

Presented to Lok Sabha on.....

Presented to Rajya Sabha on **2-5-AUG 2006**

**Performance Audit of
Conservation and Protection of
Tigers in Tiger Reserves**

**Report of the
Comptroller and Auditor General
of India
for the year ended March 2005**

**Union Government (Civil)
No.18 of 2006
(Performance Audit)**

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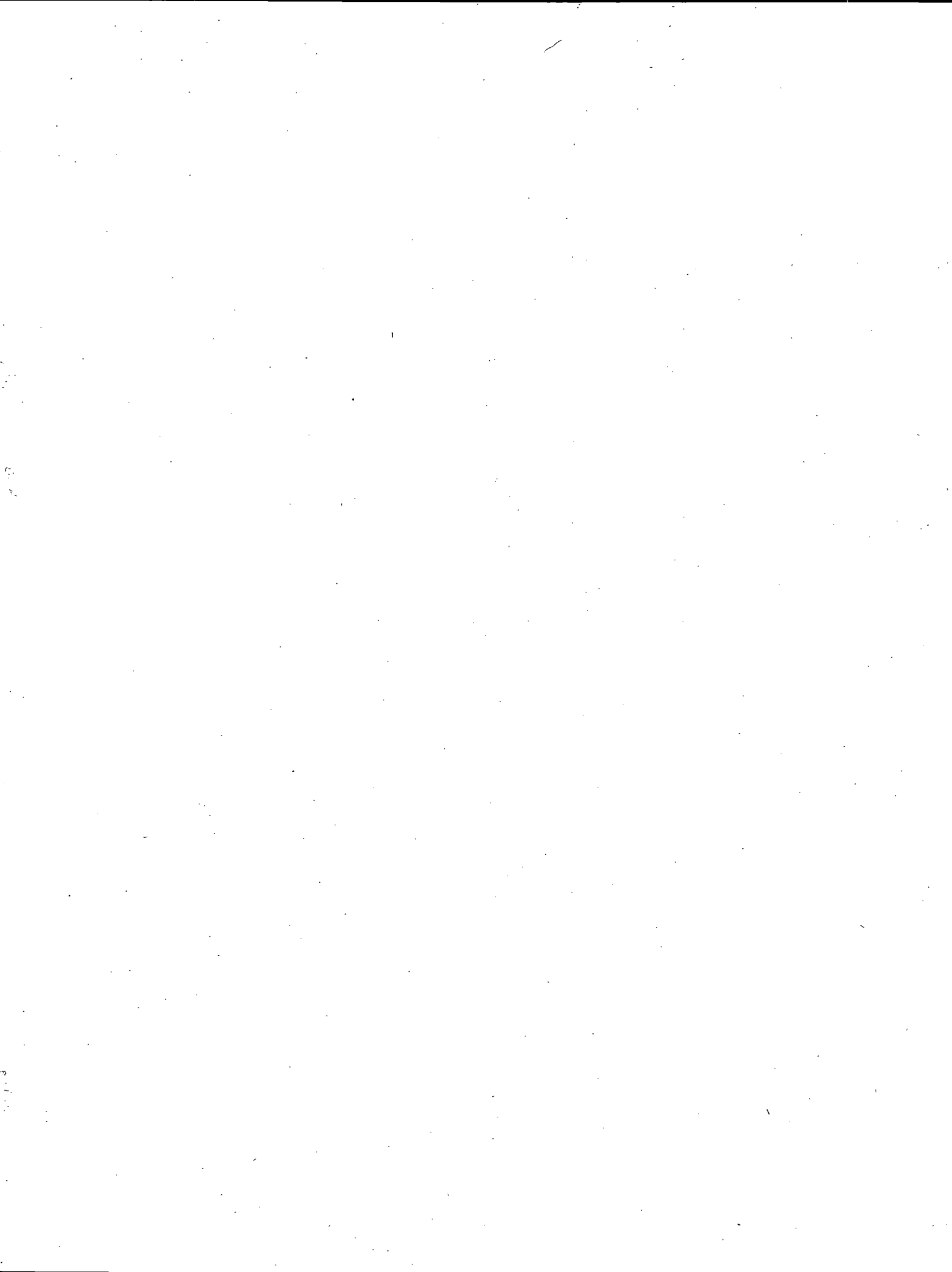
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PREFACE

This report of the Comptroller and Auditor General of India for the year ended March 2006 containing the results of Performance Audit on "Conservation and Protection of Tigers in Tiger Reserves", has been prepared for submission to the President of India under Article 151 of the Constitution.

The Performance Audit was conducted during 2005-06 through test check of records of the following organizations:

- (i) Project Tiger Directorate, Ministry of Environment & Forests,
- (ii) Wildlife Division of the Ministry of Environment & Forests,
- (iii) Offices of the Regional Deputy Director of Wildlife Preservation, Ministry of Environment & Forests at New Delhi, Kolkata, Mumbai and Chennai,
- (iv) Offices of the Field Directors and their subordinate offices in 24 selected Tiger Reserves,
- (v) Offices of PCCFs, Wildlife/Chief Wildlife Warden of 17 State Governments and
- (vi) Wildlife Institute of India, Dehradun.



OVERVIEW

The Government of India launched Project Tiger, a centrally sponsored scheme, in April 1973 to protect tigers and to ensure a viable population of tigers in India. The Management Plans were to form the bases for the implementation of the project. These were not approved by the State Governments and the Central Government in many cases. The Annual Plans of Operation also did not always have correlation with the management plans. The activities on the ground were very often dictated by the immediate needs of the project and the funds released by the Government. The State Governments did not, in many cases, release their share of funds. Cases of diversion of central funds for other purposes were also noticed during audit.

The norms decided in 1972 to create Tiger Reserves stipulated an average area of 1500 sqkms. The actual areas of the Tiger Reserves were mostly less than the prescribed area. 15 out of the 28 Tiger Reserves created had area less than half the prescribed area which was definitely not conducive for conservation, protection and sustenance of a viable tiger population. Besides, the boundaries of many of the Tiger Reserves had not been demarcated nor the areas falling within the Tiger Reserves notified legally.

The Project Tiger Directorate did not have the wherewithal to undertake any monitoring of the implementation of the project. It had only seven personnel including non-ministerial staff and could not even process the periodical reports and returns received from the Tiger Reserves or to critically examine the Management Plans and issue appropriate directions. Implementation of the project was thus entirely in the hands of the State Governments whose priorities did not always coincide with those of the Project Tiger Directorate.

Relocation of the people living within the Tiger Reserves as well as removal and prevention of encroachment is essential to ease the biotic pressure on the tiger population. Efforts in this direction did not succeed primarily because of lack of resources. Against the requirement of around Rs.11000 crore to relocate 64951 families living within the Tiger Reserves, the allocation in the Tenth Five Year Plan was a meager Rs.10.50 crore. Even this money was not properly utilized by the State Governments.

The implementation of the project was severely hampered by understaffing at the level of Tiger Reserves. The personnel actually employed were also found to be overaged, undertrained and underequipped in many cases. The intelligence and communication network at the Reserves level was also weak.

Many tiger reserves neither prepared the tourist management plans nor assessed the tourist carrying capacity of the reserves despite guidelines issued by the Project Tiger Directorate. The conflict between promotion of tourism and earning of revenue on the one hand and ecological protection of the tiger habitat on the other was thus not resolved.

Various activities under the village eco-development component of the India Eco- Development Project were not carried out efficiently and avoidable extra expenditure of Rs.5.17 crore was noticed in audit.

The census of tigers was generally carried by counting pugmarks which is not considered a fool-proof methodology. The census was not conducted annually in most of the Tiger Reserves and it was also not upto date.

In the 15 Tiger Reserves created up to 1984, the total number of tigers increased from 1121 in 1984 to 1141 in 2001-02, a rate of increase which highlights the ineffectiveness of the measures taken under the Project Tiger to attain a viable tiger population. During the same period, the overall tiger population in the country declined from 3623 to 2906.

RECOMMENDATIONS

- *All Tiger Reserves should have a well-formulated management plan encompassing long and medium term targets. The annual plans of operations should be based on the management plans to ensure appropriate allocation of resources. While enabling a planned approach to tiger conservation, the annual plan of operations should also provide a measure for achievement of targets against efforts made. Efforts may be made to complete the detailed mapping of Tiger Reserves early so that the management plans are based on reliable information. The boundaries of the existing reserves should be notified*
- *The system of allocation of financial resources to Tiger Reserves needs to be streamlined. The Project Tiger Directorate should establish formal criteria for allocation of funds and prioritize the Tiger Reserves based on their risk perception. The issues relating to late release of central funds, diversion of funds and short release of counterpart funds by the States need to be addressed at appropriate levels to ensure that tiger conservation efforts become fruitful.*
- *The Government should make a firm commitment to relocate the local families/villages from the core and buffer areas of the Tiger Reserves and draw a comprehensive resettlement plan for the purpose, adequately supported by a credible financial package. Stringent steps need to be taken to evict the encroachers.*
- *The Government should frame a comprehensive tourism management policy for the Tiger Reserves clearly spelling out the roles of the Project Tiger Directorate and the State authorities. Tourism should be regulated such that human impact on conservation efforts of ecologically sensitive areas is minimised.*
- *The Government should lay down a clear-cut agenda for coexistence by addressing the needs of the people sharing habitat with tigers and at the same time ensuring that eco-sensitive areas are protected from human disturbances, without diluting the conservation efforts.*
- *Efforts should be made to improve communication and intelligence network, to create a strike force and to provide adequate arms and ammunition to the project personnel.*

