment will look into the village relocation planning process including availability of manpower, financial resources and NGO support, if any. Is there a mechanism to address the complaints received regarding the relocation process? Efforts must be made to assess the post-relocation success or lack thereof.

˟***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

Output 5

5.1
Is adequate information on the TR management publicly available?

Assessment criteria*

Condition	*Category*˟	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Little or no information on TR management publicly available	Poor			
Publicly available information is general and has limited relevance to the account ability of the management and the condition of public assets.	Fair			
Publicly available information provides detailed insights into major management issues and condition of public assets.	Good			
Comprehensive reports on the management and condition of the public assets are routinely made available in the public domain.	Very Good			

˟***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

5.2
Are the visitor services and facilities appropriate and adequate?

Assessment criteria*

Condition	*Category*+	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Visitor services and facilities do not exist.	Poor			
The visitor services and facilities are very basic.	Fair			
The visitor services and facilities are monitored from time to time and are fairly effective.	Good			
Visitor services and facilities are conscientiously maintained, regularly upgraded and monitored for visitor satisfaction.	Very Good			

+*Include the existence and quality of visitor and interpretation centres (including the skills and capabilities of the personnel manning these); TR-related publications, films and videos; arrangements for stay (including places serving refreshments and food that are owned and managed by the TR); watch towers and hides (including safety factors); vehicles assigned for visitors, including riding elephants, if any, and their deployment; drinking water; rest rooms; garbage disposal; attended and self-guided services in the field; and visitor feedback on the quality of wilderness experience.*

+***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

5.3
Are research-/monitoring-related trends systematically evaluated and routinely reported and used to improve the management?

Assessment criteria*

Condition	*Category*+	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Little or no systematic evaluation or routine reporting of trends	Poor			
Some evaluation and reporting undertaken but neither systematic nor routine	Fair			
Systematic evaluation and routine reporting of trends undertaken	Good			
Systematic evaluation and comprehensive reporting of trends undertaken and attempts made at course corrections as relevant	Very Good			

+*+Not all TRs attract projects and researchers and, with exceptions, little research takes place on a TR's own steam because of systemic limitations. However, monitoring some critical issues is expected, e.g. the populations of the tiger, co-predators and prey, with some insights being obtained about their demography and distribution (performing some opportunistic sampling in a spatially distributed manner through sightings and signs during assessment would be extremely useful in terms of expert impressions and as a pulse), the incidence of livestock grazing and fires, weeds, sources of water, the variety of illegal activities typically associated with the reserve, the health of the wildlife (epidemics, immunization of livestock), regeneration of and changes in vegetation, visitors and their activities, offence cases and ex gratia payments. Efforts must be made to assess the planning and implementation of Phase-IV monitoring protocols and the success of implementation of M-Stripes (wherever applicable). Are the 'Sykes and Horill' monitoring plots maintained and data analysed?*

+***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

5.4
Are there funds and a systematic maintenance schedule in place for management of infrastructure/ assets?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
No systematic inventory or maintenance schedule	Poor			
The inventory maintenance is ad hoc, and so is the maintenance schedule.	Fair			
A systematic inventory provides the basis for the maintenance schedule, but the funds are inadequate.	Good			
A systematic inventory provides the basis for the maintenance schedule, and adequate funds are made available.	Very Good			

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

Outcomes 6

6.1
Are the populations of threatened species declining, stable or increasing?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Populations of key threatened/endangered species are declining.	Poor			
Some threatened/endangered species' populations declining, some are increasing, most others are stable.	Fair			
Several threatened/endangered species' populations increasing, most others are stable.	Good			
All threatened/endangered species populations either increasing or stable.	Very Good			

*This needs to practically relate to the natural ecosystem potential rather than be driven merely by numbers and visibility. The assessment score may be elaborated under 'Remarks'.

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.2
Is the population of the tiger showing a declining, stable or increasing trend?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Population of tiger is showing a declining trend	Poor			
Population of tiger is stable	Fair			
Population of tiger is showing an increasing trend	Good			
Population of tiger has significantly increased	Very Good			

*This assessment should be based in the context of the available population estimate (2010–2011) and the outcomes of the currently ongoing Phase-IV analyses.

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.3
Have the threats to the TR been reduced/ minimized? Or is there an increase?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Threats to the TR have not abated but have grown.	Poor			
Some threats to the TR have abated, others continue	Fair			
Most threats to the TR have abated. The few remaining ones are being addressed vigorously.	Good			
All threats to the TR have been effectively contained, and an efficient system is in place to deal with any emerging situation.	Very Good			

**Does the TR have a Disaster Risk Management Plan to deal with existing as well as emerging threats?*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.4
Are the expectations of visitors generally met or exceeded?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Expectations of visitors generally not met.	Poor			
Expectations of many visitors are met.	Fair			
Expectations of most visitors are met.	Good			
Expectations of all most all visitors are met.	Very Good			

**What is the compliance status regarding the Guidelines on Ecotourism in TRs of the Supreme Court/NTCA?*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.5
Are local communities supportive of the TR management?

Assessment criteria*

Condition	*Category*⁺	*(Tick ✓)*	*Reference document(s)*	*Remarks*
Local communities are hostile.	Poor			
Some are supportive.	Fair			
Most locals are supportive of the TR management.	Good			
All local communities supportive of the TR management.	Very Good			

⁺*There could be many reasons for disenchantment. It could be really because of managerial neglect, or the managerial efforts could be appropriate but there could be local elements/organisations who would like to keep the disaffectation simmering for their own ulterior motives. Likewise, success could be entirely because of the efforts of managers or they might have been fortunate in striking partnerships with credible NGOs. The assessment may take the prevailing causes into account.*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

MEE scorecard[+] 1.8

Framework element number	*Framework element name*	*Number of criteria (a)*	*Maximum marks per question (b)*	*Total (axb)*	*Marks obtained for the element*	*Overall MEE score and percentage*
1	Context	4	10	40		
2	Planning	7	10	70		
3	Inputs	5	10	50		
4	Process	6	10	60		
5	Outputs	4	10	40		
6	Outcomes	5	10	50		
	Total	**31**		**310**		

[+]Efforts will be made by the NTCA–WII–MEE team to address the issue of assigning differential weightages to the 31 assessment criteria including 'normalization'.

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02

MANAGEMENT EFFECTIVENESS EVALUATION (MEE) OF TIGER RESERVES IN INDIA

RESULTS AT A GLANCE : 2014

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Cluster-wise scoring of MEE TR 2014 2.1

The 43 Tiger Reserves in 17 states, were grouped into the same landscape clusters as in the tiger estimation exercise. The five clusters had an overall MEE of 69.63%, with a range from 45% to 91% (Table 1).

Cluster No.	States	Number of TRs	Mean MEE Score (%)	Mean MEE score range (%)
II	Madhya Pradesh	6	79.44	70-89
IV	Karnataka, Kerala and Tamil Nadu	11	76.69	61-91
I	Uttar Pradesh, Uttarakhand, Rajasthan and Maharashtra	9	71.50	52-78
V	Arunachal Pradesh, Assam, Mizoram and West Bengal	8	62.90	48-85
III	Bihar, Chhattisgarh, Odisha, Andhra Pradesh and Jharkhand	9	57.62	45-75
I - V	**Total 17 States**	**43**	**69.63**	**45-91**

Table 1 Cluster-wise MEE scores arranged according to descending percentage

Effectiveness of individual TRs in MEE TR 2014 2.2

Cluster II has the best managed TR in the country and got the highest mean MEE score (79.44%), while Cluster III has fairly managed TRs and got the lowest mean MEE score (57.62%). Periyar Tiger Reserve in Kerala (Cluster IV) got the highest MEE score (Very good-91.13%), whereas Indravati Tiger Reserve, in Chhattisgarh (Cluster III), got the lowest MEE score (Fair-45.16%). Five TRs were categorised as being in the 'Red Corridor' because of civil unrest, and two TRs that had lost their tiger populations were categorised separately (Table 2). Overall, 17 TRs were rated 'Very good' (40%); 16 TRs were rated 'Good' (37%), 10 TRs were rated 'Fair' (23%), and no TR was rated 'Poor' in the current evaluation (Figure 2). Cluster-wise MEE ratings of the TRs evaluated in 2014 were calculated, and these are shown in Figure 3. In Cluster I, there were four TRs each in the 'Good' and 'Very good' categories, whereas only one TR was in the 'Fair' category. In Cluster II, four TRs were rated 'Very good', and two TRs were rated 'Good'. In Cluster III, there was one TR each in the 'Very good' and 'Good' categories and seven TRs in the 'Fair' category. In Cluster IV, seven TRs are in the 'Very good' category and four TRs in the 'Good' category. In Cluster V, there is only one TR in the 'Very good' category, five TRs in the 'Good' category and two TRs in the 'Fair' category (Figure 3). A comparative performance of individual TRs is provided in Figure 4.

Table 2
Cluster-wise effectiveness of individual TRs

Cluster Number	States	Tiger Reserves	MEE score (%)	MEE rating
I	Maharashtra	Pench	78.23	Very good
	Uttarakhand	Corbett	76.61	Very good
	Maharashtra	Tadoba	75.81	Very good
	Maharashtra	Melghat	75.00	Very good
	Rajasthan	Ranthambore	71.77	Good
	Uttar Pradesh	Dudhwa	70.97	Good
	Maharashtra	Sahyadri	69.35	Good
	Rajasthan	Mukundara Hills	52.42	Fair
II	Madhya Pradesh	Pench	89.52	Very good
	Madhya Pradesh	Kanha	87.90	Very good
	Madhya Pradesh	Satpuda	78.23	Very good
	Madhya Pradesh	Bandhavgarh	72.58	Good
	Madhya Pradesh	Sanjay Dubri	70.16	Good
III	Bihar	Valmiki	75.81	Very good
	Andhra Pradesh	Kawal	58.87	Fair
	Chhattisgarh	Achanakmar	54.03	Fair
	Orissa	Satkosia	53.23	Fair
IV	Kerala	Periyar	91.13	Very good
	Kerala	Parambikulam	86.29	Very good
	Tamil Nadu	Mudumalai	80.65	Very good
	Tamil Nadu	Anamalai	79.84	Very good
	Tamil Nadu	Kalakad-Mundanthurai	79.84	Very good
	Karnataka	Nagarhole	79.03	Very good
	Karnataka	Bandipur	78.23	Very good
	Karnataka	Biligiri Ranganatha Temple	70.97	Good
	Karnataka	Dandeli-Anshi	70.16	Good
	Karnataka	Bhadra	66.13	Good
	Tamil Nadu	Sathyamanglam	61.29	Good
V	West Bengal	Sundarbans	85.48	Very good
	Mizoram	Dampa	68.55	Good
	West Bengal	Buxa	66.94	Good
	Assam	Kaziranga	61.29	Good
	Assam	Manas	60.48	Good
	Arunachal Pradesh	Pakke	60.48	Good
	Assam	Nameri	51.61	Fair
	Arunachal Pradesh	Namdapha	48.39	Fair
Red Corridor	Andhra Pradesh	Nagarjunsagar Srisailam	68.55	Good
	Orissa	Similipal	58.06	Fair
	Jharkhand	Palamau	54.03	Fair
	Chhattisgarh	Udanti-Sitanadi	50.81	Fair
	Chhattisgarh	Indravati	45.16	Fair
Lost all tigers	Madhya Pradesh	Panna	78.23	Very good
	Rajasthan	Sariska	73.39	Good

Figure 2
Category-wise ratings of TRs in India based on 2014 evaluation

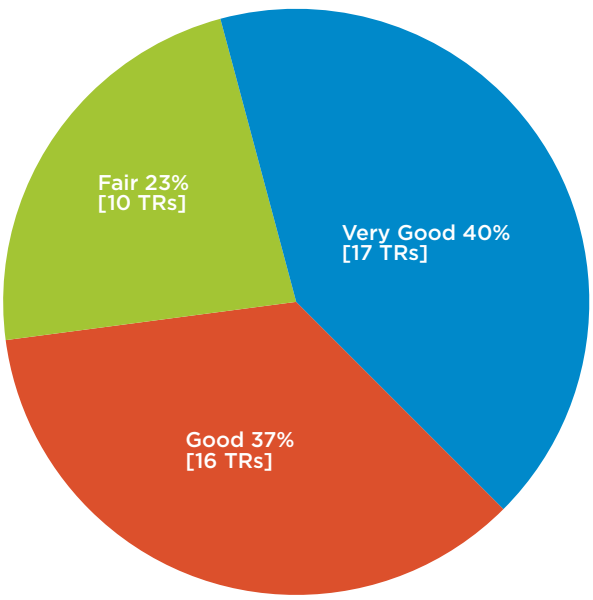


Figure 3
Cluster-wise ratings of TRs in India based on 2014 evaluation

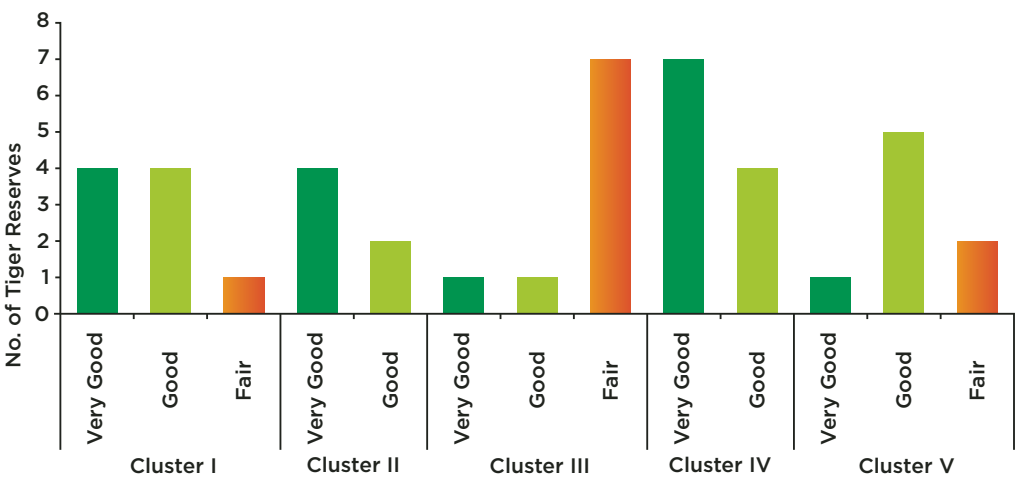
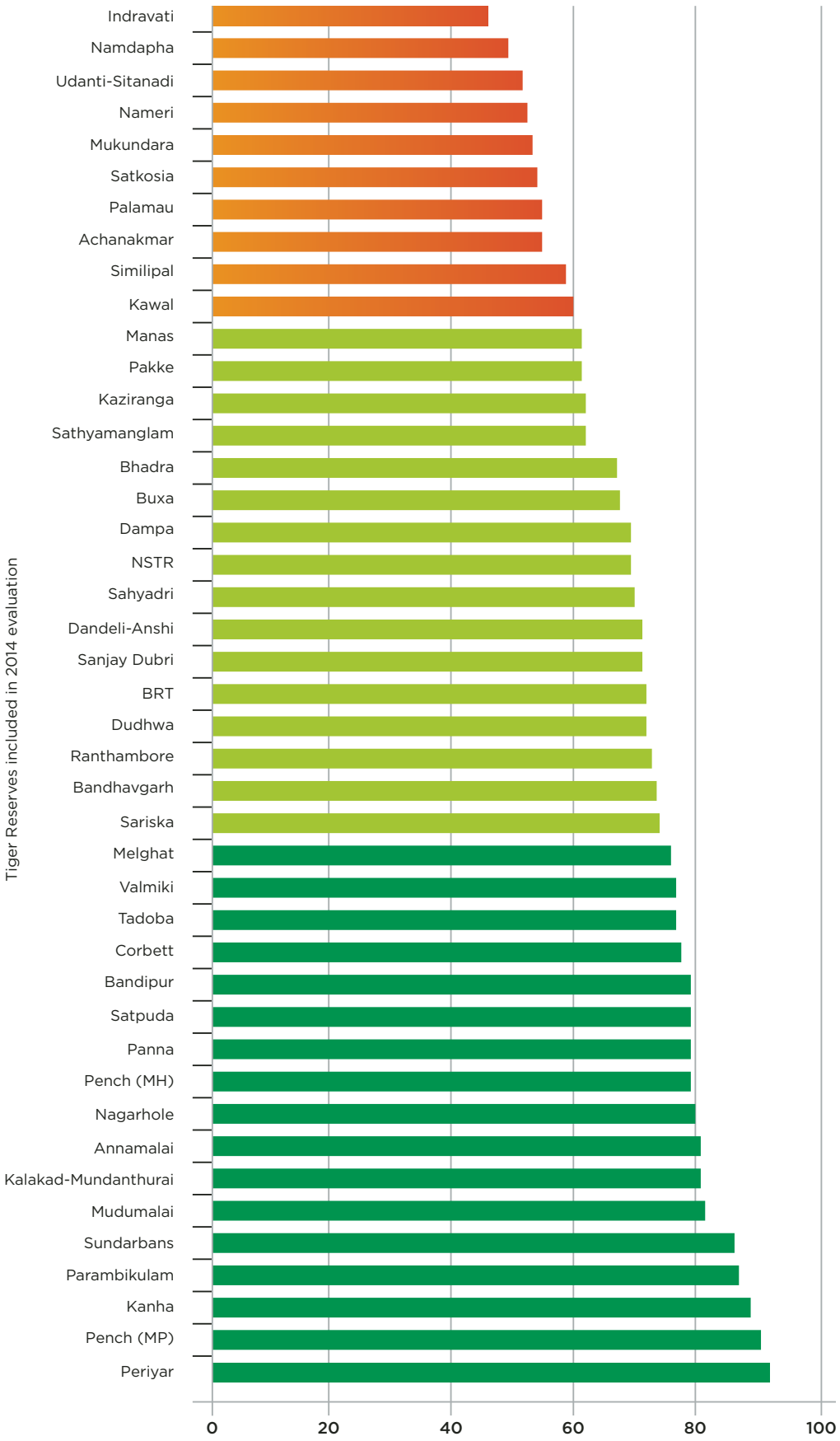


Figure 4
Comparative performance of individual TRs in MEE 2014



Comparison of MEE TR 2014 evaluations with 2006 and 2010 evaluations

2.3

A summary and comparison of the evaluations and MEE ratings of TRs of 2006, 2010 and 2014 are provided in Table 3. In 2006, 28 TRs were evaluated, and in 2010, 39 TRs were evaluated. In 2014, 43 TRs were evaluated. Twelve TRs have improved their ratings, while the ratings of 4 TRs have gone down compared with the MEE in 2010 (Table 4). Valmiki Tiger Reserve, in Bihar, showed a significant improvement in the MEE rating in 2014.

Table 3
Summary of MEE TR 2014 ratings with 2006 and 2010 ratings

MEE ratings category	MEE TR 2006		MEE TR 2010		MEE TR 2014	
	Number of TRs	Percentage	Number of TRs	Percentage	Number of TRs	Percentage
Very Good	9	32	15	38	17	40
Good	10	36	12	31	16	37
Fair	7	25	8	21	10	23
Poor	2	7	4	10	0	0
Total	**28**		**39**		**43**	

Table 4
Comparison of MEE TR 2014 ratings with 2006 and 2010 ratings

Cluster Number	Tiger Reserves	Number of notified TRs & MEE ratings			Change status
		2006 28	2010 39	2014 43	
I	Corbett	Very good	Good	Very good	↑
	Dudhwa	Very good	Good	Good	
	Melghat	Very good	Good	Very good	↑
	Mukundara Hills	-	-	Fair	-
	Pench (MH)	Good	Good	Very good	↑
	Ranthambore	Fair	Good	Good	-
	Sahyadri	-	Fair	Good	↑
	Sariska	Poor	Fair	Good	↑
	Tadoba Andhari	Good	Good	Very Good	↑
II	Bandhavgarh	Good	Very good	Good	↓
	Kanha	Very good	Very good	Very good	-
	Panna	Very good	Very good	Very good	-
	Pench (MP)	Very good	Very good	Very good	-
	Sanjay Dubri	-	Fair	Good	↑
	Satpuda	-	Very good	Very good	-
III	Achanakmar	-	Fair	Fair	-
	Indravati	Poor	Poor	Fair	↑
	Kawal	-	-	Fair	-
	Nagarjunsagar Srisailam	Fair	Good	Good	-
	Palamau	Very good	Poor	Fair	↑
	Satkosia	-	Poor	Fair	↑
	Similipal	Very good	Fair	Fair	-
	Udanti-Sitanadi	-	Poor	Fair	↑
	Valmiki	Fair	Fair	Very good	↑↑

Cluster Number	Tiger Reserves	Number of notified TRs & MEE ratings			Change status
		2006 28	2010 39	2014 43	
IV	Anamalai	-	Very good	Very good	-
	Bandipur	Good	Very good	Very good	-
	Bhadra	Good	Very good	Good	↓
	Biligiri Ranganatha Temple	-	-	Good	-
	Dandeli-Anshi	-	Very good	Good	↓
	Kalakad-Mundanthurai	Fair	Very good	Very good	-
	Mudumalai	-	Very good	Very good	-
	Nagarhole	Good	Good	Very good	↑
	Parambikulam	-	Very good	Very good	-
	Periyar	Good	Very good	Very good	-
	Sathyamanglam	-	-	Good	-
V	Buxa	Good	Good	Good	-
	Dampa	Good	Good	Good	-
	Kaziranga	-	Very good	Good	↓
	Manas	Fair	Good	Good	-
	Namdapha	Fair	Fair	Fair	-
	Nameri	Good	Fair	Fair	-
	Pakke	Fair	Good	Good	-
	Sundarbans	Very good	Very good	Very good	-

2.4 Performance of Headline Criteria/Indicators

The relative performance of 31 headline indicators is shown in Figure 5. 'Mitigation of human-wildlife conflicts' had the best rating, while 'Adequacy of trained manpower resources' had the lowest rating across all the 43 TRs.

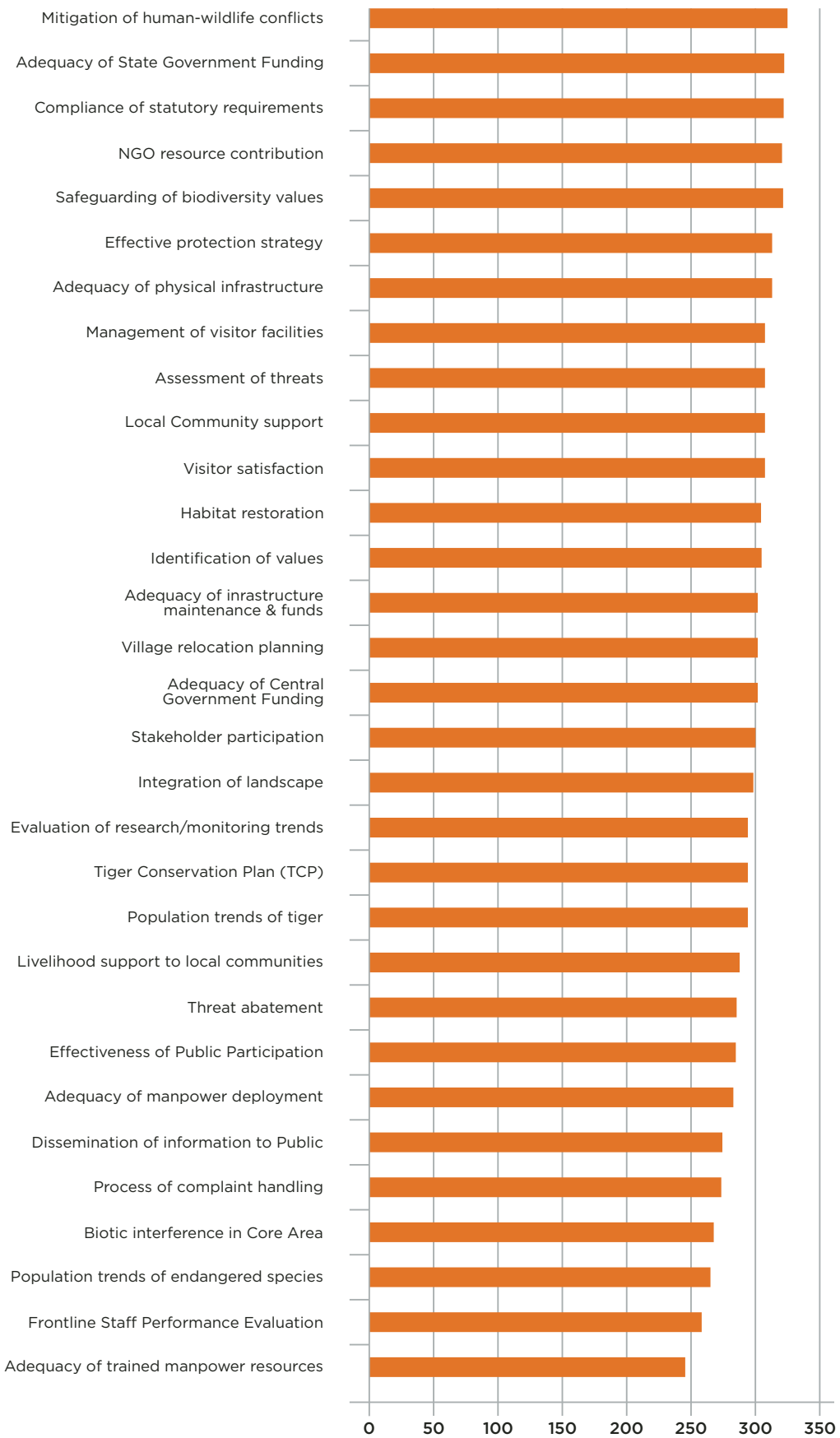


Figure 5
Relative performance of headline criteria/indicators in MEE 2014

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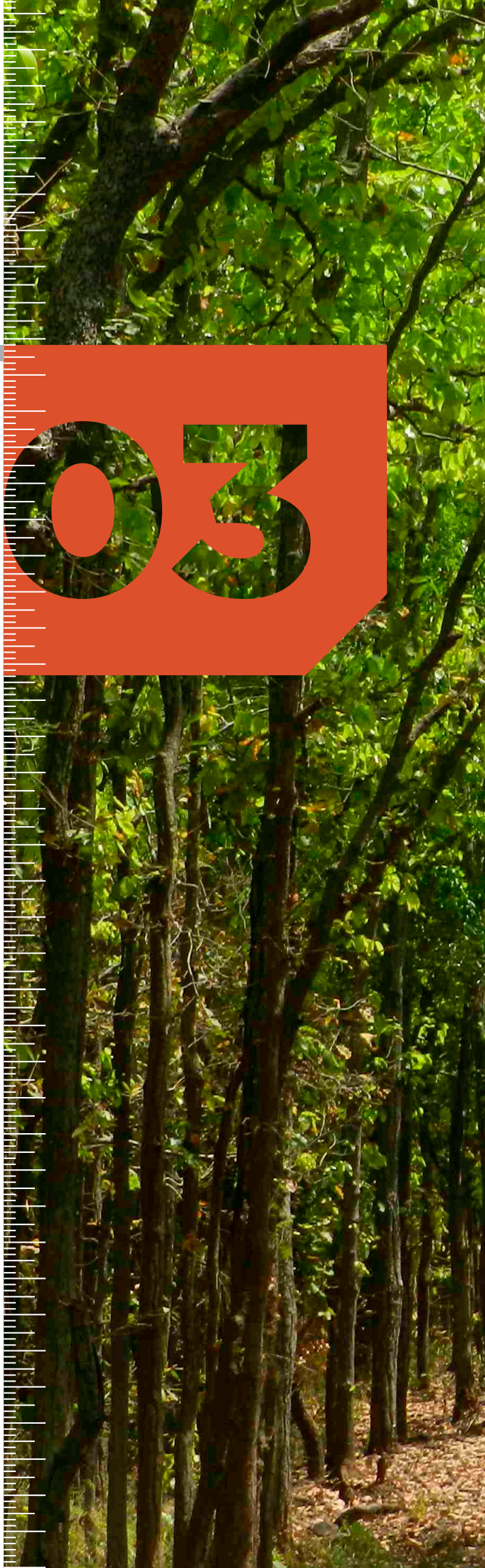
03

CLUSTER-WISE STRENGTHS, WEAKNESSES AND ACTIONABLE POINTS OF TIGER RESERVES IN INDIA, 2014



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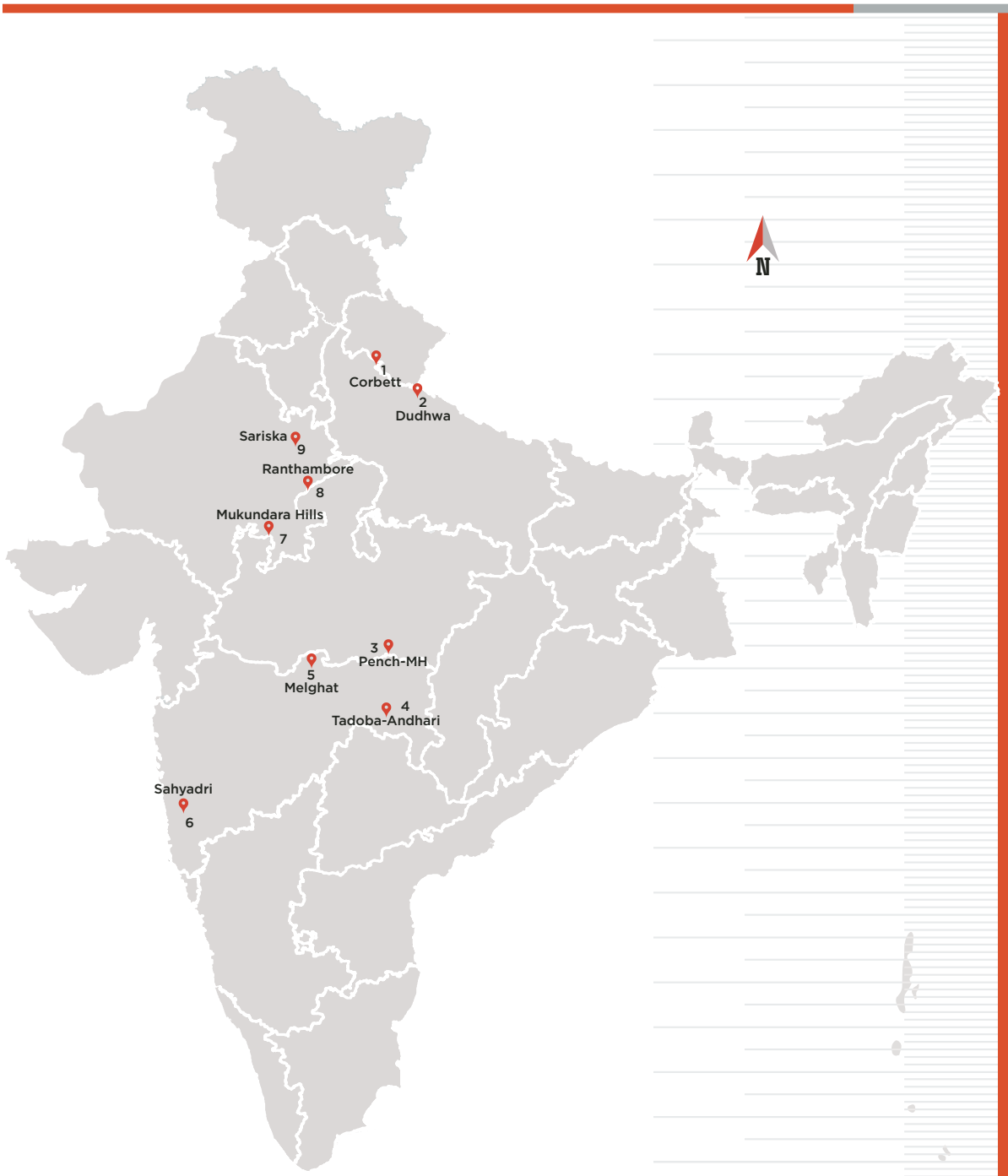
CLUSTER ONE



1. Corbett Tiger Reserve, Uttarakhand
2. Dudhwa Tiger Reserve, Uttar Pradesh
3. Pench Tiger Reserve, Maharashtra
4. Tadoba-Andhari Tiger Reserve
5. Melghat Tiger Reserve, Maharashtra
6. Sahyadri Tiger Reserve, Maharashtra
7. Mukundara Hills Tiger Reserve, Rajasthan
8. Ranthambore Tiger Reserve, Rajasthan
9. Sariska Tiger Reserve, Rajasthan

3.1 Cluster - I

**Corbett (Uttarakhand); Dudhwa (Uttar Pradesh);
Pench, Tadoba-Andhari, Melghat and Sahyadri (Maharashtra);
Mukundara Hills, Ranthambore and Sariska (Rajasthan).**

1 Corbett Tiger Reserve, Uttarakhand

A Management Strengths

1. One of the oldest conservation areas in the country, Corbett Tiger Reserve (CTR) is very well known to a large cross-section of society, ranging from high-profile policy makers to the local stakeholders around the park. The high visibility of Corbett is strength in eliciting greater conservation support.
2. The approach to protection through foot patrolling with use of technology has improved the protection of the park and the quality of the frontline staff with respect to the use of gadgets such as PDAs, GPS, wireless and E-Eye has improved. A well established protection network and its operational ability are recognizable strengths of CTR.
3. Its location as a significant unit of the Terai Arc Landscape and is being one of the areas with highest densities of Tigers makes it an invaluable conservation area of the country.
4. Effective management of corridors in the neighbouring forest divisions offers opportunities for developing a long-term secure environment for Tigers for their dispersal.
5. The involvement of local communities, especially because of the tourism-livelihood linkages and collaborations with NGOs and academic institutions, offers opportunities for a greater inclusive management regime for the CTR landscape.

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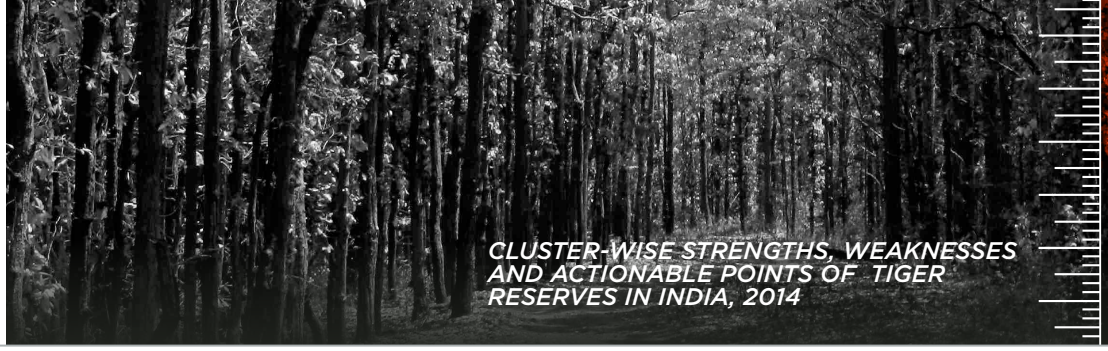


Management Weaknesses B

1. While there are no permanent villages in the core area of CTR, a total of 181 Gujjar settlements temporarily occupy parts of the core from April to June each year for grazing their cattle. Significant impacts, related to lopping of trees, grazing in the meadows and human movements, have been reported in various studies. Considering the requirement of inviolate areas for Tigers to function as a source population, the Gujjar occupation of the core area is in conflict with the larger goal of conservation.
2. There are 20 villages located in the buffer area and about 70 villages located within 5 km of the buffer zone boundary. They will continue to exert resource use pressure on the CTR landscape unless there are livelihood alternatives.
3. Human and cattle deaths and injuries due to wild animal attacks, especially Tigers, remain a constant problem. While mechanisms are in place to provide compensation for the loss of lives, injuries, etc. resentment from the victims causes negative publicity for CTR.
4. The engagement with local communities through ecodevelopment programmes requires to be strengthened in terms of revenue generation for the local communities and their participation in park protection.
5. There are still more opportunities for research and monitoring on the dynamics of key species, ecological processes and the interface with human society.

Actionable Points C

1. The voluntary relocation process for a fair and just rehabilitation of Gujars needs to be speeded up.
2. The ecodevelopment programmes in the buffer zones require special attention of the CTR management. Engagement with EDCs and development of innovative programmes for community-conservation linkages need to be developed and implemented in CTR.
3. The use of E-Eye for protecting the southern boundary has been reported to be useful in monitoring the movements of people and animals. The lessons learned from the use of E-Eye should be documented at the earliest, and the advantages, utility, technical attributes, monitoring protocol and use of information generated from E-Eye should be made widely known.
4. Due to the reputation of CTR and its proximity to important capital cities, not only the visiting tourists but often important visitors come to experience CTR. Although tourism helps generate wider support for CTR, at times it takes away a significant part of the field managers' time. With the strengthening of the existing Internet-based visitor management services, and with the implementation of standard operating protocols to manage visits of important persons, the management of CTR could be improved further.
5. There are some villages right on the movement paths of Tigers. Greater political and administrative support is required for relocating such villages.
6. The engagement with academic institutions, NGOs and civil society groups reflects the strength of CTR. The role of Tiger Conservation Foundation in strengthening this relationship to develop wider support and develop a database on the values and their management and monitoring will be crucial in improving scientific wildlife management in the country.

2 Dudhwa Tiger Reserve, Uttar Pradesh

A Management Strengths

1. As an integral part of the Terai Arc Landscape, Dudhwa is a very important conservation area of the country, with rich biodiversity, in the Terai Bhabar Bio-geographic Subdivision of the Upper Gangetic Plain (7a) Bio-geographic Province.
2. There are about 100 Tigers in the landscape, acting as a source from which Tigers disperse.
3. Out of seven deer species found in India, five species, namely the Sambar, Swamp Deer, Hog Deer, Spotted Deer and Barking Deer, are found in Dudhwa Tiger Reserve (DTR).
4. It has been a demonstration site for successful Rhinoceros conservation.
5. It protects one of the world's largest populations of the Northern Swamp Deer (Cervus duvauceli duvauceli).
6. It is an excellent place for conducting research on account of its variety of natural ecosystems, range of species, many of which are threatened, and role of local communities in the conservation of this resource.
7. There is a well organised protection network, and there is good coordination between the district administration, police and DTR management.
8. The communities living in the proximity are aware of DTR's significance and have been engaging with the management through a modest ecodevelopment programme.
9. Being the only Tiger reserve in Uttar Pradesh, and with the kind of values it has, DTR is high on the recognition radar of the local administration, the state government, NGOs, civil society and media groups. As a result, there is potential for eliciting support for the conservation of this magnificent Tiger reserve.