- *For effective patrolling of the reserves, number of camps/ chowkis and forest guards and foresters in the camps should be augmented. The staff deployed should be physically fit, capable of carrying out patrolling duties and adequately trained.*
- *Efforts should be made to augment the manpower capacity at the Project Tiger Directorate to equip it as an effective oversight agency.*
- *Monitoring mechanisms at the Centre and the State levels need to be strengthened. An effective system of follow up of recommendations should be instituted and the accountability of officials at various levels needs to be enforced.*
- *Census/ estimation of tigers should be done regularly. Techniques of tiger estimation need to be refined so that the reliability of census data is enhanced.*

CONSERVATION AND PROTECTION OF TIGERS IN TIGER RESERVES

Highlights

- *There were wide gaps between the financial projections made in the Management Plans and the Annual Plans of Operations and the actual release of funds by the Project Tiger Directorate and the State Government. (Para 4.3)*
- *As per the decision of the Special Task Force in 1972, Tiger Reserves should consist of a sizeable core area and a buffer zone around the core. These requirements were not met in many Tiger Reserves. Most of the Tiger Reserves do not have a designated, functional buffer zone, which is essential for redressing the park-people interface problems and to elicit local public support for conservation. (Para 6.1, 6.1.1)*
- *Out of the six new Tiger Reserves approved for creation by the Government in the IX Plan, only four were created. (Para 6.1.3)*
- *Since tiger population breeds well and grows rapidly in habitats that are without disturbance, 64,951 families including 17,650 families living in the core areas were to be relocated outside the Tiger Reserves. Relocation of 64,951 families needs Rs 11,041 crore against which only Rs 10.50 crore was provided in the X Plan. (Para 6.2.1)*
- *Though directives regarding computation of visitor carrying capacity had been issued, many Tiger Reserves have unregulated tourism. Very little effort has gone in for recycling the tourism receipts to the stakeholder host communities. (Para 6.5.2, 6.5.3)*
- *Though the need for a network of corridors connecting the Tiger Reserves and the adjacent forest areas, to enable tigers to migrate through the corridors was recognized in 1985, there is slow progress in the efforts for creation of the corridors. (Para 7.5)*
- *Irregularities involving Rs 12.06 crore were noticed under the village eco-development component in Pench, Buxa, Gir and Nagarhole. (Para 7.6.2.1, 7.6.2.2)*
- *Funds of Rs 13.90 crore accumulated under Village Development Fund in Buxa, Ranthambore, Nagarhole and Periyar were not utilized for post project sustainability. Besides there was short realization of Village Development Fund of Rs 89 lakh at Nagarhole (Para 7.6.2.4)*

- *Even after more than three decades of Project Tiger, the research activities in various Tiger Reserves were adversely impacted by lack of requisite laboratories or research officers. (Para 7.7)*
- *Protection measures in the Tiger Reserves were weak due to absence of measures to combat poaching, poor communication network, inadequate provision of arms and ammunition, deficiencies in creation of strike force, poor intelligence gathering, inadequate patrolling camps and tardy progress in concluding the cases of wildlife crimes. As a result, poaching of tigers continued and touched an annual level of 22 over a period of six years. (Para 8.8.1.1 to 8.1.5 and 8.3.1)*
- *Most of the reserves suffer from deployment of aged field staff, which has adversely affected the protection efforts. (Para 8.3.3.2)*
- *MoEF had not taken any action to strengthen the organizational structure of the Project Tiger Directorate in as much as against 38 posts identified in the initial project report in 1972, it was functioning with only seven personnel against the sanctioned strength of 13 posts as of May 2006. (Para 8.4)*
- *The watch over majority of exit/ entry points at airports, seaports, land ports and check posts was inadequate to monitor the illegal passage of wildlife and wildlife products through these points. (Para 8.5.3.3)*
- *The Steering Committee, the Apex body which reviews the progress of the Project Tiger met only four times during 1997-2006, as against 18 meetings required to be held at an interval of six months. (Para 9.1.1)*
- *The system of watching the receipt of returns regarding tiger estimation from the reserves and the compilation of figures at the Project Directorate was poor. (Para 9.2.1.2)*
- *The concurrent monitoring mechanism for the assessment of the effectiveness of the management plan and its various components at the various Tiger Reserves by the Project Directorate was completely derailed due to non-receipt of the monthly progress/summary reports and the quarterly, half yearly and annual reports from most of the Tiger Reserves. (Para 9.3)*
- *In the fifteen Tiger Reserves created upto 1984, the total number of tigers increased from 1121 in 1984 to only 1141 in 2001-02, a rate of increase which shows the ineffectiveness of the measures taken by Project Tiger authorities to attain a viable tiger population. During the same period, the overall tiger population in the country declined from 3623 to 2906. The Project Tiger authorities have not even developed any accepted norms for sustaining a viable tiger population. (Para 10)*

CONSERVATION AND PROTECTION OF TIGERS IN TIGER RESERVES

1. Introduction

Recognising the need to protect tigers, Government initiated several measures aimed at conservation and protection of the species. Significant among them were Project Tiger, a centrally sponsored scheme launched in April 1973 and the India Eco-development Project (October 1997-June 2004) funded by external agencies. Besides, efforts were made to prevent illegal wildlife trade to ensure a viable population of tiger in India. The main activities of Project Tiger include wildlife management, protection measures, and specific eco-development activities. Twenty eight Tiger Reserves were created in 17 states between 1973-74 and 1999-2000. The Project Tiger Directorate (PTD) in the Ministry of Environment and Forests (MoEF) at New Delhi is responsible for providing technical guidance, budgetary support, coordination, monitoring, and evaluation of Project Tiger while the management and implementation of the Project rests with the State Governments concerned. The India Eco-development Project (IEDP) was a pilot project initiated with the assistance of the World Bank and the Global Environment Facility to conserve biodiversity through eco-development. The project addressed both the impact of the local population on the Protected Areas and the impact of the Protected Areas on the local population and envisaged to improve the capacity of the Protected Area management to effectively conserve biodiversity and support collaboration between the States and the local communities in and around ecologically vulnerable areas. The project was implemented at five Tiger Reserves and two national parks. In order to curb illegal trade in wildlife, MoEF created four regional wildlife offices at Delhi, Kolkata, Chennai and Mumbai for preservation of wildlife. These regional offices are headed by Regional Deputy Directors (RDDs) and are under the direct administrative control of the Wildlife Division of MoEF.

2. Audit objectives

The performance audit of conservation and protection of tigers in Tiger Reserves seeks to assess whether -

- (i) the efforts made by the government in conservation and protection of tigers has ensured a viable population of tigers in India;

(ii) the planning for conservation and protection was adequate and the resources were allocated as per the identified needs and approved prioritisation of various activities of the Tiger Reserves;

(iii) the targets set in the plan documents were achieved through judicious utilisation of resources;

(iv) the efforts made to reduce the biotic disturbance from the tiger habitats caused by human settlements and other land uses were effective; and

(v) there existed an effective system for monitoring and evaluation and a prompt follow up mechanism.

3. Audit methodology

An entry conference was held with MoEF on 18 November 2005 where the audit objectives and methodology were explained. The effectiveness of the financial, managerial, compliance and regulatory inputs used in the project was examined during the course of performance audit through test checks of records in MoEF, PTD and the Wildlife Institute of India (WII) by the Principal Director of Audit (Scientific Departments). The records of the Chief Conservator of Forest-cum-Chief Wildlife Warden, Project Directorates and Range Offices of 24 out of 28 Tiger Reserves were scrutinized by the Principal Accountants General/Accountants General of the States where these Tiger Reserves are located.

4. Planning for Tiger Reserves

4.1 Management Plan and Annual Plan of Operations

4.1.1 The IX Plan proposal for the continuation of the Centrally Sponsored Scheme (CSS) "Project Tiger" was approved by the Government in June 1999 with the direction that for monitoring purposes, a master plan for development of each of the reserves should be prepared. Achievement of physical targets was to be compared with the master plan. PTD stated in March 2006 that the Management Plans (MPs) of the Tiger Reserves were the master plans.

4.1.2 The Management Plan is prepared by the Tiger Reserves and is to be approved by the State Governments concerned and the PTD. The Annual Plans of Operations (APOs) were drawn based on these MPs every year and it depicted the physical and financial targets. The MP serves as the basic document for the preparation and approval of the APO.

4.2 Deficiencies in Management Plans

4.2.1 *MPs were not prepared and PTD failed to follow up:* It was noticed that MPs of nine Tiger Reserves were not available at the Project Tiger Directorate (PTD). There was no evidence to indicate that these had indeed been prepared. It was seen that MPs of Tiger Reserves at Valmiki (2000-04), Melghat, Pench Maharashtra (2000-04), Kalakad (2001-02 onwards) and Kanha (2000-01) had not been prepared. In a circular issued in July 2005, PTD requested all the Tiger Reserves to clarify whether they had approved MPs and whether APOs were submitted as per MPs. This indicated that PTD was not keeping track of the receipt of approved MPs for processing APOs. It also reflected the absence of any internal control mechanism in the PTD regarding MP.

4.2.2 *MPs remained to be approved*

As per the guideline from the WII in November 1997, MPs would come into force only if these were approved by the State Government and the Government of India. However PTD did not have a mechanism to ensure that MPs received from Tiger Reserves had approval of the State Governments concerned. Besides, there was no system for technical scrutiny at PTD. It was seen in audit that the MPs of Tiger Reserves at Namdapha (1997-2006), Manas (2002-07), Valmiki (2004-14), Indravati (2000-10), Simlipal (2001-11), Katarniaghat and Dudhwa (2000-2010) and Corbett (1999-2009) had not been approved by the State Governments concerned. Lack of State Government approval would affect the project, the State's approval being critical in ensuring the flow of matching funds from them.

4.2.3 *MPs not formulated properly*

A test check of some of the MPs available at the PTD revealed that in many cases, due care had not been taken in the preparation of MPs. They were based on very old statistics and physical and financial milestones were not clearly laid down. Some problems noticed in the reserves are indicated in the table below:

Name of Tiger Reserve and period of Management Plan and lapses observed in the MPs
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1. Corbett (Uttaranchal) - MP for the period 1999-2009
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Audit observed that the yearly activities/strategies laid down in the Management Plan were not reflected in the Annual Plan of Operations for the corresponding period as indicated below:
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Name of Tiger Reserve and period of Management Plan and lapses observed in the MPs

- Though there was no provision for construction of quarters in 2000-01 as per Management Plan, the same was included in the APO of the same year.
- Target as per Management Plan was to strengthen the existing 29 patrolling chowkis, however as per APO construction of new patrolling camps was approved.

Issues relating to topography maps, vegetation, animal distribution and migration, water holes, roads and boundaries were not properly addressed.

2. Panna (Madhya Pradesh) - MP for the period 2002-12

The Management Plan was based on statistics dated five to ten years back from the period of the Plan as follows:

- Statistics for the period 1982-95, 1985-96, 1983-96 were reckoned for annual rainfall, animal population and poaching cases including fishing respectively. Statistics relating to fire incidences were for the period 1991-92 to 1995-96.
- There were no records of any diseases/epidemics in wild animals or in cattle.
- Summary of problems faced by the people that affect the management of Protected Area pertains only up to 1996.
- The Theme Plans spelling out future strategies did not spell out yearly targets.
- Financial projections of the activities in the Management Plan had not been spelt out.
- No time frame has been laid down for achievement of the theme plans/strategies depicted.

3. Buxa(West Bengal) - MP for the period 1998-2010

No financial projections were made to give an idea of the funds that would be required for achievement of objectives laid down in the Management Plan.

4. Kanha (Madhya Pradesh) - MP for the period 2001-11

- No clear definition of yearly physical and financial targets was laid down.
- No time frame was set for achievement of the envisaged objectives.
- There was no clear correlation of activities envisaged in the MP to that laid down in the APO.

5. Bandipur and Bhadra Wild Life Sanctuary (Karnataka) – MP for the period 2000-05

Issues relating to role of Non Governmental Organisations (NGOs) in development of the reserves, training plans for the staff, Degraded Habitat Restoration Plan, Buffer Zone Development Plan and Tourism Management Plan were not addressed.

6. Sunderbans (West Bengal) – MP for the period 2001-10

Physical targets under various activities were not depicted. Similarly analysis of strengths, weaknesses, opportunities and threats for the Tiger Reserve area were not addressed in the MP.

4.3 Deficiency in the Annual Plan of Operations

Annual plans are to be prepared on the basis of management plans. PTD is expected to process and approve the APOs on the basis of the respective MPs. Audit however revealed that APOs of Manas, Nameri, Pakke, Pench (*Madhya Pradesh*), Periyar, Bandhavgarh, Kalakad and Valmiki Tiger Reserves for the period 2000-06, Melghat Tiger Reserve for 2000-04 and Bandipur, Bhadra, Indravati, Sariska, Satpura, Nagarjunsagar Tiger Reserves for 2005-06 were processed and central assistance released without ensuring availability of

approved and valid MPs at PTD. Besides, in reserves where MPs existed, there were wide deviations between the MPs and the corresponding APOs. Further the actual release of assistance was not based on either the MP or the APO as indicated in *Annexure-1*.

The table below illustrates the activities not carried out due to differences in funds demanded as per APO and funds sanctioned by MoEF during 2001-05 in some Tiger Reserves.

(Rupees in crore)

Tiger Reserve/ State	Funds demanded	Funds sanctioned	Activities not taken up due to shortage of funds
Ranthambore, Rajasthan	78.94	10.87	Periodicity for vaccination of animals, relocation of villages, rehabilitation of nomadic tribe, development of prey base, plan for education and awareness.
Tadoba-Andhari, Maharashtra	0.06	0.02	Soil and water conservation, development of meadows.
Pench, Maharashtra	0.31	0.09	

In March 2006, PTD attributed the variations to restricted release of funds to States depending upon their capacity. PTD further contended that the financial projections were not really required in the MPs. In essence, thus the Plan outlays were prepared by the PTD without obtaining inputs from Tiger Reserves and there was no system to ensure that the resources were allocated as per the identified needs and the approved prioritisation of various activities and needs of the Tiger Reserves. The existence of an inbuilt procedure in the system for accountability and involvement of the Tiger Reserves in the implementation of the schemes was missing. PTD stated in March 2006 that a bill had been introduced in Parliament for amending the Wildlife (Protection) Act 1972 to insert a Chapter for according statutory authority to Project Tiger and to have a say in the planning process of the States and to redress difficulties on these issues.

4.4 Mapping of National Parks

4.4.1 In March 2004, MoEF sanctioned a project at a the cost of Rs 1.39 crore for mapping of Wildlife Sanctuaries/National Parks by Wildlife Institute of India (WII), Dehradun. The project was to be completed within 36 months. It aimed to generate accurate, reliable and latest base line spatial information on forest types and density (using satellite imagery) and topographic features (supplemented by latest satellite imagery), which could be of direct relevance for preparation/revision of Management Plans of wildlife sanctuaries and

national parks. The project objective further stated that efforts would be made to incorporate the compartment-wise plant and animal density, diversity and richness in management plans to enable the wildlife managers to use the information directly for conservation and management purposes. After completion of this pilot project in five specified National Parks/Wildlife Sanctuaries, the countrywide mapping and monitoring of the wildlife sanctuaries and national parks were to be continued by WII in coordination with the Indian Institute of Remote Sensing (IIRS), National Remote Sensing Agency (NRSA) and Aligarh Muslim University (AMU) for the generation of baseline digital data of all Protected Areas for effective management.

4.4.2 Out of the five sites selected for this pilot project, three were Tiger Reserves namely Corbett, Tadoba-Andhari and Dudhwa. The identified targets included generation of satellite data by July 2004 and securing Survey of India (SOI) topographic maps by September 2004. However, both activities were not completed even as of March 2006. As against the projected expenditure of Rs 1.20 crore in the first two years, Rs 0.73 crore was released of which only Rs 0.30 crore was spent till the end of February 2006 indicating poor progress of the project. A project review committee was constituted in December 2004 and though the project envisaged half yearly review, so far only one project meeting was held in March 2005. While accepting the facts, WII attributed (March 2006) the shortfall in achieving the targets to delay in the induction of research personnel for the project and also the delay on the part of SOI in providing the topographic maps. It further stated that all the bottlenecks have been resolved and SOI maps would be made available to the researchers shortly and the results would provide new insights for the development of spatial database, which would be useful for other Protected Areas in the country. The tardy implementation of the project meant lack of quality information to the reserves for framing their management plans.

Recommendations :

- All Tiger Reserves should have a well-formulated management plan to ensure that long and medium term targets are not lost sight of. The annual plans of operations should be based on the management plans to ensure judicious allocation of resources. While enabling a planned approach to tiger conservation, it would provide a measure for achievement of targets against efforts made.
- Efforts may be made to complete the mapping of Tiger Reserves on time so that the management plans are based on reliable information.

5. Financial Management

5.1 Funding pattern

Project Tiger was launched in 1973 with 100 *per cent* Central Assistance. From the VI Five Year Plan (1980-81 to 1984-85) onwards recurring expenditure was shared by Central and States in equal proportion. However, the Centre continued to meet 100 *per cent* of the non-recurring expenses. The Central Government also meets the entire cost of Project Allowance introduced during the IX Plan to the staff working in the Tiger Reserves as well as the entire cost of relocation of families from the Tiger Reserves. The projects on Eco-development and Beneficiary Oriented Tribal Development (BOTD) which were pursued as independent Centrally sponsored projects till the end of the IX Plan were merged with the Project Tiger in the X Plan. A provision of Rs 150 crore was made for Project Tiger in the X Plan. Central Government had provided Rs 237.75 crore as financial assistance to the Tiger Reserves till 31 March 2005 since the commencement of the project in 1973. In addition, an India Eco-development Project (IEDP) was conceived in October 1997 with the assistance of the World Bank and the Global Environment Facility (GEF). IEDP was implemented in five Tiger Reserves and two National Parks. The cost of the project was US\$ 67 Million. The project was financed partly by the World Bank loan (US\$ 28 Million) and the GEF grant (US\$ 20 Million). The rest of the contributing agencies were Government of India and the participating States (US\$ 14.60 million) and the project beneficiaries (US\$ 4.40 million). The project was completed in June 2004.