B Management Weaknesses

1. The porous international boundary with Nepal makes the area vulnerable from the protection perspective. In the illegal wildlife trade, high-value animals such as the Tiger, Rhinoceros and Elephant are always susceptible to poaching. Illicit felling of commercially important timbers such as Sal (Shorea robusta) introduces another protection dimension.
2. The fragmentation of DTR and disturbance to the habitats due to roads, including roads to Nepal and Railway makes protection of DTR still more difficult. In addition, these linear infrastructures cause wild animal accidents.
3. While flooding is a natural process of maintaining the terai grasslands and floodplains in DTR, the phenomenon causes protection issues as it becomes very difficult to travel from one side of the park to another through flooded rivers during the monsoon.
4. There are 25% vacancies in the frontline staff positions. The staff are mostly in the age group between 40 and 60 years (average age 47 years), and there is reluctance among them to be posted in DTR due to the remoteness of the area.
5. While the protection-first approach has worked satisfactorily to ward off many illegal problems, such as encroachments, illegal entries, poaching etc., the threats continue. The present protection apparatus, including manpower, protection camps, weapons

and patrolling vehicles, is inadequate to counter the problems smartly and effectively.

6. There are good opportunities for research and monitoring of ecological processes and the population dynamics of key species, but the institutional arrangement is weak.

7. There is one tribal village, Surma, in Dudhwa National Park, and 10 villages in Katerniaghat Wildlife Sanctuary, in critical Tiger habitats. This is important from the point of providing inviolate space to the Tigers so that they function as source populations.

8. The India Ecodevelopment Project initiated ecodevelopment during the late 1990s. A total of 34 EDCs are still operational, with some money in their Community Development Fund. However, the deficiency of manpower in DTR and the greater attention paid to protection issues have caused EDC management to become marginalized. However, the EDCs have potential to succeed.

Actionable Points

C

1. As can be seen from the foregoing, DTR is one of the areas with the most important conservation values in India. However, the values in terms of the ecological attributes, ecosystem processes and human interface with these processes need to be systematically understood, documented and monitored for improving the effectiveness of management decisions. Academic institutions may be approached for this purpose. Alternatively, or additionally, a dedicated team of competent ecologists, sociologists and data collectors may be created through an institutional arrangement within DTR. The constitution of the DTR Conservation Foundation, therefore, becomes very important for meeting these objectives.

2. The local communities include a significant population of Tharu tribes. DTR and WWF-India, along with the neighbouring forest divisions, have worked together in the past for improving the livelihood opportunities of the Tharu communities.

3. With the introduction of regulated gypsies accompanied by local guides, the local communities have begun to receive additional income from DTR. Visitors to the park are now required to go in the gypsies owned and managed by local people and compulsorily take a guide. It has provided revenue options to the local EDCs. This needs to be further encouraged.

4. Experiments in the use of alternative energy to replace fuel wood from the forest have been conducted. There is a need to strengthen and expend such associations so as to cover the entire buffer zone of DTR. Simultaneously, the existing EDCs need to be engaged in a more dynamic action programme, utilizing the available funds, so as to elicit their greater support for the protection of the park.

Pench Tiger Reserve, Maharashtra

3

Management Strengths

A

1. Pench Tiger Reserves (PTR), in both Madhya Pradesh and Maharashtra, are an important conservation area in the country. Together, these two reserves are linked to Kanha Tiger Reserve and therefore have long-term importance for Tiger conservation in central India.

2. The mix of forests-meadows- and waterbodies offer better tiger sighting opportunity,

and nearness to important towns draw a significant number of visitors to PTR. This could be utilized to solicit more support for the park. The identification of PTR as the place of 'Mowgli', the animal boy, has drawn further attention.

3. The buffer zone management is now under the control of the Field Director. The park is well staffed and appropriately equipped.
4. With the Special Tiger Protection Force (STPF) in place, the protection has improved. It is very encouraging to have a well managed team under motivating leadership.
5. The large waterbody of Totladoh reservoir is now largely free of fishing and other such activities. There is good potential for aquatic wildlife to flourish.
6. The ecodevelopment initiative is helping build a better park-people relationship. Relocation of the only village in Core (Fuljari) is going on, and financial and technical support is available.
7. The state government is very supportive of conservation, and the enabling orders issued by the government over the past 2-3 years have progressively directed forest and wildlife management.
8. The proportion of women in the STPF is 33%, and most of them are local women.

B Management Weaknesses

1. There are 56 villages within 10 km from the boundaries of PTR. These villages have direct or indirect influence on PTR through the movement of people along the roads, use of resources from PTR, grazing and livelihood support activities.
2. Often, a well trained and experienced staff member gets transferred from the park and is replaced by a staff member not conversant with wildlife management.
3. There are private lands adjoining the Tiger reserve (TR), and the use of such lands for large-scale commercial tourism may cause negative impacts on the values of PTR.
4. While fishing is prohibited and waterbodies are protected, the threat from illegal fishing remains a constant concern for the management. The vested interests associated with illegal fishing continue to incite the fishing communities.
5. The national highway passing close to the park is being upgraded to four lanes, and there will probably be heavy vehicular transport in the days to come. Unless suitable crossings and corridors are provided at proper locations, the highway will become a serious barrier to animal movement.
6. Damage from fire is a big threat in PTR. Since the area is basically dry deciduous forest with much litter on the ground, summers are especially worrisome.

C Actionable points

1. PTR has demonstrated effective use of solar power, earthen bunds, dykes etc. and used abandoned manganese mining areas as water holes. The use of alternative energy may be documented and disseminated for wider use.
2. Presently, the STPF (81 staff members, with 33% being women) engages only in protection duties. It is advised that their services also be utilized for scientific monitoring of habitats and key species.
3. Ecodevelopment initiatives need to be extended to the buffer zone so as to cover all the villages. Furthermore, the EDCs need to be engaged more effectively in the management of tourist places such as Sillari and Ambakuri and in revenue generation for themselves. There are encouraging signs when local youth are trained as tourist guides and alternative livelihood skills such as agarbatti making are developed. Such initiatives need to be strengthened.
4. Pench needs to develop a systematic monitoring system for documenting changes in

the values of the park and the impact of various protection and community engagement activities on the overall values.

Relocation of Fuljari village, in the core area, may be completed at the earliest. 5.

There is gregarious flowering of Bambusa bamboos, which is heavily browsed by wild animals, and there is good natural regeneration. Some of these areas can be fenced with chain-link fencing, and fire tracing operations can be taken up for 2-3 years to allow regeneration so that bamboo thickets, which are a good habitat for Tigers, are established. 6.

Ghatpendary village, which is outside the core area, is causing considerable damage and disturbing wildlife. Relocating it outside the TR may be considered, and proposals may be submitted to the state government and the National Tiger Conservation Authority. 7.

Tadoba-Andhari Tiger Reserve, Maharashtra 4

Management Strengths A

Tadoba-Andhari Tiger Reserve (TATR) is a pristine and unique ecosystem situated in Chandrapur District, of the state of Maharashtra, in India. 1.

The reserve contains some of the best forest tracts and is endowed with rich biodiversity. It is famous for its natural heritage. 2.

TATR is the second Tiger reserve (TR) and the largest TR in the state. Being the largest national park in Maharashtra, it is the most popular destination for Tiger safaris and birding. 3.

The undulating topography includes hills that are densely covered with mixed forests and belts of bamboo. The deep valleys, river beds and small grassy meadows provide suitable habitats for many life forms. 4.

The lifelines of the park are the Andhari River, Erai Dam, Kolsa Lake, Junoria Lake and Tadoba Lake. The river and water storage systems provide a year-long supply of freshwater to this amazing ecosystem. Besides small waterbodies, rivulets and creeks exist in the confines of dense forests in the plains and hills. Man-made water holes and small dams add to the life-sustaining environment. These factors explain the prolific biodiversity of the region. 5.

TATR has made excellent efforts toward reducing the biotic interference in the core. Commendable work has been done in relocating villages. 6.

Management Weaknesses B

The core zone is free of people, but there are 41,644 people in and around the reserve in 59 villages. The population of livestock in the buffer zone is 41,820 livestock and needs to be reduced. 1.

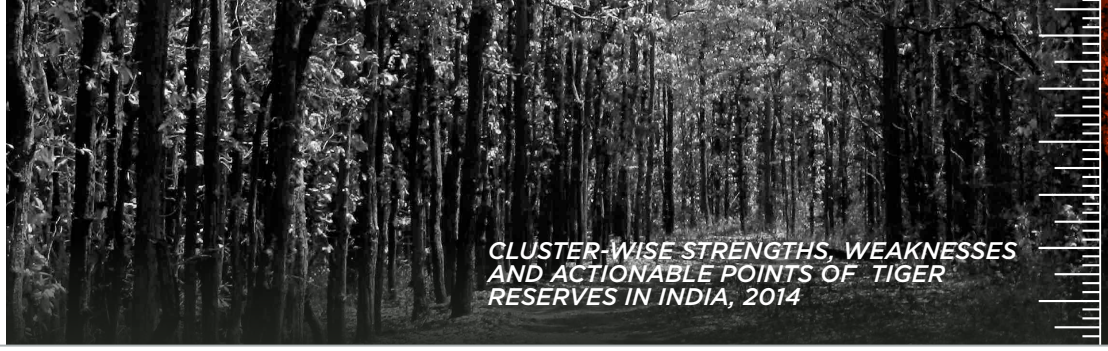
Actionable Points C

The archival data on vegetation could be collected from the preservation plots maintained. Such data should be used to compare the condition of habitats - past and present. 1.

Industrial threat to the park emanates from coal and thermal plants, situated close to the park. Fire, invasive species and issues related to regression of Bamboo have not 2.

been discussed so far and need to be discussed. Fencing can be installed to prevent browsing and grazing of regenerating vegetation.

3. There are two temples, Tadoba and Navegaon, inside the core that are occasionally visited by locals. It is advised that the temple management be carefully thought out and appropriate prescriptions made in the tiger conservation plan for this purpose.
4. FDCM areas in the buffer zone may be handed over to the Field Director as the earliest.
5. The revised draft of the TCP resubmitted to the National Tiger Conservation Authority (NTCA) should be finalised at the earliest.
6. Standard operating procedures (SOPs) should be translated in vernacular language so that they can be distributed to locals to familiarise them with SOPs of the NTCA.
7. The security plan and all the subsidiary plans related to management should have the approval of the Chief Wildlife Warden.
8. The buffer area still requires a wireless network.
9. A habitat management plan needs to be developed to deal with vegetational changes, and inverted water bunds need to be created. Invasive species management, water management, management of riparian zones, etc. be brought under database-based planning programmes. The water management planning is GIS assisted, and programmes for monitoring water quality and use have been visualised.
10. The park needs to create/ update baseline information on habitats including water bodies and wetlands; rehabilitated village sites and socio-economic progress of the rehabilitated villagers.
11. Plans should be developed for improving the habitat in the Erai backwaters and other waterbodies for threatened birds and other wildlife.
12. A list of offences, cases, conviction, prosecution and arrests should be available at the park.
13. The histories of the compartments should be constantly updated.
14. The committee advises that the landscape level map showing corridors be revised to include the connectivity with Pench and Melghat Tiger reserves, in the northwest, Navegaon Nagzira Tiger Reserve, in the northeast, and Indravati National Park, in the southeast.
15. The Chairman of the committee wishes to record that support of the Principal Secretary Forests is of great help to the management of TATR.
16. There is a need for buildings for the office and residence of the RFO Palasgaon and Seoni.
17. The entire buffer area is not connected to the wireless network. The connection has to be provided.
18. The ACF FLCS (Forest Labour Cooperative Society and Land) and ACF Vigilance, RFO Khadsangi do not have vehicles at present. These need to be provided soon.
19. Except for unavoidable situation, the resource use rights (Nistar) in the buffer may be minimized and gradually integrated with the neighbouring reserve forest areas of the territorial division to make the TR free of biotic interference.
20. The treasury procedure, irrespective of staff salary and TAs, occasionally involves delays.
21. The committee suggests that the 25 Forest Watchers who have been recruited recently may also be given training.
22. The committee suggests that the park management give feedback forms to tourist vehicles entering the TATR and that any complaints/comments can be written in the feedback forms.



The committee suggests that self-help groups (SHGs), especially women, need to be encouraged to make them self-reliant. 23.

Considering the difficulties of completing various administrating procedures related to relocation process (provision of land registration mutations, certificates of project affected persons (PAP), minor cases, etc.) the committee suggests that a single-window operational system be established so that villagers who have been relocated do not have any complaints regarding the lack of coordination and delay in settling their grievances. There are many good examples coming from the country on relocation, including in MP. Study tours to such sites would be useful. 24.

The old Nature Interpretation Centre at the Moharli entry gate is the only facility for interpretation. A modern interpretation facility is required. Interpretive programmes are required at the visitor gates and routes and need to be created for visitors. 25.

Display boards should be placed near ancient pillars and other historical structures for the benefit of visitors. Signage related to butterflies, birds, other animals and plants needs to be placed along tourist routes. 26.

The vegetation and animal use in rehabilitated sites, meadows and wetlands need to be analysed. Programmes need to be designed with the help of academicians/ scientists to monitor changes. Further, the air and water quality need to be monitored regularly. Changes in the plant and animal communities due to air or water pollution need to be monitored. Grassland and meadow management should be done on the basis of this discussion. 27.

Melghat Tiger Reserve, Maharashtra 5

Management Strengths A

One of the earliest Tiger reserves (TRs) in the country, Melghat represents the dry deciduous hills, valleys and plateaus of the Satpura-Maikal landscape, in the central Indian highlands. Connected with Satpura Tiger Reserve, though tenuously, it functions as an important source area for Tigers. 1.

This is one of the best studied TRs in the country, with well identified and documented values. It has special habitats, species of high conservation significance and socio-economic and cultural attributes. 2.

Melghat Tiger Reserve (MTR) has an effective protection system and implementation mechanism in place to secure the values of the park. On the other hand, the TR has built effective participatory management programmes that include proximate village communities, NGOs, the civil administration and academic institutions in management. Therefore the park is capable of eliciting greater participation of people in the management. 3.

The Government of Maharashtra has been very supportive of conservation of forests and wildlife in the state. There are enabling orders for filling the vacancies amongst the frontline staff expeditiously and for providing financial, technical, administrative and moral support for the process of relocation of villages from the core area of the TR. This support is a huge strength for MTR in achieving the long-term conservation goal as a source site for conservation of the Tiger. 4.

The forest training institute at Chikheldhara is an institute providing training in wildlife management through short-term regular courses. It has potential to be further strengthened to improve wildlife management in the state. 5.

6. The management is highly motivated and supported fully by the forest department, as well as the state government, which is reflected in the systematic and highly disciplined work environment in the park.

7. Chikheldhara, being the only hill station in the region, provides opportunities for wide dissemination of information on conservation. The forest training institute has developed a spider museum, with a collection of over 400 species of spider, and is an important resource for conservation awareness.

B Management Weaknesses

1. Although a very progressive approach has been adopted for relocating villages, there are still 21 villages in the core of MTR. The villages occupy flat valleys and important water sources. This hampers the building up of a base population of prey.

2. The existence of villages also impacts prime habitats such as plateaus and rich valleys due to the vehicular traffic on the roads, which connect the remaining villages with nearby markets.

3. Because of the large area, rugged terrain and occupation of prime valleys by villages, there are few sightings of wild animals.

4. Semadoh is an important place for visitors to MTR to stay overnight in. The management of Nature Interpretation Centre Semadoh has been handed over to the Forest Development Corporation of Maharashtra (FDCM), for hospitality management. The resources available for providing quality services are inadequate.

C Actionable Points

1. Twelve villages have been relocated from the core through the implementation of an excellent village relocation programme, and the process of relocating the remaining 21 villages should be pursued faster and with a similar commitment and dedication. The issue of giving title deeds to relocated villages on new sites should be settled as quickly as possible.

2. The valleys, which have been freed of human habitations, are being restored ecologically. MTR should establish protocols and procedures for monitoring the recovery of the habitat and its use by wild animals.

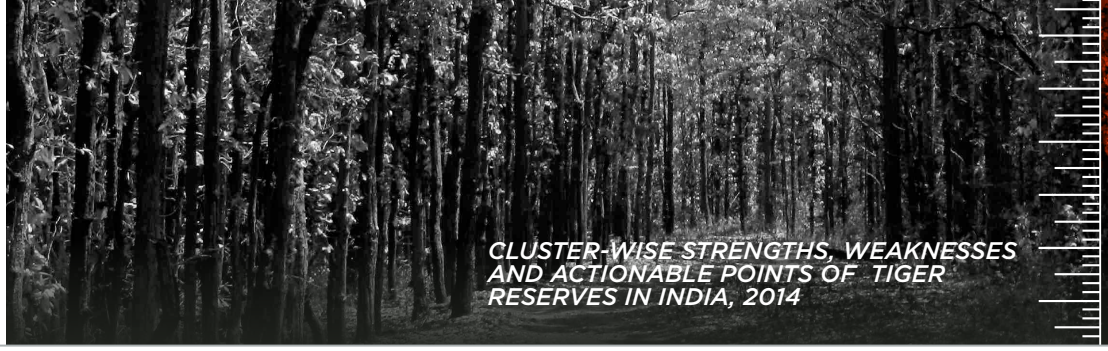
3. Chikheldhara is an important area for ecological, cultural and recreation values. The forest training institute at Chikheldhara could be developed into a centre for learning about habitat management, village relocation, ecodevelopment programmes and environmental education by upgrading the existing infrastructure and facilities. Additional financial support will be required for this to happen.

4. While the staff recruitment has improved significantly from the previous assessment, the living conditions of the staff and difficulties in patrolling the very rugged and hilly country call for additional incentives in terms of either free rations or financial support for the frontline staff.

6 Sahyadri Tiger Reserve, Maharashtra

A Management Strengths

1. This is located in one of the India's biodiversity hotspots, the Western Ghats Landscape Complex.



It is connect with other Tiger habitats in the south (Ratnagari Wildlife Sanctuary). 2.

Huge waterbodies, valleys and the Konkan slope act as a natural geographic barrier. 3.

There is good availability of water. The Koyna River, Warna River and many small waterbodies provide a good buffer habitat. 4.

The large inviolate areas (about 313 km^2 in Chandoli NP and 287 km^2 in Koyana WLS) can be improved further into a good breeding space. 5.

The western side of Sahyadri Tiger Reserve is protected by the steep slopes of the Sahyadri peaks. 6.

There is good potential for establishing populations of the Great Pied Hornbill, Giant Squirrel and White backed Vulture. 7.

There is good scope for carrying out ecodevelopment work for winning over the local people. 8.

Management Weaknesses B

The terrain is Inaccessible- there are no tracks or routes, and local knowledge of the terrain has been lost. 1.

There is a lack of infrastructure and facilities to meet the challenges of conservation, especially in terms of equipment and adequate numbers of trained staff members. 2.

A special counsel or legal officer is needed for handling the cases in the High Court, Supreme Court, CEC and other courts at the district and tahsil levels. There are multiple revenue administrative units and people's representative units. Hence the jurisdiction is unmanageable. 3.

Pilot studies indicate that the prey base for carnivores is limited. 4.

There is biotic interference in terms of poaching, collection of NTFP and firewood, grazing, fires and traffic on the roads in the buffer area. 5.

There is a demand for land for windmills, resorts and roads. Using land for these will reduce the suitable habitat available for wildlife dispersal. 6.

Actionable Points C

Improve infrastructure for protection network, staff housing, protection and strengthen monitoring and communication. 1.

Being an important part of the Western Ghats complex and extention of Kas plateau, recognised by the UNESCO as World Heritage Site, the TR has high potential for ecotourism and improvement of rural livelihood through it. Community based ecotourism, therefore needs to be built up for improved conservation outcomes. 2.

There are a few villages in the Tiger Reserves, which may be brought under voluntary relocation programme. 3.

Like other difficult and tribal dominated areas, Sahyadri staff may also be provided with an incentive known as one-step higher pay and allowances. 4.

The Buffer areas in Satara division, Sangli division, Kolhapur division and Ratnagiri division may be transferred under unified command to the STR. 5.

Deployment of additional staff including increase in their strength with strong communication network and incentive to strengthen protection of STR. 6.

Examine the possibility of repopulating the habitats with ungulate species. 7.

7 Mukundara Hills Tiger Reserve, Rajasthan

A Management Strengths

1. Mukundra Hills Tiger Reserve (MHTR) is a newly constituted Tiger reserve (TR), consisting of a cluster of protected areas, namely Mukundra Hills National Park, Darrah Wildlife Sanctuary (WLS), Jawahar Sagar WLS and Chambal WLS. It represents the Mukundra series of Vindhayan hill,s also known as the Malwa plateau. Having being declared as a TR, the entire landscape has come under the purview of scaled-up conservation efforts.
2. There is a ground swell of support from civil society, including academicians, political leaders, professionals, businessmen and NGOs, around the TR, especially in places such as the city of Kota. This support can be utilized to create effective environmental education programmes, ecodevelopment programmes, village relocation programmes and tourism management programmes.
3. The constitution of MHTR provides an opportunity to link this area to Ranthambore TR through Ramgarh--Bisdhari WLS and the territorial forest areas of Bundi District, of Rajasthan. The addition of buffer areas to the TR from Kota, Chittorgarh and Bundi districts will help secure the landscape values.
4. There is a nascent programme of ecodevelopment involving 22 EDCs. Opportunities exist to strengthen the programme and generate revenues for the EDCs through community-based ecotourism. Such opportunities are available due to the excellent interface of waterbodies, forests and the scenic values of the landscape.

B Management Weaknesses

1. Although the buffer area has been handed over to MHTR, the implementation on the ground has not been completed. Therefore, there is a shortage of staff members for managing MHTR.
2. The staffs are not trained in wildlife management, but they have been exposed to participatory management methods in the nascent ecodevelopment programme.
3. While some information on the biodiversity values and socio-economic issues is available because of help from Kota University, which has a M.Sc. programme in wildlife, a systemic investigation and research monitoring programme is lacking in MHTR.
4. There are 16 villages in MHTR, mostly cattle herders and farmers with small landholdings occupying prime valleys and causing severe damage to the habitat there. Because of heavy movement of humans and cattle inside MHTR, there are human-wildlife conflicts also.
5. Because National Highway-12 (NH-12) and the Delhi-Mumbai railway line cut across MHTR, there are accidents involving wild animals. A Tiger died on 15 July 2013 on the railway track.

C Actionable Points

1. A village relocation programme should be pursued with greater rigour as a large number of villagers have expressed their willingness to be relocated. There are degraded reserve forest lands close to Kota city that are exposed to threats from urban encroachment, solid waste disposal, cutting of small trees and shrubs, removal

of litter from the ground and excessive grazing. The relocation programme can consider incentivizing the villagers by providing lands in these degraded and vulnerable reserve forests.

2. There is a nascent ecodevelopment programme involving 22 EDCs. Opportunities exist to strengthen these programmes and generate revenues for the EDCs through community-based ecotourism. Such opportunities are available due to the excellent interface of waterbodies, forests and the scenic values of the landscape. The ecotourism programmes, especially those of the Rauntha EDC, centre on the Rauntha palace and the meadows and waterbodies around it.

3. There is an overwhelming opinion among various sections of society, including the staff, regarding introduction of Tigers in MHTR. Whether Tiger translocation, as in Sariska and Panna, could be implemented in MHTR may be examined. A detailed investigation will be required, and the committee recommends that the process be started immediately.

4. To elevate MHTR to the level of the existing TRs will require significant investment of money, especially for upgrading the infrastructure, skills and equipment, training the staff and village-level engagements. Additional resources may be provided for these.

Ranthambore Tiger Reserve, Rajasthan 8

Management Strengths A

1. A very high profile conservation area of the country, Ranthambore Tiger Reserve (RTR) attracts a large number of visitors, ranging from high-profile policy makers to local people. The large number of visitors is an opportunity to leverage support for Tiger conservation.

2. One of the very few parks in the country where Tigers can be sighted frequently, RTR has established good linkages with other government departments such as the administration, police and electricity departments and village panchayats, and with NGOs. As a result, there is wide support for conservation of RTR.

3. The socio-political acceptance of the necessity for relocating villages from within the Tiger reserve (TR), as reflected in the ongoing village relocation programmes, augurs well for the creation of inviolate areas in the TR by continuing with village relocation programmes.

4. The peripheral villagers have been engaged through ecodevelopment programmes, largely targeting gathering of fuel wood and grazing. Distribution of a large number of LPG connections and provision of out-of-turn priority electricity connections to the villages for facilitating fodder cultivation have been received well.

5. A protection network has been established fairly well.

Management Weaknesses B

1. The RTR landscape is an island habitat with very tenuous and limited connectivity to neighbouring protected areas in Madhya Pradesh. Hence, it cannot support Tiger populations that can be considered genetically viable in the long term unless the adjoining corridors are secured as soon as possible.

2. Of the 65 villages in RTR, four have been relocated, and eight villages are being relocated. There is a shortage of staff for managing relocation programmes. The staff

members of RTR were found to be inadequately trained to handle the rehabilitation issues. This process should be given high priority because of the anthropogenic and grazing pressures.

3. Being a high-profile TR of the country, a significant part of the time of RTR's management is invested in managing visitors, including VIPs. There is no interpretation centre at RTR, and sufficient importance is not given to educational aspects and raising awareness about the importance of this TR.

4. There are a number of religious sites in the core area, which are visited by the general public. The Ganesha temple near Jogi Mahal is visited by large numbers of people in an unregulated fashion. Unless the flow of visitors controlled and regulated, it will be a potential threat for the Tigers and wildlife in this TR as poachers and unscrupulous elements can take advantage of the situation.

C Actionable points

1. The village relocation programme, which is the top priority of this TR, needs to be strengthened by improving the skills of the staff in managing human issues. The staffs require adequate and sympathetic supervision, and the villagers need more hand-holding. The process of relocating eight villages may be completed at the earliest.

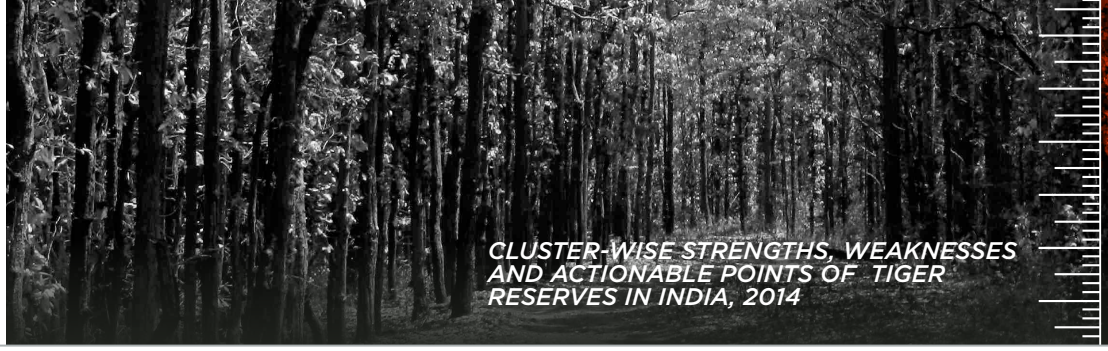
2. RTR has also been functioning as a source area for repopulating places such as Sariska and Panna TRs with Tigers. Therefore the research and monitoring in RTR may be upgraded through a dedicated team of researchers, monitoring prey-predator relationships, habitat quality assessment, recovery of habitats from relocated sites, securing of corridors, monitoring related to translocation of Tigers, etc.

3. The Ganesha temple in the core area attracts a very large number of pilgrims, especially on days such as Karthik Purnima. Crowds walk unguided and in an irregular fashion from the entry gate to the temple, a distance of about 5 km. RTR should think in terms of organising a voluntary guided programme on special days for regulating the pilgrimage. Some of the EDCs can be engaged in pilgrim management, which will result in revenues for the EDCs and regulation of the flow of pilgrims.

4. Due to the reputation of RTR and its proximity to important capital cities, not only recreation tourists but often VIPs come to experience the reserve. Although tourism helps generate wider support for RTR, at times it takes away a significant part of the field managers' time. With the strengthening of the existing Internet-based visitor management services, and with the implementation of standard operating protocols to manage visits of VIPs, the management of RTR could be improved further.

5. Due to vacancies at many nakas, Assistant Foresters and Senior Forest Guards are holding the charge of Foresters. These vacancies should be immediately filled so that RTR is provided effective protection.

6. Recruitment for the STPF, which is in the final stages, needs to be hastened up. This must be done by taking up the issue at appropriate political and administrative levels. This will help regulate and control various threats such as grazing pressures and pilgrimage pressures.



Sariska Tiger Reserve, Rajasthan 9

Management Strengths A

Sariska is the Tiger reserve (TR) nearest to the national capital. 1.

Sariska TR (STR) nestles in the oldest mountain ranges of the country. The Aravallis are a repository of serene dense forests, wide valleys and sprawling plateaus. 2.

They support over 404 plant species and 211 bird species in an area of 881 km^2 of dense forests. 3.

The TR has a unique assemblage with a large ungulate population. Due to the absence of the Tiger for over 4 years, the ungulate population (mainly Sambar) has increased a lot. 4.

The habitat in about 350 km^2 is compact, with good growth of Dhok and Boswellia and Zizyphus species. 5.

Sariska is an example of an experimental site in which conservation efforts are being carried out. It is an area from which Tigers were lost and subsequently reintroduced. All aspects of management such as relocation of villages, regulation of anthropogenic pressures, livelihoods of local communities, research and monitoring should be properly executed to make Sariska an exemplary success story utilizing the present positive political and public will in the right manner. 6.

The TR staff members are not involved in tourism directly, and they can focus on protection and management. 7.

The leadership and long-term vision of the Field Director, as seen from the field interactions and implementation of certain schemes (such as ex-gratia payments made to local villagers even if a cow dies within the TR due to an attack by a predator) is commendable. 8.

Management Weaknesses B

There is biotic disturbance due to the presence of 27 villages within STR and about 300 villages within 5 km of the boundary. Cattle grazing is widespread, and there is a problem of fires during the dry season. 1.

There is heavy extraction of biomass from the peripheral areas in the impact zone of the villages and from the zone of influence of the villages situated inside the TR. 2.

The reserve is open on all sides. As a result, probably there is illegal entry of people and poachers from all sides. 3.

The temple at Pandupol, in the heart of Sariska, is visited by about 2 lakh devotees/visitors every year, and there is a surge of around 50,000 people during the Pandupol fair, in July/August, each year. 4.

Two highways run through the park: State Highway 29A (which links Sariska to Dausa) and State Highway 13 (which links Alwar to Jaipur). About 3000 vehicles ply every day on State Highway 13. 5.

The needed infrastructure (vehicles, Range Office staff, telephone facility) is not available for the Foresters and Range Officers. 6.

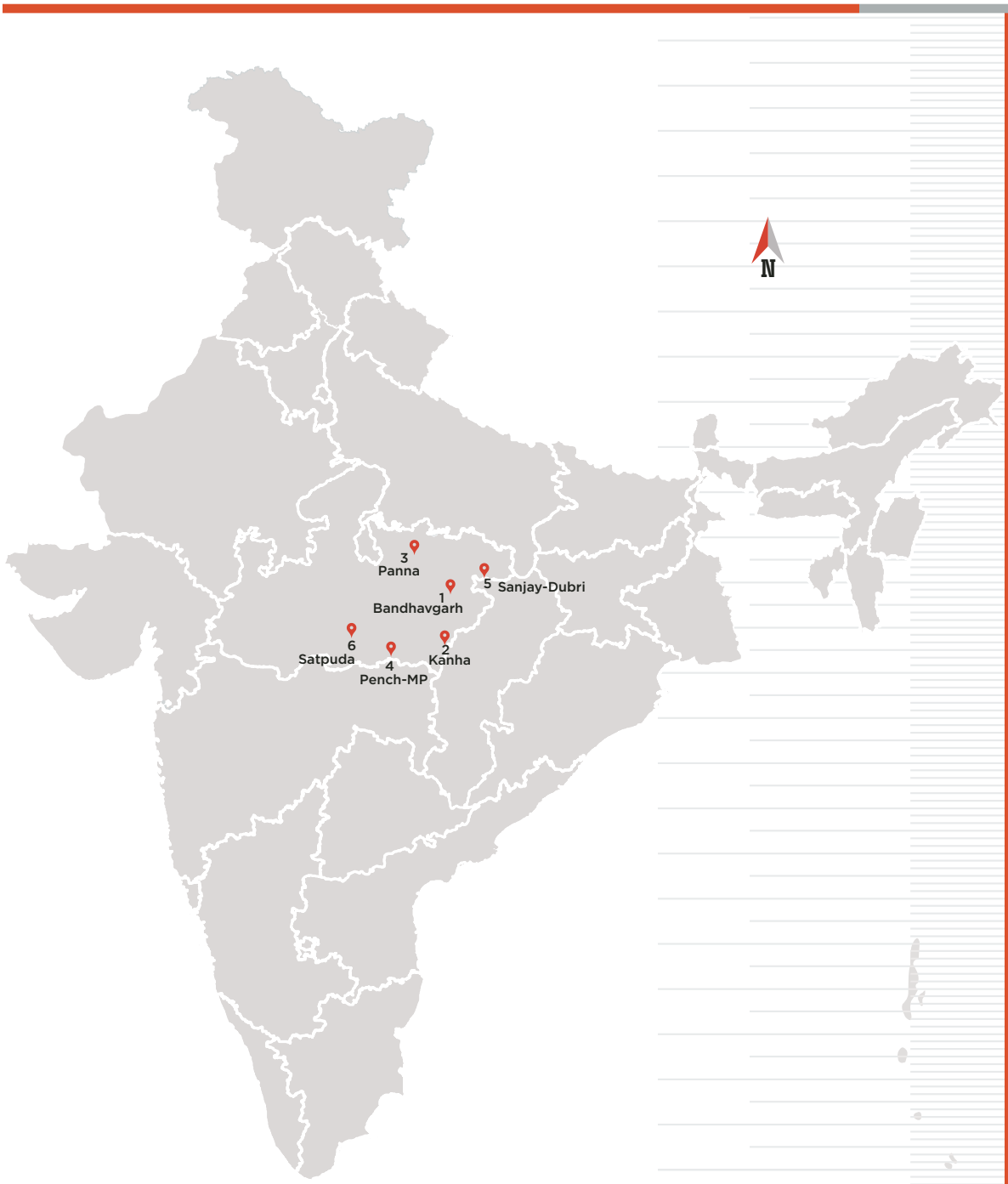
There are dhabas (country restaurants) on revenue/non-revenue lands within the TR. There is a nexus between them and the local people who fell trees illicitly for fuelwood. 7.

8. There is poor retention of water in the TR owing to the small number of large waterbodies.
9. The boundary has not been demarcated properly. More than 50% of the area of STR has not been surveyed (roondh areas), as a result of which there are litigations and disputes.
10. There are mining activities in areas abutting the TR.
11. The engagement of local communities and improving their livelihoods through EDCs is minimal. Thus there is little local support.
12. Though there is regular presence of the WII, Dehradun, this presence is not utilized effectively for data collection, research or monitoring purposes.

C Actionable points

1. Resettlement of villages is a priority and challenging task. Land prices are high because the area falls within the ambit of National Capital Region. Special incentives such as giving jobs, giving the value of assets in addition to compensation for relocation and providing alternate means of livelihood such as shops in towns may be thought of to persuade people to relocate themselves outside the TR. This needs significant inputs and a proactive approach from the TR.
2. Dedicated staffs are required for managing the park. They need to be given special training, and their capacity needs to be built.
3. Priority needs to be given to the main habitats that are suitable for the Tiger instead of spreading the resources (financial and manpower) all over the TR area.
4. Weeds need to be removed as they are encroaching into grasslands and meadows.
5. The protection is to be strengthened through recruitment and placement of the STPF.
6. Engaging local communities effectively and voluntarily through EDCs by addressing their livelihood needs also requires immediate attention.
7. The Tiger reintroduction process needs to be accelerated after a thorough study and research by institutions such as the WII, the WWF, universities and individual researchers. Research may be conducted on the breeding problems of reintroduced Tigers with the help of these institutions and individuals.
8. Historic areas such as Bhangad Fort and tourist attractions such as Salisate palace and lake (which are in the buffer area) can be developed into ecotourism hubs. The local communities can participate in these efforts, which will contribute to their livelihoods and assist the TR management in their conservation efforts.

CLUSTER TWO



1. Bandhavgarh Tiger Reserve, Madhya Pradesh
2. Kanha Tiger Reserve, Madhya Pradesh
3. Panna Tiger Reserve, Madhya Pradesh
4. Pench Tiger Reserve, Madhya Pradesh
5. Sanjay Dubari Tiger Reserve, Madhya Pradesh
6. Satpura Tiger Reserve, Madhya Pradesh

3.2 Cluster - II

Bandhavgarh, Kanha, Panna, Pench, Sanjay-Dubri and Satpura Tiger Reserves, Madhya Pradesh

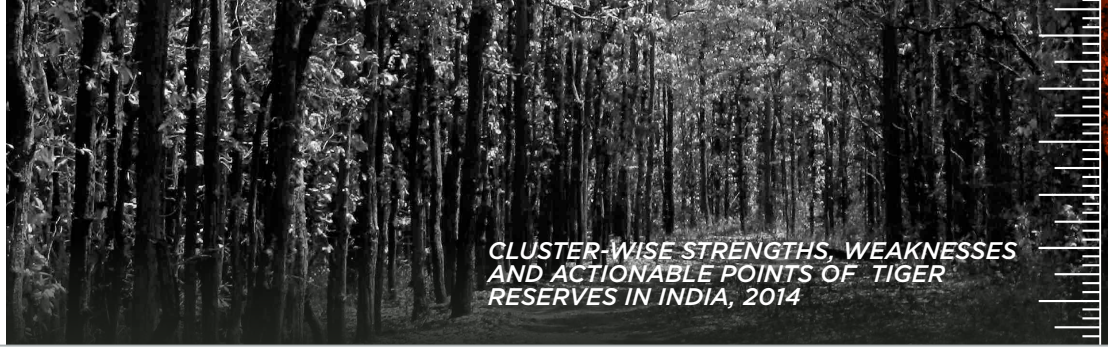
1. Bandhavgarh Tiger Reserve, Madhya Pradesh

A Management Strengths

1. Connectivity with other TRs and forests : Bandhavgarh TR is part of a large Tiger landscape (~13,000 km^2). The reserve is connected with Sanjay Dubari TR, in Madhya Pradesh, which is contiguous with Guru Ghasidas National Park, in Chhattisgarh. To the north-eastern side, this zone is connected with Palamau TR, in Jharkhand. The reserve is also connected with the forests of Katni Division, Veerangana Durgawati Wildlife Sanctuary and Nauradehi Wildlife Sanctuary.
2. Tiger source population : With an estimated population of 47-71 Tigers (according to All India Tiger Monitoring, 2010), the Bandhavgarh landscape stands at the fourth position in the Central Indian Landscape. Thus, it serves as a very good Tiger source population in the landscape.
3. Active wildlife conservation : The TR has been proactive in taking active conservation measures for important species. Recently, the Indian Gaur was reintroduced in the reserve. These reintroduced animals are flourishing in the reserve. They are being monitored regularly. Their natality, mortality and movements beyond the TR are also being understood.
4. The TR has created in-situ facilities for rearing orphaned Tiger cubs at Jhurjhura. A Tigress raised in the facility was recently translocated to Satpura TR. In the past, another Tigress was translocated to Panna TR. It was observed that the TR management gave the required focus to the day-to-day housekeeping and safety aspects of the cub. However, the size of the enclosure seems small for the size to which a sub-adult Tiger would be reared in the facility. We observed the Tigress in the enclosure displaying stereotypic behaviour during our visit.