5.1.1 EFC clearance not obtained

The Ministry proposed creation of eight new Tiger Reserves in the Xth Plan period. This involves requirement of Central Assistance for several new items of work such as providing ex-gratia payment to villagers residing in the vicinity of the project area in the event of loss of life. Inclusion of the new activities in the Plan proposals called for the clearance of the Expenditure Finance Committee (EFC). MoEF sought EFC clearance only in February 2005 after a delay of 34 months. The Planning Commission in July 2005 held that EFC approval should be sought for the total cost estimates including the State share and desired that the criteria adopted for the creation of the new Tiger Reserves be specified. Besides, the Planning Commission desired that the success criteria to be adopted for assessing the impact of the scheme be laid down. PTD did not furnish the information and as a result, EFC clearance

for the X Plan proposal of PTD was pending even as of March 2006. PTD stated in reply (March 2006) that though a proposal for inclusion of the above additional items was drawn up, it was not processed and kept in abeyance for reconsideration and a fresh proposal with appropriate modifications would be sent to the Planning Commission after the constitution of National Tiger Conservation Authority (NTCA). The decision to defer the creation of new Tiger Reserves till the constitution of National Tiger Conservation Authority has to be viewed against the need to bring more areas under protection as emphasized in the report of the Working Group on Wildlife Sector of the Ministry for the X Five Year Plan.

5.2 Adhoc allocation of funds to Tiger Reserves

5.2.1 *Funds allocated without norms*

PTD did not project their plan requirements based on the inputs received from the Tiger Reserves. No Reserve wise break up of allocations and budget was available at PTD. Thus it was not possible to ascertain if the funds earmarked for a particular Tiger Reserve were not diverted to other Tiger Reserves. PTD in reply stated in March 2006 that it projected the demand for its plan and annual allocation based on the expenditure over the years vis-a-vis the MPs and the APOs. However, specific information about areas where funding was to be provided in each Tiger Reserve was essential to ensure that projection and release of funds were consistent with the identified priority areas. While admitting this fact, PTD stated in March 2006 that it was in the process of improving the norms for providing funding to Tiger Reserves and once the system was streamlined, the depiction of financial allocation to Tiger Reserves and their phasing would be more meaningful and the National Tiger Conservation Authority by virtue of its statutory provision, would address these issues through rules.

5.2.2 *Allocation of funds to Tiger Reserves widely divergent*

Audit analysed the fund allocation across Tiger Reserves against the area covered and the number of tigers. In both cases wide divergences were noticed. The funds released for different Tiger Reserves could not be correlated to the areas of the Tiger Reserves or the tiger population. During the period 1997-2005, the average funds released per sq. kilometre of Tiger Reserve area amounted to Rs 5560 but the amount actually released varied from Rs 25,968 per sq. km in respect of Panna to only Rs 640 sq. km to Nagarjunsagar. Similarly, the average allocation per tiger during the period

1997-2005 was Rs 1.33 lakh but the amount actually allocated varied from Rs 10.99 lakh in case of Dampa to Rs 0.94 lakh in case of Melghat.

In the face of such wide divergences in allocation and absence of formal criteria to explain the divergence, it was not possible to link the targets with fund allocation. PTD stated in March 2006 that the fund release was site specific and could not be correlated with the area of the Tiger Reserves and the population of the tigers in a reserve. However, it added that action has been initiated for categorising the Tiger Reserves under four categories viz. (i) established Tiger Reserves without any major problems, (ii) problematic old reserves, (iii) upcoming reserves not consolidated and (iv) new reserves. According to the PTD, prioritisation of various activities for providing funds under recurring and non-recurring heads would be taken up in a rational manner in the coming years.

5.3 Distortions in release of funds

5.3.1 Central Assistance not released by States timely

As per the directive issued by the PTD in May 2000, the State Governments were to release Central Assistance to Tiger Reserves within six weeks from the date of its receipt. A test check in Audit revealed that there were delays ranging from 1 to 8 months in the release of Central Assistance to the reserves in Assam, Rajasthan, Maharashtra, Karnataka, Tamil Nadu etc. as detailed in *Annexure-2*. Delay in the release of Central Assistance to the field formations has to be viewed against Honorable Supreme Court's direction in February 2005 that the State Government should release the Central Assistance within 15 days of its receipt. The PTD in March 2006 cited delay in the release of Central Assistance by States as one of the difficulties faced in the implementation and monitoring of the scheme.

5.3.2 Late release of funds leading to low utilization by the reserves

As of March 2005, out of Rs 87.11 crore released to 28 Tiger Reserves during the period 2002-05, Rs 77.53 crore was utilized. In Karnataka, Maharashtra and Madhya Pradesh against liberal Central Assistance of Rs 10.45 crore, Rs 11.06 crore and Rs 25 crore respectively, only Rs 8.16 crore, Rs 4.13 crore and Rs 19.50 crore were utilised during the period 2002-2005. PTD in reply stated that the poor utilization of Central Assistance was due to late release of central funds by States to field formations. The PTD also informed that the unspent central assistance was adjusted in subsequent releases or revalidated and as of March 2006 no huge unspent Central Assistance under

the Project Tiger was left with States. However Audit observed that out of Rs 4.63 crore provided to Tadoba in Maharashtra for relocation during 2002-03, Rs 1.27 crore only was spent even as of March 2006.

5.3.3 Short release of matching contribution by State Government

As per the funding pattern of Project Tiger, the recurring expenditure was to be shared by the States and the Central Government in equal proportion. However, a test check in Audit revealed that in Valmiki Tiger Reserve, Bihar as against the State share of Rs 1.13 crore, Rs 80.85 lakh only was made available by the State Government during 2000-05. The short release of matching contribution thus worked out to more than 28 per cent. This depicts low commitment of the State in conservation measures in the Tiger Reserve.

5.3.4 Diversion of Central Assistance by States

Test check in audit revealed diversions of Central Assistance in some States. A few such cases are mentioned below.

Name of the Reserve/ Details of diversion of Central Assistance

1. Melghat, Maharashtra

A proposal to include 350 km² area of Wan, Ambabarwa and Narnala Sanctuary under Melghat Tiger Reserve was submitted to MoEF in June 2003 by the Government of Maharashtra. However, as of March 2006, MoEF had not approved the proposal. Notwithstanding these facts, the Deputy Conservator of Forest, Akot incurred an expenditure of Rs 50.16 lakh on various wildlife related activities during 2001-05 out of the Central Assistance of Rs 54.06 lakh in the area not included in the Melghat Tiger Reserve. The expenditure amounted to unauthorized diversion of Central Assistance.

2. Manas, Assam

MoEF sanctioned Rs 51.40 lakh in 2000-01 for the creation of a Strike Force consisting of four police platoons for protection of Manas Tiger Reserve. Of this, Rs 20.40 lakh was meant for recurring expenditure and the balance Rs 31 lakh was for non-recurring items. However, no expenditure has been incurred for creation of strike force till March 2004. It was observed in Audit that Rs 84.30 lakh including Rs 51.40 lakh of unspent balance of 2000-01 was revalidated and released for the APO for 2004-05 for various activities, other than creation of the Strike Force. Thus, the purpose for which Rs 51.40 lakh was initially sanctioned remained unfulfilled and funds were diverted for other purposes.

3. Nagarhole Extension of Bandipur Tiger Reserve, Karnataka

Grant of Rs 7.75 lakh was provided to Nagarhole National Park at Karnataka during 2003-04 for the construction of quarters, anti-poaching camps, formation of armed police, patrolling tracks and census under non-recurring items. In addition, Rs 6.54 lakh was provided under the recurring head for maintenance of roads and employment of tribal people for protection duties. However, the entire provision of Rs 14.29 lakh under these heads were diverted towards payment of outstanding wages of anti-poaching watchers engaged on daily wage basis for the reason that no separate allocation of funds was provided for the same.

5.3.5 Booking of recurring expenditure to non-recurring head

Non-recurring expenditure on the project is borne by the Central Government. Expenses booked by 20 reserves over the five-year period of 2000-2005 were checked in audit. It was seen that in 43 cases out of 100, expenditure on annual estimation, a recurring expense, was booked as non-recurring. Depicting the expenditure on annual estimation under non-recurring head entailed an additional burden of Rs 36.99 lakh on the Central Government. This accounted for 50 per cent of the bookings under non-recurring heads (Rs 73.98 lakh booked under non-recurring). PTD accepted in March 2006 that expenditure on annual estimation/census qualifies for matching grants only under the recurring head.

A comparison of Management Plan targets and the proposals included in the APO of Dudhwa revealed that certain items of works were shifted from 'recurring' to 'non-recurring' heads putting extra burden on the Central Government. The target for 'non-recurring' expenditure was increased to Rs 16.80 crore from Rs 9.35 crore and that for 'recurring expenditure' was reduced from Rs 26.14 crore to Rs 14.69 crore. Dudhwa Tiger Reserve did not intimate any reason for this change.

5.3.6 Payment of Project Allowance without safeguards

Considering the harsh and difficult condition in which the officers and staff of Tiger Reserves work, the Government in June 1999 approved 100 per cent Central Assistance for the payment of project allowance. PTD sanctioned project allowance to Tiger Reserves without insisting on any certified list of staff from the States. Some Tiger Reserves registered steep increase in the expenditure on project allowance over 2000-05 as shown in the table below. However, PTD neither ascertained the reasons for such steep increase in the payments nor ensured that the Tiger Reserves were not claiming project allowance on vacant posts.

(Rupees in lakh)

Sl. No.	Name of the Tiger Reserve	Project allowance expenditure during	
		2000-01	2004-05
1.	Bandipur	6.50	18.23
2.	Palamau	2.13	24.00
3.	Sariska	7.00	20.00
4.	Nagarjunsagar	8.50	11.50
5.	Panna	3.75	6.00
6.	Bhadra	2.42	7.30

Sl. No.	Name of the Tiger Reserve	Project allowance expenditure during	
		2000-01	2004-05
7.	Kalakad	4.61	10.00
8.	Indravati	3.11	6.32
9.	Tadoba-Andhari	3.00	6.05

Test check in Audit revealed weaknesses in regulation of the project allowance expenditure by various Tiger Reserves. The allowance was paid to ineligible personnel and funds demanded on this account were more than what could actually be spent as shown in the table below:

Name of Tiger Reserve /Remarks

1. Simlipal, Orissa

Out of Rs 15 lakh released to Simlipal Tiger Reserve in 2005-06, Rs 7.31 lakh were to the staff working in three divisions outside the Tiger Reserve.

2. Sariska, Rajasthan

There was an unspent balance of Rs 11 lakh as of 31 March 2005 against the release made for the payment of project allowance to Sariska Tiger Reserve during 2003-04. During 2005-06, again Rs 20 lakh was released for payment of project allowance. However, expenditure for payment of project allowance during 2005-06 was only Rs 11.65 lakh. Thus, the release of Rs 19 lakh for the payment of project allowance during 2005-06 to Sariska Tiger Reserve lacked financial propriety in as much the unspent balance of Rs 11 lakh on project allowance carried forward by it to 2005-06 was almost enough to meet the expenditure of Rs 11.65 lakh on project allowance during 2005-06.

3. Sunderbans/Buxa, West Bengal

Project allowance though admissible only to the field staff, Sunderbans Tiger Reserve utilized Central Assistance of Rs 6.96 lakh for the payment of project allowance to the ministerial staff. Similarly, Buxa Tiger Reserve had also used Central Assistance of Rs 54.37 lakh for the payment of project allowance to the staff who were not eligible for it during 2000-05.

4. Indravati, Chattisgarh

Indravati Tiger Reserve at Chattisgarh claimed Central Assistance for the project allowance on the basis of sanctioned strength where as the disbursement was made on the basis of men-in-position. Men-in-position was less than sanctioned number of posts during 2000-01 to 2004-05. As against a financial sanction of Rs 25.42 lakh, only Rs 14.00 lakh was spent on project allowance.

PTD stated in March 2006 that certified list of posts sanctioned and detailed reasons for the steep increase in the payment of project allowance would be obtained from the States and made available to Audit.

5.3.7 Non realization of revenue

A test check in Audit revealed lack of promptness in realization of revenue due to the Forest Departments in Andhra Pradesh, Uttaranchal, Maharashtra and Karnataka as indicated below :

Name of Tiger Reserve/ Remarks

1. Nagarjunsagar, Andhra Pradesh

Over the years, 65.13 km² were diverted for 12 items of work for Irrigation, Hydro-electric power, Road/bridge construction and mining activities at Nagarjunsagar Tiger Reserves. Even though, the beneficiary organizations had deposited Rs 11.99 crore as of April 2006, the Andhra Pradesh Government had transferred only Rs 60 lakh to the Forest Department. No details were available for the balance items of works.

2. Corbett, Uttaranchal

Outstanding revenue on account of petty demand, royalty, marking fees, late fees, extension fees and lease rent etc. to the extent of Rs 1.50 crore accrued before 2001-02 from the Uttar Pradesh Forest Corporation were pending to be recovered by Uttaranchal Government as of March 2006. An amount of Rs 3.48 lakh was also due from the Uttaranchal Forest Development Corporation.

3. Melghat, Maharashtra

Rates of entry to Melghat Tiger Reserve for tourists were revised from 17 May 2004. Deputy Conservator of Forests however continued to levy entry fees at the old rate, which led to loss of Government revenue to the tune of Rs 14.37 lakh from tourists during 2004-05.

Recommendations :

- Allocation of financial resources to Tiger Reserves needs to be streamlined. PTD should establish formal criteria for allocation of funds and prioritize the Tiger Reserves based on their threat perception.
- The issues relating to late release of central funds, diversion of funds and short release of counterpart funds by the States need to be addressed at appropriate levels to ensure that tiger conservation efforts become fruitful.
- The expenditure authorized under the 'recurring' and 'non-recurring' heads should be explicitly defined and actual classification of funds should be checked.

6. Biotic Pressure

6.1 Norms for Tiger Reserves

Tiger population breeds well and grows rapidly in habitats without incompatible human uses. They cannot co-exist with people particularly in a situation where both human impacts and live stock grazing is continuously on the increase. The long-term survival of the tiger therefore depends on how secure and inviolate are the Protected Areas they live in. Expert international advisers had suggested in 1972 that the best method of protection of the tiger was to have a large area of at least 2000 km² with a similar contiguous area to ensure a viable population of about 300 tigers in each such area. Considering the

difficulty to locate such a large area in the Indian context, Special Task Force decided in 1972 to create Tiger Reserves with an average area of 1500 km² with at least 300 km² as core area. Thus, for management purposes, each Tiger Reserve is broadly divided into two parts namely core and buffer. In the core area, forestry operations, collection of forest produce, grazing, human settlement and other human disturbances are not allowed. In the buffer zone, strictly controlled wildlife oriented forestry operations and grazing are allowed.

6.1.1 *Creation of Tiger Reserves inconsistent with norms*

28 Tiger Reserves were created under Project Tiger. In 15 Tiger Reserves the minimum area was less than 720 km² i.e. less than half the prescribed area. In six out of these fifteen reserves, Palamau, Ranthambore, Pench (Madhya Pradesh), Tadoba-Andhari, Bhadra and Pench (Maharashtra), even the core area was less than the prescribed 300 km². In 14 of them, there were human settlements. Human settlements existed even in the core areas of Palamau, Rathambore, Sariska, Kalakad, Panna and Pench (Maharashtra) Tiger Reserves. Further, four Tiger Reserves, viz., Pench (Maharashtra), Pakhui, Panna and Satpura Tiger Reserves were created without ensuring existence of any buffer zones. While admitting that the biotic disturbance in the form of human settlements and other land use disturb tigers and that there were no functional buffer zone under the unified control of the Field Directors in several reserves, PTD stated in March 2006 that these areas were brought under the project coverage considering the threat faced by the tiger population there. It also stated that the core area of the Tiger Reserves can be increased once the surrounding buffer zones are freed from disturbances and a National Tiger Conservation Authority (NTCA) with statutory powers is being established to address such issues. The reply has to be viewed against the fact that the core area in the Tiger Reserves at Palamau and Ranthambore continued to be less than 300 km² even 34 years after their creation (1973-74).

6.1.2 *Tiger Reserves not notified*

As per Section 35 of the Wildlife Protection Act 1972, the State Government notifies an area as a National Park. The notification provides the legal basis for ensuring protection. However, in many Tiger Reserves, the final declaration procedures of National Park (Core) and Sanctuary (Buffer) were pending even as of March 2006 even though the amended Wildlife (Protection) Act 2003 set a time-limit for completion of acquisition proceedings. The details of the Tiger Reserves where the final notification and boundary demarcation are pending

are given in *Annexure-3*. The Annexure reveals that in case of Indravati, Kanha, Pench, Palamau, Bandhavgarh, Panna, Simlipal and Kalakad Mundanthurai Tiger Reserves, the final notification has not been issued even as of March 2006 though these reserves were created during 1973-95. In the case of Tiger Reserves at Bandipur, Corbett and Namdapha, notification for inclusion of additional areas in the Tiger Reserves were not issued. Similarly, in the case of the Tiger Reserves at Manas, Indravati, Ranthambore, Sariska and Buxa boundary demarcation was not completed. This depicts lack of commitment and seriousness of the concerned State Governments while denying legal backing to the boundaries of the reserves.

6.1.3 Creation of new Tiger Reserves

Though the Government approved the proposal for creation of six new Tiger Reserves in the IX Plan, only four were created. Similarly, though PTD proposed to create eight new Tiger Reserves in the X Plan, none was created till March 2006. PTD stated in March 2006 that the proposals were not dropped but only kept in abeyance and would be processed further after creation of National Tiger Conservation Authority. The time lost in the creation of the Tiger Reserves has to be viewed against PTD's own contention that one of the considerations for the creation of new Tiger Reserves was to reduce the disturbance to the tigers. Besides, the report of the Working Group on Wildlife Sector for the X Plan of MoEF had also emphasised the need to bring more areas under Project Tiger.

6.2 Relocation of families residing in the Tiger Reserves

One of the main thrusts of Project Tiger is protection and mitigation of negative human impacts for comprehensive revival of natural ecosystems in the Tiger Reserves and to create favourable atmosphere to increase the tiger population. Hence, to a great extent, the success of the Project Tiger depends on the relocation of persons living in the core and the buffer areas of the Tiger Reserves.

6.2.1 Absence of a road map for the relocation of families

The records in PTD indicated existence of 1487 villages with 64,951 families in the core and buffer areas in 26 out of the 28 Tiger Reserves as of July 2005. The distribution of villages and families in the Tiger Reserves since their creation is indicated in *Annexure-4*, which reflects the increasing encroachment of the Tiger Reserves and the ineffectiveness of the efforts to keep them encroachment free by moving out the families.