B Management Weaknesses

1. No Tiger Conservation Plan : The TR does not have a Tiger Conservation Plan approved by the National Tiger Conservation Authority (NTCA). An attempt has been made to write a plan for the core area, but there are several observations of the NTCA that have to be urgently complied with. However, no attempts are being made to prepare a Tiger Conservation Plan for the buffer area and corridors.
2. Electrocution of Tigers in the adjoining areas : Electrocution of wild animals in general and Tigers in particular in the forest areas adjoining the TR is emerging as a grave threat. During 2012-2013, four Tiger deaths-three in Katani District and one in Umaria District-due to electrocution were reported.
3. Frequent transfer of Field Directors : Field Directors of the TR are frequently transferred, which is a matter of great concern. This adversely affects the effectiveness of the management of the TR. This also violates Article 2.V. of the



Tripartite MOU signed by the state government, the NTCA and the Field Director. In the last 2 years, two Field Directors have been transferred.

4. Villages in the core area : There are as many as four villages in Bandavgarh National Park and eight villages in Panpatha Wildlife Sanctuary, in critical tiger habitat, causing significant biotic disturbance.

5. Human wildlife conflict : Frequent instances of human wildlife conflicts are reported from the buffer and surrounding areas. Although human and cattle death and injury cases are compensated adequately and in a timely manner, crop compensation cases are delayed, and sometimes these cases do not see the light of the day. As a result, there is resentment among the villagers.

6. Presence of State Highways : The traffic on the Umaria-Rewa and Paraxi-Khitauli State Highways, passing through the TR, is heavy. The roads obstruct the movement of wild animals, and instances of wild animals getting killed in accidents have been recorded.

7. Pressure on buffer zone forests : The forests in the buffer zone were heavily worked in the past. More than 62 villages are located in the surrounding areas, exerting intense human and cattle pressure on the forests, leading to heavy degradation and denudation of the forests. It was observed during our visit that a 62.4 ha coupe in Panpatha buffer along the Bhadar River, in compartment No. 492, was marked for improvement felling during the current year. Similar coupes were worked in the past, but no attempts were made to plant up the big gaps created in extraction coupes.

8. It was also observed that plantations raised in the past in the Manpur buffer range areas on either side of the Umaria-Rewa State Highway have failed due to heavy biotic pressure. Such working in buffer forests may be re-examined. There is also a need for fine tuning forestry operations in the Forest Development Corporation areas of Kundam Project falling in the corridor. Encroachments, illicit felling, grazing and fires were noticed in Dhamokar Range and in the other two buffer ranges.

9. Road strengthening in buffer range : It was observed that the forest road in the Manpur buffer range was being upgraded and metalled under different schemes of the state government, without any consent/permission from the TR management. Such actions should be implemented after assessing their compatibility with the long-term goals of Tiger conservation.

10. Fencing along core boundary : Chain link fences have been erected along the boundary of the core area in strategic stretches in order to minimize instances of human-wildlife conflict. The fencing obstructs the movement of wild animals between the core and buffer zones. Many a time Tigers have been found crossing the fences by climbing on them. A 37 ha private forest owned by Sri Rajendra Singh in Bansa and Duchara villages, of Manpur buffer range, is fenced with chain link on three sides, taking advantage of the fencing installed by the management along the core boundary. Tigers often jump over the fence along the core boundary and visit Sri Rajendra Singh's private forest.

11. Drainage blockage due to construction of water holes : During the visit, debris from a recently constructed stop dam at Jhiria, in Patour range, was found dumped downstream, obstructing the flow of water. Similarly, the flow was found to be obstructed in many perennial streams through intervention. It is suggested that waste weirs be provided so that the flow is not obstructed for a major part of the year.

12. Tourism in larger portions of core zone : According to the latest guidelines, not more than 20% of the core area should be used for tourism activities. However, it was apparent that the expansion of the tourism zone was beyond this limit. Some maps prepared by the management suggested that approximately 28% of the core

area/critical tiger habitat has been opened for tourism. Also, the TR management is not clear about how the area in the tourism zone was calculated.

13. Religious tourism : There are two annual fairs-one at Sheshshaiya and the other at Kabir Caves-in which people assemble in and around Bandhavgarh fort. There is one more annual fair in the TR, in which people assemble in large numbers.

14. Weak eco-development activities : Despite the fact that there is significant biotic pressure on the buffer zone of the TR, the eco-development activities in the reserve are minimal. During interactions with stakeholders, including the eco-development committees (EDCs), it was found that the EDCs' office bearers are unaware of their roles and responsibilities. Some committees complained that they were unable to spend the money deposited in their accounts.

C Actionable points

1. The Tiger Conservation Plan for the core area, buffer area and corridors must be prepared and the approval of the NTCA obtained so that there is no ambiguity in implementing the plans.

2. The extent of the core area presently utilized for tourism needs to be rechecked so that there is no violation of the latest guidelines. Attempts should also be made to shift the tourism to the buffer areas in a phased manner. Some potential areas in Panpatha buffer range and Dhamokar range could be opened for tourism. In Badrehal beat, of Dhamokar range, there are very good meadows where there is huge cattle pressure. If protection is provided in these areas, they can be as good as the core with regard to movements of wild animals. Attempts must be made to shift the tourism to such buffer areas, and the pressure can be relieved from the core areas.

3. The villagers of Gadpuri, in Khitauli range, are unwilling to be relocated. The remaining 11 villages in the core are or critical tiger habitat should be relocated on a priority basis. The NTCA may provide the necessary funds. During interaction with villagers from Mili, in Kalwah range, it was observed that they are in a hurry to be relocated. However, they are of the view that the package of Rs. 10.00 lakhs per family is increasingly becoming inadequate. It is suggested that this amount have an additional component dealing with escalation.

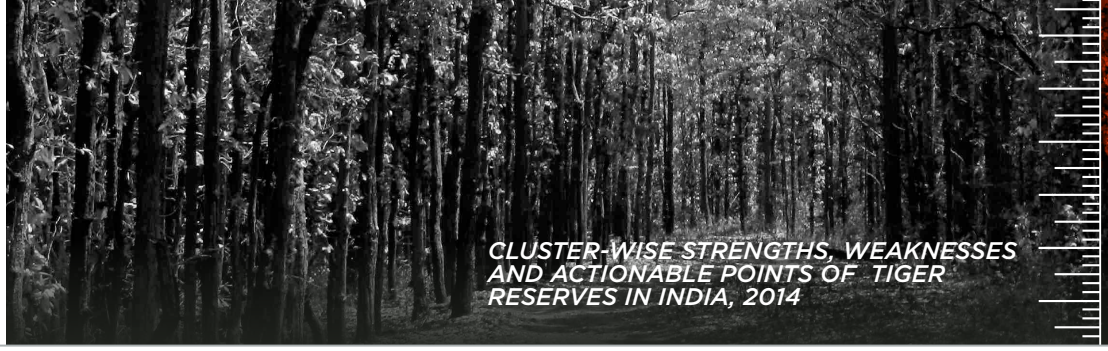
4. Eco-development initiatives should be undertaken to reduce the dependence of the villagers on the TR. Additionally, encroachment of forests must be dealt with iron hands in order to improve the condition of the buffer zone.

5. Forestry working in the buffer area should be followed by growing successful plantations of indigenous species. The reasons for the failure of plantations should be investigated, and the management should be more alert and watchful in the future.

6. Wildlife monitoring should be done religiously in the buffer zone. Currently, it is not carried out in a proper manner.

7. During interactions with stakeholders, it came to our notice that there are problems with the current online booking system for safaris. Many a time there is impersonation by tourists. A few tourist guides complained that they were wrongly implicated by the TR management. The issues should be solved at the earliest and the system made more transparent and accountable.

8. During the interactions with stakeholders, it also came to our notice that a renowned tourist resort has encroached upon the land of the TR. This needs further enquiry, and suitable actions must be taken by the TR management.



Kanha Tiger Reserve, Madhya Pradesh 2

Management Strengths A

1. Scientific management being the main focus : Kanha Tiger Reserve has the distinction of being one of the few protected areas and Tiger Reserves in the country where management interventions are based on sound scientific information and research outcomes produced by both the Tiger reserve management and independent researchers. The clearly outlined prescriptions for wildlife management in the management plans of the past and the current Tiger Conservation Plan reflect the fact that the practice of scientific management is deep-rooted and has, in fact, become a culture. Additionally, the reserve, in the past, was managed under the leadership of most visionary contemporary wildlife managers, and the legacy has been transferred to the present management. The dogma of "information-experimentation-learning-expanded implementation" has largely been followed by the Tiger reserve management for many years, and it has made the management very effective.

2. Connectivity with other Tiger populations in the landscape : Kanha is connected with Achanakmar Tiger Reserve, in Chhattisgarh (in the north-east), and Pench Tiger Reserve, in Madhya Pradesh (in the south-west). This strong connectivity makes Kanha an important Tiger habitat. The Kanha-Achanakmar connectivity is important for the survival of Tigers in central India.

3. The Kanha-Pench corridor, though fragmented, is used by Tigers frequently. This corridor needs to be preserved and developed. Chilpi forest range, of Chhattisgarh, lies along the eastern border of the core zone of Kanha Tiger Reserve. If this range is added to the protected area network, Kanha will have connectivity with Bhoramdev Wildlife Sanctuary, in Chhattisgarh, and it will help restore the Kanha-Achanakmar corridor.

4. Buffer zone strengthens satellite micro-core: With the expansion of the buffer zone of Kanha, Phen Wildlife Sanctuary, which is a satellite micro-core of the reserve, has been strengthened. Now there is good connectivity between Supkhar range and Phen Wildlife Sanctuary through this buffer zone. It is proposed to relocate Sajalagan, the only forest village in this sanctuary. There is a strong case for adding this wildlife sanctuary to the critical tiger habitat.

5. Prompt payment of compensation in human-wildlife conflicts : Compensation relating to death and injury to humans and cattle is dealt with under the Madhya Pradesh Lok Seva Gurantee Act, 2010. All these compensation cases are cleared by the park management without any appreciable loss of time. This has resulted in the development of a congenial relation between the management and the people living around. However, compensation for crop losses is dealt with by the revenue department, and there are delays, which causes resentment among the villagers.

6. Meadows and grasslands : Meadows and grasslands are conspicuous features of Kanha. Most of these meadows are the sites of old villages that have been relocated. In addition to these meadows, the natural dadar areas (the flat-topped hills) are also occupied by grassy vegetation. These grasslands are meticulously managed for different prey species and support a huge ungulate biomass. These areas are fenced off in rotation, and woody and other non-palatable species are uprooted. Slips of palatable grass species are planted, in addition to the practice of early burning and

fencing. Maintaining meadows in this reserve has helped build up the populations of the ungulates and the Tiger.

7. Active wildlife conservation interventions : Several wildlife conservation measures involving experimentation and developing expertise have been taken. The reserve successfully raised orphaned Tiger cubs in the sufficiently large (26 ha) in situ enclosure constructed at Ghorela, in Mukki range. The cubs were raised with due precautions to avoid human imprinting, which helped develop their natural behavioural instincts. The cubs have supplemented the tiger population of Satpura and Panna Tiger reserves, in Madhya Pradesh. Kanha has also played a crucial role in conservation of the Gaur in Bandhavgarh Tiger Reserve, being the source of the founder population, which was successfully translocated. Recently, reintroduction of Blackbuck has also started in Kanha.

8. Staff welfare : Staff welfare is one of the strong features of Kanha. The Tiger reserve maintains a hospital at Mukki for the forest staff. This initiative of the management is praiseworthy, and it boosts the morale of the staff.

9. Barasingha reintroduction : The population of the Barasingha came down to 66 in 1968. It was reintroduced, and there are 500 Barasingha in the Tiger reserve. Interventions such as brushwood eradication, Lantana removal, Phoenix uprooting, de-weeding and early burning are carried out. Many grasslands with shallow water holes are frequented by Barasingha herds. This species of deer moves from one grassland to another along specific corridors. The movements have been mapped by the management. The knowledge gained has been quite useful in monitoring the population and taking measures for habitat management.

10. Relocation of villages : Only three villages. (Linga, Jholar and Sukudi) remain to be relocated from the core of the Tiger reserve. The relocation is proposed to be carried out under Option-I, which involves paying Rs.10.00 lakhs to each family. Once the money is received and the three villages are relocated, the core area of the Tiger reserve, except an extent of 184 km^2 in which there is tourism, will become inviolate, a pre-requisite for the long-term survival of Tigers.

B ManagementWeaknesses

1. Anthropogenic pressure on buffer zone : The northern side of the buffer zone of Kanha borders East Mandla territorial division and the southern side borders north Balaghat territorial division. During the visit, it was observed that the human and cattle pressure in these areas is excessive, as a result of which there is degradation and denudation of the forests. Since a healthy buffer is greatly desired for dispersal of Tigers as well as meeting the wood-based requirements of the human population around, it is important that the quality of the buffer forest also be restored and maintained. More eco-development works and providing alternate livelihood options for the dependent communities will improve the situation. It should also be ensured that the staff be gradually oriented towards enhancing the protection afforded to Tigers and monitoring them in this zone. Basic habitat improvement measures such as developing water holes and grasslands for ungulates should also be taken up.

2. Tourism pressure : During the visit to Mocha village, it was found that there are many tourist resorts flourishing in the area. The National Tiger Conservation Authority (NTCA) guidelines approved by the Honourable Supreme Court of India mandate that not more than 20% of the core area can be utilised for tourism. This has resulted in the curtailment of the tourism zone in the critical tiger habitat from 370 km^2 in the past to 184 km^2 at present, and accordingly the number of tourist vehicles has been restricted to 140 (78 in the morning and 62 in the afternoon). Despite these measures, the number of tourist lodges is increasing and many hoteliers are purchasing big chunks of land in the Kanha-Pench corridor. Although no no-

objection certificate has been issued by the Tiger reserve management, the Local Advisory Committee (LAC), headed by the Commissioner, Jabalpur has permitted alienation of these lands in the aforesaid corridor. It was also found that many resort owners purchase firewood from the villagers, who bring it from the buffer forests of the Tiger reserve.

3. Tiger deaths in fighting : In recent years, deaths of Tigers as a result of infighting have become prominent. In the last five months (January-May 2014), two Tigers have died in infighting. These cases might be due to an increase in the Tiger population and poor dispersal of the sub-adults, leading to intra-specific fights. The situation suggests that strategic measures need to be taken to improve the prey resources, improve the conditions in buffer and strengthen the corridor connectivity.

4. Village relocation : The villages in the core should be relocated urgently to make the critical tiger habitat free from human and cattle disturbances.

5. No eco-sensitive zone : The notification of the eco-sensitive zone around the protected areas (PAs) included in the Tiger reserve pending at the Union Ministry of Environment and Forests should be expedited. Notification of the eco-sensitive zone will facilitate compatible land use around the PAs.

Actionable points

C

1. Field protection and wildlife monitoring are important in the corridor linkages, and hence the Tiger reserve management should become the nodal agency for mainstreaming the protocol in the concerned forest divisions. Besides, the movements and activities of traditional hunters should also be closely monitored, and there should be regular exchanges of data relating to wildlife crimes between the forest/police departments of areas falling in the corridor and Tiger reserve.

2. Initiatives should be undertaken to include Chilpi forest range, of Chhattisgarh, in the adjoining sanctuary.

3. Wildlife habitat improvement practices such as developing water bodies and grasslands and ensuring protection should be taken up on priority basis in the linkages between the core zone of Kanha Tiger Reserve and Phen Wildlife Sanctuary.

4. The Tiger reserve management should move the LAC to cancel the alienation of lands purchased by private individuals for tourist resorts in the Kanha-Pench corridor.

5. Up to 20% of the critical tiger habitat is earmarked for tourism; it is advisable to shift the tourism to the buffer zone in a phased manner. It is absolutely necessary that this area become inviolate and free from human and cattle disturbance for the long-term survival of Tigers. This is also needed for improving the condition of the buffer by reducing the biotic pressure and improving protection measures.

6. The existing tourism resort owners should find alternate sources of energy and suspend the purchase of firewood from village folks. Firewood required for campfires could be purchased from authorised depots of the forest department and Forest Corporation.

7. NGOs working in the Tiger reserve may be constantly pursued to shift their area of operation from the core zone to the buffer zone and assist with implementation of eco-development programmes. Unless the buffer zone and corridors are strengthened, the long-term survival of Tigers and other animals will remain a question mark.

8. The eco-sensitive zone around the PAs should be notified at the earliest. This will help the authorities in regulating and restricting the activities around the Tiger reserve and ensure that the land use is compatible with the needs of Tiger conservation.

3 Panna Tiger Reserve, Madhya Pradesh

A Management Strengths

1. Corridor connections : The location of Panna Tiger Reserve in the Vindhyan landscape is critical. It is the only Tiger source population of Aravallies and Vindhyan Ranges, testimony of which is the fact that a known Tiger of Ranthambore was camera trapped in the Datia forests in April 2012. Within Madhya Pradesh, there are corridors connecting Panna Tiger Reserve with Bandavgarh Tiger Reserve and Nauradehi Wildlife Sanctuary. There are also some meta-populations of Tigers in the Chitrakoot forests of Satna District, in the north eastern corner, and Sagar District, in the western corner. Radio collared tigers of Panna, moving in all directions, are establishing corridors in the entire landscape. At present there is a gap of around 30 km between Panna and Bandavgarh Tiger reserves, which needs to be plugged by afforestation on the banks of water sources, especially on the banks of the Ken and Midhassan rivers. Afforestation will restore the corridor links between two important source populations and ensure a flow of genes for the long-term survival of Tigers in both places.

2. Standardization of Tiger reintroduction protocol : The Tiger reserve has successfully reintroduced and rehabilitated Tigers. Thus, it has developed and standardized the protocol for the capture (chemical immobilization), transportation, acclimatization and monitoring of Tigers translocated from other Tiger areas. The know-how related to reintroduction as well as rehabilitating the big cat will help Tiger conservation in the country in a big way.

3. Monitoring of tigers : Panna Tiger Reserve has been rigorously monitoring the Tigers released under the Tiger recovery plan. A system has been developed to monitor the Tigers 24×7 using a radio telemetry technique. The system of deploying manpower for monitoring the Tigers and collecting, collating and interpreting data is commendable, and the team of the frontline staff and officials has developed expertise in this. It was quite interesting to see that when one set of staff members hands over the monitoring to another, the successor takes over the radio signals. Sometimes if the signals cannot be detected by the team at work, both parties search for them. In addition, Tigers without radio collars are also monitored based on the tracks and signs in the territories occupied by them.

4. Infrastructure for protection of wildlife and its habitat : The number of patrolling camps is adequate. The camps have equipment, accessories and wireless stations for communication. There are watch towers at strategic locations. There are two rapid response teams and two flying squads to keep a vigil on poachers, smugglers and other antisocial elements. Thus, the Tiger reserve has a proper system in place for taking care of protection, but what needs to be regularly monitored is the performance of the persons manning their respective assignments.

5. Constitution of Friends of Panna : A foundation named "Friends of Panna" has been constituted under an order of the Government of Madhya Pradesh. This body includes a cross-section of government functionaries, people's representatives, media personnel, professionals, office bearers of eco-development committees and other stakeholders. Common people can also join the foundation by paying a fixed life membership fee. This is a good initiative for bringing together the stakeholders and contributing to the conservation of Panna.

6. Effective communication strategy: The Tiger reserve management has been very

effective in communicating the successes and failures of the management. The official web site of the Tiger reserve provides all information about the reserve to the public. Press releases are also uploaded to the web site. The management publishes brochures to showcase its successes and to seek the support of communities in general.

Management Weaknesses

B

1. Lack of Tiger Conservation Plan : The reserve has not prepared a Tiger Conservation Plan, which is not only a statutory requirement for Tiger reserves but is also crucial for managing the reserve in a planned and scientific way.

2. Ken-Betwa river link project: It is proposed to construct a dam at Dhaudan village and a 2 km long tunnel inside the core area of Panna Tiger Reserve under the Ken-Betwa Link Canal Project. Water from the proposed Dhodan dam will be diverted to the Betwa River. Reportedly, the project will submerge a 115-125 km^2 area of the critical Tiger habitat of Panna Tiger Reserve and affect the vulture habitat in the Tiger reserve. The impact of the project should be reassessed in the interest of conservation of the Tiger and other critically endangered species.

3. Biotic pressure on the core area/critical tiger habitat : The core area/critical Tiger habitat in the Tiger reserve is still not free of human and cattle pressure. There are three villages on the left bank of the River Ken, and they are cultivating the drawdown areas of Gangau reservoir in addition to their own land. There are 180 families in these villages, which are more than willing to be relocated under Option-II of the relocation and rehabilitation package. The park management are expecting financial assistance from the state government. Many villages were relocated in the recent past, but the villagers have left their cattle behind. The feral cattle pose a big threat to the grassland managed in the reserve. When Tigers are rehabilitated/reintroduced in a reserve, the presence of such cattle will complicate matters and induce changes in the behaviour pattern of tigers.

4. National Highway and State Highway : Speeding vehicles through the reserve pose problems to the movements of wild animals. Two roads, i.e. the Panna-Chhatarpur road (NH-75) and Panna-Amanganj road (SH-46), passing through the Tiger reserve lack measures (such as speed breakers and traffic regulation) to reduce the chances of accidents and resultant wildlife casualties. The Field Director stated that speed breakers were provided at strategic locations earlier but were removed subsequently.

5. Cattle grazing and illicit removal of firewood : There are many villages in and around the reserve, the families of which are dependent on the critical Tiger habitat for their needs. Fuelwood is also taken to Panna town. Sitting in the forest rest house of Madla, one can see any number of head loads of fuelwood being brought from the forests. The cattle of the adjoining villages also exert grazing pressure on the critical Tiger habitat.

6. Mining : Although mines of NMDC in Panna are located in a portion of Gangau Sanctuary, which is not a part of the critical Tiger habitat, the existence of this establishment and the mining activities pose a big threat to the long-term survival of tigers, co-predators and prey animals. The Honourable Apex Court is believed to have asked for the mines to be closed by 2020 and has given directions for restoration and monitoring plans. The Tiger reserve management may urgently work out the same and incorporate appropriate prescriptions in the Tiger Conservation Plan.

7. Defunct eco-development committees : The eco-development committees constituted by the Tiger reserve are defunct. These committees are required to be activated in villages in and around Tiger reserves. There are several district-level welfare schemes that need to be integrated in the eco-development strategy, with a

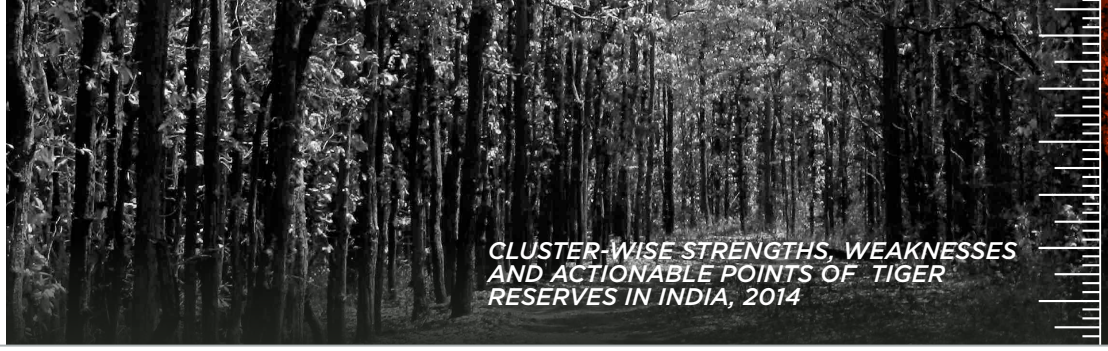
participatory approach. The strategy should address livelihood and resource-dependence issues of the dependent communities besides undertaking rapport-building measures supported by the state as well as centrally sponsored funding schemes. In some of the agricultural lands the land-use pattern is changing fast. These lands should be monitored to take appropriate measures to keep the corridor values of these lands intact.

8. Hindrance to movement of wildlife due to stone walls : In the past, stone walls were constructed to demarcate the sanctuary and the national park, the sanctuary and the buffer forest and the national park and the buffer forests. These walls obstruct the movements of wild animals. During our visit to Kandwaha beat, in Rampura section of Panna range, on 16 June 2014, we observed that a Tigress with two cubs crossed the stone wall demarcating the core area of Panna range and the Amanganj buffer forests. We later found the same Tigress resting in the Tara beat, in the Hathidol area of the Amanganj buffer forests. It is recommended that the stone walls be opened at animal crossing points.

9. Poor village relocation : The village relocations of the last few years do have several shortcomings. In Jhalar village, six families are still living inside the Tiger reserve. The village was relocated in 2010. We also found cattle that had been abandoned by villagers who had been recently relocated. The Tiger reserve has not taken any steps to move out these cattle.

C Actionable points

1. Funds should be made available to the Tiger reserve immediately for relocation of nearly 180 families (three villages) from the left bank of the River Ken, in Chattarpur District.
2. The management of the Tiger reserve should finalize the Tiger Conservation Plan and get it approved by the National Tiger Conservation Authority at the earliest.
3. The eco-development committees should be provided more assistance and should be activated. Assistance must be obtained from grassroots NGOs to help the villagers find alternate options to reduce their dependence (including cattle grazing) on the forests for various products. The villagers should also be provided alternate livelihood options. Feral cattle should be removed from critical Tiger habitats.
4. Speed breakers must be provided on NH-75 and SH-46, which pass through critical Tiger habitats, at important wildlife movement points.
5. Improvement of the corridor in the 30 km stretch in Satna Forest Division, providing connectivity between Bandhavgarh Tiger Reserve and Panna Tiger Reserve, should be taken up by planting vacant revenue/forest land along the river.
6. Continuing the working of the NMDC mines beyond 2020 (the cutoff date fixed by the Apex Court) will be harmful for the long-term survival of Tigers, co-predators and prey animals. The management of the Tiger reserve should take proactive action to ensure that the mining is suspended and the area is restored.
7. The Ken-Betwa River Link Project will severely impact the conservation of biodiversity in Panna Tiger Reserve. Taking into consideration the investments and efforts that have gone into conservation and livelihood issues, the project must be reassessed and suspended.
8. The Field Director was found to be dissatisfied with some of the members of his field staff. All such staff members should be posted out of the Tiger reserve, and their places must be filled with motivated persons from outside and with proven track records.
9. It is suggested that the stone walls be opened at important crossing points to facilitate unhindered movement of wildlife across the forests within the Tiger reserve.



Pench Tiger Reserve, Madhya Pradesh 4

Management Strengths A

Crucial source population of tigers : Research has revealed that the Tigers of this reserve have dispersed up to Kanha and Melghat, thus contributing valuable genetic variation in the landscape. Both these protected areas have corridor connectivity. Kanha Tiger Reserve is directly connected with Pench, while Melghat Tiger Reserve is connected with it through Satpura Tiger Reserve. The findings of a recent study on the gene flow of the Tiger in the highlands of central India suggest that historically there was strong flow of genes from Kanha to Melghat and Satpura and from Pench to Satpura and Melghat, with Kanha and Pench acting as source populations. But currently, only Pench is acting as a source population, and the gene flow from Pench to Kanha and Satpura is very strong. Thus, the Tiger reserve serves as an important source population of Tigers in the landscape. 1.

Mitigation of human-wildlife conflicts : The Tiger reserve has constructed stone walls in strategic patches to prevent straying of wild animals such as Wild Boar and Chital into the adjoining agricultural fields. However, walls were also constructed in some parts of the reserve to demarcate the protected area and other forests of the territorial division, which are now included in the buffer zone. These structures hinder the movements of wild animals. 2.

Cases of compensation for injury and death of cattle and human beings are promptly addressed by the management of the Tiger reserve; however, compensation for crop losses is dealt with by the Revenue Department, and payment of compensation for crop damage is a time-consuming process. There is apathy among the villagers in dealing with the Revenue Department, and there is a demand from them that this matter be transferred to the control of the management of the Tiger reserve. 3.

Congenial relationship with villagers : The Tiger reserve has adopted innovative measures to build congenial relationships with the villagers in the adjoining areas. This has helped develop a network of informers. The management of the Tiger reserve has undertaken confidence building measures with the cattle graziers of these villages and provided them umbrellas, water bottles, torches, etc. Inputs are also given to them for intelligence gathering, which is helpful in apprehending culprits. The villagers are taken inside the reserve for a safari and are provided with training to educate them and create awareness about conservation of forests and wildlife. 4.

Quality buffer forest : The buffer zone has been transferred to the Tiger reserve recently from East and South Chhindwara and South Seoni territorial forest divisions. The quality of the forest in most of the buffer zone ranges in general and Rukhad in particular is quite good, and the forests can provide good habitats to many wild species if proper protection and compatible forestry operations are ensured. 5.

Support of civil society organizations : The Tiger reserve is supported by several reputed non-government organizations of the country. These organizations support the reserve in various ways to strengthen the capacity of the field staff, ensure welfare measures for the protection staff and carry out eco-development activities to benefit village communities. 6.

Habitat improvement measures : A number of habitat improvement works, such as creation of water holes, managing grasslands on sites of villages that have been relocated and other open patches inside the reserve, creation of dykes in the 7.

backwaters of Totladoh reservoir and eradication of Parthenium and other unpalatable species from drawdown areas, are being taken up. This helps provide sufficient food and shelter for wild animals and works towards conservation at large. The measures are well planned and monitored for taking midcourse corrections.

8. Sufficient staff: All staff positions at cutting edge levels have been filled up. A production division in Seoni was wound up recently, and additional vacancies of Forest Guards and Foresters are also transferred to the Tiger reserve. In due course, these vacancies will be filled up and meaningful protection will be extended to buffer zones that have been taken over recently.

B Management Weaknesses

1. Illegal fishing in Totladoh reservoir : Before the construction of the Totladoh dam, the fishing community of the adjoining areas depended upon fishing in the Pench River. Before the notification of Pench National Park, fishing rights in the Pench River were enjoyed by the fishing families of 13 villages. After the notification of the national park, all fishing rights were settled in favour of the government by giving compensation of Rs.72 lakhs to the 138 families in the affected villages. Now, there are no fishing rights in the reservoir. Fishing has been prohibited by law. But illegal fishing in the reservoir still continues. It came to our notice that fishermen come in very large numbers during the night from nearby villages in Madhya Pradesh and Maharashtra. They stay on the islands in the middle of the huge waterbody. According to the estimates of the management of the Tiger reserve, nearly 100 boats are involved in illegal fishing during the night. Although the management has kept a strong vigil and several patrolling squads camp at strategic locations for protecting the 54 km^2 Totladoh reservoir, these steps are not enough to deter the illicit fishing activities. Already, there is good co-ordination between the managements of Pench Tiger Reserve in Maharashtra and Madhya Pradesh, but the Revenue and Police departments of the two states need to be engaged for controlling the menace.

2. Highway through the reserve : National Highway 7 passes through the eastern boundary of the core area/critical Tiger habitat of Pench. The buffer area of the reserve is further east of the road. The highway poses severe threats to the wildlife and their habitat. Additionally, a proposal for widening (four-lane) this highway is also pending with the Government of India. Strengthening the existing road will lead to further habitat fragmentation and blocking of the active Pench-Kanha corridor, leading to isolation and blocking of the gene flow.

3. Faults in development works : It was seen that the roads in the core area are maintained regularly without maintaining the side drains. Side drain maintenance is strongly recommended. Earth is dug from the borrow-pits close to the road, and the same is spread on the road. However, in recently repaired roads, the drains are cleared. Also, the additional soil requirement for the road is met from shallow and systematically dug pits on either side. It was also seen that when water holes are de-silted, earth is excavated close to trees, exposing the roots. Even the sides of water-impounding areas, in some cases, were found to be cut vertically. The management is advised to ensure that the edge should always be gently sloping.

4. Stone walls hindering the movements of wild animals : In some areas, stone walls were erected to demarcate the core and buffer zones. The walls are potential obstructions to the movements of wild animals across the core and buffer zones. The management is further advised to provide some openings at strategic places to facilitate the movement of wildlife.

5. Weed invasion : Despite sincere attempts, the invasive weeds in the drawdown area of Totladoh reservoir are assuming threatening proportions, and the management is finding it difficult to contain the menace.

Surge in tourism infrastructure : There is mushrooming of hotels and resorts near the Turiya gate of the Tiger reserve. The changing land-use exerts severe pressure on the natural resources of the reserve. The growing tourism infrastructure will hinder the movements of wild animals, and the activities and land-use may not be compatible with the long-term objectives of Tiger conservation in the reserve. 6.

Actionable points C.

A high-level meeting of officers of the Forest, Police and Revenue departments of Maharashtra and Madhya Pradesh will be necessary to deal with the menace of illicit fishing in Totladoh reservoir. Additionally, alternative livelihood options should also be worked out for the fishing community. 1.

About 20% of the core area has been carved out for tourism. Although this is in accordance with the guidelines of the Honourable Supreme Court, the management must make efforts to reduce the same and use the buffer zone areas of Ghatkohka buffer range for tourism. In due course, the tourism activity should be shifted to the buffer zone. This is absolutely necessary for making the core area inviolate and for the survival of Tigers in the long run. 2.

Stone wall barriers constructed between the core and buffer areas in the past should be opened up at strategic locations in the interest of the movement of wild animals. Removal of entire stone walls demarcating the core and buffer areas may involve a huge cost. 3.

Recent research shows that the functional status of corridors in the central Indian landscape is declining rapidly owing to fragmentation, mining, road widening, railroad construction and urbanization. This necessitates the formulation of a very effective corridor plan for the region. Pench Tiger Reserve and the adjoining forest divisions should make an effective corridor plan to manage the non-protected area forests in tune with Tiger conservation. 4.

Data on wild animal populations show that herbivore counts (especially the Chital) have gone up rapidly in the recent past. This might be the outcome of active habitat management interventions. It is suggested that the management of the reserve work out the carrying capacity of the habitat for herbivores and the ongoing intensive management interventions be slowed down accordingly to optimize the grazing pressure on the grasslands. 5.

The movements of animals between the core and buffer are restricted by the heavy and fast-moving traffic. There is pressure to widen the road as well. Mitigation measures should be taken to ensure that wild animals can move across the landscape. 6.

Sanjay Dubari Tiger Reserve, Madhya Pradesh 5

Management Strengths A

Availability of water in the reserve : Various perennial streams flow through the reserve. These are the Gopad, Mawai, Mahan, Kodmad, Banas, Umadari, Magdar, Bijaur, Bastua and Patnaiya rivers. The areas around these abound in riparian vegetation. Fortunately, the major portions of these areas are free of human settlements. Minimal intervention is required in such areas, and they can be put under 1.

a zone plan for the unique habitat to ensure that there is complete tranquillity in such areas through day-to-day monitoring and protection. Even in the remaining part of the TR, no shortage of water is noticed during summer.

2. Connectivity with tiger source populations : Although the tiger reserve has very few tigers, it is an important connecting habitat with Bandhavgarh on the west and Palamau (Jharkhand) on the east through Guru Ghasidas National Park of State of Chhattisgarh.

3. Strengthened tiger monitoring : The TR has brought about significant improvements in monitoring of Tigers. Camera traps are being deployed in the area, and the presence of Tigers has been ascertained in different parts of the reserve. This has helped the TR in focusing its protection and management efforts. The TR staffs also monitor the Tiger that was recently translocated to Sanjay TR using radio telemetry techniques. The Tiger had strayed out from Panna Tiger Reserve and was captured and released in Sanjay TR.

4. Negligible instances of forest fire in recent years : The TR has controlled the incidences of forest fires in the last 2 years. This has resulted in a drastic decline in the forest area affected by fire. The management of the TR effectively communicated with the villagers and persuaded them to adopt non-destructive methods of minor forest produce (MFP) collection, which used to be the main cause of fires (the fires were started by the MFP collectors in the forest).

B Management Weaknesses

1. Large number of villages in the TR : There are large numbers of revenue villages in Dubari Wildlife Sanctuary and Sanjay National Park, with considerable biotic disturbance in the core area/critical tiger habitat. As a result, there is a huge pressure of grazing, illicit felling of trees and fire in the forests of the core zone. In addition, there are many villages in the notified buffer zone also, which adds to the pressure on the core area/critical tiger habitat as well. Ideally, all 40 villages in the critical tiger habitat need to be relocated. Only one village, Kanjara, comprising of 24 families, has been relocated so far. However, families from 23 of the remaining 39 villages have volunteered for relocation, and the remaining 16 villages have not fully opted for relocation.

2. Lack of Tiger Conservation Plan : The TR has yet to prepare a Tiger Conservation Plan. In the absence of proper planning, most of the activities proposed in the Annual Plan of Operation are ad hoc.

   Buffer not under the control of TR: The buffer zone of the TR has been notified, but till date this has not been brought under the control of the Field Director. This is one of the reasons why the TR has not started any concrete action to strengthen the buffer forests, which are under tremendous human pressure.

3. Poor prey base: The prey base in the TR is very poor, which might be due to the excessive biotic pressure from the villages in the core and buffer zones. Poaching of prey species in the recent past could also be a probable cause of the decline in prey abundance. This is one of the important reasons for the low density of Tigers in the reserve.

4. Poor protection infrastructure: The TR lacks infrastructure for protecting the area. Most of the patrolling camps are housed in temporary structures of thatch. In recent years, some of the camps have been converted into permanent structures. There is a scarcity of patrolling vehicles in the TR, and the protection work depends heavily on hired vehicles.

5. Poor wildlife monitoring: Though there has been improvement in the monitoring of Tigers in the TR, in general, the monitoring of other wildlife and habitats needs a lot of improvement. In general, it was noticed that a culture of recording observations by

the frontline staff during patrolling was lacking. Most of the camps lack wildlife monitoring and observation records. Patrol logs are not maintained by the staff in camps. Even the staff members moving with GPS units have not recorded the coordinates of intermediate and final destinations patrolled by them.