Out of the families residing in the Tiger Reserves 17,650 families were in the core area and the remaining 47,301 families were in the buffer zone. The current cost of relocation of a family is Rs 1 lakh which has been suggested to be enhanced to Rs 2.5 lakh by experts, appointed by the Government. At current rates, the cost of relocation of all the families living in the Tiger Reserves works out to Rs 649.51 crore which will increase to Rs 1623.78 crore if the enhanced rates are implemented. When the payment for land is also considered, the total cost of relocation would be Rs 11041.68 crore as shown in the table below:

(Rupees in crore)

Cost of relocation	Core Area	Buffer Zone	Overall Tiger Reserve
	No. of villages : 273 No. of families: 17650 Population: 101077	No. of villages : 1,214 No. of families: 47,301 Population: 279458	No. of villages : 1,487 No. of families: 64,951 Population: 380535
1. Estimated cost at the current rate of Rs 1 lakh per family	176.50	473.01	649.51
2. Estimated cost at the enhanced rate of Rs 2.5 lakh per family	441.25	1,182.53	1,623.78
3. For payment for land @ Rs 5.8 lakh per hectare and 2.5 hectare per family	2,559.25	6858.65	9,417.90
Total cost assuming enhanced cost (2+3)	3,000.50	8041.18	11,041.68

As against this huge fund requirement, a meagre allocation of Rs 10.50 crore was provided for the relocation of families under Beneficiary Oriented Tribal Development scheme in the X Plan. The amount provided could at best relocate 1050 families (at current rates) which is approximately 5 per cent of the families residing in the core areas of the Tiger Reserves. Thus the fund allocation was wholly disproportionate to the magnitude of the problem.

While accepting the above facts, PTD stated in March 2006 that even though the Wildlife Protection Act, 1972 gave the mandate for settlement of rights of affected people, many States have not accomplished the task due to problems associated with displacement including the resentment of local people. PTD further stated that MoEF has directed the WHI in December 2005 to assess the inviolate spaces required in all the Protected Areas in the country including Tiger Reserves after standardising the norms within a time frame of five years. The financial requirement for relocation would be included in the XI plan. The reply indicates absence of a road map or firm commitment for the relocation of villages/families living even in the core area of the Tiger Reserves, after 34 years of implementation of the project.

6.2.2 Lapses in the relocation strategies pursued by the States

Shortcomings were noticed in the relocation efforts of the States. MoEF released Rs 21.89 lakh in 1989-90 for the relocation of families at Bandhavgarh Tiger Reserve. The entire fund was kept in civil deposits and not utilised for the stated purpose. In Maharashtra, Rs 4 crore released by MoEF in 2002-03 for the relocation of families from Tadoba-Andhari Tiger Reserve remained unutilized. Relocation from Kalakad Tiger Reserve was not taken up by the Tamil Nadu Government despite payment of Rs 55 lakh in March 1992 to the Collector and allotment of alternative site in 2004. Similarly, out of Rs 1 crore released by MoEF in March 2003 for the relocation of families from Corbett Tiger Reserve, Uttranchal Government kept Rs 95 lakh under forest deposit while rehabilitation programme were included in the APOs of Corbett Tiger Reserve during 2000-05. In the Simlipal Tiger Reserve, relocation of the families had not succeeded, as the alternate site offered was not suitable for irrigation. Similarly, it was observed that in the Dudhwa Tiger Reserve, villagers filed a petition against relocation, as Court's order for financial help to villagers for construction of houses was not implemented. These cases indicated lack of concern by the State Governments in relocation of the villagers from the Tiger Reserves.

6.3 Encroachment of Protected Area

As per Section 27 of the Wildlife Protection Act 1972, no person other than that specified in the Section shall enter or reside in a Sanctuary or a National Park except and in accordance with the conditions of a permit granted under Section 28 of the Act. Section 34 A ibid vested powers in an officer not below the rank of Assistant Conservator of Forests to evict any person who occupies Government land in contravention of the provisions of the Act from the National Park. Such Officer was also delegated powers to remove unauthorized structures, buildings or constructions erected on any Government land and tools and effects belonging to encroachers shall be confiscated. Test check in audit revealed that encroachments were widespread in several Tiger Reserves affecting the quality of conservation adversely. Land pertaining to Tiger Reserves were encroached upon either by communities or by private companies and the States had not been able to remove the encroachments with the result that Protected Areas were subjected to increasing biotic pressures. The problems of encroachments observed in some Tiger Reserves were as below:

Name of States and magnitude of encroachment

1. Nagarjunsagar, Andhra Pradesh

The area under encroachment at Nagarjunsagar Tiger Reserve was 13,793.81 hectares in 2003. It was identified that 3220 encroachers existed in 23 *per cent* of the encroached area. In the remaining 77 *per cent* of the encroached land, the Forest Department did not identify the number of encroachers even as of April 2006. As per the Management Plan of 1990-2005, certain tribes had migrated from Maharashtra where they were not accorded Scheduled Tribe status. They had encroached upon 3500 acres (1416 hectares) of forest land raising commercial crops like cotton and subsistence crops like Sorghum, Jowar, etc. They used high concentrated pesticides to protect the crops from pests which were polluting the Eco-System. In 1995, the MoEF had acknowledged that some outsiders had settled in the villages in the core area. The fact that the original inhabitants were willing to move but the new settlers were not seen as a dangerous trend by the MoEF. It was emphasized that steps should be taken by the State Government to restrict any new settlement inside the Tiger Reserve and relocate the existing ones.

2. Namdapha, Arunachal Pradesh

462 persons encroached upon 131 hectares of land in the unexplored core zone of Namdapha Tiger Reserve and were living there since 1995. The Forest Department in consultation with civil administration served notices on the encroachers for vacating the forest land between February and May 2003. The matter was frequently discussed by arranging meetings with superior officers of the Central and State Governments and the State Board of Wild Life. But these evoked no results even as of March 2006.

3. Manas, Assam

1600 hectares of land in Kahitema Reserve Forest under Panbari range was encroached by about 905 Bodo families with 4500 population in 1991. Though evicted three times (1994, 1995, and 2002) these encroachers have re-encroached the same area. The last eviction operation was carried out in 2002 in compliance of order of Hon'ble Supreme Court. However the settlers had re-encroached the area.

4. Valmiki, Bihar

Encroachment register was not being maintained though encroachment cases had been registered. Scrutiny disclosed that out of 186 hectares encroached land, 67 hectares was restored and encroachment cases for 50 hectares were pending and no action was found on record to restore the rest 69 hectares of encroached land. Apart from that, 5380 acres (2152 hectares) of land, which was in dispute with Government of Nepal, was under encroachment since 1988.

5. Bhadra and Bandipur, Karnataka

In Bhadra and Bandipur Tiger Reserves, there was encroachment to the extent of 52.04 hectares of the notified area even as of March 2006.

6. Melghat and Tadoba-Andhari, Maharashtra

In Tadoba-Andhari Tiger Reserve, 199.45 hectares of land scattered in 9 villages within the Tiger Reserve was under possession of SCs/STs/Tribals. Government of Maharashtra directed that the land encroached by SCs/STs/Tribals should not be evicted and a move to regularize these encroachments could be made in near future. In Melghat Tiger Reserve, 1141.258 hectares of land had been encroached by villagers. However, records of the Reserve indicated that only 875.299 hectares area was under encroachment. When this

Name of States and magnitude of encroachment

discrepancy was pointed out, it was stated that 266.59 hectares area was under encroachment by tribals and as per the orders of the Government, these encroachments were to be regularised and therefore, it was not reported.

7. Sariska and Ranthambore, Rajasthan

Out of 257 cases of encroachment registered during 2003-05, 195 were decided by imposing nominal penalties by the Divisional Conservator of Forest (DCF), Ranthambore (Buffer), Karauli leaving 62 cases (involving 677 bigha forest land) unsettled. Out of 86 cases of encroachments of 231.24 ha land registered during 2000-2005 by the DCF, Ranthambore (Core), Sawai Madhopur, only 3 were decided, indicating slow progress. 14 cases of unauthorised construction of pucca structures (houses, boundary walls and fencing etc.) were noticed even in the core area of Ranthambore Tiger Reserve despite deployment of regular patrolling forest staff. This indicated poor control mechanism of the protection management staff of the Tiger Reserve. Likewise 219 cases of encroachment covering 263.734 hectare and 1080 sq. ft. residential land were pending since 1994 in the Sariska Tiger Reserve. The DCF, Ranthambore Tiger Reserve (Core) stated in January 2006 that out of the 231.24 ha land encroached during 2000-2005, 70 ha land was still under dispute. However, the main constraints for non-disposal/delayed disposal of the cases were not intimated to Audit.

8. Buxa, West Bengal

The Management Plan envisaged thorough survey for identification of encroachment in the Buxa area. However, no such survey was undertaken as of January 2006. Scrutiny revealed that 335 hectare of forest land had been under encroachment. 101.86 hectare land was, however, recovered during 2003-04. Thus, 233.14 hectare of forest land still remained under encroachment. Action taken by Buxa authorities to recover the balance encroached land was not on record.

Encroachment in reserve areas intensified the biotic pressure on them and undermined tiger conservation efforts.

6.4 Biotic pressure owing to activities of other departments

In addition to encroachment, audit observed that owing to the undesirable activities of Electricity Boards, Tourism, Irrigation Departments etc., there was heavy biotic pressure on Nagarjunsagar, Periyar, Ranthambore, Sariska, Corbett, Panna and Kalakad Tiger Reserves. Besides, Nagarjunsagar, Valmiki, Melghat, Bhadra and Periyar Tiger Reserves were also facing biotic pressure due to permitted activities such as highway and roads and places of worships. The nature and extent of the biotic pressure in these reserves is indicated in *Annexure-5*.

6.5 Tourism in reserve areas

Tourist facilities and places of worship often exist within the Tiger Reserves. Tadoba-Andhari has tourist facilities within its core area. The Management Plan (1997-2007) of the Tiger Reserve emphasized the need for the relocation of the tourist facilities to reduce the traffic on roads passing through the core

zone. However, APO of the Tiger Reserve for 2001-05 did not list any such activity. PTD stated in March 2006 that no time frame can be fixed for the completion of this activity as day to day management of Tiger Reserves rest with the States and necessary action has been initiated to provide statutory authority to PTD to regulate tourism activities through an amendment to the Wildlife Protection Act, 1972. Inordinate delay in the relocation of tourist facilities from the Tiger Reserve indicated low concern of the PTD and the State to reduce the human disturbance even in the core areas. In addition, the Srisailam temple at Nagarjunsagar Tiger Reserve, three places of worship at Panna Tiger Reserve and coffee and tea plantations at Kalakad Mundanthurai (*Annexure-5*) in the core areas of the Tiger Reserve, continue to exert biotic pressure on these reserves. While studying the extinction of tigers from Sariska Tiger Reserve, a four member committee headed by a former Principal Chief Conservator of Forest, Madhya Pradesh had highlighted rush of tourists and devotees round the year to temples, specially Pandapal temple located within the reserve. Besides, highways pass through the Sariska Tiger Reserve making it prone to poaching and disturbances.

6.5.1 Delay in the preparation of eco-tourism norms

The National Wildlife Action Plan (NWAP) emphasized the need to develop national guidelines on eco-tourism within Protected Areas on a priority basis by the end of 2004. The guidelines would address the need for development of tourism management plan for each Protected Area and conducting surveys for accommodation and tourist facility within the Tiger Reserves. The need for relocation of tourist facilities outside the Tiger Reserves, development of stringent standards of waste disposal, energy and water consumption as well as construction plan and material used for construction could also be addressed. However, the guidelines were not completed as of March 2006. PTD stated in March 2006 that MoEF is in the process of evolving a set of holistic guidelines for eco-tourism, which will address all the aspects mentioned in the National Wildlife Action Plan. The delay in developing the guidelines would have an adverse impact on conservation and eco-development efforts in the reserves.

6.5.2 Compliance with PTD guidelines on tourism

PTD issued guidelines to regulate tourism in reserve areas in April 2003. The guidelines highlighted the need for fixing a ceiling on the number of visitors entering at any time in any given part of the Tiger Reserve. It prescribed the method for working out tourist carrying capacity and emphasised the need to keep minimum distance between the vehicles (500 meters) as well as between

the tourist vehicles and the wild animals (30 meters) etc. Since the Tiger Reserves are eco-typical repositories of vulnerable gene pool, the guidelines also reiterated the need to ensure that no compromise or trade-off in wildlife interests was made. However, there was no system in PTD to ensure that the States complied with PTD directives in this regard.

The PTD guidelines underline the importance of separate tourism management policy and assessment of tourist carrying capacity of the reserves. Audit revealed that in many Tiger Reserves such as Nagarjunsagar, Palamau, Periyar, Pench (Madhya Pradesh), Panna and Bandhavgarh there was neither a separate tourism management policy nor did these Tiger Reserves assess the tourist carrying capacity of the reserve. Tiger Reserves at Namdapha, Manas, Valmiki, Melghat, Tadoba-Andhari, Pench (Maharashtra) and Ranthambore also did not have separate tourism management policy. Simlipal, Sariska and Kalakad Mundanthurai Tiger Reserves had not worked out the tourist carrying capacity.

It was seen that even as of March 2006, PTD had not identified the Tiger Reserves where there was heavy tourist traffic creating management problems for Tiger Reserves. PTD contended in March 2006 that the State Chief Wildlife Warden is the statutory authority under the Wildlife Protection Act 1972 for regulating tourism in Protected Areas including Tiger Reserves. PTD admitted that in the States like Rajasthan, tourism in the Tiger Reserves was managed by the State Tourism Department instead of the Forest Department.

In the absence of adequate monitoring by PTD, the guidelines failed to make a dent in controlling eco-tourism.

6.5.3 Creation of development funds from tourism receipts

The Wildlife Conservation Strategy 2002 of MoEF envisaged that the revenue earned from tourism should be used entirely to augment available resources for conservation. For this purpose, a development fund would be created out of the revenue proceeds. However, a test check in audit revealed that in respect of the following Tiger Reserves though the revenue receipts during 2000-05 were considerable, no development fund was created :

(Rupees in lakh)

Sl. No.	Name of Tiger Reserve	Revenue receipts realized during 2000-05	Remarks
1.	Simlipal, Orissa	49.03	Revenue realized from tourism was deposited into Government Account and no development fund was created.

Sl. No.	Name of Tiger Reserve	Revenue receipts realized during 2000-05	Remarks
2	Corbett, Uttaranchal	608.78	No development fund created from the revenue realized from tourism. State Government had provided Rs 15.60 lakh in 2004-05 which was only 11% of revenue generated in 2003-04.
3.	Buxa, West Bengal	587.00	Though revenue earned which included tourism receipts was Rs 5.87 crore upto 2005, no development fund has been created.
4	Sariska, Rajasthan	133.14	An amount of Rs 1.33 crore has been realized from the tourists towards eco-development surcharge but no separate fund was created for the same. Instead, the amount was credited to the State Government Account defeating the very purpose of levying surcharge for development of Protected Areas.

Recommendations :

- Efforts may be made to augment the forest cover of the existing reserves; the proposal to create eight new Tiger Reserves should be revived. The boundaries of the existing reserves should be notified.
- Simultaneously, the Government should make a firm commitment to relocate the local families/villages from the core and buffer areas of the Tiger Reserves and draw a comprehensive resettlement plan to this effect, adequately supported by a credible financial package. Stringent steps need to be taken to evict the encroachers.
- The Government should frame a comprehensive tourism management policy for the Tiger Reserves clearly spelling out the roles of the PTD and the State authorities as implementers. Tourism should be regulated such that human impact on conservation efforts of ecologically sensitive areas is minimised.

7. Conservation of tigers in the Tiger Reserves

Conservation efforts include efforts at habitat restoration and improvement works. This involves water management, grasslands development, weeding out lantana, soil conservation works, habitat manipulation, management of wetlands and unique habitats, etc. Audit observed that some of the action plans envisaged in National Wildlife Action Plan oriented for corrective measures to improve the consolidation, protection and habitat restoration in the Tiger

Reserves lagged behind the identified milestones as discussed in the succeeding paras.

7.1 Management of water holes in Tiger Reserves

Site-specific plan for water utilization by wildlife and water gap need to be worked out for implementing development of water holes in Protected Areas. A test check in audit revealed cases of pollution/contamination of water bodies, non-completion of targeted waterworks, and inadequacy of funds for water works. A few cases of such deficiencies are depicted below.

Name of Reserves and Deficiencies observed

1. Bandipur, Karnataka

Out of 201 Water Bodies in Bandipur Tiger Reserve, desilting works had been taken up only in 57 (28 per cent) water bodies during the period 2000-2005 due to paucity of funds. Hence, availability of water to wildlife especially in dry seasons could not be ensured. The Divisional Officer, Bandipur replied that the existing water bodies could not be desilted periodically due to insufficient budget for this activity.

2. Nagarjunsagar, Andhra Pradesh

Uranium mining, tendu leaf collectors camping near the water holes created stress/contamination to the water holes affecting availability of water to the wildlife.

3. Indravati, Chattisgarh

Against financial sanction of Rs 60.90 lakh, Rs 31.48 lakh was spent on water development works. Construction of tank, stop dam, saucer and hand pumps, earthen dams, water holes, puddle dams, ponds and repairing of old tanks were not carried out upto targeted numbers resulting in savings of Rs 29.42 lakh (48.30 per cent).

4. Pench, Kanha, Bandhavgarh and Panna, Madhya Pradesh

Government of India did not provide 69 per cent of the estimated amount for developing water sources in Panna Tiger Reserve. Even against the sanctioned amount, Panna, Pench, Bandhavgarh and Kanha Tiger Reserves registered savings of 1 per cent, 5 per cent, 24 per cent and 47 per cent respectively during 2000-05. The Tiger Reserves did not plan for species specific water management plan. The Tiger Reserves, except Kanha, did not close water sources periodically to facilitate rotational grazing and even spatial dispersal of wild animals.

5. Tadoba-Andhari, Maharashtra

Water development works was given low priority as seen from the APO of 2004-05 wherein out of the demanded funds of Rs 13 lakh only Rs 3 lakh was sanctioned.

6. Buxa, West Bengal

The aspect of sustained availability of water during the lean and dry seasons remained substantially neglected thereby endangering wildlife conservation.

7. Manas, Assam

There are 25 rivers and streams inside Manas Tiger Reserve located at an average distance of 5 km and there is no water problem during the monsoon/rainy seasons. During winter and summer seasons, almost all of these rivers and streams dry up causing water problems inside Manas Tiger Reserve and the problem is solved by digging water holes as per necessity. This showed that no specific water management plan was drawn to solve the water problem during dry seasons.