6. Unnatural death of wild animals on railway track and under electric lines: A railway track passes through Sanjay Dubari Tiger Reserve. An open electric line also runs along this railway track. Besides, several electric lines run in the reserve to augment the power supply of some of the villages in the core and buffer zones. Unnatural deaths of wild animals on the railway track as well as in contact with the electric line are reported. The railways have come up with a proposal for expansion, which will not be in the interest of the long-term survival of Tigers, co-predators and prey animals in this reserve.

7. Impact due to industrialisation in Singrauli District: The TR is situated on the left bank of the Gopad River, while Singrauli District is situated on the right bank. Because of the coal deposits in Singrauli District, the area is undergoing heavy industrialisation, and thermal power projects are coming up in the area. These developments will have a direct and indirect bearing on the TR. It should not only be ensured that air and water pollution are kept in check but also that labourers working on the project do not burden the buffer forests of the TR, situated on the left bank of the River Gopad.

8. Eco Development Plan: Since, the buffer areas have not yet been brought under the control of the Field Director of the TR, there is poor or no planning for eco-development in the area. Eco-development committees have not been constituted in the buffer villages of the TR, and the participation of the people in buffer management is also minimal.

9. Tiger release based on poor scientific understanding: Recently, a Tiger, P212, that strayed out from Panna Tiger Reserve (a progeny of reintroduced Tigers in Panna) was captured and released back in the wild in Sanjay Dubari Tiger Reserve. Since Sanjay Tiger Reserve lacks sufficient prey species (as evident from fewer sightings and indirect signs of wild ungulates), the relocation should not have been done without proper assessment of the prey biomass. Now, the relocated Tiger has established its territory near village areas and completely depends on cattle kills. It was reported that this Tiger has not made a single wild kill in Sanjay Tiger Reserve. The increased human-wildlife conflict due to this translocation is not a healthy sign for the future of Tiger conservation in the area.

10. Poor research: Little scientific information, needed for wildlife management in the reserve, is available. Recently, the state government funded the Wildlife Institute of India (WII) to undertake a study on the socio-biology of the Tiger, and a researcher from a local university is studying the grassland communities in the managed grasslands. Lack of research is a major handicap in scientific management of the reserve.

11. Poor protection of managed habitats: During the visit to the areas where habitat management interventions (especially grassland management) were made last year, we found that these areas were aggressively used by domestic cattle and used very little by wild ungulates. Poor protection against grazing has ultimately defeated the whole purpose of grassland management.

Actionable points

C

1. The observations of the National Tiger Conservation Authority (NTCA) on the Tiger Conservation Plan (TCP) of Sanjay Dubari Tiger Reserve were received by the Field Director on 25 October 2013 with an instruction to complete the TCP within a fortnight. However, so far, no action has been taken to write the plan. It is strongly suggested that the TCP be completed on a priority basis to streamline the

management practices.

2. The buffer zone should be brought under the administrative control of the Field Director of the TR.

3. The eco-development committees (EDCs) in the adjoining villages should be activated, and new EDCs should be constituted so that measures can be taken by the management of the TR to reduce the dependence of villagers and proactive measures can be taken to win their support for the cause of the management of the TR. It is high time that NGOs are involved in helping the villages find alternatives so that their dependence on the forests is minimized.

4. The core area/critical Tiger habitat needs to be made inviolate by relocating and rehabilitating the villages inside the habitat. According to Section 18A (read with Section 36A) of the Wildlife (Protection) Act, 1972, till the rights of affected persons are finally settled, the state government should make alternative arrangements for providing fuel, fodder and other forest produce to the affected persons in terms of their rights according to the records. Such provisions should be in the zone plan of the TCP. The state government must be persuaded to comply with the provisions for the overall benefit of the TR.

5. Presently tourism is in its infancy and not being carried out in the critical Tiger habitat. Since the critical Tiger habitat is under the influence of anthropogenic activities due to villages, tourism can be confined to some buffer forests of the TR. The forest areas of Bhuimand buffer range are suited for tourism. The Gopad River passes through some picturesque places, and mere boating in it will attract tourists from the adjoining Singrauli District.

6. Although some old thatched patrolling camps are being replaced by permanent structures, it is necessary to provide funds to the TR to convert all these temporary structures into permanent ones.

7. The management of the TR should tap NGOs' funds for strengthening the infrastructure, such as vehicles, equipment and accessories for the frontline protection force and patrolling camps.

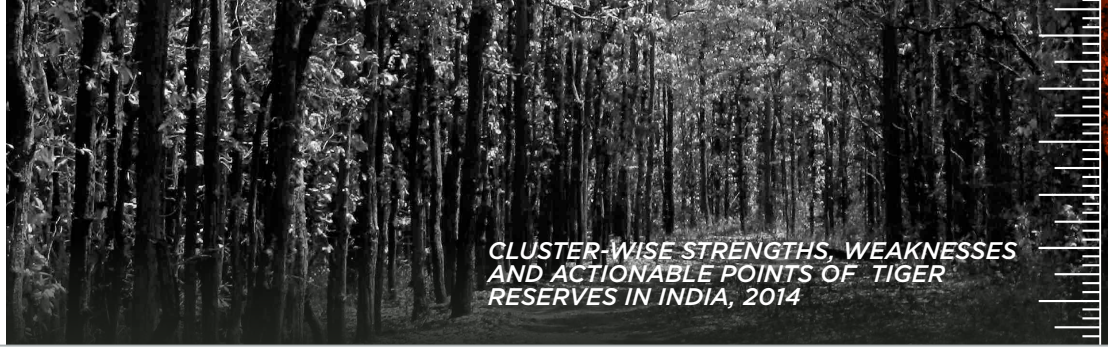
8. The protocol suggested by the WII-NTCA for monitoring carnivores, prey and habitats should be strictly followed. The staff should be adequately trained and resources must be provided to accomplish the task properly. Daily wildlife observation and patrolling registers should be maintained at all field camps. The TR can follow the format for data collection currently used in other TRs of the state such as Kanha, Pench and Panna.

9. Whenever water holes are de-silted, it must be ensured that the edge of the hole is gently sloping and is not vertically cut. Also, earth should not be removed so as to expose the roots of the trees.

10. Whenever open areas are provided with brushwood fencing for grass development, a special drive should be launched to keep domestic cattle away.

11. Some staff members may be kept exclusively on vigil to prevent any illicit felling, grazing and setting off of fires in Bhuimand buffer range by the industrial labourers of Singrauli District. A vigil may also be maintained against pollution of the Gopad River, which eventually flows into Son Gharial Sanctuary.

12. The management of the TR is taking initiatives for in situ breeding of Chital to augment the prey base. Under these initiatives, an enclosure is being constructed at the recently relocated village of Kanjara. One more such enclosure is under construction, where 29 Chital from Sahdol Zoo will be placed for breeding and subsequent release in the TR. A Tiger enclosure is also planned, in the vicinity of the Chital enclosure, for reintroduction of Tigers in the future. The implementation of this programme may be reassessed and can only be taken up when some more villages



are relocated and a larger area is made free of the influence of domestic cattle.

It is important to take stock of the ongoing district-level welfare schemes while casting an eco-development strategy to ensure the desired integration of various sectors. The strategy should be based on participative village-level micro-planning through EDCs to address income-generating, resource-substituting and community-cooperation inputs in consultation with the local people. 13.

Satpura Tiger Reserve, Madhya Pradesh 6

Management Strengths A

Large contiguous landscape: The landscape of Satpura extends over 10,000 km^2. The landscape links the Tiger Reserve (Madhya Pradesh and Maharashtra) and Melghat Tiger Reserve (Maharashtra). Although the density of the Tiger population in this TR is comparatively low, with due management interventions and the inclusion of more inviolate areas within, it can serve as a very good Tiger source population. 1.

Water barrier: The Tawa reservoir, in the western and north-western corners of the reserve, acts as a barrier, and it effectively deters wildlife offenders from these areas and protects the forests and wildlife wealth from getting plundered. 2.

Least disturbance due to linear infrastructure: Except National Highway 19A, to Pachmarhi, there are no major district roads, State Highways, National Highways and railway lines passing through the TR. Thus very little disturbance is caused due to linear infrastructure. The local communities residing in the core area/critical tiger habitat are willing to be relocated. They are generally fed up of jungle life as they have to cover a distance of 20 to 40 km to reach the road head, hospitals, schools, etc. 3.

Unified control of core and buffer: Very recently, buffer areas with an extent of 795 km^2 from different territorial divisions (Hoshangabad, Chhindwara West, Rampur Bhatodi and Betul) have been transferred to the TR and have come under the unified command of the administration of the TR. 4.

Less tourism pressure in the core area: Less than 5% of the area inside the core area/critical tiger habitat is open for tourism, which is not very significant. However, the tourist facilities in the core area, at Churna, Dhain and Bori, are quite disturbing and should not be continued. The remaining portion of the TR is inviolate, and attempts must be made to minimize tourism in the core area in a phased manner. 5.

Protection system: The reserve has sufficient infrastructure and manpower for its protection measures. Recruitment of staff members at the cutting edge level has been a regular phenomenon in the past 5-7 years. Although there are 40 vacancies of Forest Guards and 14 vacancies of Foresters in the TR, there is a culture of patrolling the area on foot, vehicles and boats with the help of temporary staff members recruited additionally. 6.

Habitat improvement at evacuated sites: The management of the TR has undertaken habitat management interventions in evacuated village sites on a priority basis. Grassland development is being attempted at such sites. These rehabilitated sites attract good numbers of herbivores. 7.

8. Relocation of villages: The TR has been doing a praiseworthy job in relocating and rehabilitating the villages located within the core/critical area. During 2010-2014, altogether total of 12 villages were successfully relocated from the core area of the TR. The management of the TR and the state forest department efficiently mobilised resources of the state government for a rehabilitation package for the relocated families. This could be learning lesson for other TRs in the country.

B Management Weaknesses

1. Heavy anthropogenic pressure: There is heavy biotic pressure inside core critical tiger habitat due to human and cattle population in the villages inside the core area. However, since 2004-05, as many as 14 villages have already been relocated from the tiger reserve. But, still there are 29 villages settled in the core area thus exerting pressure on the biophysical resources of the reserve. As per estimates, over 9200 people live in these villages. Up to 2011-12, four villages were relocated using NTCA funds. Towards the end of the financial year 2012-13, with the intervention of Chief Secretary Government of Madhya Pradesh, Rs. 68 Crores, unspent tribal development funds, were allotted to Satpura Tiger Reserve for relocation of villages. This helped in relocation of 10 villages and brought a ray of hope for the remaining 29 villages, who have volunteered for relocation from core/critical tiger habitat.So far, there is no firm commitment by State Government or NTCA to provide money for relocation.

2. Religious tourism in Pachmarhi: Religious tourism in Pachmarhi and movement of traffic on National Highway 19A are the sources of disturbances in the core area. The Honourable Supreme Court has directed the State of Madhya Pradesh to remove the temple town of Pachmarhi and some 20 villages in the eastern and north-eastern portions of the core area from the limits of the reserve. Attempts can be made to remove the other 29 villages (as discussed in the preceding paragraph) to make a major part of the reserve inviolate.

3. Limited expense of grasslands: Approximately 1% of the area of Satpura Tiger Reserve is covered by grasslands. Attempts have been made to develop grasslands on all the available sites after relocation of villages with the help of experts, but there is evidence of movement of cattle abandoned by the relocated villagers in these areas. No effective measures have been taken by the management of the reserve to make the area free of cattle after village relocation. These domestic cattle could be a potential source of communicable diseases to their wild counterparts. The management believes that the number of cattle might decline over a period of time.

4. Weak Tiger Conservation Plan (TCP): The TR submitted a TCP to the National Tiger Conservation Authority (NTCA) for approval. The NTCA has communicated its observations regarding the TCP. Looking at these observations, it is evident that the plan needs to be re-written. Unless there is planning for each component of work in the TCP, the management will find it difficult to manage the reserve scientifically.

C Actionable points

1. The state of Madhya Pradesh has moved a proposal for diversion of forest land in Hoshangabad territorial division, required for relocation of the 29 villages. Sufficient fund need to be provided by the NTCA and the state of Madhya Pradesh for taking up relocation of these remaining 29 villages. Also, the proposal under the Forest (Conservation) Act, 1980 for diversion of forest land in Hoshangabad territorial division must be expedited by the (central) Ministry of Environment and Forests. This forest land is required for settling relocated families from within the reserve.

2. The suggestions of the NTCA on the TCP should be urgently incorporated to complete the plan and seek the approval of the NTCA.

3. The old village sites are being managed for grassland development. Unpalatable species such as Sida acuta, Sida cordifolia, Alternanthera species, Ageratum conyzoides, Hyptis suaveolens (vantulsi), Parthenium and Spilanthus species are being weeded out. Palatable grasses such as Dichanthium annulatum, Eragrostis unioloides, Hetropogon contortus, Cynodon species and Apluda mutica are being introduced. It is suggested that the area be closed for one and a half months during July and August in the interest of developing meadows, as is being practiced in Pench Tiger Reserve.

4. Barasingha relocation is planned at the site of the relocated village Bori, in the core area. The closure of the area with chain link mesh and creation of water holes have been completed. The TR should seek the necessary permissions and clearances from the NTCA to expedite the project.

5. During the visit to compartment P-25, in Dhenwa buffer range, gully check works were found to have been carried out during the current year. Similar gully check work was carried out in the same area about a decade ago. Sadly, it was observed that the stones of the old gully checks were used in the newly constructed gully checks. This practice must be discontinued.

6. In Kamti range, it was observed that a good number of trees have been felled using captive elephants to create openings in the forest, probably to promote the growth of grasses. This practice is not based on any research finding and should be reassessed.

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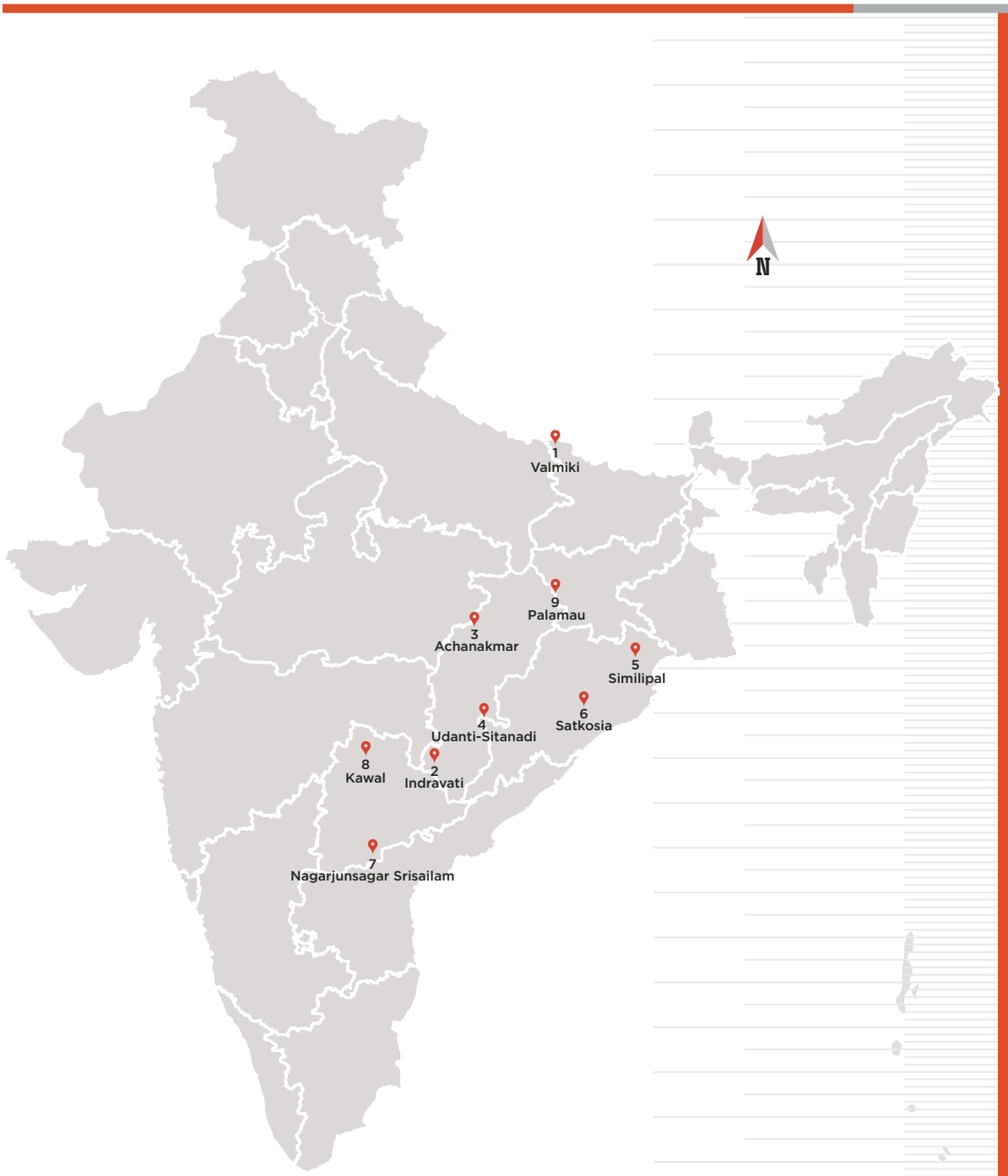
CLUSTER THREE



1. Valmiki Tiger Reserve, Bihar
2. Indravati Tiger Reserve, Chhattisgarh
3. Achanakmar Tiger Reserve, Chhattisgarh
4. Udanti-Sitanadi Tiger Reserve, Chhattisgarh
5. Simlipal Tiger Reserve, Odisha
6. Satkosia Tiger Reserve, Odisha
7. Nagarjunsagar-Srisailam Tiger Reserve, Andhra Pradesh
8. Kawal Tiger Reserve, Telangana
9. Palamau Tiger Reserve, Jharkhand

3.3 Cluster - III

Valmiki (Bihar); Indravati, Achanakmar, Udanti-Sitanadi (Chhattishgarh); Simlipal, Satkosia (Odisha); Nagarjuna Sagar Srisailam-NSTR, Kawal (Telangana) and Palamau (Jharkhand) Tiger Reserves.

1. Valmiki Tiger Reserve, Bihar

A Management strengths

1. Compact area with excellent tiger habitat; excellent accessibility by road; local communities supportive of conservation.
2. Part of Greater Tiger Landscape (Shiwaliks and Terai Arc Landscape), Valmiki-Sohagibarwa Wildlife Sanctuary, Uttar Pradesh; Valmiki-Chitwan National Park, Nepal and Valmiki-Parsa Wildlife Sanctuary, Nepal.
3. Small but focused actions have contributed towards improving the status of the Tiger and other wildlife.
4. Young motivated staff at RFO level and above.

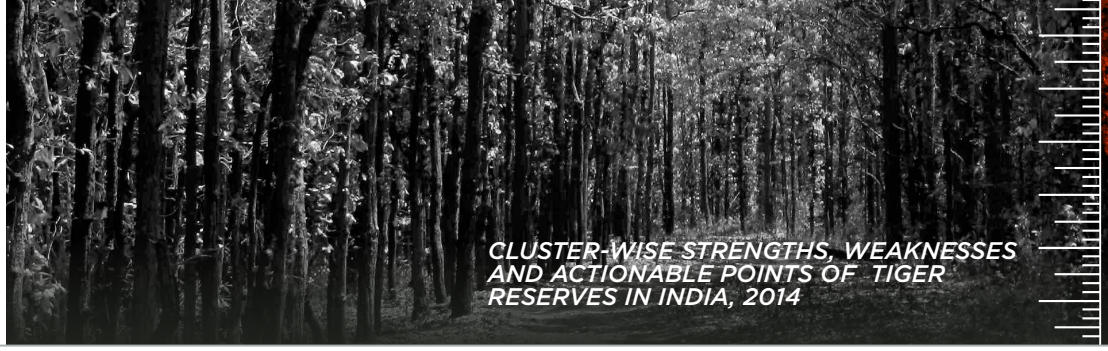
B Management weaknesses

1. Invasive plants such as Phoenix sp. have invaded the area, followed by other species, namely Eupatorium sp. and Lantana camara, creating a hindrance to the regeneration of native species. Herbivores such as Spotted Deer are seen to avoid such areas.
2. General shortage of staff

   Construction of a 6 km long reinforced concrete (RC) wall around the railway track
3. Signs of biotic interference such as illegal felling, grazing and infestation with weeds are visible.
4. Inadequate veterinary capability-dependent on veterinarians from Patna Zoological Park.

C Actionable Points

1. Construction of 6 km long reinforced concrete wall around the railway track- It is recommended that the state government be advised to immediately restrict the construction of the 6 km RC wall and that a chain link wall be constructed. The 4 m high underpass also needs to be reviewed.
2. Training and reorientation of staff- Management training programmes will not only build the capacity of the field staff in managing wildlife and habitats but will also help raise a core team of wildlife managers in Bihar.
3. Strengthening of veterinary services- It is recommended that a full time veterinary position, along with a minimum support staff of animal handlers, be appointed in Valmiki TR.
4. Valmiki TR has a common boundary with Chitwan National Park and has a corridor linkage with Sohaghi Barwa Wildlife Sanctuary, in Uttar Pradesh. This continuity of undisturbed areas provides ecological contiguity between the two reserves and



facilitates genetic exchange, which will favour the long-term survival of the wildlife in this reserve. It is recommended that the Bihar and Uttar Pradesh state governments have a joint meeting and Sohaghi Barwa Wildlife Sanctuary, in Uttar Pradesh, be made a buffer of Valmiki TR (e.g. Amangad Wildlife Sanctuary, in Uttar Pradesh, has been included as the buffer of Corbett TR, in Uttarakhand).

Indravati Tiger Reserve, Chhattisgarh 2

Management strengths A

Compact, large area. 1.

Part of Greater Tiger Landscape (central India), Indravati-Udanti Sitanadi-Achanakmar-Kanha (MP); Indravati-Kawal (Andhra Pradesh)-Tadoba (Maharashtra); Indravati-Udanti Sitanadi-Sonabeda (Sanctuary) (Odisha) and Indravati (Bhopalpatnam)-Godavari (River)-Papikonda (Andhra Pradesh) 2.

Management weaknesses B

Severely affected by left wing extremism. Most areas still not approachable for staff. Little or no Information on status inside. 1.

General shortage of staff members 2.

Available members of field staff not trained in wildlife management or conservation 3.

The Territorial CF has the authority to transfer members of the frontline staff, as a result of which they are posted in Tiger reserves and out of them at inappropriate times. Also, unwilling and at times incompetent staff members are posted in Tiger reserves. 4.

An aptitude for wildlife conservation is missing amongst the frontline staff (FGs). Staff orientation towards wildlife very week is required. 5.

The control of poaching of wildlife for local consumption by some tribal communities is ineffective. There is an inability to detect and deactivate inter-state and international illegal trade in bear parts in the absence of a proper intelligence network. 6.

Inadequate rescue and conflict mitigation capability and infrastructure; veterinary doctor and support staff inadequate or not provided for 7.

Actionable Points C

Manage the situation so as to enable regular visits, stay and patrolling by staff and officials. 1.

Inadequate staff: With a core area of 1258 km^2, the sanctioned strength of FGs is 88 (14.3 FGs/km^2), close to the norm of 1 FG/12 km^2 of the NTCA. According to the NTCA norms, the TR should have 105 FGs. Not only is the sanctioned strength only 84% of the required strength, it is alarming that even the sanctioned strength is not fully utilized as there are only 39 FGs in position, or 44% of the sanctioned strength and a meager 37% of the required strength. The shortage of staff is not limited to the FGs-even at higher levels; the situation is not very encouraging. Of the five ranges of ITR, only two are properly manned by ROs; the remaining 3 are managed by ROs of 2.

the Forest Wing with additional charge of wildlife ranges of ITR.- It is recommended that the state government immediately review the staff strength of TRs at the highest level and immediately fill up vacancies of FG and other ranks in ITR.

3. Handing over of buffer: The area of the buffer around ITR still with the Territorial Wing of the forest department is 1500 km^2. Consequently, the Wildlife Wing has no management control over the buffer area. This has serious implications for the conservation of the Tiger and its habitat and prey base in ITR.- It is recommended that the state government hand over the buffer area of ITR to the wildlife authorities immediately to enable proper management of the buffer along with the core of the TR.

4. Posting of staff in TRs: The Territorial CF exercises the power of transfer of FGs in ITR. This most often leaves the ITR ranges and beats without dedicated and trained staff members.- It is recommended that a proper transfer and posting policy be adopted regarding positions in ITR and other TRs . It is recommended that the state government be requested to frame and follow a strict policy regarding postings and transfers in respect of wildlife areas including ITR.

5. Training and reorientation of staff: Proper training programmes will not only build the capacity of the field staff in management of wildlife and habitats but also help raise a core team of wildlife managers in Chhattisgarh.- The following training programmes need to be arranged immediately, and the same should be included in the TCP of ITR:

    Director-7 days in Kanha + WII

    DDs/ROs-15 days in Kanha + 3 TRs of Chhattisgarh

    Dy. Ranger/Forester/FGs-15 days

6. Provision of veterinary services: Despite the huge area, occasional cases of poaching and rescue and rehabilitation of wild animals, ITR does not have reliable basic minimum veterinary facilities.- It is recommended that a mobile rescue van with a veterinary doctor and a minimum support staff of animal handlers be provided immediately to ITR.

3 Achanakmar Tiger Reserve, Chhattisgarh

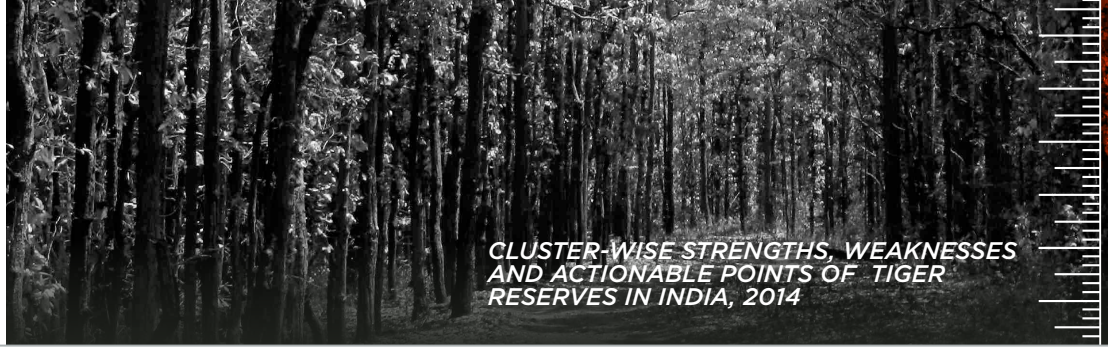
A Management strengths

1. Compact area with good Tiger habitat; excellent accessibility by road; local communities supportive of conservation.

2. Part of Greater Tiger Landscape (central India), Udanti Sitanadi-Achanakmar-Kanha (MP); Achanakmar-Udanti Sitanadi-Sonabeda (Sanctuary) (Odisha). Small but focused actions can contribute towards improving the status of the Tiger and other wildlife.

B Management weaknesses

1. Lack of effective patrolling and its supervision.



Ad hoc construction of water harvesting structures; no evidence of planned water regime development 2.

The essential condition of development of agricultural fields (for village relocation) has not been implemented fully. Also, the lands from which villages have been relocated seem to be used continuously by graziers, with the result that the habitats are not recovering. Consequently, there is no perceptible increase in the use of abandoned lands by wild animals. 3.

Three SoPs have not been translated into the local language (Hindi) and provided to the field staff. 4.

The draft Tiger Conservation Plan (TCP) does not highlight the region's importance as a source of major rivers in the Statement of Significance. Similarly, the TCP does not include a mention of the possible presence of the Sacred Grove Bush Frog Philautus sanctisilvaticus-a species that is new to science, discovered in Amarkantak in 1997. 5.

The buffer area is broken, with compartments being worked by the State Forest Corporation, as a result of which it is porous and ineffective. 6.

There is a general shortage of staff members. 7.

The available field staffs are not trained in wildlife management or conservation. 8.

The Territorial CF has the authority to transfer members of the frontline staff, as a result of which they are posted in Tiger reserves (TRs) and out of them at inappropriate times. Also, unwilling and at times incompetent staff members are posted in TRs. 9.

An aptitude for wildlife conservation is missing amongst the frontline staff (FG). Orientation of the staff towards wildlife very week is required. 10.

The veterinary capability is inadequate. 11.

Actionable Points C

Strengthening of patrolling: Although this TR is the best manned of the three TRs of Chhattisgarh, the staff strength of the field functionaries needs to be reviewed with a view to rationalizing the beats and the number and locations of the patrolling/anti-poaching camps. Presently, each camp caters to an area of 25 km^2, which is better than the other two TRs of Chhattisgarh. Nevertheless, it would be advisable to reduce the jurisdiction of the camps further, by increasing their number, for more effective patrolling and surveillance. It is recommended that the state government immediately review the staff strength of ATR at the highest level and immediately provide for the minimum number of posts of FG and other ranks. 1.

Integration of buffer area: The buffer is not continuous around ATR. Its continuity is broken by compartments being worked by the State Forest Corporation. This hampers effective conservation and management of the wildlife and habitats in ATR. It is recommended that the state government immediately rationalize the buffer area and arrange to hand over the compartments/coupes being worked by the State Forest Corporation that otherwise fall in the buffer, and break its continuity, to the ATR authorities at the earliest. 2.

Posting of staff in TRs: The Territorial CF exercises the power to transfer FGs in ATR. Often this leaves the TR ranges and beats without dedicated and trained staff members. It is recommended that a suitable transfer and posting policy governing the positions in ATR and other TRs be adopted. It is recommended that the state government be requested to frame and follow a strict policy governing postings and transfers in respect of wildlife. 3.

Training and reorientation of staff: Proper training will not only build the capacity of 4.

the field staff in management of wildlife and habitats but will also help raise a core team of wildlife managers in Chhattisgarh. The following training programmes need to be arranged immediately, and the same should be included in the TCP of ATR:

Director-7 days at Kanha + WII

DDs/ROs-15 days at Kanha + 3 TRs of Chhattisgarh

Dy. Ranger/Forester/FGs-15 days

5. Village relocation: There is need tor proper village relocation. The relocated village that we saw had unsatisfied beneficiaries allocated poorly constructed dwelling units and they had not been allotted suitable agricultural lands as promised.

6. The staff do not seem to be well versed wit h the guidelines relating to relocation of villages from inside a TR and about the facilities and infrastructure to be provided by the forest department to relocated villagers at the site of relocation, e.g., levelling of agricultural fields. It is recommended that the staff be given an awareness course in dealing with the relocation of villages according to the NTCA guidelines and be taken on a visit outside the state to sites of successfully relocated villages to get firsthand knowledge of the finer points of a relocation exercise.

7. The sites from which villages have been relocated are still under severe grazing pressure which defeats the purpose of the relocation. Need to effective protect and manage the area especially the former village sites.

8. Strengthening of veterinary services: ATR is the only TR in Chhattisgarh that has a mechanized rescue van and in which the services of a veterinary doctor are available. However, this is not considered to be adequate. It is recommended that the services of an additional veterinarian, along with a minimum support staff of animal handlers, should be made available immediately at ATR.

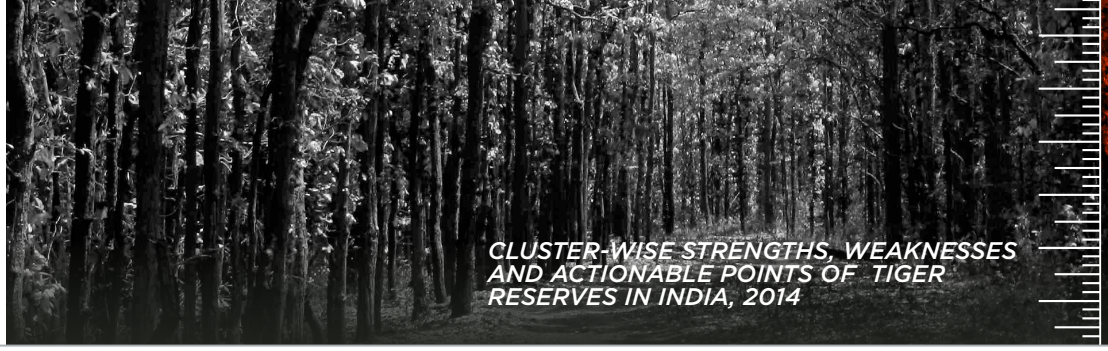
9. Revision of TCP: The TCP needs to be thoroughly reworked to include important information relating to ATR. It is recommended that the TCP be revised by incorporating, inter alia (i) rationalization of beats and patrolling camps to make patrolling effective, and (ii) including information in the Statement of Significance related to the TR being the landscape being the source of the major rivers of the region and the home of yet undiscovered species like the Sacred Grove Bush Frog. There could still be more vital information that has not yet been included in the TCP. Utmost care should be taken to ensure that no important information related to the TR is left out of the final TCP. Also, the SOPs should be translated in Hindi and distributed amongst the field staff.

4 Udanti-Sitanadi Tiger Reserve, Chhattisgarh

A Management strengths

1. USTR also has two compact areas separated by a good forested area only part of which is included in the buffer. With potentially good Tiger habitat. The accessibility by road is fairly good, and the local communities are in general supportive of conservation.

2. Part of the Greater Tiger Landscape (central India)



Udanti-Sitanadi-Achanakmar-Kanha (MP)

Udanti-Sitanadi-Sonabeda (Sanctuary) (Odisha)

The habitat of the remnant population of the Wild Buffalo, the state animal of Chhattisgarh, falls in USTR.	3.
Small but focused actions can contribute towards improving the status of the Tiger and other wildlife.	4.

Management weaknesses B

Lack of intensive, effective patrolling	1.
Threat of Left wing extremism.	2.
General shortage of staff	3.
Available field staff not trained in wildlife management or conservation	4.
The Territorial CF exercises the authority to transfer frontline staff members, with the result that they are posted in and out of USTR at inappropriate times. Also, unwilling and at times incompetent staff members are posted in the TR.	5.
An aptitude for wildlife conservation is missing amongst the frontline staff (FGs). Weekly staff orientation towards wildlife is required.	6.
Ineffective control of poaching of wildlife for local consumption by some tribal communities; inability to detect and deactivate inter-state and international illegal trade in bear parts in the absence of a proper intelligence network; no evidence of regular manning of, and intensive patrolling from, the sparse patrolling camps	7.
Absence of focused planning for key wildlife habitat development, for example, Wild Buffalo habitats. There is no mention of the Wild Buffalo in the Statement of Significance of the Tiger Conservation Plan (TCP) of USTR.	8.
Inadequate rescue and conflict mitigation capability and infrastructure; veterinary services grossly inadequate or completely missing	9.
Inadequate experience of dealing with village relocation from TRs, specifically the application of National Tiger Conservation Authority Option I (cash + hand-holding), Option II or a combination of Option I and Option II	10.

Actionable Points C

Manage the situation so as to enable regular visits, stay and patrolling by staff and officials.	1.
Inadequate staff: The Udanti part of USTR on average has one patrolling camp/75 km^2, which is highly inadequate considering the threat of local poaching and instances of the illegal trade in bear parts. The locations and jurisdiction of the patrolling camps need to be reviewed and rationalized based on the management need and threat perception. Certainly, the number of camps needs to be increased. It is considered that stationing the patrolling/anti-poaching camps every 25 km^2 should serve the purpose of minimum effective conservation and protection of wildlife and habitats. The same is true in respect of the Sitanadi part of USTR. Similarly, the number of beats will need to be rationalized based on the norm of one beat (FG)/12 km^2. It is recommended that the state government be advised to immediately review the staff strength of USTR at the highest level and immediately provide for the minimum number of posts of FG and other ranks in USTR.	2.
Posting of staff in TRs: The Territorial CF exercises the power of transfer of FGs in USTR. This often leaves the TR ranges and beats without dedicated and trained staff members. It is recommended that a proper transfer and posting policy governing positions in USTR and other TRs be adopted. It is recommended that the state	3.

government be requested to frame and follow a strict policy for postings and transfers in respect of wildlife postings, including USTR.

4. Training and reorientation of staff: Proper training will not only build the capacity of the field staff to manage wildlife and habitats but will also help raise a core team of wildlife managers in Chhattisgarh. The following training programmes need to be arranged immediately, and the same should be included in the TCP of USTR:

   Director-7 days in Kanha + WII

   DDs/ROs-15 days in Kanha + 3 TRs of Chhattisgarh

   Dy. Ranger/Forester/FGs-15 days

5. Water resource planning: Construction of water resource structures is not being planned systematically and on the basis of scientific considerations. It is recommended that the USTR TCP have 'rehabilitation of Wild Buffalo' as part and that the Wild Buffalo rehabilitation plan have water resource planning as an important component. Rationalization of beats and patrolling camps should also be included in the TCP to make patrolling more effective

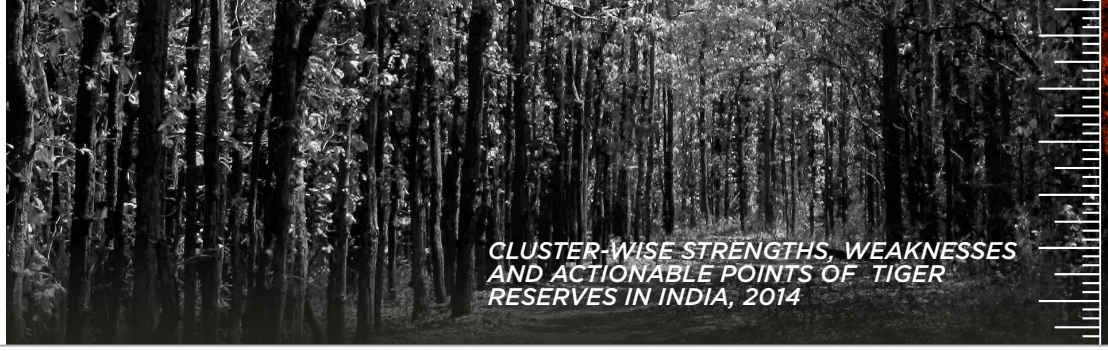
6. Provision of veterinary services: Despite huge area, and occasional cases of poaching, as well as rescue and rehabilitation of wild animals, USTR does not have reliable basic veterinary facilities. It is recommended that a mobile rescue van, two veterinary doctors and a minimum support staff of animal handlers be immediately provided to USTR.

7. Village relocation: The staffs are not well versed with the application of Option I (cash + hand-holding) for relocation of villages from a TR. It is recommended that a group of the interested villagers and the staff may be taken on a visit to Kanha and Satpura Tiger Reserves in MP where both options are being made use of for relocation of villages.

5 Simlipal Tiger Reserve, Odisha

A Management strengths

1. One of the nine earliest Tiger reserves (TRs).
2. The connectivity by road is very good and adequate from the point of view of patrolling.
3. This is a hotspot of biodiversity, with floral and faunal elements from the Western Ghats and eastern Himalaya-such as the Collared Falconet (from eastern Himalaya), Malabar Pied Hornbill (from Western Ghats). Many orchids found in Simlipal occur specifically in the North-east.
4. The area is large, measuring about 2750 km^2, with a core area with an extent of 1195 km^2. The large area offers varied habitats to a range of wild animals including birds. The presence of gregarious Sambar is an indication of potential Tiger habitat.
5. There is a concept of a core area within the core area (400 km^2), which is kept free of disturbance of any kind. Even forest department staff members normally do not intrude into this area.
6. There has been no traditional 'Akhand shikar' for the last 2 years (2013, 2014).
7. Small but focused actions can contribute towards improving the status of the Tiger and other wildlife.



A dog squad has been established for anti poaching operations. 8.

Management weaknesses B

Inadequate patrolling - Patrolling not planned, supervised or supported by the top management. 1.

General shortage of staff- Of the seven ranges in the core area, ROs are posted in only three. The remaining four ranges have not had ROs posted for the last 6-7 months. The staffs at the RO level and below are unwilling to serve in the TR because of the serious malaria infestation. Presently, the posted staffs are kept motivated through incentives such as payment of project allowance, timely and full reimbursement of TA and medical bills and grant of special leave of 5 days a month to meet their families at home. The story in the buffer area, where seven out of 12 ranges have not had ROs posted for the last 6-7 months, is no different. 2.

Ineffective control of poaching- Poaching continues to be a major problem. Camera traps have recorded photos of poachers. Congregations of animals near salt-licks after dusk are also a pointer towards this problem. The MEE team also saw some local people moving with bows and arrows within the TR. Seemingly, poaching of wildlife for local consumption is prevalent. There is no evidence of regular manning of, and intensive patrolling from, the sparse patrolling camps. 3.

Inadequate number of antipoaching camps- Presently, 94 (63 core + 31 buffer) antipoaching camps are functional, which is not adequate to keep a check on poaching by local communities. The MEE team's assessment is that 94 antipoaching camps are not adequate to curb effectively the poaching by local tribal communities. Each antipoaching camp is manned by a mix of forest department officials and local youth (1 Forest Guard + 4 locals) recruited on a daily wage basis as Protection Assistants. 4.

Presence of villages in the core area of the TR- There are still three villages within the core area of the TR, viz. Jamunagarh, Kobadghai and Bakua. The presence of these villages provides the villagers, most of whom are traditional hunters, a perverse incentive to poach animals for their own consumption. 5.

The aptitude for wildlife conservation of the frontline staff (FGs) needs to be improved as their orientation towards wildlife protection, conservation and management is not up to the mark. 6.

The rescue and conflict mitigation capability and infrastructure is inadequate, including a lack of veterinary services. 7.

The malaria infestation is causing staff to be out of action very frequently. 8.

Actionable Points C

Implementation of an effective patrolling plan with participation at all levels. 1.

Inadequate staff at key positions of RO: The vacant positions of RO (core 4 + buffer 7) need to be filled up immediately to ensure proper management of the key areas of the TR. It is recommended that the state government be advised to immediately fill up the vacant posts of 11 ROs in the core and buffer areas of the TR. The state may also consider introducing a special provision for giving preference to the local people of tribal origin in the recruitment of ROs as they are not only immune to malaria but also have homes in villages within or in the buffer area of SmTR. A system of a posting of choice after completion of tenure in SmTR may also encourage staff members to willingly accept postings in the TR area. 2.

Inadequate number of antipoaching camps: The MEE team feels that the number of antipoaching camps will need to be doubled from the present 94 (core and buffer) to at least about 190 for effective control of poaching and for effective protection 3.

and management of the TR (with an area of 2750 km^2). It is recommended that the SFD be impressed upon to set up these additional 96 antipoaching patrolling camps (core 64 + buffer 32) immediately. The camps will also provide for engagement of 384 more villagers as Protection Assistants (Pats) (on a daily wage basis), thereby strengthening the protection of wildlife in the TR and increasing the stakeholdership of the local communities in the management of the TR.

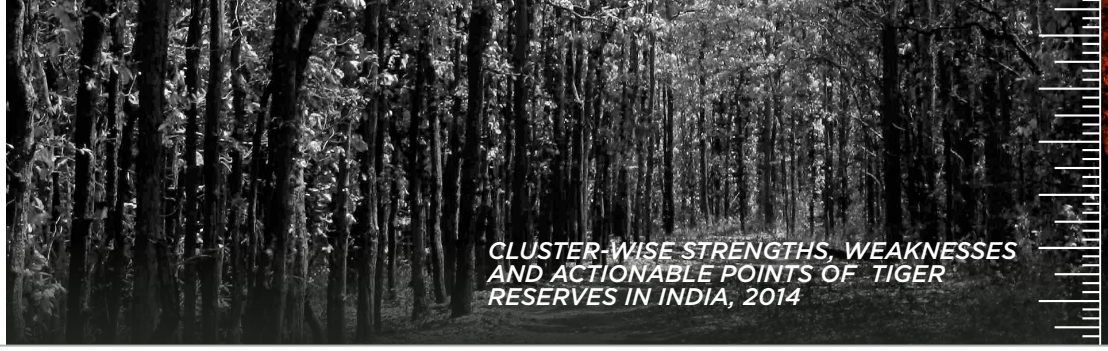
4. Temporary machan camps (TMCs): This is a novel arrangement in SmTR to strengthen the protection regime. The TMCs are located in areas falling outside the core area and within the buffer area. Each TMC is manned by a team of four personnel (1 forest department staff member + 3 PAts). The system is reportedly proving to be very effective. It is recommended that all the TMCs be converted into permanent, regular antipoaching camps and counted against the 96 additional camps that are required for effective management of the TR.

5. Relocation of villages in the core area of the TR: The three villages still remaining in the core area, viz, Jamunagarh, Kobadghai and Bakua, need to be relocated on a priority base in a phased manner. It is recommended that the National Tiger Conservation Authority immediately process the case for providing financial assistance to the management of SmTR to enable them to relocate all the families of Jamunagarh village immediately. This village is a serious threat to effective protection of wildlife of the TR.

6. Improvement in aptitude of field staff for wildlife conservation: It will be essential to expose the field staff to basic training in wildlife management to reorient them properly to wildlife conservation and management. It is recommended that short orientation and capacity building courses with durations ranging from 7 to 15 days be arranged for different levels of the field staff of SmTR.

7. Ineffective control of poaching by local communities: There is evidence that local tribal communities indulge in poaching of wild animals for food and to satiate their hunting urge. Although enforcement is good, the awareness of locals may be raised effectively through confidence building measures such as enrolling local youth as Protection Assistants (PAts) in the core and buffer areas of the TRs. It is recommended that awareness campaigns supplemented by measures to increase the stakeholdership and participation of local communities in wildlife protection and management by strategically increasing the number of PAts and the hospitality facilities for visitors to the TR be immediately planned, in consultation with local communities, and implemented in a phased manner at the earliest. The catering facility for visitors to the TR established at Barehpani (Muktapur), using a coupon system, is a stunning innovation. Similarly, ecotourism huts constructed at Jamuani village, and provision of resting and catering facilities for visitors with training from Indian Gramin Services (IGS), an NGO, is a novel experiment, which may be scaled up by having similar facilities at other sites, again to be manned by villagers. More such innovative facilities should be created to enhance the interest and stakeholdership of the local tribals in protecting wild animals. Also, more livelihood options such as horticulture, improved agriculture and mushroom cultivation and facilities of loans and finances for goateries will go a long way in enlisting the support of the local communities for protection and conservation of wildlife. There is also a need to establish more residential ('Ashram') schools as another confidence building measure.

8. Inadequate rescue and conflict mitigation capability and infrastructure: There is hardly any expertise for rescue and rehabilitation at SmTR. There is an urgent need to provide veterinary facilities to cater to the emergency needs of the TR. It is recommended that a mobile veterinary service unit be established to take care of wildlife-related rescue emergencies in the TR.



Malaria infestation: The field staffs are frequently struck down with malaria, which is causing difficulties for protecting and managing the TR. It is recommended that the staff be made aware of the precautionary measures required to control malaria infestations. Adequate medical facilities and quick reimbursement of medical bills of the staff should be ensured. Incidentally, the local communities are immune to malaria. Keeping in view the immunity of the local people to malaria and the need to enhance their stakeholdership in the management of the TR, it will be advisable to make special provisions for recruiting local candidates even at the level of ROs by lowering the educational and other norms. 9.

The Director, SmTR does not favour the involvement of local tribals in the protection and management of the TR because of their tradition of hunting for food. He wants the forest department to be careful about recruiting locals as PAts as they become poachers later on, after leaving the department. The views of the Director, SmTR are in contrast with the views of the Director, Satkosia TR, who spoke of the usefulness of recruiting local youths as project assistants to improve and strengthen the protection regime of the TR. Nevertheless, the MEE team believes that the involvement of tribal youth in the protection and management of the TR is a good strategy and needs to be encouraged. However, checks and balances to control wayward behaviour of PAs also need to be put in place simultaneously. 10.

Satkosia Tiger Reserve, Odisha 6

Management strengths A

Compact area with good tiger habitat; fairly good access by road. Small but focused actions can contribute towards improving the status of the Tiger and other wildlife. 1.

The inhabitants of the local villages could be persuaded to be relocated outside SkTR. The core area of Satkosia Wildlife Division has only one village, Raiguda. All the residents of this village are ready and willing to be relocated to a place outside the core area. 2.

The practice of enrolling local village youth as part of antipoaching patrolling teams is a very innovative and effective protection measure. In most antipoaching patrolling camps, the constitution of a patrolling party is 1 Guard + 4 Protection Assistants (local villagers). Reposing confidence in the locals for protection of wildlife sends a positive signal of recognition and of being valued very highly by the forest department to the villagers, who are mostly tribals and traditional hunters. 3.

Management weaknesses B

General shortage of staff: Satkosia Wildlife Division has five ranges, and only one of these at present is being manned by a Range Officer (RO). ROs are to be posted in the remaining four ranges. All the four ranges of Mahanadi Wildlife Division of the TR are functioning without ROs for the last 6 months. This hampers the effective management of the TR. 1.

At present, 20 antipoaching camps are functional in Satkosia Wildlife Division, with average area coverage of 26.5 km^2. Based on the threat perception, it is considered appropriate that each camp should not have a jurisdiction of more than 12 km^2. This implies that a total of about 45 camps are required to effectively manage and protect Satkosia Wildlife Division. Similarly, the number of antipoaching camps in 2.

Mahanadi Wildlife Division need to be increased from 20 (average jurisdiction more than 21 km^2) to 36.

3. Presence of villages in the core area of the TR: There is one village (Raiguda) in Satkosia Wildlife Division and four villages (Marada, Kuturi, Salapaganda, Musuguda) in Mahanadi Wildlife Division, within the corearea. The presence of these villages is highly detrimental to the effective management of the TR. Also, this provides villagers, most of whom are traditional hunters, a perverse incentive to poach animals for their own consumption.
4. The aptitude for wildlife conservation amongst the frontline staff (FGs) needs to be improved as their orientation towards wildlife protection, conservation and management is not up to the mark.
5. Ineffective control of poaching of wildlife for local consumption by some tribal communities
6. Inadequate rescue and conflict mitigation capability and infrastructure, including a lack of veterinary services
7. Malaria infestation causing staff to be out of action very frequently
8. Non-payment of 'Project Allowance' (NTCA funded) to Director SkTR on the plea that he is holding additional charge of the TR. This is an avoidable irritant to the effective discharge of the duty by the Director.

C Actionable Points

1. Inadequate number of antipoaching camps: Based on the rationalization of jurisdiction, Satkosia and Mahanadi wildlife divisions require 25 and 16 camps in addition, respectively, for an effective protection and management regime. It is recommended that the SFD be impressed upon to set up the additional 41 antipoaching patrolling camps (Satkosia, 25; Mahanadi, 16) immediately. Besides strengthening the protection of the TR, the camps will also provide engagement of 164 more villagers as Protection Assistants (on a daily wage basis), thereby increasing their stakeholdership in the protection of wildlife in the TR.
2. Inadequate staff at key positions of RO: Four out of the five ranges in Satkosia Wildlife Division do not have ROs in position. In the case of Mahanadi Wildlife Division, all the four ranges of the TR are functioning without ROs for the last 6 months. It is recommended that the state government be advised to immediately fill up the vacant posts of eight ROs in the two wildlife divisions of SkTR so that proper protection and management of the TR can be ensured. Allowing Foresters or Deputy Rangers to man posts of RO is not the solution as is being done in the case of some ranges in the TR. Such arrangements need to be discontinued immediately.
3. Relocation of villages in the core area of the TR: All the 83 families of Raiguda village, who are willing to be relocated under Option-1 of the NTCA guidelines, should be shifted as early as possible. This is the only village in the core area falling in the Mahanadi Wildlife Division. Relocation of this village will certainly improve the prey base, and consequently the Tiger population, in the TR. It is recommended that the NTCA immediately process the pending case for providing financial assistance to the management of SkTR to enable them to relocate all 83 families of Raiguda village under Option-1 as quickly and as early as possible.
4. Improvement in aptitude of field staff for wildlife conservation: To properly reorient the field staff to wildlife conservation and management, it will be essential to expose them to basic training in wildlife management. It is recommended that short orientation and capacity building courses with durations ranging from 7 to 15 days be arranged for different levels of the field staff of SkTR.
5. Ineffective control of poaching by local communities: There is evidence that local

tribal communities indulge in poaching of wild animals for food and to satiate their hunting urge. Although enforcement is good, improving the awareness of locals and confidence building measures such as enrolling local youth as Protection Assistants in the core and buffer areas of the TR can prove to be very effective in conservation of wildlife. It is recommended that awareness campaigns be planned immediately in consultation with local communities and implemented in a phased manner at the earliest. The hospitality facilities may include ecotourism camps (such as the one in Chutkei) and catering, accommodation and camping services managed by the local communities.

6. Inadequate rescue and conflict mitigation capability and infrastructure: Expertise for rescue and rehabilitation is hardly available at SkTR. There is an urgent need to provide veterinary facilities to cater to the emergency needs of wildlife rescues in the TR. It is recommended that a mobile veterinary service unit be established to take care of wildlife-related rescue emergencies in the TR.

7. Malaria infestation: The field staffs are frequently struck down with malaria, causing difficulties to the protection and management of the TR. It is recommended that the staff be made aware of the precautionary measures required to control malaria. Adequate medical facilities and quick reimbursement of medical bills of the staff should be ensured. Incidentally, the local communities are immune to malaria. Keeping in view the immunity of the local people to malaria and the need to enhance their stakeholdership in the management of the TR, it will be advisable to make special provisions for recruiting local candidates even at the level of RO by lowering the educational and other norms.

8. Non-payment of 'Project Allowance' (NTCA funded) to Director, SkTR: The non-payment of a project allowance of Rs.2000 per month to the present Director, SkTR on the grounds that he is holding additional charge, and not the main charge, of the TR, does not seem to be justified. It is understood that for Satkosia and Simlipal TRs, the territorial and park functions have been rolled into one post-that of the CCF and Director TR-by an order of the government. Under such a dispensation, the same person exercises control over the wildlife divisions of the TR, as also on the surrounding territorial divisions. This, in fact, is a positive measure for more effective management of the TR as there is better coordination between the Wildlife and Territorial divisions in the matter of protection and management of wildlife within and outside the TR. It is recommended that the NTCA reconsider its decision to disallow the project allowance to the Director, SkTR and allow him this small benefit, which it is understood has already been endorsed and supported by the state government.

9. Residents of Raiguda met the MEE team at Raiguda FRH on 4 May 2014. They were led by one Shri Divyasingh Dehuri of the same village. All 83 families are willing to be relocated to lands near village Badzora, in the neighbourhood of Sinduriguri, Nuwagaon and Talaberna villages. The case is reportedly pending with the National Tiger Conservation Authority (NTCA) for more than 2 years. The Forest and Environment Department, Odisha, through its letter no. 8F-(T)-9/08/17713/F&E dated 27 October 2008, notified the initiation of the process of relocation of Raiguda village and sent copies of the letter, inter alia, to MS, NTCA. It appeared that all the families of Raiguda were willing to be relocated under Option-I and were not averse to the money being released progressively with the achievement of different milestones of the relocation process, such as procurement of land, construction and leveling of agricultural fields and creation of community facilities (Panchayat Ghar, etc.). The total extent of the present landholdings of all the 83 families of Raiguda village is 53.5 acres. The villagers expect the same quantum of land at the relocated site. They have visited and seen the relocation site. They will be happy to relocate to this identified relocation site. This means that 4×25=100 more villagers can be enrolled in Satkosia Wildlife Division as daily wage watchers as part of each

antipoaching patrolling squad (1 guard + 4 villagers). Similarly, in Mahanadi Wildlife Division, 4×16=64 villagers can be enrolled to constitute the requisite number of antipoaching camps.

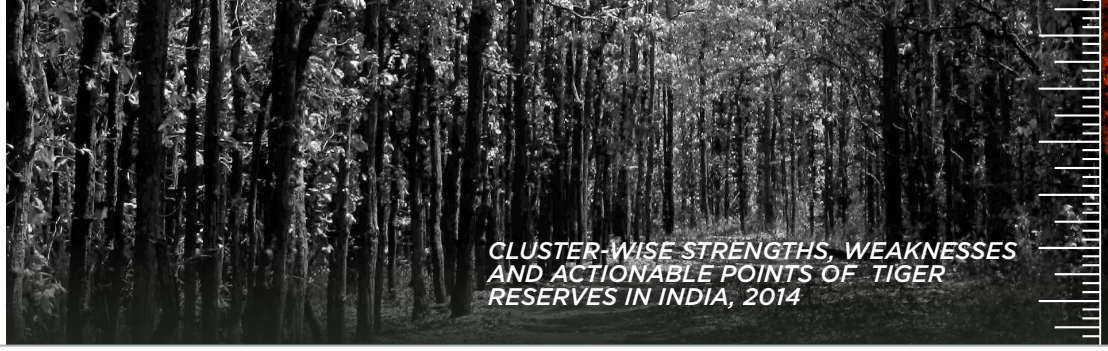
7 Nagarjunsagar-Srisailam Tiger Reserve, Andhra Pradesh

A Management strengths

1. Area with excellent tiger habitat under fairly effective protection and management regime
2. NSTR is a unique Tiger reserve (TR) with a huge area (5938 km^2), which, now, due to the creation of the new state of Telangana, spreads across 2 states (Andhra Pradesh, 3326 km^2; Telangana, 2612 km^2). This offers an unprecedented opportunity for having a common management plan for transboundary TRs.\
3. The intelligence network comprising local shepherds is working well and is a unique measure for building bridges with local communities by reposing confidence in their ability to gather important information that is useful for protecting wild animals and controlling poaching.
4. The installation of solar water pumps at reasonable cost to supplement the water supply to waterbodies is proving to be useful.
5. The Corridor between NSTR and Sri Venkateswara (SV) National Park can be secured with minimum intervention. The width of this corridor at Badvel, between Nandyal Division and Lankamaleswara Sanctuary, is 2.5 km, which is adequate and does not need to be increased by notifying village lands.
6. The inhabitants of two villages-Vatvarpalli (Telangana) and Palutala (Andhra Pradesh)-identified by the forest department are proposed to be relocated.
7. The forest department, as in Kawal, is following the practice of enrolling local villagers to work in base camps for general patrolling as well as for antipoaching activity. The pattern of constitution of a patrolling party is 1 Guard + 5 Daily Wagers (local villagers, at times tribals (Chenchus)). This is a very popular confidence building measure as far as the relationship of the forest department with local villagers is concerned.

B Management weaknesses

1. Non-recognition and maintenance of Tiger corridor: The NSTR-SV corridor is a potential Tiger corridor, but it has not yet been recognized by the NTCA and, therefore, not been secured so far. This hampers the movement of surplus Tigers to the adjoining landscape of SV National Park.
2. Shortage of field staff at the lower levels: There is a general shortage of Beat Officers (BOs) (Forest Guards) in the TR. A huge area (5938 km^2) of the TR (core, 3722 km^2; buffer, 2216 km^2) is managed by only 123 BOs, with each having a patrolling jurisdiction of more than 48 km^2. The number of BOs is proposed to be increased to 224 after reorganization, which will still mean a large average patrolling beat of 26.5 km^2. Larger beats do not contribute to proper and effective protection and management of the TR.
3. Inadequate number of base camps: A total of 68 base camps are presently functioning in NSTR, with average area coverage of 93 km^2 each. Based on the threat perception, it is considered appropriate that each camp should not have a jurisdiction



greater than 25 km^2. This implies that a total of about 238 base camps are required to effectively manage NSTR.

4. Lack of mobility of the field staff: Presently, no official motorbikes are provided to the BOs, which impede their mobility. Some BOs are using their own motorbikes, and getting a fixed TA for the purpose. This system is not very useful and is generally not appreciated by the lower-level staff.

5. Institutionalization of people's participation: As in Kawwal TR, the Van Sanrakshan Samitis (VSSs) are more or less defunct in this TR, adversely affecting its protection regime.

6. Presence of villages inside the core area of the TR: Two out of the 27 villages located inside the TR have been identified by the forest department for relocation. The presence of other villages inside the TR gives rise to disturbances affecting the normal movements of wildlife. No scientific study has been conducted to decide which villages can be allowed to remain inside the TR on account of being harmless to wild animals.

7. Lack of experience in wildlife management: The aptitude of the frontline staff, including BOs, for wildlife conservation requires to be improved by providing knowledge about wildlife management as their orientation towards wildlife protection, conservation and management is not up to the mark.

8. The rescue and conflict mitigation capability and infrastructure, including veterinary services, which are lacking, is inadequate.

Actionable Points

C

1. Need to maintain composite NSTR: NSTR is a unique TR with a huge area (5938 km^2), which, now, due to the creation of the new state of Telangana, spreads across two states (Andhra Pradesh, 3326 km^2; Telangana, 2612 km^2). In the interest of continuity of management, there is a need to retain the present synergy in the management activities. It is recommended that an 'Apex Common Tiger Conservation Plan' (ACTCP) be formulated to ensure synergy between actions aimed at conservation of the Tiger, its habitat and the prey base in the two new TRs (with separate action plans for the two new TRs) till a single TR should be formulated.

2. Intelligence network of local shepherds: This is a very innovative and positive action, engaging the local community in the crucial task of intelligence gathering. The network needs to be strengthened and enlarged. It is recommended that a review of the network be undertaken at the end of each year with a view to improving the functioning of the network.

3. Non-recognition and maintenance of tiger corridors: The NSTR-SV corridor is a potential Tiger corridor, but it has not yet been recognized by the NTCA and, therefore, not been secured so far. This hampers the movement of surplus Tigers to the adjoining landscape of SV National Park and thus impacts the potential of the Tiger population at the landscape level to increase. It is recommended that the NTCA initiate immediate steps to recognize this potential Tiger corridor, connecting NSTR and SV National Park. The NTCA should subsequently also provide financial and technical support for securing this vital corridor. Inclusion of village lands in the corridor should be avoided as far as possible by having flexibility in fixing the width of the corridor, which may be increased or decreased by 0.5 km with a view to avoiding village lands. This has specific reference to the width of the corridor of 2.5 km at Badvel, between Nandyal Division and Lankamaleswara Sanctuary. The corridor, despite being 2.5 km broad at this point, serves the purpose of a proper corridor and, therefore, need not be increased in width by 0.5 km by adding village lands. This fact may be appropriately incorporated in the TCP of the TR.

4. Shortage of field staff at the lower levels: To effectively man the huge TR, with an area of 5938 km^2, the number of beats will have to be increased. Consequently, the number of BOs will need to be raised to 495, according to the accepted norm of 1 BO/12 km^2, against the present sanctioned strength of 123 BOs. It is recommended that the state governments be advised to create the additional 372 posts of BO immediately to strengthen the protection and management of the TR. This requirement may be appropriately incorporated in the TCP of the TR.

5. Inadequate number of base camps: A total of 68 base camps are presently functioning in NSTR, with average area coverage of 93 km^2 each. Based on the threat perception, it is considered appropriate that each camp should not have a jurisdiction greater than 25 km^2. This implies that a total of about 238 base camps (meaning an additional 170 base camps) are required to effectively manage the NSTR. It is recommended that the two state governments be advised to establish the additional 170 base camps in the TR to ensure effective protection and management of the TR. This requirement may be appropriately incorporated in the TCP of the TR.

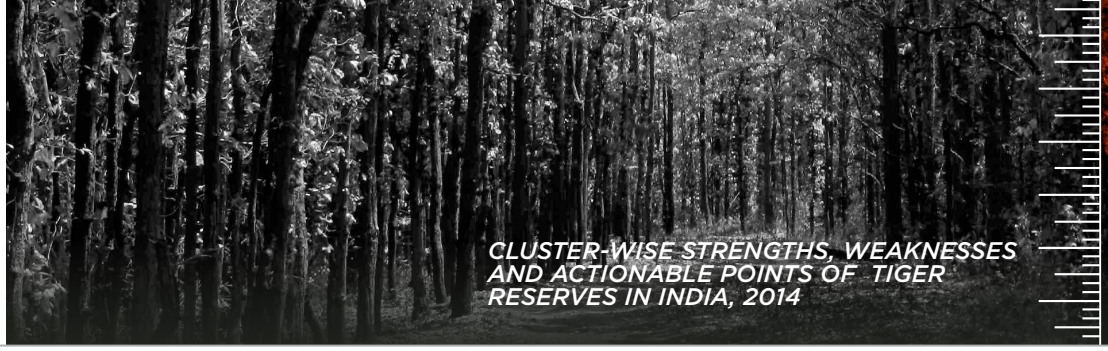
6. Lack of mobility of the field staff: Presently, no official motorbikes are provided to the BOs, which impede their mobility. It is recommended that the forest department include a budget for providing motorbikes to at least 15% of the BOs in the current year (2014-2015). The next year's (2015-2016) budget may include a funding provision for motorbikes for an additional 25% of the staff. All 495 BOs may be provided with motorbikes in the next 7-8 years. This includes the additional BOs this report is recommends be posted at NSTR.

7. Institutionalization of people's participation: As in Kawwal TR, the Van Sanrakshan Samitis (VSSs) are more or less defunct in this TR, which is adversely affecting its protection regime. It is recommended that EDCs be created immediately in all the villages in the vicinity of the TR and a list of ecodevelopment activities to be carried out by the villagers outside the TR be drawn up in consultation with the villagers. The number of EDCs to be created may be appropriately incorporated in the TCP of the TR.

8. Presence of villages inside the core area of the TR: Two of the 27 villages located inside the TR (Vatvarpalli, Telangana; Palutala, Andhra Pradesh) have been identified by the forest department for relocation. The presence of other villages inside the TR also gives rise to disturbances, affecting the normal movement of wildlife. No scientific studies have been conducted to decide which villages can be allowed to remain inside the TR because of their being harmless to the movements of wild animals. It is recommended that the TR authorities prepare a proposal immediately for relocation of the two villages located inside the TR. The state governments, after due scrutiny and approval of the proposal, may submit the same to the NTCA for financial support. This requirement may be appropriately incorporated in the TCP of the TR. Also, a study to determine other villages located inside the TR that may need to be relocated in the future may be commissioned immediately.

9. Lack of experience in wildlife management: The aptitude for wildlife conservation needs to be improved by providing knowledge about wildlife amongst the frontline staff, including BOs. It is recommended that short orientation and capacity building courses in wildlife management with durations ranging from 7 to 15 days be arranged for different levels of the field staff, including the BOs, of NSTR.

10. Inadequate rescue and conflict mitigation capability: Presently the TR has one mobile animal rescue vehicle, but no regular veterinary staff of the forest department is available to man the rescue vehicle. It is recommended that a mobile veterinary service unit be established by providing the services of a veterinarian and one veterinary assistant to man the mobile rescue vehicle to deal with wildlife-related rescue emergencies in the TR.



Kawal Tiger Reserve, Telangana 8

Management strengths A

Area with excellent Tiger habitat; responds to good management practices such as control of invasive weeds. 1.

KTR is a unique potential sink for the larger Tiger landscape of Tadoba-Kawwal-Indravati. The surplus population of Tigers in Tadoba Tiger Reserve, in the north, can find its way into KTR through the Tadoba-Kawal corridor and into Indravati Tiger Reserve through the Kawal-Indravati corridor. 2.

Scientific management of weeds such as Hyptis suovalensis and Cassia tora can restore the habitat of herbivores, the prey base of the Tiger, and consequently improve the habitat and population of Tigers. 3.

The use of solar water pumps, each costing around Rs.3 lakhs, to supply water to water holes is a worthwhile experiment, and has the scope of improving the availability of water in the Tiger reserve. Such water pumps can be provided in the neighbouring villages to meet daily needs as a confidence building measure to enrol the participation of local communities. 4.

Confidence building measures such as the establishment of a water filter pump in Gangapur village to augment the supply of drinking water have been successful in enrolling the participation of the local communities in forest and wildlife protection. However, a mechanism such as the creation of a small corpus will be required to ensure that the plant is maintained in the future. The installation of Wild Boar-proof chain link fencing, 1 foot deep in the ground, around Naikopoda village, is another example of enrolling the participation of people. The villagers are happy as the erection of this chain link has appreciably stopped the raiding of crops by Wild Boar in the village. 5.

The inhabitants of five villages located inside the Tiger reserve, identified by the forest department for relocation, are ready to be relocated outside the reserve. In a meeting with the villagers, held on 8 August 2014 at the EEC (Environment Education Centre) at Jannaram, there was a demand from the villagers for them to be relocated as quickly as possible. 6.

The practice of enrolling local villagers to work in base camps for general patrolling and antipoaching activity was initiated by the forest department. This is proving to be a popular and effective protection measure. In most base camps, the constitution of a patrolling party is 1 Guard + 5 Daily Wagers (local villagers). Expressing confidence in the locals regarding protection of wildlife and control of poaching has sent a positive signal to the local communities, who are mostly tribals and traditional hunters. They feel proud and important about their participation in the protection of forests and wildlife being recognized and valued by the forest department. 7.

Staffs deployed in the tiger corridors. 8.

Management weaknesses B

Non-recognition and non-maintenance of tiger corridors: Tadoba-Kawwal and Kawwal-Indravati are two potential tiger corridors that have not been recognized by the National Tiger Conservation Authority (NTCA) and therefore not been secured so far. This hampers the movement of Tigers from Tadoba and Indravati Tiger reserves to KTR. 1.

2. Shortage of field staff at the lower levels: There is a general shortage of Beat Officers (BOs, Forest Guards). To manage an area of 2015.44 km^2 (core, 892.23 km^2; buffer, 1123.21 km^2), there are 89 BOs, each having a patrolling jurisdiction of 22.6 km^2. The number of BOs is proposed to be increased to 138 after reorganization, which will still mean that on average a patrolling beat is about 14.6 km^2, which again is higher than the accepted norm of 12 km^2 per BO. The inadequate number of BOs hampers effective protection and management of the Tiger reserve.

3. Inadequate number of base camps and strike force: At present, 38 base camps are functional in KTR with average area coverage of 53 km^2 each. Based on the threat perception, it is considered appropriate that each camp should not have a jurisdiction of greater than 25 km^2. This implies that a total of about 81 base camps are required to effectively manage and protect KTR. Similarly, the Kadamb range of the Tiger range, which has an elongated shape, requires two strike forces instead of the present one.

4. Lack of wireless communication: The base camps are not connected to the wireless network, as a result of which the camp staffs are jeopardized and their efficiency in responding to calls for help or reinforcements in case of an emergency created by a poaching incident or an attack by a wild animal is reduced.

5. Lack of mobility of field staff: Presently, no official motorbikes are provided to the BOs, which hamper their mobility. Some BOs are using their own motorbikes, and getting a fixed TA for the purpose. This system is not very useful and is generally not appreciated by the lower-level staff.

6. Institutionalization of people's participation: Van Sanrakshan Samitis (VSSs), which were created under a World Bank (WB) financed forestry project, have now become inactive because a proper exit mechanism was not created during the currency of the WB project. This has affected the quality of the people's participation in protection and conservation of the forest and wildlife in KTR.

7. Presence of villages inside the core area of the Tiger reserve: Five villages are located inside the Tiger reserve that has been identified by the forest department staff for relocation. Incursions into the Tiger reserve by the inhabitants and cattle of these villages adversely impact the habitat, and thus the wild herbivore population, consequently reducing the chances for Tigers to be rehabilitated and build up a population in the reserve.

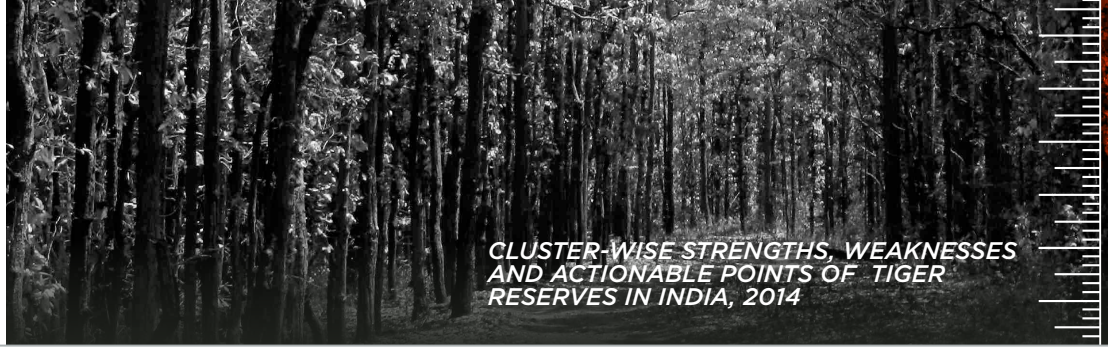
8. Lack of experience in wildlife management: The aptitude for wildlife conservation amongst the frontline staff, including BOs, needs to be improved as their orientation towards wildlife protection, conservation and management is not up to the mark.

9. Inadequate rescue and conflict mitigation capability and infrastructure, including lack of veterinary services

C Actionable Points

1. Non-recognition and maintenance of tiger corridors: Tadoba-Kawwal and Kawwal-Indravati are two potential Tiger corridors that have not been recognized by the NTCA and, therefore, have not been secured so far. This hampers the movement of tigers from Tadoba and Indravati Tiger reserves to KTR. It is recommended that the NTCA initiate immediate steps to recognize the two potential Tiger corridors, i.e., the Tadoba-Kawwal, and Kawwal-Indravati corridors, and in due course provide financial and technical support for securing the two corridors. This requirement may be appropriately incorporated in the TCP of the TR.

2. Shortage of field staff at the lower levels: To effectively man the huge TR, with an area of 2015.44 km^2, 168 Beat Officers (BOs) (against the present sanctioned strength of 89 BOs) are required, keeping in view the accepted norm of 1 BO/12 km^2.



Thus, there is a shortage of 79 BOs (Forest Guards). It is recommended that the state government be advised to create 79 additional posts of BO immediately to strengthen the protection and management of the TR. This requirement may be appropriately incorporated in the TCP of the TR.

3. Inadequate number of base camps and strength of strike force: At present, 38 base camps are functional in KTR, with average area coverage of 53 km^2 each. Based on the threat perception, it is considered appropriate that each camp should not have a jurisdiction greater than 25 km^2. This implies that a total of about 81 base camps are required to effectively manage and protect KTR. Similarly, the Kadamb range of the TR, which has an elongated shape, requires two strike forces instead of the present one. It is recommended that the state government be advised to establish an additional 43 base camps in the TR and one more strike force in the Kadamb range to ensure proper effective protection management of the TR. This requirement may be appropriately incorporated in the TCP of the TR.

4. Lack of wireless communication: The base camps are not connected to the wireless network, as a result of which the safety of the camp staff is jeopardized and the efficiency of their responses to calls for help or reinforcements in the case of an emergency reduced. It is recommended that the forest department immediately connect every base camp to the wireless network. This requirement may be appropriately incorporated in the TCP of the TR. If required, the NTCA may provide urgent financial assistance for the purpose.

5. Lack of mobility of the field staff: Presently, no official motorbikes are provided to the BOs, which impede their mobility. It is recommended that the forest department include in the budget a provision for motorbikes to at least 15% of the BOs in the current year (2014-2015). The budget of the next year (2015-2016) may have a provision for additional motorbikes for an additional 25% of the staff. All 168 BOs (including the additional BOs that this report is recommending to be posted in KTR) may be provided with motorbikes in the next 5 years.

6. Institutionalization of people's participation: Van Sanrakshan Samitis (VSSs), which were created under a World Bank (WB) financed forestry project, have now become inactive, because a proper exit mechanism was not created during the currency of the WB project. It is recommended that EDCs be immediately created in all the villages in the vicinity of the TR and a list of eco-development activities to be carried out by the villagers outside the TR be drawn up in consultation with the villagers. The number of EDCs to be created may be incorporated in the TCP of the TR.

7. Presence of villages inside the core of the TR: Five villages are located inside the TR that has been identified by the forest department staff for relocation. Incursions into the TR by inhabitants of these villages and their cattle adversely impact the Tiger habitat, and thus the wild herbivore population, consequently reducing the chances of rehabilitating Tigers and building up the population in the reserve. It is recommended that the TR authorities immediately prepare a proposal for relocation of the five villages located inside the TR, indicating the priority of the villages to be relocated. The state government, after due scrutiny of the proposal and approval, may submit the proposal to the NTCA for financial support. The process of relocation should be advanced to 2015-16 from 2018-2019, as presently planned by the forest department. This requirement, with the advancement of the time of relocation, may be appropriately incorporated in the TCP of the TR.

8. Scientific management of weeds such as Hyptis suovalensis and Cassia tora: Weed eradication programme It is recommended that the weed eradication programme continue for 3-4 years to be effective and to deal with the problem of new weed growth, which was seen in some areas of the TR.

9. Lack of experience in wildlife management: The aptitude for wildlife conservation

needs to be strengthened by improving the knowledge about wildlife amongst the frontline staff, including BOs. It is recommended that short orientation and capacity-building courses in wildlife management, with durations ranging from 7 to 15 days, be arranged for different levels of the field staff, including BOs, of KTR.

10. Inadequate rescue and conflict mitigation capability: Presently the TR has one mobile animal rescue vehicle, but no regular veterinary staff member of the FD is available to man the rescue vehicle. It is recommended that a mobile veterinary service unit be established by providing the services of a veterinarian and one veterinary assistant to man the mobile rescue vehicle to deal with wildlife-related rescue emergencies in the TR.

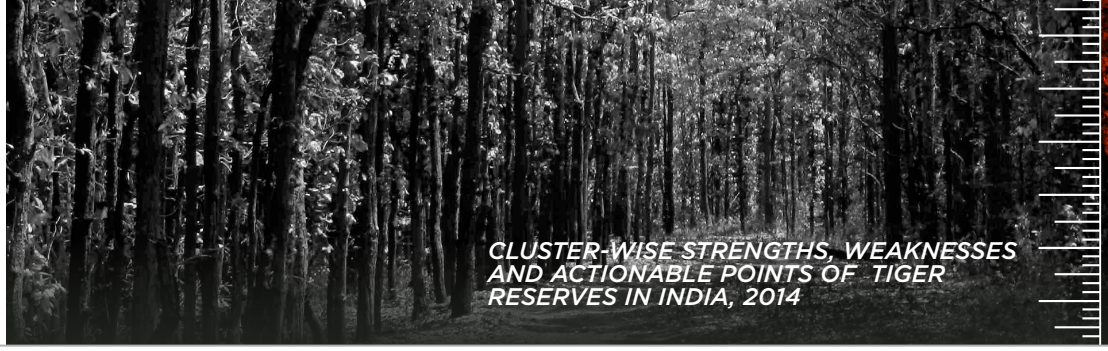
9 Palamau Tiger Reserve, Jharkhand

A Management strengths

1. Severely affected by left wing extremism. Most areas still not approachable for staff. Little or no Information on status inside.
2. Compact area with good tiger habitat; access by road.
3. Part of Greater Tiger Landscape (central India): Palamau-Sanjay-Bandhavgarh and Palamau-Badalkhol-Achanakmar-Kanha.
4. Small but focused actions can contribute towards improving the status of the Tiger and other wildlife.

B Management weaknesses

1. Adjoining Mahuaduar Wolf Sanctuary, not included as a buffer to Palamau Tiger Reserve
2. Critical shortage of staff members
3. Available field staff not trained in wildlife management or conservation; also, unwilling and at times incompetent staff members posted in TR.
4. Aptitude for wildlife conservation missing; orientation of staff towards wildlife very weak.
5. The posts are on annual retention basis. There are extensions after the end of the financial year. All posts, including that of the Field Director, are extended by the government, after July.
6. There are no plans/schemes for village relocation. The inhabitants of the local villages could be persuaded to be relocated outside the TR, after consultations with the state government. There are eight villages inside the core area/critical habitat.
7. Inadequate veterinary capability
8. Signs of biotic interference such as illegal felling of trees, overgrazing and infestation with weeds are visible.
9. Weeds such as Parthenium and Lantana camara are hindering the regeneration of native species.



Actionable Points

C

1. Manage the situation so as to enable regular visits, stay and patrolling by staff and officials.

2. Inadequate staff: Over 87% of the sanctioned frontline staff positions are vacant (1129.93 km^2/23 Forest Guards (FGs) = 50 km^2/FG). Over 68% of the overall sanctioned staff positions are vacant. It is recommended that the state government immediately review the staff strength of Palamau TR at the highest level and immediately provide the minimum number of posts of FG and other ranks in the Palamau TR.

3. Relocation of villages in Core of the TR: There are eight villages within the core area/critical tiger habitat, with no village relocation plans. Relocation of these villages will certainly improve the prey base, and consequently, the Tiger population in the TR. The village of Kujrum has voluntarily appealed to the state to be relocated and rehabilitated. It is recommended that the state government be advised to initiate immediately the process of relocating the eight villages in the core area/critical Tiger habitat at the highest level and provide assistance to the management of Palamau TR to enable them to relocate the villages as quickly and as early as possible. The MEE team was informed that the state is unwilling to relocate the villages from the TR.

4. Training and reorientation of staff: Proper training programmess will not only build the capacity of the field staff to manage wildlife and habitats but will also help raise a core team of wildlife managers in Jharkhand.

5. Strengthening of veterinary services: Palamau TR is the only TR in Jharkhand with no veterinary services. It is recommended that the services of a veterinarian, along with the minimum support staff of animal handlers, be provided immediately to Palamau TR.

6. Paramilitary forces: The presence of the CRPF in the TR should help the protection of the forest. It is strongly recommended that the state government have joint meetings with the paramilitary forces to make them aware of Tiger conservation and protection.

7. The state highway passing through the TR needs to be regulated

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CLUSTER FOUR

1. Bandipur Tiger Reserve, Karnataka
2. Nagarhole Tiger Reserve, Karnataka
3. Bhadra Tiger Reserve, Karnataka
4. Dandeli Anshi Tiger Reserve, Karnataka
5. Biligiri Ranganatha Temple Tiger Reserve, Karnataka
6. Periyar Tiger Reserve, Kerala
7. Parambikulam Tiger Reserve, Kerala
8. Kalakad Mundanthurai Tiger Reserve, Tamil Nadu
9. Anamalai Tiger Reserve, Tamil Nadu
10. Mudumalai Tiger Reserve, Tamil Nadu
11 Sathyamangalam Tiger Reserve, Tamil Nadu

3.4 Cluster - IV

Bandipur, Nagarhole, Bhadra, Dandeli-Anshi, Biligiri Ranganathaswamy Temple (BRT) (Karnataka); Periyar, Parambikulam (Kerala); Kalakad-Mundanthurai (KMTR), Annamalai, Mudumalai and Sathyamanglam (Tamil Nadu) Tiger Reserves.

1 Bandipur Tiger Reserve, Karnataka

A Management Strengths

1. Larger landscape: The reserve is part of the larger Western Ghats landscape of the Bandipur-Nagarahole-Mudumalai-Satyamangalam Tiger reserves (TRs) and Wynad Wildlife Sanctuary. Being part of this landscape and having an area of about 1000 km^2, with an adequate prey base and connectivity, it has optimum ecological conditions for a healthy population of breeding Tigers. In addition, this landscape is home to the single largest Asian Elephant population in the world and is part of the notified Mysore Elephant Reserve. As it is part of the Nilgiri Biosphere Reserve, it has a very rich biodiversity.
2. Absence of human settlements: The core area is free of human settlements.
3. Long history of conservation: The Maharaja of Mysore notified the Venugopala Wildlife Park way back in the early 20th century itself and is one of the first nine TRs of the country.
4. Good water resource: The TR is an important catchment area of the Kabini, Nugu and Moyar rivers. The Kabini and Nugu reservoir backwaters are adequate water resources for the wildlife, especially during summer.
5. Eco-tourism destination: The state has a strong eco-tourism programme, and the reserve is one of the important eco-tourism destinations.
6. Support by the state government: The state has been proactive in implementing conservation policies and programmes and provides adequate funding support.
7. Availability of wildlife/ecological research organizations: A number of research organizations such as the Centre for Ecological Studies, Indian Institute of Science and Wildlife Conservation Society are based in Bangalore or nearby in the state. The reserve is a potential site for these organizations to carry out long-term research projects. Some research projects have been carried out or are being carried out by them.
8. Reduction of fuelwood consumption by supplying LPG: Fuelwood collection has been significantly reduced through the establishment of Namma Sangha, a cooperative society. About 35,000 LPG connections have been provided in the last decade.
9. Eco-sensitive zone: Areas around the core area of the TR have been notified as an eco-sensitive zone to effectively address the ever-increasing tourism and other developmental pressures on the fragile eco-system of the reserve.

B Management Weaknesses

1. Long boundary/interface with humans and cattle: The reserve faces serious

anthropogenic pressures due to the presence of about 150 villages, with a cattle population of about 3 lakhs.

2. Human-wildlife conflicts: Human-wildlife conflicts, involving Elephants, Wild Boars and occasionally Tigers/Leopards are on a high scale.

3. Staff trained inadequately to deal with wildlife management: There is an acute shortage of wildlife-trained staff members in the TR.

4. Poor participation of local people: Enlisting meaningful participation of the local communities in the protection and conservation of the TR has not been possible due to a lack of effective participatory programmes. The number of EDCs is very small. Further, the number of income generation activities/programmes is very insignificant.

5. Poor regeneration of natural forests and invasion by weeds: The regeneration of natural forests, especially Bamboo, is poor due to various anthropogenic pressures. In particular, exotic weeds such as Lantana have invaded the area.

6. Poor baseline data: Adaptive experimental research and adequate baseline data are lacking.

7. Weak coordination: There is no synergy among the various efforts of the governmental and non-governmental organizations/institutions due to weak coordination.

8. Presence of highways: The existence of two National Highways (NH-67 and NH-212) inside the core area of the TR poses serious problems to the movement of wild animal.

9. Forest Fires: Forest fires are serious problems. This year, large areas were burnt due to the occurrence of fires.

Actionable Points

C

1. During the field visit and discussions, it was felt that the threats related to the spread of alien invasive species, particularly Lantana, and loss of habitat arising out of repeated gregarious Bamboo flowering (in the last three cycles) need intensive assessment and corrective measures.

2. The numbers of vacancies in the cadre of Deputy Range Forest Officers and Forest Guards are 16 (53%) and 24 (21%), respectively. They should be filled up on priority basis.

3. As proposed in the draft TCP (Para 8.5), a training needs assessment should be carried out for the frontline staff immediately. Trained wildlife personnel should be posted in the TR.

4. The security plan and staff development needs of the TR need to be approved/ assessed.

5. Although the Plan and non-Plan funds released by the state government are fully utilized, the utilization of funds of the TCF in some sanctioned activities needs special attention. It is noteworthy that in 2012-2013, an amount of Rs.30 lakhs was sanctioned by the TCF for income generation activities, but no work was carried out. These activities should be prioritized.

6. The proposal suggested in Para 11.4.2 (g) of the TCP and the Environmental Education Matrix (Annexure-22 of the TCP) should be implemented for providing effective environmental education.

7. There is an interpretation centre at Bandipur providing basic information. This should be developed into a full-fledged centre, as suggested in the TCP.

8. The services of trained guides need to be made available in the departmental safaris.

9. Phase-IV monitoring needs to carry out according to the guidelines of the NTCA.

10. The daily monitoring protocol needs to be improved according to the guidelines of the NTCA.

11. Although many threatened species are found in the TR, systematic and scientific censuses or estimations of the populations of all these species, except Elephants, are not carried out regularly by the management of the TR. Population estimations should be carried out according to established protocols.

12. The maintenance of records related to the execution of works under CSS-PT (centrally Sponsored Scheme- Project Tiger) needs to be improved.

13. The number of Tiger deaths recorded as natural deaths in the last 5 years is 16, with the figure for 2012-2013 being 10. In view of this large number, each mortality of 2012-2013 needs to be followed up closely. In addition, there are many unnatural deaths, including cases of poaching. However, there has not been even one conviction so far. During the discussion, it was also found that recently a Deputy Superintendent of Police was arrested by TR officials for poaching of wildlife. This is a matter of great concern, and stringent action should be ensured.

14. Guidelines should be issued at the national level to assess the impacts of climate change and measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures to be adopted for reducing carbon loss and increasing carbon capture without compromising the primary objectives of managing wildlife habitats/TRs, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

2 Nagarhole Tiger Reserve, Karnataka

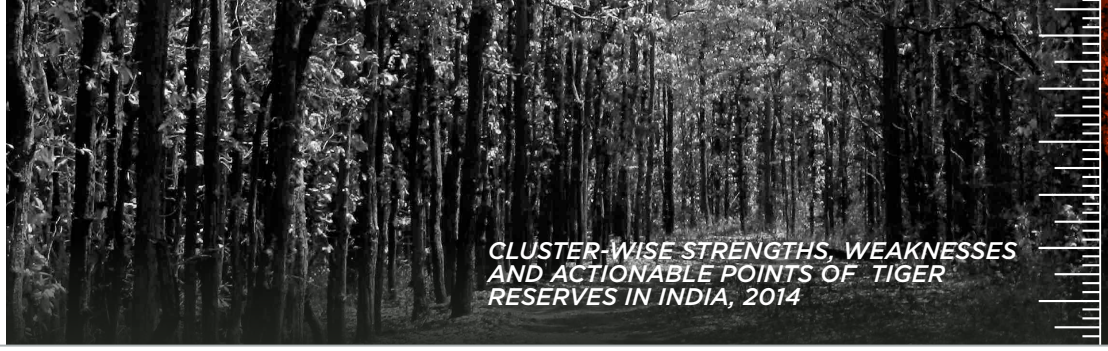
A Management Strengths

1. Larger landscape: The reserve is part of the larger Western Ghats landscape of Bandipur-Nagarahole-Mudumalai-Satyamangalam Tiger reserves and Wayanad Wildlife Sanctuary. Being part of this landscape, with an area of about 643 km^2, and adequate prey base and connectivity, it has optimum ecological conditions for a healthy population of breeding Tigers. In addition, this landscape is home to the single largest Asian Elephant population in the world and is part of the notified Mysore Elephant Reserve. Its biodiversity is very rich.

2. Rich biodiversity: Nagarahole Tiger Reserve (NTR) has an assemblage of many mega-herbivores such as the Asiatic Elephant, Indian Gaur, Sambar and Spotted Deer. It also harbors important top carnivores such as the Bengal Tiger, Leopard and Asiatic Wild Dog (Dhole) and omnivores such as the Sloth Bear. Being a part of the Western Ghats, NTR is a hotspot of biological diversity, with a high level of endemism. It is home to many rare, endangered and threatened species of the Indian sub-continent.

3. Presence of special habitat-hadlu: One of the special features of NTR is the presence of a swampy marsh habitat called hadlu. Hadlus are unique ecosystems that hold water for a major part of the year and thus attract large numbers of wild ungulates during the pinch period.

4. Important catchment area: NTR forms a major catchment area for rivers such as the Kabini, Lakshmanateertha, Taraka and Nagarahole. These rivers in turn form important tributaries of the River Cauvery.



Deployment of STPF: The Special Tiger Protection Force (STPF) has been established and specially trained for protecting Tigers in and around Nagarahole and Bandipur Tiger reserves. This is the first time in India that such a force has been created. 5.

Eco-tourism destination: The state has a strong eco-tourism programme, and the reserve is one of the important eco-tourism destinations. 6.

Support by the state government: The state has been proactive in implementing conservation policies and programmes with adequate funding support. 7.

Availability of wildlife/ecological research organizations: A number of research organizations such as the Centre for Ecological Studies, Indian Institute of Science and Wildlife Conservation Society are based in Bangalore or nearby in the state. Thus the reserve is a potential site for long-term research projects. Some research work has also been carried out or is being carried out by them. 8.

Management Weaknesses B

Presence of human settlements inside the critical tiger habitat (CTH): There are about 33 tribal settlements in the CTH of NTR. In addition, there are 96 villages in the periphery, exerting pressure on the core area. Further, there are many encroachments that form an enclosure within the Tiger reserve (TR). These settlements exert considerable pressure on the natural resources of the TR, causing negative impacts on the wild animal populations and their habitats. 1.

Monoculture plantations inside the NTR: An area of around 107 km^2 (teak occupies 92.3km^2, eucalyptus 5.3km^2 and miscellaneous trees 9.4 km^2) of the TR is occupied by plantations raised at different periods before 1984. 2.

State Highways running across the CTH: The Mysore-Mananthavady, Hunsur-Kutta and H.D. Kote-Kallahatti-Murkal State Highways passing through the core area of the TR pose serious problems to the movements of wild animals. 3.

Long boundary/large interface with humans and cattle: The eastern and western sides of NTR have borders extending over more than 200 km with revenue villages and private coffee estates. This makes them susceptible to various forms of threats such as illegal timber cutting, illegal grazing and snaring for bush meat. 4.

Human-wildlife conflict: There is a high level of human-wildlife conflict involving Elephants, Wild Boars and, occasionally, Tigers and Leopards. 5.

Inadequate wildlife-trained staff: There is an acute shortage of wildlife-trained staff members in the TR. 6.

The porous interstate boundary with Kerala: On the south-western side of the Kerala-Karnataka border is the River Kabini, which is crossed by people from Kerala at night for illegal activities such as fishing and timber cutting. 7.

Poor baseline data: There is no adaptive experimental research, and the baseline data are not adequate. 8.

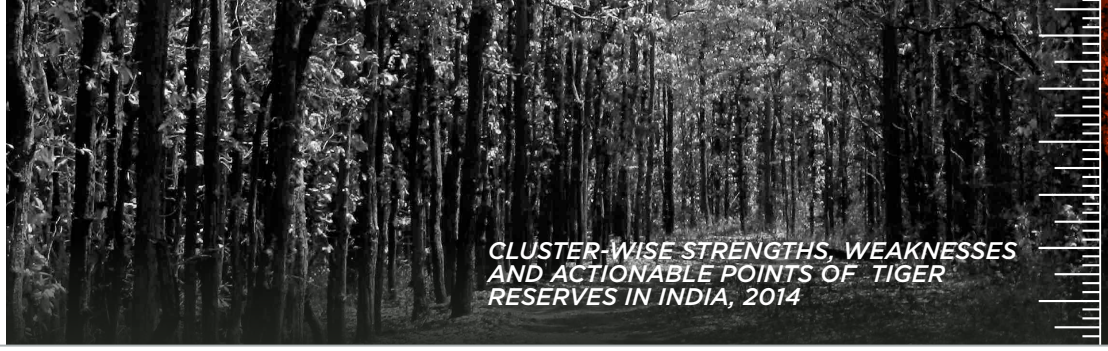
Weak coordination: Synergy of the government and non-government organizations/ institutions has not been achieved because of weak co-ordination. 9.

Absence of interpretation centre or visitor centre at Nagarahole: Though NTR is famous for many reasons, including wildlife tourism, there is no interpretation centre or visitor centre for imparting nature education and for creating awareness about the importance of wildlife and its conservation. 10.

Actionable Points C

The buffer area should be brought under the unified control of the Field Director immediately. 1.

2. The various training programmes specified in the draft TCP should be conducted systematically for the entire staff to build their capacity. Detailed schedules and a calendar should be prepared for the entire frontline staffs on a priority basis.
3. Wildlife-trained personnel should be posted in NTR.
4. The TCP, security plan and staff development plans should be approved expeditiously.
5. An interpretation centre should be established and developed as described in the TCP.
6. Trained guide services need to be introduced in the departmental safaris.
7. Phase-IV monitoring needs to carry out according to the guidelines of the NTCA.
8. The daily monitoring protocol needs to be improved according to the guidelines of the NTCA.
9. For want of effective participatory programmes, enlisting the participation of the local communities in the protection and conservation of the TR in a meaningful manner has not been possible. An exercise to systematically identify areas in which various stakeholders can participate in the management of the TR and the manner in which they can do this should be carried out and institutionalized by having it incorporated in the TCP.
10. Not all the villages have EDCs, and most of the EDCs formed previously are dormant, without significant income generation activities. They should be made active as soon as possible.
11. An institutionalized responsive system should be in place to ensure that all grievances/complaints/feedback are logged and processed in a timely manner to address the issues and take corrective steps. A suitable mechanism for getting regular feedback, including through websites, should be introduced.
12. As reported in the TCP, there was a severe drought during 2012 and many Elephants died because of the water shortage and the complications associated to water paucity for want of proper soil and moisture conservation measures, including water hole management. Therefore, the soil and water conservation management strategy should be reviewed immediately.
13. There are many home stays in Kodagu district, adjacent to the TR. The land use changes around the reserve need to be mainstreamed to the objectives of the TR. An eco-Sensitive zone should be notified expeditiously.
14. Although many threatened species are found in the TR, systematic and scientific censuses are conducted and estimates of the populations are made only for the Tiger, co-predators and prey species and Elephants regularly. The populations of all other threatened species should be estimated according to the established protocols.
15. The maintenance of records relating to execution of works under the CSS-PT needs to be improved.
16. Guidelines should be issued at the national level to assess the impacts of climate change and measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures to be adopted for reducing carbon loss and increasing carbon capture without compromising the primary objectives of managing wildlife habitats/TRs, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.



Bhadra Tiger Reserve, Karnataka 3

Management Strengths A

Bhadra Tiger Reserve is integrated into the wider landscape, with Kudremuka National Park in the south-west and Shettihalli Reserved Forest in the north through a potential corridor. This permits the wild animals to move freely from one protected area to another. 1.

Bhadra Tiger Reserve, situated in the midst of the Western Ghats, lies in Biogeographic Zone-05B, Western Ghats-Western Ghats Mountains. The Tiger reserve (TR) is also included in the Mysore Elephant Reserve. The biodiversity of the reserve is very rich. 2.

The reserve has the Bhadra reservoir on the northern and western sides and a high mountain ridge running from Kemmannugundi to Gangegiri on the eastern and southern sides. The reservoir and the ridge act as a natural barrier and help protect the TR. 3.

The reserve has a strong history of protection. This chunk of potential forest from wildlife conservation point of view was declared the Jagara Valley Game Sanctuary in 1951, and this was upgraded to the Bhadra Wildliffe Sanctuary in 1974 by the State of Karanataka. In 1998, Bhadra Wildlife Sanctuary was upgraded to Bhadra Tiger Reserve under Project Tiger (vide letter No. 1-17/94 PT (Project Tiger) MoEF, dated 23 December 1998), and the State of Karanataka declared the designated area as Bhadra Tiger Reserve in 2007. 4.

The reserve receives much rainfall and is an important catchment area for the River Bhadra and its tributaries. 5.

A considerable amount of research has been conducted on the tigers of Bhadra over the last few years by organizations such as CWS and WCS. 6.

Management Weaknesses (B)

Low morale of frontline protection staff due to lack of professional knowledge regarding wildlife behavior, protection and law enforcement. 1.

Inadequately maintained road network, poor protection infrastructure in interior areas and ineffective intelligence network 2.

Spreading of invasive species such as Lantana, Eupatorium and Parthenium 3.

Presence of five human settlements inside the reserve and biotic pressures from fringe areas 4.

The Bababudangiri State Forests (Kemmanugundi), Madhuguni State Forests and Aldhara State Forests are separated from the main reserve by government lands and the Bhadra reservoir, as a result of which it is very difficult to monitor and manage the reserve. 5.

Actionable Points C

An exercise to address frontline staffing needs and filling up vacancies among the frontline staff needs to be conducted on top priority 1.

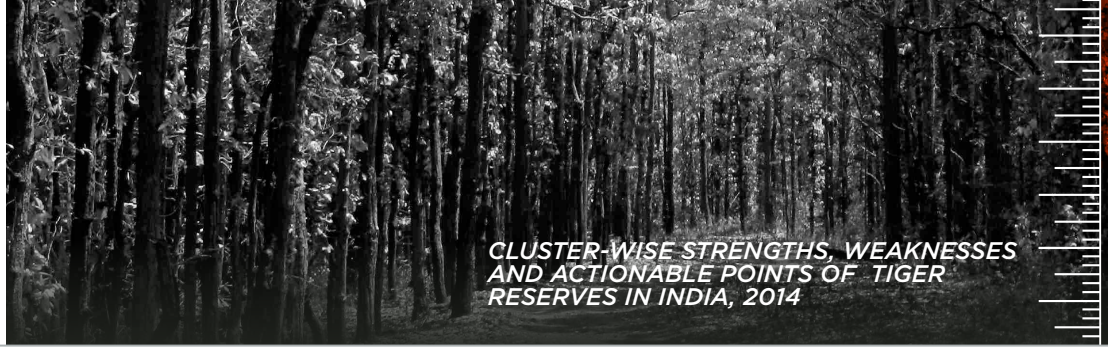
Vigorous capacity building programmes for the staff/personnel in wildlife management. Short-term training courses in wildlife management, planning processes and monitoring should be taken up on priority. 2.

3. More scientific and technical displays are needed at the interpretation centre at Muthodi.
4. The tourism management needs to be adequately organized under the ambit of the guidelines of the Supreme Court/ NTCA.
5. Eco-development activities need to be strengthened further.
6. Regular meetings with the Irrigation Department (Bhadra reservoir) need to be conducted regarding the level of water to be maintained so that conservation values are not affected.
7. The deficiencies in the draft TCP should be rectified, and approval be obtained from the competent authority at the earliest.
8. The security plan and staff development plan of the TR have to be written and approval obtained.
9. Phase-IV monitoring should be carried out according to the guidelines of the NTCA.
10. The implementation of M-STrIPES needs to be improved, and regular and rigorous monitoring at higher levels is required.
11. Special attention needs to be paid to prevent the spread of invasive alien species, which have occupied about 18% of the TR area, especially the grasslands.
12. More efforts need to be made to relocate the remaining villages outside the reserve.
13. The level of participation of the people in the management of the TR is not adequate. It needs to be raised in accordance with the guidelines issued by the NTCA.
14. Villagers and local communities should be incentivized to obtain their co-operation and help with gathering intelligence.
15. Solid efforts should be made to hand over the buffer area to the management of the TR in a time-bound manner.
16. The corridor link needs to be activated to manage wildlife better.
17. A large number of resorts and home stays are coming up in and around the TR in a nearly unregulated manner. This may pose a threat to the TR in the near future. Notifying an eco-sensitive zone around the TR will help regulate the growth of tourism around the TR. The pending proposal regarding the same should be approved urgently.
18. Guidelines for climate change issues should be issued at the national level to assess impacts and adopt measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures that need to be adopted to reduce carbon loss and increase carbon capture without compromising the primary objectives of managing the wildlife habitat/TR, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

4 Dandeli Anshi Tiger Reserve, Karnataka

A Management Strengths

1. Dandeli Anshi Tiger Reserve (DATR) is part of a Tiger conservation landscape with an extent of approximately 8800 km^2. It consists of protected areas and reserved forests in the larger Western Ghats landscape.



It is one of the biological hotspots in the Western Ghats, known for its geo-physical and geo-morphological features. 2.

A wide range of vegetation is found (six forest types including Semi-evergreen Forests). 3.

The floral (>350 species) and faunal (mammals, 36 species; amphibians, 29 species; reptiles, 20 species; butterflies, 41 species; birds, 272 species) diversity is rich. 4.

The Tiger reserve (TR) is home to rare and endemic plants and animals. There are good populations of the largest Indian butterfly, the Southern Birdwing, and the endemic Malabar Tree Nymph in these woods. 5.

The reserve falls in the catchment area of the River Kali and its tributaries, such as the Nagazari and Kaneri. 6.

A number of research organizations such as the Centre for Ecological Studies, Indian Institute of Science and Wildlife Conservation Society have been involved in long-term research projects. These projects have provided crucial management inputs for better conservation of the reserve. In addition, the camera trap technique, pugmark survey method and line transect method have been used for more than a decade by the CWS to obtain better estimates of the tiger population and to identify individuals. 7.

Being very close to Goa, having an excellent forest and landscape with many tourist spots and the attraction of river rafting, it is an important eco-tourism destination. 8.

The state has been proactive in implementing conservation policies and programmes with adequate funding support. 9.

Management Weaknesses B

The boundary is very long and presents an interface with a landscape with dense human and cattle populations. The reserve faces serious anthropogenic pressures due to the presence of about 52 villages and a large cattle population. 1.

Frequent man-animal conflicts compromise the conservation values of the reserve. 2.

There are many vacancies, especially in the frontline staff cadre. 3.

Neither the senior officials nor the frontline staffs are trained in wildlife management. 4.

Since the area is very hilly and undulating, the communication network is weak in some of the ranges. 5.

The temples such as Ulvi and Kavala attract huge numbers of devotees. 6.

A State Highway cuts across the reserve. 7.

Though the tract receives good rainfall, due to the terrain and soil, the water drains off quickly, and during summer there is a scarcity of water for the animals. 8.

Actionable Points C

Some chapters and sections of the draft plan are devoid of essential details. This may be looked into, and necessary steps should be taken to get the plan approved at the earliest. 1.

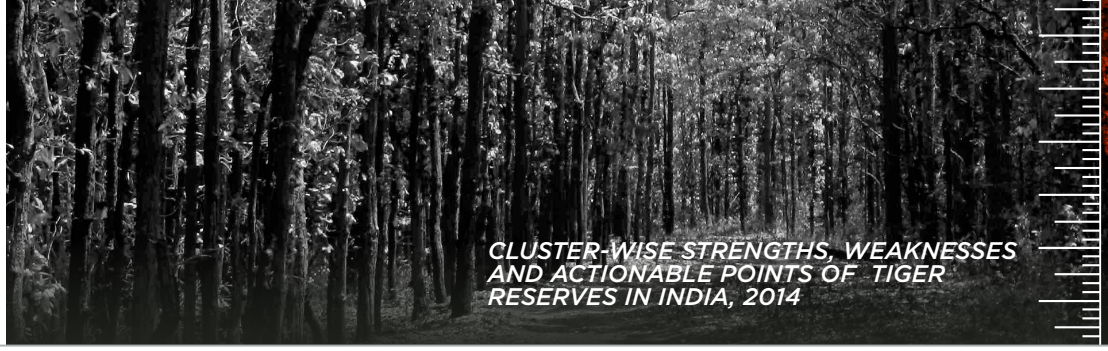
A proper corridor plan and buffer plan should be prepared and approval obtained expeditiously. 2.

Approval should be obtained for the security plan. It should be incorporated into the TCP. 3.

The values need to be clearly listed and described under themes such as Biological Values, Scientific Values, Ecological Process and Functions, Educational Values, Recreational Values, Economical Values, Historical Values and Religious and Cultural 4.

Values in the TCP. Detailed assessments should be provided and criteria for periodic monitoring should be incorporated.

5. A detailed training need assessment should be carried out for building the capacity of the staff. A staff development plan needs to be prepared urgently.
6. Recruitment for vacant posts, especially Forest Guards, is urgently needed.
7. Phase-IV monitoring needs to carry out according to the guidelines of the NTCA.
8. The wireless network of the reserve needs to be improved.
9. There are 62 villages, but only 29 EDCs have been constituted. Many of the EDCs are not vibrant. They should be made active, and eco-development works need to be planned systematically.
10. There should be an institutionalized responsive system in place to ensure that logs are maintained regularly and all grievances/complaints/feedbacks are processed in a timely manner to address the issues and take corrective steps. A suitable mechanism for obtaining regular feedback, including through web sites, should be introduced.
11. Although many threatened species are found in the TR, systematic and scientific censuses/estimation of the populations of species other than the Tiger, co-predators, prey species and Elephants are not carried out regularly. Estimation of the populations of all other threatened species should be carried out according to established protocols.
12. Efforts should be made to maintain the existing grasslands/open areas in the TR instead of taking up plantation work (as noticed in some such areas) in these sites.
13. Twenty-six wildlife cases and 53 other cases are pending. About 12 wildlife cases booked prior to 2011-2012 are pending for more than 3 years. This is a serious concern to address.
14. The maintenance of records related to the execution of works under the CSS-PT needs to be improved.
15. The core area lacks a buffer over a long stretch, particularly in the southern and south-eastern sides. The forest patches around the core area, where no buffer has been notified, should be notified as the buffer in accordance with the scientific concept of core and buffer zones.
16. There are many revenue enclaves inside the TR, posing another threat.
17. The growing pilgrimage tourism needs to be regulated properly. The relocation of the villages in the core area should be expedited.
18. A large number of home stays have come up in the revenue enclaves and periphery of the TR. The homes stay facilities in and around the TR need to be regulated. An eco-sensitive zone should be notified expeditiously to contain these.
19. Guidelines for climate change issues should be issued at the national level to assess impacts and adopt measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures that need to be adopted to reduce carbon loss and increase carbon capture without compromising the primary objectives of managing the wildlife habitat/TR, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.



Biligiri Ranganatha Temple Tiger Reserve, Karnataka 5

Management Strengths A

Biligiri Ranganathaswamy Temple Tiger Reserve (BRT TR) is part of a Tiger landscape that is contiguous with the Nagarhole-Bandipur-Mudumalai-Wynaad Tiger Landscape. It is connected to this landscape through the newly created Sathyamangalam Tiger Reserve, of Tamil Nadu, with which it shares a long boundary. This Tiger landscape is recognized as the most promising stronghold for the Tiger in the entire world. 1.

The area, being located at the confluence of the Western Ghats and Eastern Ghats, has rich floral and faunal diversity, including many endemic and endangered species, and enables the movements of Tigers, Elephants and many other animals between these ranges. 2.

The shola forest in the higher ranges of the reserve is the lifeline of perennial streams and forms the catchment area for many rivers and dams. Water is abundant in all seasons. 3.

Because of its diverse habitats, beautiful landscapes, rich history, famous Biligiri Ranganathaswamy Temple, good populations of wild animals and location (close to and easily accessible from Mysore, Bangalore and the states of Tamil Nadu and Kerala), it is one of the major tourist destinations in the area. 4.

It has a good research base: BRT TR has been able to attract many reputed research organizations to conduct research in the area. 5.

The state has been proactive in implementing conservation policies and programmes with adequate funding support. 6.

Management Weaknesses B

There are 10 Soliga settlements, with 396 families (population-2247), the BR Hills Enclosure and five coffee estates are inside the core area 1.

Chamarajnagara road and Kollegal-Hasanur road pass through the reserve, hindering the movements of Elephants and other wild animals. 2.

The JFM institutions (VFCs/EDCs) are recently constituted. 3.

The temples of Lord Rangayya (Biligiri Ranganatha), Kyatedevaru and Siddeswaranagudi and the holy trees of Doddasampige and Chikkasampige attract large numbers of pilgrims, who are responsible for the annual fires and littering of the area. 4.

There is no interpretation centre or visitor centre. 5.

A large proportion of the area (around 60%) is under invasive alien species (IAS). 6.

None of the top-level officers have been trained in wildlife management. This may result in whimsical interventions and cause serious problems in wildlife management. 7.

The extent of the vacancies in the category of frontline staff (Dy. RFOs, Forest Guards and Forest Watchers) is around 27%. 8.

Actionable Points C

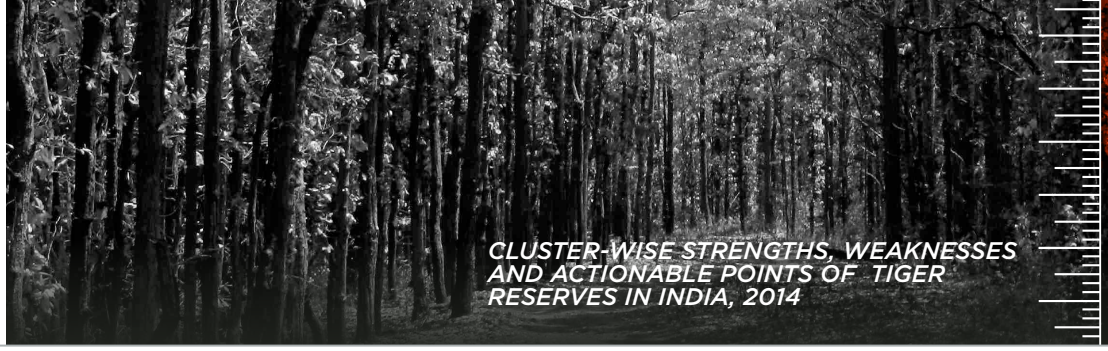
Expeditious reconstitution of state-level steering committee and holding its meeting at the earliest 1.

2. Filling up vacancies among the frontline staff on top priority
3. There is a severe shortage of wildlife-trained staff members. A training programme should be prepared immediately and implemented after a training need assessment is carried out.
4. Settlements in the core area should be relocated voluntarily. Constant efforts should be made to win the faith of the local inhabitants.
5. Activation of JFM institutions (VFCs/ EDCs)
6. The human-Elephant conflict level is very high. The management of BRT TR is taking effective steps to control it. Innovations should continue.
7. The approval of the draft TCP has to be obtained from the competent authority at the earliest.
8. A security plan and staff development plan have to be written for the TR and approval obtained.
9. Removal of IAS, which occupies about 60% of the area, should be a regular habitat management activity. Since the TCP is being prepared, this habitat management activity should be prescribed on the basis of sound scientific knowledge and principles, with provisions for strict monitoring.
10. Notifying an eco-sensitive zone around the TR will help regulate the growth of tourism. The pending proposal regarding the same should be approved urgently.
11. Phase-IV monitoring needs to be carried out according to the guidelines of the NTCA.
12. The issue of managing the pilgrimage tourism pressure needs to be addressed proactively.
13. Research activities should be promoted.
14. Guidelines for climate change issues should be issued at the national level to assess impacts and adopt measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures that need to be adopted to reduce carbon loss and increase carbon capture without compromising the primary objectives of managing the wildlife habitat/TR, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

6 Periyar Tiger Reserve, Kerala

A Management Strengths

1. This Tiger reserve (TR) encompasses a large extent of evergreen forest. It is surrounded by forests in Kerala in the south-west and west and by forests in Tamil Nadu in the north, east and south-east.
2. The TR is well connected with forests in Tamil Nadu that extend up to Kanyakumari through Kalakad Mundanthurai Tiger Reserve.
3. The TR has healthy populations of Tigers, Elephants and all prey species.
4. The TR is very rich in rare, endangered and threatened (RET) species as well as endemic plant and animal species.
5. There are no human habitations in the core area.



The TR has a good network of trek paths for patrolling in sensitive areas for protection.	6.
The TR has well distributed perennial sources of water for the flora and fauna.	7.
The TR gets overwhelming support from the dependent communities, local self-government, media and NGOs.	8.
The TR has an adequate number of protection camps equipped with necessary facilities in crucial locations for the patrolling staff.	9.
There is no tourism activity in the core area.	10.
The TR gets technical and professional support from the Periyar Tiger Conservation Fund.	11.
Old poachers have turned protectors because of successful EDC programmes.	12.
The administrative establishment of the management of the TR is at the edge of the reserve.	13.

Management Weaknesses — B

The TR becomes inaccessible during the monsoon, and patrolling becomes confined to a limited area.	1.
Out of the 881 km^2 of the notified core area, an area of 148 km^2 (added from Goodrical Range, of Ranni Forest Division) is not part of any wildlife sanctuary/national park but merely falls within reserve forests.	2.
An extent of only 44 km^2 (with tourism, pilgrimage and various other leases) has been carved out as the buffer area. Large areas of the adjacent Ranni and Kottayam forest divisions around the core, serving as an ecological buffer, have been left out. With these areas not having been secured as a buffer, the ideal core-buffer situation and integration with the greater landscape are not possible.	3.
The grasslands and vayals of the TR are progressively being infested with woody species.	4.
Invasive alien species (exotic weeds) are spreading progressively into the TR.	5.
Licensed gun holders within 10 km of the TR boundary are not registered.	6.
The biotic pressure and its impacts on the forest during the carnivals of Sabarimala and Mangaladevi need to be kept under control.	7.
The collection of NTFP by the forest-dependent communities from the TR area needs to be controlled.	8.
TR faces paucity of water holes at the hilltops particularly during pinch period.	9.
Information about the lower groups of the flora and fauna is lacking, from the managerial standpoint.	10.

Actionable Points — C

More efforts are needed to reduce the pressure/impacts on the forest due to the carnivals of Sabarimala and Mangaladevi with the help of NGOs, the local administration, the media and volunteers. The Sabarimala Master Plan, prepared in 2007, should be implemented in letter and spirit.	1.
According the provisions of the WL (P) Act, 1972, all the licensed arms issued to the public within 10 km of the TR boundary should be registered with the TR office. This work should be completed in a time-bound manner.	2.
The woody vegetation invading the grasslands and vayals should be uprooted/eradicated using well tested scientific means before they spread more in the TR.	3.

4. Invasive alien species should be removed after determining the carrying capacity accurately, keeping in view the vision and goals of the TR.

5. All staff members should be trained in wildlife management as proposed in Chapter 8 of the TCP under the Human Resource Development Plan (Section 8.5) after carrying out a gap analysis for every staff member. The training should be completed within a fixed schedule, for which a training calendar has to be prepared in advance.

6. There was one poaching incident in 2011, two in 2012 and six in 2013 (which is the highest in the last 8 years). More attention should to be paid to protect those areas where the number of incidences has increased or new incidences have started occurring. Efforts should be made to have the offenders quickly convicted by vigorously pursuing the cases in courts.

7. Private estates within the core area (as enclosures) need to be taken out in a phased manner for effective protection.

8. The peripheral forest areas of Ranni and Kotayam forest divisions serving as ecological buffers should be notified as the "Buffer of Periyar Tiger Reserve" under Section 36(V) of the WL (P) Act.

9. Eco-sensitive zones should be notified under the Environment Protection Act at the earliest to contain unregulated tourism and incompatible developmental activities around Periyar Tiger Reserve.

10. Special strategies may be prepared and implemented to mitigate any adverse impacts arising from raising the storage water level in the Mullaperiyar dam.

11. A thorough study of the hilltops to determine the availability of water and presence of animals is desirable. After the study, management interventions to improve the habitat and water sources to conserve the species may be carried out.

12. Research on the lower groups of the fauna should be initiated to determine their ecological requirements so that more scientific measures can be adapted to safeguard the RET species.

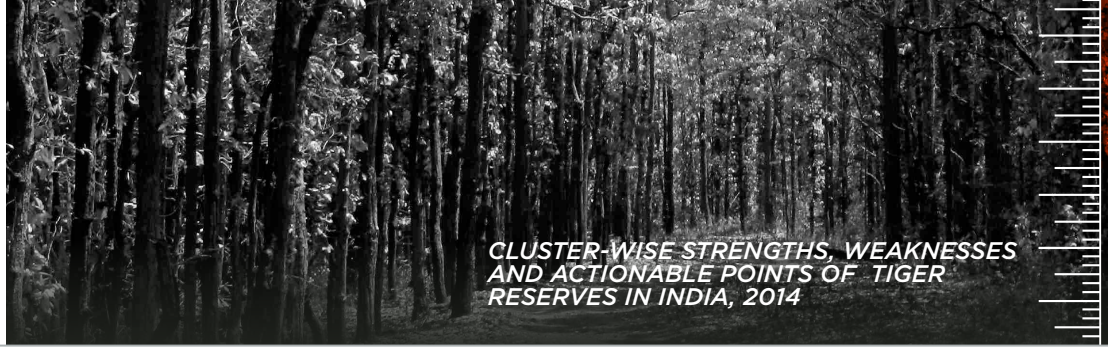
13. An institutionalized mechanism laying down procedures for maintaining logs and fixing appropriate levels and time limits for disposal, redressal and review of all complaints/grievances/suggestions (including those received through the web), with provisions for monitoring them, should be established by a written order.

14. Guidelines should be issued at the national level to assess the impacts of climate change and measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures to be adopted for reducing carbon loss and increasing carbon capture without compromising the primary objectives of managing wildlife habitats/TRs, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

7 Parambikulam Tiger Reserve, Kerala

A Management Strengths

1. Parambikulam Tiger Reserve is a protected ecological portion of the Nelliampathy-Anamalai sub-unit of the Western Ghats Landscape. It is buffered by ecologically similar forests of other forest divisions and protected areas of Kerala and Tamil Nadu. The reserve supports diverse habitat types, viz., evergreen, semi-evergreen, moist deciduous, dry deciduous and shola forests.



Parambikulam-Indira Gandhi, including Indira Gandhi Wildlife Sanctuary (in Tamil Nadu) and Chinnar Wildlife Sanctuary and Parambikulam Wildlife Sanctuary (in Kerala), has a Tiger occupancy of 2744 km^2 within a contiguous forest patch of 4400 km^2. Within Kerala, the Tiger occupancy of this population is 1425 km^2. 2.

There is prime habitat in the form of wetlands (vayals) for the prey species of the Tiger. 3.

Three reservoirs and perennial streams in this Tiger reserve (TR), ensure water available throughout the year, helping recharge the groundwater and adding to the diversity. 4.

No tourism is in the core zone: All eco-tourism activities, including adventure tourism, medicinal garden and trekking are in the buffer zone. 5.

The TR has worked out a win-win model for biodiversity governance that balances the imperatives of conservation, livelihoods and economic production. This TR, which has strong participatory eco-development programmes for livelihood improvement, has been successful in obtaining support from the dependent communities. 6.

Management Weaknesses B

A significant part (145.76 km^2) of the inviolate/core area of the TR is not part of the national park or sanctuary but has the status of merely a reserve forest. Further, this area and 252.77 km^2 in the buffer area are not under the administrative control of the TR. 1.

No buffer zone has been constituted in the northern part of the TR. 2.

There are six tribal settlements with 306 families. These are actually parcels of land/enclaves, surrounded by the core area/critical Tiger habitat (CTH) and have been notified as part of the buffer area of the TR. Legally they are not part of the core area, but because of their presence there, the core area is not inviolate. 3.

Not all gun license holders within a 10 km radius of the protected area are registered with the TR authorities. 4.

Except the DD, Wildlife Education (who has undergone a certificate course conducted by WII), none of the officers/frontline staff have undergone professional courses in wildlife management at WII or similar institutes. 5.

Information on the distribution status of unique/rare, endemic and threatened species of the TR is lacking. Monitoring protocols for estimating populations regularly are lacking. 6.

There is fair chance that the number of visitors to the temple will increase, which will pose threats to the TR in the future. 7.

Traditionally tribals take dogs along with them in the forests, which may spread diseases to wild animals. 8.

Uncontrolled, unscientific and unsustainable collection of NTFP from the buffer zone is a major problem faced by the TR authorities. 9.

Ganja is reported to be cultivated in remote forest areas. 10.

Actionable Points C

According to the legal provisions of the WL (P) Act, the core area/critical Tiger habitat of a TR has to be a national park or sanctuary. However, in Parambikulam Tiger Reserve, the area of 145.76 km^2 added from the territorial divisions is a reserve forest. As prescribed in the TCP, immediate action should be taken to declare the 145.76 km^2 of reserve forests as a wildlife sanctuary. 1.

The extent of 145.76 km^2 in the core area and 252.77 km^2 in the buffer area still under 2.

the administrative control of territorial divisions should be brought immediately under the administrative control of the TR.

3. The TR should build its own technical capability to carry out Phase-IV monitoring through camera traps and assessment of the populations of the Tiger, co-predators and prey species every year. Further, the daily monitoring protocol of the NTCA should be strictly followed. A database should be built up, and there should be regular analysis.

4. All staff members should be given training in wildlife management urgently to enhance their knowledge and skills according to the training module developed and incorporated in Chapter 4 of the TCP. The training should be completed within a fixed schedule, for which a training calendar has to be prepared in advance.

5. According to the provisions of WLP Act-1972, all the licensed arms issued to the public within 10 km of the TR boundary should be registered with the TR office. This work should be completed in a time-bound manner.

6. There are six settlements/colonies that are enclaved in the core area, and 95% of the people residing in one settlement (Kuriarkutty Colony) have expressed their willingness to be relocated. Option-I has been selected by 60% of the people, and 5% are not willing to be relocated, with the rest opting for Option-II. The TR authorities say that a dialogue is in progress with the people who are not willing to be relocated. This process needs to be expedited.

7. Water is not available in the western part of the TR during the pinch period, and hence water holes should be created in these areas on a priority basis.

8. Efforts should be made to adopt effective measures to reduce human-wildlife conflicts, particularly those related to Elephants, after a thorough survey, in the area that has been added to the TR as a buffer recently.

9. Information on the distribution status of unique/rare, endangered and threatened species should be collected and monitoring protocols implemented immediately to estimate their populations regularly.

10. An invasive species management plan needs to be prepared with the help of research institutes and implemented in a timely manner to safeguard the vayals.

11. Collection of NTFP from the buffer areas is to be regulated in a sustainable manner.

12. Most of the northern part of the core is open (without any buffer). To secure the core area on the northern side, areas should be identified on the basis of ecological considerations and notified.

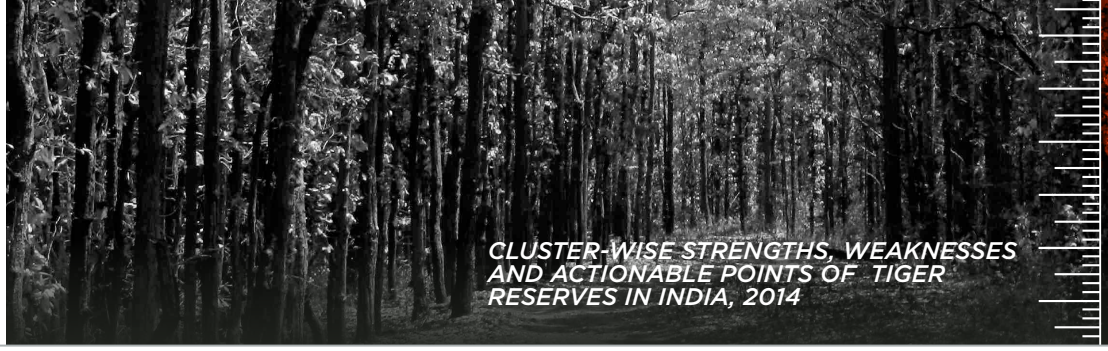
13. An eco-sensitive zone around the TR should be declared expeditiously to secure the landscape against incompatible development.

14. Proactive action is required to contain the adverse effects of pilgrimages to the Mariamman, Athucheriyamman and Kovil temples, which are enclaves in the core area.

15. The TR has three reservoirs and numerous streams. Mechanisms should be established for regular meetings/interactions with the irrigation authorities to safeguard the biodiversity values of the TR.

16. An institutionalized mechanism laying down procedures for keeping logs and fixing appropriate levels and time limits for disposal, redressal and review of all complaints/grievances/suggestions (including those received through the web), with provisions for monitoring them, should be established by a written order.

17. Guidelines should be issued at the national level to assess the impacts of climate change and measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures to be adopted for reducing carbon loss and increasing carbon capture without compromising the



primary objectives of managing wildlife habitats/TRs, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

Kalakad Mundanthurai Tiger Reserve, Tamil Nadu 8

Management Strengths A

This Tiger reserve (TR) harbours a wide range of endemic, endangered and vulnerable animal and plant species and has been declared one of the 35 mega hotspots of biodiversity. Several endangered species are endemic to this habitat. It serves as a specific habitat for the Lion-tailed Macaque and Nilgiri Langur. It is an important biodiversity-rich area, forming part of Agasthiyarmalai Biosphere Reserve. 1.

This TR constitutes an important part of the Western Ghats, and its continuity with wildlife sanctuaries of Kerala (Peppara, Shendurni and Neyyar) permits a large range of animals to move from one place to another and helps the gene flow. 2.

As many as 14 rivers originating and flowing through three major watersheds in the reserve provide water to the wild animals as well as cater to the agricultural needs of four neighbouring districts. At several places waterfalls enhance the panoramic beauty of the reserve. 3.

Well established eco-development committees in 228 fringe villages of Kalkad Mundanthurai Tiger Reserve (KMTR) strengthen the protection and reduce significantly the biotic interference. The TR receives strong support from the local people, NGOs and other stakeholders because of the well managed eco-development activities. 4.

The capacity built into the organization in managing VFCs/EDCs in the past years is a great strength in handling community participatory programmes effectively. 5.

The TR attracts many researchers, who provide good scientific research-based information to the management, which helps provide inputs for scientific management planning. 6.

The TR is emerging as a learning centre for community-based protected area management. 7.

Management Weaknesses B

The TR suffers from inadequate staff strength. The Field Director Office lacks a supporting technical staff. 1.

The staffs have not been formally trained in wildlife management. The large number of settlements in the core area, consisting of four Kani settlements (129 families spread over 29.52 ha), three non-Kani forest dwellers' settlements (105 families spread over 10.15 ha), colonies of the Electricity Board and a few tea-states, exerts continuous pressure on the forest resources. 2.

Because of the presence of temples in the reserve, large numbers of pilgrims enter the TR area during festivals and exert unavoidable pressure on the natural resources. 3.

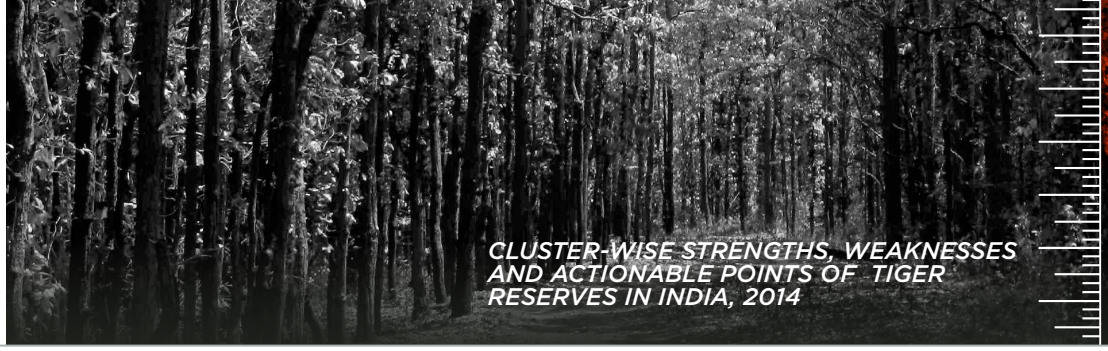
The TR is subjected to pressures of grazing, illicit felling and poaching along the eastern boundary and the inter-state border with Kerala. 4.

The facilities provided for visitors are inadequate, and a good interpretation centre with informative displays is lacking. 5.

6. The vastness of the area and presence of the geographical features make many parts of the sanctuary inaccessible.

C Actionable Points

1. The State Level Steering Committee needs to be reconstituted and its first meeting held at the earliest.
2. Vacant posts among the staff should be filled up immediately. Adequately trained, motivated and committed persons should be selected for the field staff of the TR. A staff development plan needs to be prepared and implemented. The beat size should be reduced to 10-15 km^2, and accordingly, additional posts of FGs, Foresters and other ranks should be sanctioned.
3. Capacity building programmes and short term training courses in wildlife management (planning, protection and monitoring) should be conducted for the staff on a priority basis to enhance their technical knowledge.
4. An interpretation centre should be established to impart effective nature education.
5. More tourism facilities should be provided within the frame work of guidelines issued by the Hon'ble Supreme Court and the NTCA.
6. The settlements in the core area/critical tiger habitat should be relocated a time-bound manner within the provisions of the WL (P) Act, 1972 (as amended from time to time) and Scheduled Tribes and Other Traditional (Recognition of Forest Rights) Act, 2006.
7. Bridle paths should be laid and anti-poaching camps established after a thorough survey to step up the protection.
8. Not all the anti-poaching camps are manned permanently. A careful assessment should be made as to whether they should be made permanent and the number of camps increased.
9. Efforts should be made to make the monitoring protocol of M-STrIPES fully functional as early as possible.
10. The implementation of the Phase-IV daily monitoring protocol needs to be improved according to the guidelines of the NTCA.
11. Several small teams should be drawn from local villagers from different regions to serve as leaders in protecting and managing the TR. The villagers may also be incentivized to report wildlife crimes.
12. Good vehicles should be made available to carry out effective patrolling.
13. EDCs should be established in the villages that do not have them yet, and more resources should be provided for alternate livelihood programmes.
14. The pressure of religious tourism needs to be regulated.
15. The record keeping pertaining to execution of works needs to be improved.
16. Guidelines for climate change issues should be issued at the national level to assess impacts and adopt measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures that need to be adopted to reduce carbon loss and increase carbon capture without compromising the primary objectives of managing the wildlife habitat/TR, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.



Anamalai Tiger Reserve, Tamil Nadu 9

Management Strengths A

The area is part of the larger landscape. It encompasses a series of important habitats and rich biodiversity. It is contiguous with Parambikulam Tiger Reserve and Chinnar Wildlife Sanctuary, of Kerala, thereby providing space for migration of large mammals. 1.

The area has very good and well distributed perennial sources of water. 2.

The Tiger reserve (TR) has attracted a lot of scientists/biologists/institutions. As a result, there is very good research-based information. A total of 56 research studies have been carried out between 2006 and 2014. 3.

Very good support of NGOs: Eleven NGOs, from local NGOs to national and international ones, are actively supporting the management of Anamalai Tiger Reserve (ATR) 4.

There is regulated tourism, in four department-owned 25-seat mini-buses. 5.

Good funding support from the state government 6.

Innovative experimentation: round-the-clock toll-free numbers to receive information on human-wildlife conflicts and intelligence; early-warning light and sound systems with provisions to send SMSs regarding the movements of elephants; E-surveillance cameras installed to monitor live movements of humans, elephants and other animals. 7.

Management Weaknesses B

The core area has 33 tribal settlements, with 1738 families, and many coffee estates. 1.

The south-eastern boundary of the core area is completely exposed. A lot of social buffering issues need to be addressed in this part. 2.

The buffer area is not under the unified control of the Field Director. 3.

None of the officers and subordinate staffs is trained in wildlife management. 4.

The vacancies among the frontline staff (Foresters, Forest Guards and Forest Watchers) amount to 43%. 5.

The staff members are mostly middle-aged or old. 6.

Late release of funds by the state government 7.

Actionable Points C

Expeditious reconstitution of state-level steering committee and holding a meeting of this committee at the earliest 1.

Filling up vacancies among the frontline staff on top priority 2.

Posting officers (FRs/ACFs/DCFs) who are formally trained in wildlife management 3.

There is a shortage of wildlife-trained staff. A concrete staff training programme on issues related to various management aspects of ATR should be prepared after carrying out a training need assessment in consultation with the Tamil Nadu Forest Academy, as mentioned in section 7.3.45 of the draft TCP. 4.

Activation of JFM institutions (VFCs/EDCs) 5.

6. Voluntary relocation of settlements from the core area should be carried out. Constant efforts should be made to win the faith of the local inhabitants.

7. The bottlenecks and shortcomings preventing M-STRIPES from being fully operational should be removed/ resolved expeditiously.

8. The management of ATR is taking a number of innovative and effective steps to control human-Elephant conflicts. The system needs to be institutionalized so that the innovations can continue.

9. Improved coordination with the Kerala Forest Department, specifically with the Parambikulam Tiger Reserve authorities, for quick resolution of management issues and better cooperation.

10. Buffer areas should be brought under the control of the Field Director.

11. The DFO in charge of Amravati Division is also looking after parts of the TR area. Since he is also the territorial DFO having the jurisdiction of the entire Tirupur District, including social forestry work, it is difficult for him to give focused attention to the management of the TR. Hence administrative re organization should be contemplated.

12. The existing tourist infrastructure and amenities for tourism are not put to full use as many works are yet to be completed.

13. Many new water holes have been created in some areas or are planned despite there being very good and well distributed perennial sources of water. This needs to be reviewed on the basis of principles of water management for wildlife.

14. Notification of an eco-sensitive zone around the TR will help regulate the growth of tourism there. Efforts should be made to expedite the process.

15. Guidelines should be issued at the national level to assess the impacts of climate change and measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures to be adopted for reducing carbon loss and increasing carbon capture without compromising the primary objectives of managing wildlife habitats/TRs, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

10 Mudumalai Tiger Reserve (MTR), Tamil Nadu

A Management Strengths

1. This Tiger reserve (TR) is part of the Nagarahole-Mudumalai-Bandipur-Wayanad-Satyamangalam Tiger Conservation Landscape. The connectivity with the Eastern Ghats through Moyar valley is significant for dispersal of Tigers to Biligiri Ranganathaswamy Temple Tiger Reserve and Kaveri Wildlife Sanctuary. Further, the connectivity with Mukkurthi and Silent Valley national parks and Nilgiri North Forest Division makes it a vital constituent of a larger landscape in the Western Ghat landscape complex. This landscape is home to the single largest Asian Elephant population in the world, apart from Tigers.

2. Mudumalai Tiger Reserve (MTR) supports an intact assemblage of prey species that supports three large carnivores. MTR is one of India's few "high density" TRs (with approximately 20 Tigers per 100 km^2 in the core area).

3. MTR is part of the Nilgiri Biosphere Reserve (~5000 km^2 and spread across three

states), which provides an extensive range for biodiversity and has a relatively restricted interface with land under human use.

4. The biodiversity of MTR is very rich and includes a large number of plant and animal species. The reserve also harbours several wild relatives of cultivated plants including Wild Rice, Wild Ginger, Turmeric, Cinnamon, Solanum, Guava, Mango and Pepper, acting as a gene pool for cultivated plants. Mudumalai also has several species of endemic plants and animals. Ten species of reptile and 14 species of fish endemic to Western Ghats are found in the TR, with one of the fish species, Puntius mudumalaiensis, being found only in MTR.

5. Field research and studies conducted by various individuals and institutions at MTR has led to the accumulation of a sizeable scientific database on diverse themes of biodiversity and wildlife management. This can be a backbone for enhanced and efficient management in the future.

6. An organized and skilled patrolling system against poaching has been in place for the past few decades.

7. The strategic location of MTR within the Nilgiri Biosphere Reserve provides a corridor between the Eastern Ghats and Western Ghats for Tigers to spread to various landscapes.

8. The relatively gentle terrain and the good network of roads make all parts of MTR accessible which allows the reserve to be managed well.

Management Weaknesses

B

1. The 30 hamlets (seven inside the core or Critical Tiger habitat, with about 2000 people and their livestock, exert pressure on the resources within the core area of MTR.

2. The summer months, from February to May, remain dry almost every year. In a rain-deficient year, the situation is aggravated and the efficiency of management is affected.

3. One National Highway (Mysore-Ooty) and State Highways pass through the TR, as a result of which there is heavy vehicular traffic through MTR (on average 1000 vehicles pass through it daily).

4. Insufficient intelligence and evidence gathering, non-use of modern equipment, due to inadequate availability of young subordinate staff.

5. About 40% of the frontline staff posts (43% of the Forest Guards) are vacant.

6. Over-aged subordinates among frontline protection staff.

7. No senior officials or members of the frontline staff have been trained in wildlife management.

8. Due to poor management control, the two main Elephant corridors are being encroached into by private resort owners to run unsustainable tourism

9. Inadequacy in updating technology, especially in communication technology, database management and management information system.

Actionable Points

C

1. The buffer area should be brought under the unified control of the Field Director immediately.

2. All values should be listed appropriately at one place in the TCP, with provisions for periodic assessment, with simultaneous determination of the criteria for monitoring.

3. Approval of the staff development plan should be obtained from the appropriate authority. A concrete staff training programme on issues related to gaps in

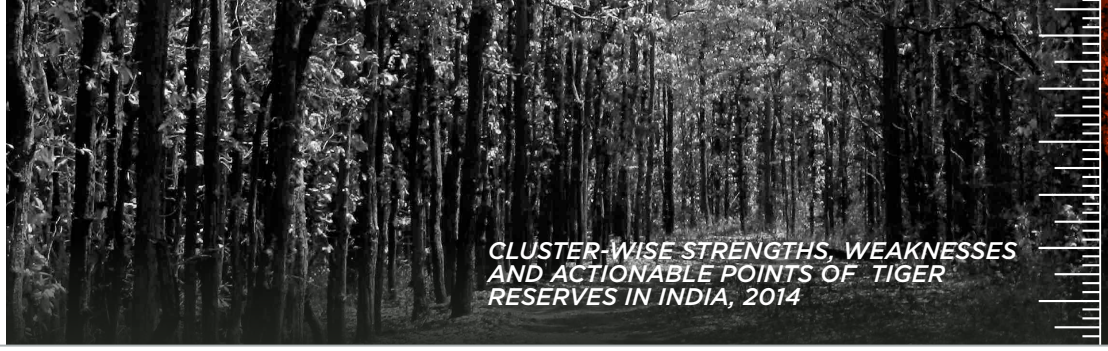
knowledge related to wildlife management aspects should be developed, with a detail time frame, and implemented.

4. Recruitment for the vacant posts, especially FGs and Rangers, is urgently needed.
5. The EDC programmes need to be implemented more actively, as specified in section 7.2.1.1 and chapter 8 of the indicative plan for the buffer area to address livelihood issues. The EDCs have to be given a bigger role in the eco-tourism activities.
6. An institutionalized responsive system should be put in place to ensure that logs are maintained regularly and all grievances/complaints/feedback are processed to address the issues and take corrective steps. A suitable mechanism for getting regular feedback, including through web sites, should be introduced.
7. The maintenance of records related to execution of works under the CSS-PT needs to be improved.
8. Water harvesting structures/water holes should be created for the wild animals for the pinch period on the basis of a survey.
9. The relocation of villages from the core should be expedited.
10. The pressure of tourism is very high. The logic of increasing the limits relating to the number of visitors during vacation days above the Effective Permissible Carrying Capacity by deploying extra staff (10%) needs to be examined scientifically.
11. The increasing tourism infrastructure in the Sigur and Singara corridors will be a major threat to the TR. Notifying an eco-sensitive zone around the TR will help regulate the growth of tourism.
12. Guidelines for climate change issues should be issued at the national level to assess impacts and adopt measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures that need to be adopted to reduce carbon loss and increase carbon capture without compromising the primary objectives of managing the wildlife habitat/TR, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

11 Sathyamangalam Tiger Reserve, Tamil Nadu

A Management Strengths

1. The biodiversity of the area is very rich.
2. The reserve provides connectivity between the Western Ghats and Eastern Ghats. Sathyamangalam Tiger Reserve (STR), on account of its long boundary with Biligiri Ranganathaswamy Temple Tiger Reserve, is contiguous with the large Nagarhole-Bandipur-Mudumalai-Wayanad Tiger Landscape.
3. This is a very important landscape that provides a habitat for migratory Tigers and Elephants and accommodates a spill-over population of Tigers.
4. There is a young team of top-level managers, and there are good examples of VFCs and EDCs.
5. This is a very new protected area (a wildlife sanctuary was notified in 2008, and a Tiger reserve was notified in 2013)-there is an opportunity to excel.
6. The core and buffer areas are under the unified control of the Field Director.



STR has good research base. It has been able to attract many research organizations to conduct research in the area. 7.

There is good funding support from the state government. 8.

Management Weaknesses B

None of the officers and subordinate staff has undergone special training or possesses degrees/diplomas in wildlife management. 1.

There are vacancies to an extent of around 41% among the frontline staff (Forest Guards and Forest Watchers). A very large proportion of the existing staff is in the higher age groups. 2.

There are nine tribal and 18 tribal revenue settlement enclaves inside the core area, with about 1705 families occupying 12,800 ha. As all these human settlements have been excluded from the core area of the STR, legally they are not part of the core. However as a result of their presence inside the core, the core area is not inviolate. 3.

Sections of NH 209 and a State Highway, of length 28 km and 22 km, respectively, pass through the TR. The heavy vehicular traffic on these roads increases the vulnerability of the TR to poaching, road kills and forest fires. Because of these roads, it is easy to transport illegal timber, animal articles, etc. from the TR. 4.

There are about 57 temples and places of worship inside the TR. Large number of people visit these places periodically and congregate there during annual festivals. This is a serious concern for the management. 5.

Around 200 km of roads (metalled, partly metalled and un-metalled), crucial for patrolling, supplies and general communication, are in bad condition 6.

A large extent (37,000 ha) is under invasive alien species (IAS). 7.

Funds are released late by the state government. 8.

Actionable Points C

The State Level Steering Committee should be reconstituted expeditiously, and its first meeting should be held at the earliest. 1.

The vacancies among the frontline staff are to be filled up. 2.

There is a severe shortage of wildlife-trained staff members. A training programme should be prepared and implemented immediately after a training need assessment is carried out. 3.

The TCP has to be prepared on a priority basis. A security plan and staff development plan have to be prepared, and they need to be approved by the competent authorities and integrated with the TCP. 4.

As all the human settlements inside the core have been excluded from the core area of STR, legally they are not the part of the core. But as a result of their presence inside the core, the core is not inviolate. Hence a voluntary relocation process should be planned and implemented. However, till then, the co-existence agenda has to be taken up with increased livelihood activities through EDCs. 5.

The JFM institutions (VFCs/ EDCs) in the area should be made more active. 6.

Since STR is a new Tiger reserve, eco-tourism is in its infancy. However, caution has to be exercised in developing tourism activities. Such development must be carried out only after the approval of the TCP by the NTCA. 7.

The level of human-elephant conflict in STR is very high. It is desirable that in highly sensitive areas EPTs be dug and solar-electric fences installed. There should also be inspection paths along EPTs/solar-electric fences for daily maintenance. 8.

The removal of invasive alien species should be a regular habitat management 9.

activity. Since the TCP is being prepared, this habitat management activity should be based on sound scientific knowledge and principles.

10. Since the area is generally dry, the fire protection regime should be strengthened.

11. The anti-poaching measures need to be strengthened.

12. It has been reported that check dams and percolation ponds are to be constructed and desilted on the basis of a study titled "Developing Water Management Strategy and Action Plan" carried out by Care Earth Trust. The density of artificial structures seems to be very high (274 check dams, 255 percolation tanks). The present locations and proposed ones for future needs to be re-examined on the principles of scientific wildlife management.

13. Guidelines should be issued at the national level to assess the impacts of climate change and measures for adaptation so as to prepare specific plans and integrate them with the TCP. The guidelines should indicate various measures to be adopted for reducing carbon loss and increasing carbon capture without compromising the primary objectives of managing wildlife habitats/TRs, i.e., conservation of the uniqueness of the habitats/eco-systems, especially grasslands, for supporting the wild fauna.

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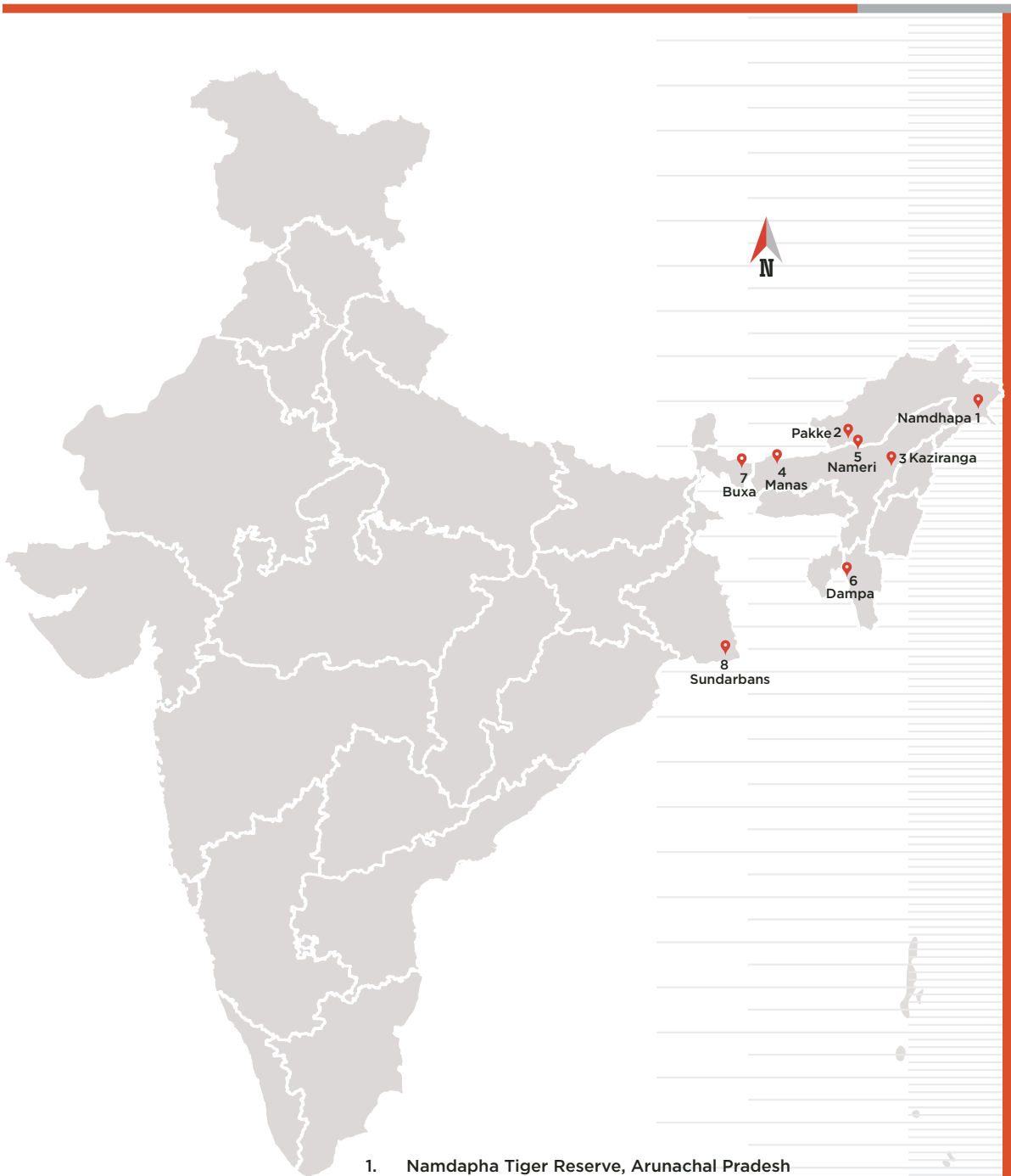
CLUSTER FIVE



1. Namdapha Tiger Reserve, Arunachal Pradesh
2. Pakke Tiger Reserve, Arunachal Pradesh
3. Kaziranga Tiger Reserve, Assam
4. Manas Tiger Reserve, Assam
5. Nameri Tiger Reserve, Assam
6. Dampa Tiger Reserve, Mizoram
7. Buxa Tiger Reserve, West Bengal
8. Sunderbans Tiger Reserve, West Bengal

3.5 Cluster - V

Namdapha, Pakke (Arunachal Pradesh); Kaziranga, Manas, Nameri (Assam); Dampa (Mizoram); Buxa and Sundarbans (West Bengal) Tiger Reserves.

1 Namdapha Tiger Reserve, Arunachal Pradesh

A Management Strengths

1. Namdapha has very rich forests that are inaccessible and have minimal human interference. There is only one road going through it, only a 22 mile part of this 80 mile road is motorable.
2. It is fed by two major rivers and a number of small streams, lakes and water bodies, which provides water all round the year. The grasslands are well dispersed.
3. The altitudinal range varies from 280 m to 4800 m, as a result of which there is a wide spectrum of vegetational types from lowland forest to alpine forest and from pure dipterocarp forest to conifers.
4. The altitudinal gradient has resulted in animal biodiversity also. NTR has four of the large cats-the Tiger, Leopard, Clouded Leopard and Snow Leopard-and a number of small cats-the Marbled Cat, Golden Cat, Jungle Cat, Fishing Cat and Leopard Cat. It is also home to five varieties of hornbill.

B Management Weaknesses

1. The inaccessibility gives rise to problems also. The road connectivity is very poor. Only one road, called the 80 mile road, passes through the park, of which only 32 km is patrolled by the staff. There are no other approach roads or inspection paths.
2. It has very poor infrastructure. There is a lack of vehicles, buildings, arms and ammunition, wireless equipment, cameras, binoculars, GPS, computers/laptops, tourist facilities, etc.
3. With a park area of 1985 km^2, it has only three ranges, and these are not evenly distributed, as a result of which there is skewed control and weak patrolling. The park is understaffed, and the staff are also not trained in wildlife management.
4. The southern boundary (Nampong) and the eastern boundary (Gandhigram) have not been demarcated. The entire boundary issue needs a relook.
5. There is no systematic research work or publicity to attract visitors. The lack of good approach roads makes it a lonely place that otherwise has huge potential.

C Actionable Points

1. NTR should have more ranges and a stronger field staff. The headquarters should be strategically and suitably located. As the 80 mile road is the lifeline of this park, all the range headquarters should be located on this road. The proposed range headquarters should be located at or near the 27th mile and not at the farm-base.
2. The Lisu settlement at around the 35th mile should be resettled/relocated as the

activities there cannot be monitored/ controlled.

The Miao Vijainagar road, which covers the entire length of NTR, should be made motorable and should be under the control of the FD. It should have strategically located check-posts, with a staff to man them. These should be provided with communication and camping facilities. **3.**

The adjoining forested areas in the east (Gandhigram, 300 km^2) and south (Nampong, 340-400 km^2) should be included in the buffer zone and notified as such. **4.**

There is an area of 177 km^2 in NTR across the Nohadihing River that is an important habitat of the Hoolock Gibbon and other wildlife. This area is inaccessible during summer. One hanging bridge is needed near Deban to provide access for year-round patrolling. **5.**

The boundary should be demarcated on the ground expeditiously with GPS readings. **6.**

Eco-tourism should be encouraged and facilities provided, along with interpretation centres. Publicity material should be prepared. **7.**

There is a vast scope for research in NTR. This can be tapped by involving universities/research institutions/NGOs. **8.**

All vacancies among the field-level staff should be filled up, and all the staff members should be trained in the use of firearms and in legal and administrative matters. **9.**

Pakke Tiger Reserve, Arunachal Pradesh **2**

Management Strengths **A**

Over 37 anti-poaching camps are manned throughout the year. **1.**

The staffs are trained in the use of arms and ammunition and weapons. More than 90 wireless sets are used for communication. The total length of the patrolling paths is over 120 km. **2.**

Fair weather roads (64 km) provide the park its lifeline. Elephants are used for anti-poaching activities and for provisioning the staff. A total of 204 people, mostly from the local Nyishi community, are employed to patrol the area. A quick-action team, called the Special Tiger Protection Force, is manned by ex-army personnel and skilled watchers. **3.**

Ghorra Abbhe is a society of 16 village heads that helps with the protection of the park. Kebang (a group of gaon burrahs) settle disputes, enforces customary laws and imposes penalties for hunting and illicit logging. **4.**

Women self-help groups, formed in 2007, alert the park authorities or Ghorra Abbhe about poaching or theft, and half of the fines goes to these groups for reporting these activities. Village Development Councils help with conservation and awareness activities at the periphery of the park. Tourism is managed by the local Nyishi community. **5.**

The biodiversity of PTR is very rich. There are no settlements inside the park, and there are plenty of perennial water resources. It has four varieties of hornbill, nine Felis species and the rare White Winged Wood Duck. **6.**

B Management Weaknesses

1. The buffer area of the park has not been handed over to the park management, and logging is going on in the buffer areas.
2. Although the lower reaches of PTR, adjoining Nameri Tiger Reserve, are well secured, hunting and cane collection are still prevalent on the northern side of the park.
3. There are proposals for building dams on the Kameng and another river. These dams may have an adverse effect on the ecology and wildlife of the park.
4. The Dezling and Langka Elephant corridors are under threat.
5. Unregulated establishment of industrial units in the Bhalukpong area is causing pollution in the area.
6. Invasive species are spreading, and forests are being cleared for shifting cultivation, causing degradation of the habitat.

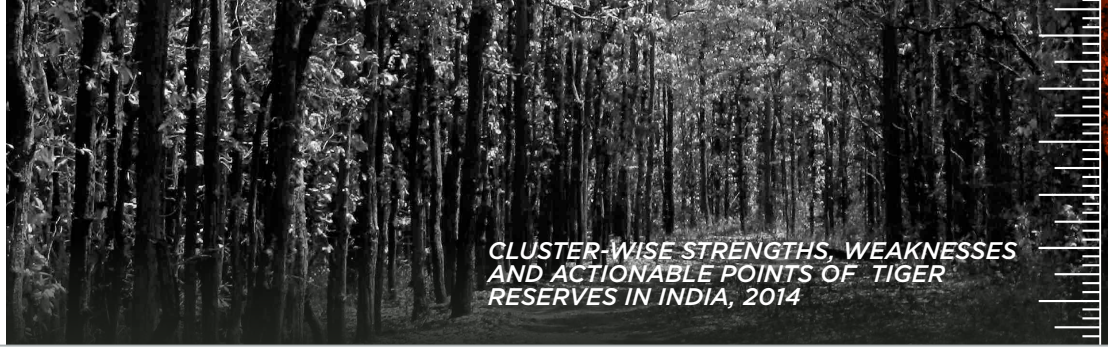
C Actionable Points

1. The Field Director's post should be upgraded to at least CF level, and DCF/DFO and ACF posts should be created to man the park effectively. Infrastructure and vehicles should also be provided with field- and office-level staff.
2. One more division, comprising Papum Reserve Forest (Kelong Forest Division), Tenga Reserve Forest (Bomdila Forest Division) and Doimara Reserve Forest (Kelong Forest Division), with a total area of 515 km^2, should be added as the buffer area of PTR, with a separate DFO to manage it. Another DFO can take care of the core area. Sesa Orchid Sanctuary (100 km^2) and Eaglenest Wildlife Sanctuary (217 km^2) should be added to PTR. They can serve as second Core of the reserve. Accordingly, ranges and beats should also be created. The headquarters of the Field Director should be shifted to Tippi, where there is suitable infrastructure in a complex with an area of more than 4 ha. Tippi is also connected well by road with Tezpur and Bomdila/Tawang.
3. A motorable road should be constructed for patrolling the area from east to west so that the area is controlled.
4. The buffer area should be brought under the control of the FD.
5. The staff should be given basic wildlife training and training in the use of weapons.
6. The maintenance of records should be improved, and a register listing the different documents to be kept at the range and FD level should be prepared.
7. A careful watch and continuous vigil have to be maintained for construction and other activities in the park lands.

3 Kaziranga Tiger Reserve, Assam

A Management Strengths

1. KTR has an abundance of mega herbivore species, with the largest Rhino and Wild Buffalo populations in the country. The productivity of the landscape is very high, and the floods of the Brahmaputra rejuvenate the area every year.
2. It is a UNESCO World Heritage Site with the density of its Tiger population being one of the highest.



The location of KTR in the dynamic floodplains of the Brahmaputra and the inclusion of the river in the core area (sixth addition) has given institutional protection to many aquatic species such as dolphins, fishes, turtles and migratory birds. 3.

Access to the park is very convenient, with excellent tourism facilities and high revenue collection, making it probably the richest Tiger foundation. The involvement of the local people is vibrant, and this generates lots of livelihood options. 4.

There are many anti-poaching camps. These are evenly distributed, and they are well armed and well equipped. 5.

Management Weaknesses B

There are no suitable buffer areas, and all the notified buffer areas have also not been transferred to the park management. The Field Director's post and his job are not exclusive to the park. He has no office staff and has to depend on the staff of the DFO'S office for his office work. 1.

The corridors have not been properly identified and secured for the migration of animals during floods. The management of the habitat is poor, and only animal management is being done. No monitoring is being done regarding the habitat degradation by weeds, siltation or Water Hyacinth. 2.

Tourism activity is mostly confined to one area of the park, exerting a heavy pressure on it. The activity is controlled by big business groups only, leaving a gap between the local populace and the management. 3.

Staff members selected for posts in KTR has been transferred elsewhere for their convenience, causing a serious shortage of frontline staff members and compromising the security of the park. The maintenance of records by the park is poor. No estimates are being made of the populations of important animals and birds. These populations are not being monitored. 4.

Actionable Points C

The management of KTR is largely Rhino-centric, and all the attention, efforts and publicity are aimed only at Rhinoceroses. The management should pay greater attention to the conservation of Tigers and other species also. 1.

No proper documentation of Tiger dispersal from KTR to other areas is maintained. Studies should also be carried out on Tiger ecology. 2.

Steps should be initiated to monitor the habitats and populations of important species of animal and bird. 3.

The notified buffer is not the ecological buffer that can support the core. Inclusion of the Karbi Anglong forests (which is a council area), to the south of the park, where wild animals take shelter during floods, should be examined. 4.

A wetland management policy should be formulated, and invasive alien species should be controlled. 5.

The estimates of the populations of wildlife species should also include the prey base of Tigers, along with other important species such as the Bengal Florican and migratory birds. 6.

The anti-poaching camp facilities should be further improved, and there should be a rotational policy for the staff so that every staff member gets experience and no continuous hardship is caused to the selected staff members. 7.

The local communities should be involved in the formulation and execution of management plans, eco-development plans and tourism-related activities. 8.

The tourist lodges/hotels along the National Highway should be regulated, and a 9.

check should be maintained on them for undesirable elements.

10. The river patrolling and monitoring should be increased and more speed boats and firearms provided to the staff.

11. There is a large gap among the staff positions. It is learnt that that staff members were recruited for vacancies in KTR but subsequently got themselves transferred out of the park. These staff members should be brought back to the park.

4 Manas Tiger Reserve, Assam

A Management Strengths

1. The core area of MTR is almost free of human settlements. A few square kilometres of land encroached upon during the ethnic strife should be vacated through negotiations.

2. MTR is a UNESCO World Heritage Site and, along with the contiguous Royal Manas Park, of Bhutan, Buxa Tiger Reserve, of West Bengal, and the forests of Arunachal Pradesh, forms a big inviolate tract in a large landscape and should be considered for nomination as a transboundary world heritage site.

3. MTR is divided into two halves by the Manas River, which is perennial in nature, and a number of smaller rivers and rivulets provide water to the animals. The river also drains water from the forests. Along with the forested areas, MTR is also gifted with large areas of grasslands. The unique climatic and soil conditions support diverse habitats, and the landscape of rivers, floodplains and wooded mountains creates outstanding ecological and scenic values.

4. The annual phenomenon of floods causes a regular cycle of inundation, rejuvenating the entire ecosystem of the park and offsetting to some extent the adverse impacts caused by ethnic disturbances or biotic interference on the park.

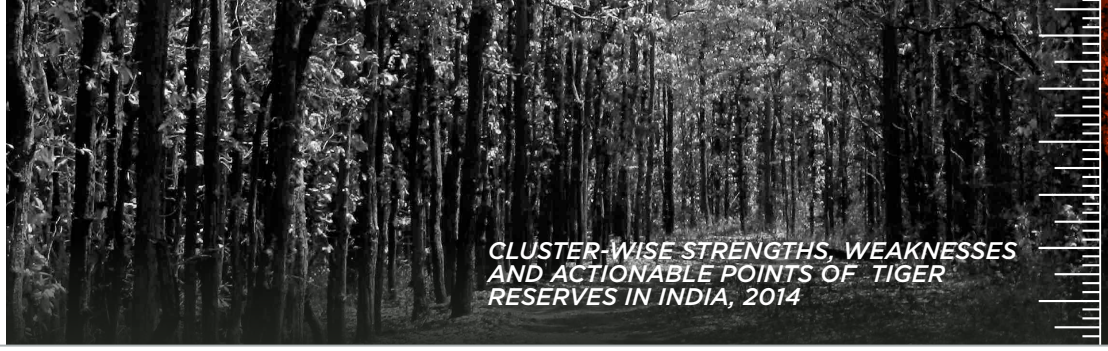
   The biodiversity of MTR is very rich. Important species include the Golden Langur, Hispid Hare, Bengal Florican, White Winged Wood Duck and many cats.

B Management Weaknesses

1. The buffer area of the park is not under the control of the Field Director. The core area that has been notified is 500 km^2, whereas the buffer area has an extent of 2337.10 km^2 and falls within the jurisdiction of the Bodoland Territorial Council, which has resulted in a multiplicity of control and management objectives. The core area of MTR has a long southern boundary. It abuts several tea estates and 60 villages. The villagers are poor and mostly work as labourers in the tea estates. In the absence of forest areas and common lands near their villages, they depend on the fringe of the core area for their requirements of resources. On the other hand, wild animals frequently enter the villages, causing conflicts.

2. The anti poaching camps are all situated in the core area, and the buffer zone is left unattended. The equipment, facilities and living conditions of the staff are inadequate and need to be improved qualitatively.

3. After the cessation of the ethnic strife, the locals were appointed as volunteers, but they are neither trained nor used to handling forestry equipment. They are also not oriented towards wildlife management.



The law and order situation is fragile. An atmosphere of uncertainty has been created because of ethno-political upsurges for conflicting demands. 4.

Actionable Points C

The buffer is not under the control of the FD. It is with the Bodoland Council. A dialogue should be undertaken to end the impasse. 1.

The core area of MTR has a long southern boundary with private tea estates, and there are about 60 villages located in it. The villagers are poor, and in the absence of forest areas and common lands near the villages, they depend upon the fringe of the core areas for their requirements of grazing, fuelwood, timber and NTFP. On the other hand, wild animals also frequently stray out in the villages, causing conflicts. Therefore it is important to coordinate with the district administration, council and local communities for effective eco-development activities. 2.

The road along the southern boundary of the park, from Panbari to Bhuinpara, should be an all-weather road. It should be properly maintained for inspection and patrolling. 3.

It should be impressed upon the managers of the adjoining tea estates that they should make arrangements for providing fuelwood for their labour forces. They should be made accountable also. 4.

The field staff should be given training in eco-development, monitoring wildlife and eco-tourism. The interpretation ability should be built up to create awareness. 5.

Habitat monitoring protocols need to be developed to assess the directions of change that suggest recovery of habitats and species. 6.

The grasslands of the park should be mapped and watched for any changes in them. Invasion of grasslands by tree species and conversion to woodlands should be prevented. 7.

Adequate funds should be made available to MTR in a timely manner. 8.

An institutional mechanism should be established for conducting meetings between officials from Bhutan, the district administration and council officials for timely redress of problems. 9.

The boundary extension of Manas-WHB India to include Manas NP should be completed immediately following the prescription of UNESCO Operational Guidelines. 10.

Mana WHS-India and Manas-WHS-Bhutan should be considered for transboundary Manas Indo-Bhutan WHS. 11.

Nameri Tiger Reserve, Assam 5

Management Strengths A

The biodiversity of NTR is very rich. It has two mega herbivores-the Elephants and Gaurs, four species of hornbill, the rare White Winged Wood Duck and many species of fish and turtle. 1.

It has a comparatively smaller core area, but it is free of habitations and forms a contiguous protected areas network with Pakke Tiger Reserve, to the north. 2.

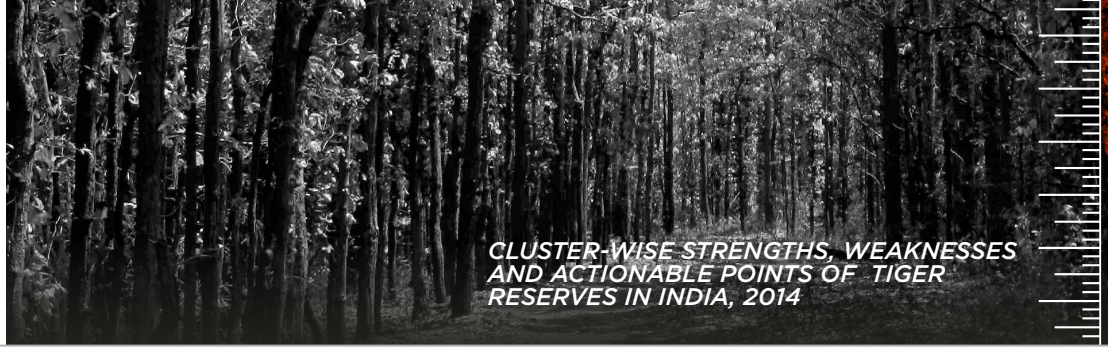
3. The tourism facilities are good, and they are managed by eco-tourism committees. The River Jia Bhoreli provides unique opportunities for river rafting and adventure sports.

B Management Weaknesses

1. The pattern of funding from the government is very poor, extending over periods greater than a year. If this is not redressed immediately, it will seriously impair the management of NTR.
2. There is a severe shortage of manpower, and the existing staff are quite old. The number of ranges and the number of staff members in position are very small. An urgent revisiting is required. The distribution of range headquarters is also skewed and is not effective in controlling the illegal activities inside the park.
3. The buffer area is not under the control of the park management and has been heavily encroached upon. There are no anti-poaching camps in the buffer, and it is not possible to check illegal activities in the buffer areas. They are being continuously degraded and encroached upon. This is impacting the adjacent core areas also. The unfortunate part of this is the fact that the park authorities are not getting administrative and political support because of the ethno-political situation in the state.
4. The construction and widening of the Balipara-Bhalukpong road and the linking of Bhalukpong through a broad gauge rail link has disturbed and destroyed the habitat and corridors of Elephants.

C Actionable Points

1. The position in NTR regarding funds is precarious. During the evaluation period (fourth week of March 2014), funds for the years 2012-2013 and 2013-2014) were not available with the park authorities. Timely availability of funds should be ensured in NTR. This needs to be monitored at the highest level in the Government of India.
2. The Field Director level should be upgraded to the CF/CCF level, with an adequate supporting staff.
3. The buffer area should be brought under the control of the FD immediately. There is no anti-poaching camp in the buffer area to control illegal activities there, which has a bearing on the core area. Also, the buffer area has been heavily encroached upon, and degradation is being caused by organized groups with political patronage.
4. The strength of the field staff is inadequate, especially at the cutting edge level of FGD, FR and others. The number of ranges should be increased and the areas reorganized. There is only one RO for the core area, at Potasali, who looks after both protection and tourism activities. These should be separated, and another range should be created, at Seijosa, to control the eastern part of the park.
5. There has been a manifold increase in the number of forest villages, resulting in encroachment into adjacent forest areas. Also, the human and cattle populations of these villages are increasing the pressure on the nearby forests manifold.
6. The construction and widening of the Balipara-Bhalukpong road has resulted in disturbance to and breaking up of the Elephant corridor, resulting in negative impacts on the park. Mitigation measures should be taken on a priority basis.
7. Habitat-related issues should be identified and remedial measures taken so that they can be monitored continuously.
8. Adequate infrastructure and equipment, especially for river patrolling, should be provided. Training should be provided to the field staff regarding legal issues and the use of firearms.



Dampa Tiger Reserve, Mizoram

6

Management Strengths

A

1. DTR is a fine representative of Eastern Himalayan Tropical Evergreen and Semi Evergreen Forests, harbouring several species, including at least eight non-human primates, a variety of rare cats and the Malayan Sun Bear, as a result of which its conservation value is high.
2. The core area, nearly 500 km^2, is comparatively free of habitations, and all the rights of the forest-dependent communities have been settled, and thus it is free from biotic interference.
3. It is often called a roadless wonder. Its inaccessibility and remoteness ensures that it has a contiguous and undisturbed habitat for all forms of wildlife.
4. There are many perennial sources of water in the form of streams and rivulets, which provide water for the wildlife throughout the year.
5. Of late, there has been a change in the attitude of the local tribals towards the management of the park, and they have become willing stakeholders and contribute positively towards the development and protection of the wildlife in the park.

Management Weaknesses

B

1. DTR has a long international border with Bangladesh, in the west, and Myanmar, in the east. The Bangladesh border is porous, and the 70 km border, which is not fenced yet, is the reason why 'loot-and-scoot' activities from across the border are feasible. The rest of the border with Bangladesh is guarded by the BSF.
2. The field staff are grossly inadequate-there are only two ROs, five Foresters and three Forest Guards on regular appointment and the rest (170) are on muster roll, which raises a question regarding their ability, training, dedication and commitment.
3. The buffer area is not under the control of the management of the park. This is hindering the management of the park. There are a lot of villages in the buffer, and they all practice shifting cultivation. Some of these villages are located in the immediate vicinity of the core area, and their crops are damaged by the wild animals, causing conflicts. Moreover, because of the short jhoom cycles and crop damage, the jhoom areas tend to expand. These areas also cause invasive plant species to spread.
4. DTR suffers from poor connectivity as well as from poor infrastructure. At the northern tip of the core area, there is a poorly maintained road connecting Mizoram with Tripura, and similarly there is a connecting road at the southern tip of the core area. In between, there is hardly any road. There are only some bridle paths, and so the movement of the protection staff is hampered. Similarly, the fire arms, wireless equipment, field equipment, visitor facilities, etc. are inadequate.

Actionable Points

C

1. DTR suffers from its infrastructure, such as vehicles, arms and ammunitions, buildings, field equipment and tourism facilities being poor. This should be addressed immediately.
2. The fund flow should be streamlined, and timely availability of funds should be ensured and monitored.
3. There must be concerted efforts to mark prime localities occupied by unique animals,

including primates and cats. Once these localities are identified, they should be effectively protected and the populations monitored.

4. The post of the FD should be upgraded to the CF/CCF level, and appropriate subordinate staff postions should also be created and filled.

5. The position of the staff is precarious. There are only two ROs, five Foresters and three Forest Guards making up the regular staff, to man the 390 km^2 core area, which is grossly inadequate. A revisiting of the staff requirement is urgently needed.

6. The buffer area is not under the control of the FD. Bringing these areas under unified control and creation of new ranges are required.

7. Fencing should be put in place along the Bangladesh border, over a distance of 62 km, expeditiously to stop infiltration by poachers as this stretch is the only gap in an otherwise completely fenced border.

8. Dampa is known as a roadless wilderness, but the lack of roads creates problems in day-to-day management. DTR is entirely hilly terrain, and all the hills are run parallel in the north-south direction. An all-weather patrolling road is required from Chikha APC (at BRO road) to Aivapui APC, in the south (40 km) for effective protection. Another important road is urgently required from Terei FRH to Chhawrpial Kawn (saddle), running along the western aspect below Dampa and Pathlawitlang thence to BRTF road at, Plantation Mual.

9. An institutional mechanism to coordinate and liaise with officials of SSB (Seema Suraksha Bal) and Bangladesh is needed to ensure prevention of smuggling of timber, NTFP and wildlife articles

10. It is a pity that such a beautiful area has no visitors. There should be an aggressive publicity campaign to highlight the rich biodiversity of non-human primates (eight species) and lesser cats (four species) in the Tropical Evergreen and Semi Evergreen forests. Development of tourism infrastructure and an interpretation centre should also be taken up.

11. Research and listing the flora and fauna should be accorded high priority, and universities/NGOs and other such organizations should be actively involved.

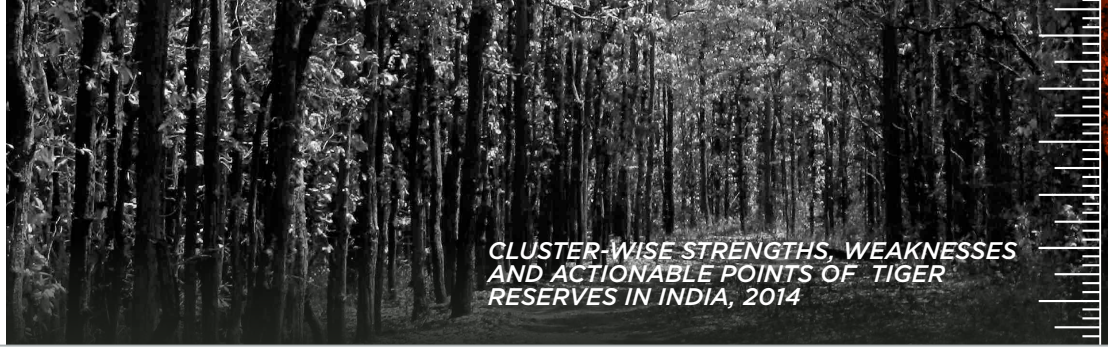
12. The staff should be trained in all aspects of wildlife management, handling weapons, court procedures, etc.

7 Buxa Tiger Reserve, West Bengal

A Management Strengths

1. Buxa Tiger Reserve is situated at the confluence of 3 major Bio-geographic Provinces viz. Lower Gangetic Plains, Central Himalayas and Brahamputra Valley resulting in presence of unique and rare species of plants and animals. Its connectivity with Phipsu Wildlife Sanctuary of Bhutan in the north and forests of Assam and West Bengal in the east and west respectively makes it a potentially good site for wildlife conservation.

2. It has an excellent biodiversity and the forests are densely stocked and the river systems criss-cross the entire landscape providing an important lifeline for the wildlife in the park as well as to the tea gardens and the agricultural fields south of the park. The rivers and the rivulets coming down the hills play an important part and



rejuvenate the park. Since it is an annual phenomenon, the renewal is also a constant feature. The forests act as a carbon sink and provide ecological security to the agricultural field and contributing towards their productivity.

Within its confines are also the ancient Mahakal temple and Buxa Fort which add to the cultural value and supports the religious faiths of the tribal populations around it. 3.

Management Weaknesses B

The core area of the park is not ecologically well defined, and certain forest areas have been left out, the inclusion of which would have resulted in a harmonious and well meaning entity. Additionally, the core area also has biotic pressures from a number of villages situated in the core. 1.

BTR has a number of natural and artificial water holes, and there have been attempts to open up the canopy particularly in teak plantations, to promote the growth of palatable grasses, but in the absence of a well defined protocol and monitoring mechanism, the clearings are being invaded by alien species. 2.

Though there have been JFMs and EDCs for a long time, their working and the interface with the park management are less than desired. The same is the case with eco-tourism, which could be improved for mutual benefits. 3.

The training of the staff and their orientation towards wildlife management need continuous attention. At the same time, the facilities provided for the staff in anti-poaching camps need to be upgraded to keep the morale of the staff high. 4.

The functioning of the Tiger foundation can be further improved. 5.

Actionable Points C

The core and buffer area notifications need to be revisited to make the demarcation ecologically relevant and sound without altering the boundary of the Tiger reserve. 1.

The large gap between the sanctioned and actual strength of the frontline staff should be filled through special recruitment-preferably locally as this will goodwill to the park and such recruits tend to stay in the park. 2.

APOs should be based on TCPs, and the items should be prioritized and monitored at the NTCA level. 3.

The functioning of the State Level Steering Committee and the Tiger Reserve Foundation need to be reviewed to make them more and effective. 4.

Habitat management and local livelihood enhancement should be strengthened. Many new plantations near the vicinity of villages are full of invasive species. These need to be eradicated with the involvement of the EDCs/JFMCs with an effective participatory approach. 5.

Tea garden should be asked to supply coke briquettes or LPG for their labourers. 6.

Records of animal sightings need to be maintained systematically and occupancy maps developed for effective monitoring of wild animals, including the Tiger. 7.

An institutional mechanism should be developed to coordinate and liaise with officials in Bhutan, Assam and SSB (Seema Surakhsha Bal) to control illegal activities inside and around the park. 8.

The spots on the crime map, which are maintained on a monthly basis at the beat level, should be merged and matched with range- and forest department-level maps to monitor and effectively control crimes and to establish/shift patrolling camps. 9.

Eco-tourism should be developed as a community-centric activity and the members of the community should be suitably prepared to manage the activity. 10.

11. The services of research organizations/universities/NGOs in the region are to be obtained to monitor changes in the vegetation in areas that have been opened up.
12. Attempts should be made to relocate villages from the core.
13. Efforts should be made to rejuvenate JFMCs/ EDCs and Tea Gardens should also be brought under JFM system.

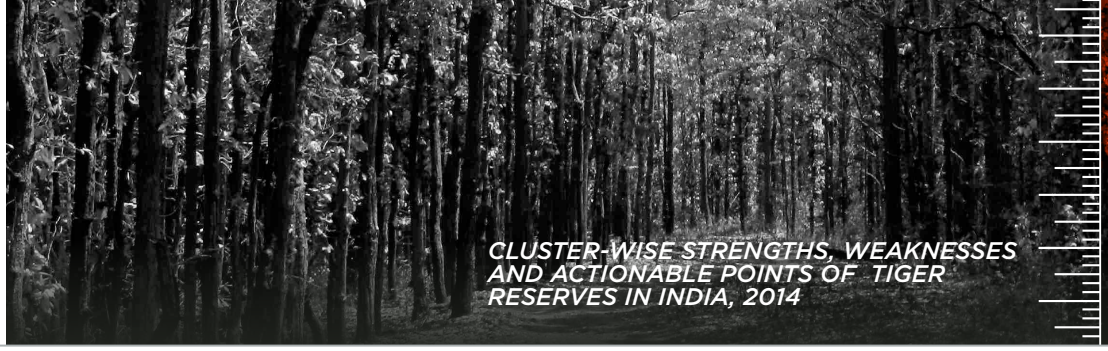
8 Sunderbans Tiger Reserve, West Bengal

A Management Strengths

1. This is a World Natural Heritage Site of UNESCO and a globally recognized biosphere reserve.
2. Along with Bangladesh, it forms the largest contiguous patch of mangrove forest in the world and constitutes more than 60% of the mangrove forests in India.
3. There are no villages or habitations inside the Tiger reserve.
4. The aquatic biodiversity is extremely rich. The populations of many endangered species such as the Irrawady Dolphin, Gangetic Dolphin, Estuarine Crocodile, Horseshoe Crab and Olive Ridley Turtles are notable.
5. With mangrove systems being highly productive, STR is self-sustaining. It has a high regenerative capacity for the aquatic fauna and serves as the source population for the fisheries of the entire east coast of India.
6. The compact and dense forests act as a shelter belt and windbreak and protect the hinterland, especially Kolkata and its suburbs, from tidal surges and cyclones.
7. The maintenance of records in STR is exemplary, and the dedication and knowledge of the officers and staff is of a very high standard.

B Management Weaknesses

1. The international border with Bangladesh is long and open. The patrolling facilities need to be further strengthened.
2. There is a large human population around the reserve. The socio-economic conditions are poor and the density is high, causing a high level of resource dependence.
3. High-speed boats are not available to the staff for fast and deterrent patrolling. Drinking water facilities and tide warning information alerts are not available, as a result of which life in the patrol camps in the interior is difficult.
4. Systematic research work on the evolving ecological processes and population dynamics of key species is lacking.
5. The growth of tourist lodges and motor launches in the vicinity of the park is uncontrolled and unregulated.



There are no guidelines or parameters for for managing the waste generated by tourists and motor launches and freighters carrying ores/coal to Bangladesh or to monitor them. 6.

Actionable Points C

The system of registration of private boats needs strict enforcement and rationalization so that their movements are controlled and regulated. The boats should be fitted with GPS tracker devices to monitor their movements. 1.

The monitoring of vegetational changes in open areas should be improved. 2.

The conservation awareness among the populations of the fringe villages, school children and tourists should be increased. 3.

The daily sighting reports should be converted into occupancy maps. 4.

STR has an excellent record maintenance culture. Offence spots, identified through monthly exercises and the reports submitted by Beat Officers to the Range Officers/Field Director should be merged into the map of the larger landscape so these areas can be monitored and controlled effectively. 5.

An institutionalized mechanism is needed to coordinate and liaise with officials of BSF and Bangladesh officials to ensure prevention of smuggling of timber, NTFP and wildlife articles/derivatives and illegal fishing. 6.

A review of the functioning of the State Level Steering Committee and Tiger Reserve Foundation is required to make more effective. 7.

APOs should be based on TCPs, and the items should be prioritized and monitored at the NTCA level. 8.

The present livelihood security programmes need to be upgraded into Integrated Area Development Programmes to ensure that their products can be marketed and skills upgraded. 9.

The patrolling camps should be provided with desalination plants to provide sweet drinking water which is the most limiting condition for living in the camps. Further, rain water harvesting can also be promoted. 10.

Two fast-moving boats should be provided to each range for patrolling/health/ rescue purposes. 11.

Construction of family quarters at suitable places and giving special allowances for difficult areas should be considered for inclusion among the staff welfare measures. 12.

There is a large gap between the sanctioned strength and the position strength of the field staff, especially in the frontline positions of Dy ROs, FGDs, boatmen and majhis, which should be filled by a special recruitment drive for the TR-preferably from the local/regional areas. This brings goodwill, and the new recruits tend to stay in the park. 13.

E-eye or other compatible devices can be installed at the junctions of major channels to prevent unauthorized entry. CCTV cameras can also be installed at all the watch towers that have observation paths, to record the movements of wild animals. 14.

A notification should be issued for the Tiger reserve under section 38w of the WPA. 15.

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04 THE WAY FORWARD

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The Way Forward

The present MEE process has provided valuable insights into the management processes and practices in all tiger reserves. The 2014-15 Management Effectiveness Evaluation indicates there has been overall improvement in the management effectiveness of tiger reserves compared to 2005-06 and 2010-11 assessments. During this assessment of MEE TR 2014-15, the overall MEE rating increased and no any tiger reserve in the country falling in poor category. The Tiger Conservation Plan (TCP) and Annual Plan of Operations (APOs) will have to be appropriately aligned to respond to the outcomes of this assessment in order to enhance the management effectiveness of tiger reserves in a time bound manner. The APOs will also have to take into account the strengths, weaknesses and actionable points as described in Chapter 3 of this report.

CD Filled in questionnaires in respect of 43 Tiger Reserves in India, evaluated in 2014.

ANNEXURE - I

Clusters for Independent Management Effectiveness Evaluation of Tiger Reserves

S. No.	Cluster	Name of Tiger Reserve	State
1.	**Cluster-I : 9 Tiger Reserves**	Dudhwa	Uttar Pradesh
2.		Corbett	Uttarakhand
3.		Ranthambhore	Rajasthan
4.		Sariska	Rajasthan
5.		Mukundara Hills	Rajasthan
6.		Melghat	Maharashtra
7.		Pench	Maharashtra
8.		Tadoba Andhari	Maharashtra
9.		Sahyadri	Maharashtra
10.	**Cluster -II : 6 Tiger Reserves**	Bandhavgarh	Madhya Pradesh
11.		Satpura	Madhya Pradesh
12.		Kanha	Madhya Pradesh
13.		Panna	Madhya Pradesh
14.		Pench	Madhya Pradesh
15.		Sanjay Dubri	Madhya Pradesh
16.	**Cluster -III : 9 Tiger Reserves**	Valmiki	Bihar
17.		Indravati	Chhattishgarh
18.		Achanakmar	Chhattishgarh
19.		Udanti Sitanadi	Chhattishgarh
20.		Similipal	Odisha
21.		Satkosia	Odisha
22.		Nagarjunsagar Srisailam	Andhra Pradesh
23.		Kawal	Andhra Pradesh
24.		Palamau	Jharkhand
25.	**Cluster -IV : 11 Tiger Reserves**	Bandipur	Karnataka
26.		Nagarhole	Karnataka
27.		Bhadra	Karnataka
28.		Dandeli Anshi	Karnataka
29.		Biligiri Ranganatha Temple	Karnataka
30.		Periyar	Kerala
31.		Parambikulam	Kerala
32.		Kalakad Mundanthurai	Tamil Nadu
33.		Annamalai	Tamil Nadu
34.		Mudumalai	Tamil Nadu
35.		Sathyamanglam	Tamil Nadu
36.	**Cluster -V : 8 Tiger Reserves**	Namdapha	Arunachal Pradesh
37.		Pakke	Arunachal Pradesh
38.		Kaziranga	Assam
39.		Manas	Assam
40.		Nameri	Assam
41.		Dampa	Mizoram
42.		Buxa	West Bengal
43.		Sundarbans	West Bengal

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Committees for Independent Management Effectiveness Evaluation of Tiger Reserves

ANNEXURE - II

S. No.	Cluster	Name of Tiger Reserve	State	Chairperson	Members
1.	**Cluster-I : (9 TRs)**	Dudhwa	Uttar Pradesh	Shri S.V. Kumar,	Shir Dipankar
2.		Corbett	Uttarakhand	Retd. CWLW,	Ghosh, WWF-
3.		Ranthambhore	Rajasthan	Andhra Pradesh	India
4.		Sariska	Rajasthan		
5.		Mukundara Hills	Rajasthan		
6.		Melghat	Maharashtra		
7.		Pench	Maharashtra		
8.		Tadoba Andhari	Maharashtra		
9.		Sahyadri	Maharashtra		
10.	**Cluster -II : (6 TRs)**	Bandhavgarh	Madhya Pradesh	Shri B.K. Singh,	Shri Samir K.
11.		Satpura	Madhya Pradesh	Retd. CWLW,	Sinha, WTI,
12.		Kanha	Madhya Pradesh	Karnataka	Patna
13.		Panna	Madhya Pradesh		
14.		Pench	Madhya Pradesh		
15.		Sanjay Dubri	Madhya Pradesh		
16.	**Cluster -III : (9 TRs)**	Valmiki	Bihar	Shri Jagdish,	Shri Prasanjeet,
17.		Indravati	Chhattishgarh	Kishwan, Retd.	Nvigere,
18.		Achanakmar	Chhattishgarh	ADG (WL),	Independent
19.		Udanti Sitanadi	Chhattishgarh	MoEF	Researcher
20.		Similipal	Odisha		
21.		Satkosia	Odisha		
22.		Nagarjunsagar Srisailam	Andhra Pradesh		
23.		Kawal	Andhra Pradesh		
24.		Palamau	Jharkhand		
25.	**Cluster - IV : (11 TRs)**	Bandipur	Karnataka	Shri B.K. Patnaik,	Shri R.K. Singh,
26.		Nagarhole	Karnataka	Retd. CWLW,	Retd. DCF,
27.		Bhadra	Karnataka	Uttar Pradesh	Katerniaghat,
28.		Dandeli-Anshi	Karnataka		Dudhwa Tiger,
29.		Biligiri Ranganatha Temple	Karnataka		Uttar Pradesh
30.		Periyar	Kerala		
31.		Parambikulam	Kerala		
32.		Kalakad Mundanthurai	Tamil Nadu		
33.		Annamalai	Tamil Nadu		
34.		Mudumalai	Tamil Nadu		
35.		Sathyamanglam	Tamil Nadu		
36.	**Cluster -V : (8 TRs)**	Namdapha	Arunachal Pradesh	Shri D.N.S.,	Shri R.K.
37.		Pakke	Arunachal Pradesh	Suman,	Singh,
38.		Kaziranga	Assam	Retd. PCCF,	WCT
39.		Manas	Assam	Uttar Pradesh	
40.		Nameri	Assam		
41.		Dampa	Mizoram		
42.		Buxa	West Bengal		
43.		Sundarbans	West Bengal		

ANNEXURE - III WII Faculty for Technical Backstopping of Independent Management Effectiveness Evaluation of Tiger Reserves

1. **Dr. V.B. Mathur, Director**
2. **Dr. Y.V. Jhala, Scientist-G**
3. **Shri Qamar Qureshi, Scientist-G**
4. **Dr. Nasim Ahmad Ansari, Senior Project Associate**

S. No.	Cluster	Name of Tiger Reserve	WII Faculty Member
1.	**Cluster-I : 9 Tiger Reserves**	Dudhwa	Shri V.K. Uniyal
2.		Corbett	
3.		Ranthambhore	
4.		Sariska	
5.		Mukundara Hills	
6.		Melghat	
7.		Pench	
8.		Tadoba Andhari	
9.		Sahyadri	
10.	**Cluster -II: 6 Tiger Reserves**	Bandhavgarh	Shri P.C. Tyagi
11.		Satpura	
12.		Kanha	
13.		Panna	
14.		Pench	
15.		Sanjay Dubri	
16.	**Cluster -III : 9 Tiger Reserves**	Valmiki	Shri S. Sen
17.		Indravati	
18.		Achanakmar	
19.		Udanti Sitanadi	
20.		Similipal	
21.		Satkosia	
22.		Nagarjunsagar Srisailam	
23.		Kawal	
24.		Palamau	
25.	**Cluster -IV : 11 Tiger Reserves**	Bandipur	Shri Aseem Shrivastava
26.		Nagarhole	
27.		Bhadra	
28.		Dandeli Anshi	
29.		Biligiri Ranganatha Temple	
30.		Periyar	
31.		Parambikulam	
32.		Kalakad Mundanthurai	
33.		Annamalai	
34.		Mudumalai	
35.		Sathyamanglam	
36.	**Cluster -V : 8 Tiger Reserves**	Namdapha	Shri Mukul Trivedi
37.		Pakke	
38.		Kaziranga	
39.		Manas	
40.		Nameri	
41.		Dampa	
42.		Buxa	
43.		Sundarbans	

ANNEXURE - IV

Assessment Criteria for addressing issues relating to Climate Change & Carbon capture in the Tiger Reserves (TRs)

1. Additional Criteria on Climate Change : Is the TR being consciously managed to adapt to climate change?

Condition	Category*	(Tick✓)	Comment/ Explanation	Next Steps
There have been no efforts to consider adaptation to climate change in management	Poor			
Some initial thought has taken place about likely impacts of climate change, but this has yet to be translated into management plans	Fair			
Detailed plans have been drawn up about how to adapt management to predicted climate change, but these have yet to be translated into active management.	Good			
Detailed plans have been drawn up about how to adapt management to predicted climate change, and these are already being implemented	Very Good			
***Score:** Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*				

2. Additional Criteria on Climate Change: Is the TR being consciously managed to prevent carbon loss and to encourage further carbon capture?

Condition	Category*	(Tick✓)	Comment/ Explanation	Next Steps
Carbon storage and carbon dioxide capture have not been considered in management of the TR	Poor			
Carbon storage and carbon dioxide capture have been considered in general terms, but has not yet been significantly reflected in management	Fair			
There are active measures in place to reduce carbon loss from the TR, but no conscious measures to increase carbon dioxide capture	Good			
There are active measures in place both to reduce carbon loss from the TR and to increase carbon dioxide capture	Very Good			
***Score:** Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*				

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