7.2 *Herbivores estimation and Grassland Management*

Grasslands in reserves are essential for sustaining the prey population of the predators, notably tigers. Herbivores in Tiger Reserves contribute more than 70 per cent of tiger diet and are an important determinant for presence of tiger. The guidelines of MoEF (June 2001) also provides for estimation of herbivores annually. The estimation of prey base was not carried out at Bhadra and Simlipal Tiger Reserves during 2000-05 and was done only once in Valmiki and Periyar Tiger Reserves. In Palamau Tiger Reserve, though estimation was done every year, the prey predator ratio had not been assessed. The population of prey species was estimated over a limited area and the population for the entire area was arrived at proportionately in Kalakad Tiger Reserve.

Test check in audit revealed lack of adequate planning and paucity of necessary funds for the proper maintenance of grasslands in Tiger Reserves which adversely affected the food availability for the herbivores. A few cases are cited below.

Tiger Reserves and Remarks

1. Bandipur and Bhadra, Karnataka

The Management Plans of Tiger Reserves at Bandipur and Bhadra for 2000-05 did not set forth any action plan for grassland management and development to ensure adequate fodder availability for herbivores. In the absence of estimation of prey species such as deer, sambhar, wild boars, etc. since 1996-97 and 2000-01 at Bandipur and Bhadra Wildlife Sanctuaries respectively, the Forest Department could not assess the need for grassland development. In fact, there were no grasslands in the reserves to provide fodder to herbivores. The Management Plans also did not focus on this issue.

2. Bandhavgarh, Panna, Pench and Kanha Tiger Reserves, Madhya Pradesh

The Kanha Tiger Reserve had 7 per cent of the area as grasslands which was to be increased to 15 per cent. On a comparison of the availability of grasslands during 2000-05, it was seen that except in Bandhavgarh Tiger Reserve, three other Tiger Reserves witnessed a decline ranging between 0.001 and 0.05 km² land availability per herbivore. The decline in availability of grassland was due to increase in the number of livestock in these Tiger Reserves. The livestock population severely causes fodder shortage in the Tiger Reserve which needs to be tackled while planning for grassland and meadows development in the reserves.

7.3 *Removal of lantana and other weeds*

The weeds like lantana, parthenium and eupatorium affect the natural regeneration of forest and grassland as they grow fast, and invade large forest areas. Presence of exotic vegetation deprives the prey base of fodder and needs to be eradicated to restore indigenous vegetation. Test check of records revealed that adequate efforts were not made for removal of lantana and other weeds in many Tiger Reserves.

Name of Tiger Reserve

1. Kalakad Mundanthurai, Tamil Nadu

Against Rs 26 lakh sanctioned by the Central Govt. during 2000-05, the Tiger Reserve spent only Rs 0.36 lakh during 2000-01.

2. Bandipur, Karnataka

Tiger Reserves at Bhadra and Bandipur neither assessed the area affected by lantana nor initiated any action for its removal.

3. Dudhwa including Katarniaghat extension, Uttar Pradesh

Dudhwa Tiger Reserve identified 1309.93 hectare for removal of lantana/weeds during 2002-05 but allotted only 158.59 hectare area to UP Forest Corporation for its removal. The area was yet to be cleared (March 2006) as the work was stopped in compliance with the instructions issued by the Central Empowered Committee in July 2004 in the light of an order passed by the Hon'ble Supreme Court of India.

4. Kanha, Pench, Panna and Bandhavgarh, Madhya Pradesh

The Tiger Reserves in Madhya Pradesh did not conduct detailed survey during 2000-05 to assess the total area affected by weeds. Pench Tiger Reserve identified 2110 hectares of weed affected area but did not demand funds for weed eradication during 2001-03. In Panna Tiger Reserve the identified area of 1400 hectares (2002-05) remained untreated as the reserve authorities undertook weed eradication in 472.50 hectares in un-identified areas.

7.4 Preventing destruction of natural forests

7.4.1 Illegal trading in timber

In order to prevent destruction of natural forest which would affect the ecology, the Honorable Supreme Court of India banned felling of trees. Government of Tamil Nadu in August 1997 issued an order stipulating that all existing and new saw mills should be registered with the respective District Forest Officer concerned giving full details of ownership, capacity, source of timber supply etc., to identify purchase of illicit timbers owned by them. However, 21 saw mills situated around Kalakad Tiger Reserve were not registered with the Deputy Director/ Project Tiger, Ambasamudram. Incidentally, 390 cases of illegal felling of trees were noticed during 2000-05.

7.4.2 Unauthorised commercial activities

38 saw mills and plywood factories existed within a radius of 20 km before launch of the Project Tiger in Buxa Tiger Reserve. Only 11 saw mills/plywood factories had valid license renewed upto 2005-06. As per the West Bengal Forest Produce Transit Rule 1959, all forest produce entering or leaving saw mills shall be covered by a transit pass issued by the Forest Authority. The Act also required the Forest Authorities to make surprise visit to the saw mills frequently and inspect stock of raw and sawn timber in order to verify that stock of raw timber in each mill was legally procured. A return of activities was to be submitted by each mill annually to the Forest Authority. However,

audit scrutiny revealed that neither any inspection was made by the authorities nor the annual returns were obtained from the mills. No steps were taken to stop the unauthorised business by the mills without license.

7.5 *Creation of corridors in Tiger Reserves.*

If a wildlife habitat is small, it will have a small population of top carnivores like tiger. Smaller populations promote inbreeding and therefore remain vulnerable on a long run due to inadequate genetic diversity. National Wildlife Action Plan (NWAP) emphasized the need for identification and restoration of linkages and corridors between wildlife habitats so as to provide gene continuity and prevention of insular wild animal population by 2004. National Wildlife Action Plan also contemplated recovery plans of degraded areas in Tiger Reserves by 2004. PTD stated in March 2006 that a report on the spatial distribution of tigers and status of habitat connecting corridors in Tiger Reserves in the seventeen tiger bearing states was completed using satellite data in collaboration with the WII. Comparative assessment of forest cover in the Tiger Reserves and its outer surround upto 10 km has also been completed through the Forest Survey of India. However, PTD admitted that these two reports were not placed in public domain even in March 2006. Necessary action for restoration would follow the publication of these reports. Further by 2004, all the identified areas around Tiger Reserves and corridors were to be declared as ecologically fragile under the Environment Protection Act, 1986. PTD stated in March 2006 that the identification of the impact zone around each Tiger Reserve for declaring the same as a buffer would gain momentum after creation of National Tiger Conservation Authority. Thus, there has been little progress in identification and restoration of corridors in Tiger Reserves. It may be mentioned that the need for the establishment of a network of corridors was recommended in a review report conducted by the Steering Committee way back in 1985. The delay in the implementation needs to be viewed in this light. Pertinently during 2000-05, out of the 19 cases of tiger mortality reported in Madhya Pradesh, 13 were from the Kanha Tiger Reserve. Though all these deaths were treated as natural, the report on their deaths indicated that most of them died due to fighting among themselves.

7.6 *Eco-development in Tiger Reserves*

Eco-development is an integral part of Tiger Reserve development. Through eco-development activities, the interests of the tiger can be dovetailed with the need of the people sharing habitat with tigers. Two schemes, Beneficiary Oriented Tribal Development Scheme (BOTD) funded by Government of India and India Eco-development Project (IEDP) funded by external sources

were operated for eco-development in the Tiger Reserves. BOTD was merged with Project Tiger in the X Plan. The X plan provision included Rs 22.50 crore for eco-development around Tiger Reserves. IEDP provided US\$ 67 million during 1996-2004 to address eco-development concerns in Tiger Reserves.

7.6.1 Eco- development under Project Tiger

Scrutiny of records relating to eco-development in the Tiger Reserves revealed lack of adequate initiative, shortage of funds in some reserves while funds remained unspent in others, non-achievement of targets, etc. Some cases are mentioned in the table below:

Name of the Reserve/State and remarks

1. Melghat, Maharashtra

In two villages under Melghat Tiger Reserve, providing and erecting Solar Power Operated Water Supply Scheme was completed at the cost of Rs 5 lakh during 2003-04. The systems however, remained inoperative due to reduced flow of water for pumping. Expenditure of Rs 5 lakh incurred thus remained unfruitful.

2. Simlipal, Orissa

Due to non-utilisation of funds released during 2000-02, the required funds were not released by Government of India in subsequent year. Further, the target set was not realistic in view of actual release of fund by the Government. Though there had been target for the construction of community centre and payment of incentives to the staff and villagers of core area for meritorious works but no effort was made either for construction of community centre or payment of incentives to the staff and villagers.

3. Dudhwa, Uttar Pradesh

Against a demand of Rs 2.56 crore submitted during 2000-05, only Rs 80 lakh (31 per cent) was released by the Government of India. The Tiger Reserve did not demand additional funds to take up the left over activities like soil conservation, erection of fences, digging of gamed proof trenches etc. This indicated that either the estimates submitted through the APOs were inflated or the works proposed were not important. None of the Eco Development Committees (EDCs) had created the 'eco- development fund'. The funds received were being spent directly by the EDCs.

4. Valmiki, Bihar

Eco-development activities of the Tiger Reserve were partially carried out and out of Central fund of Rs 72.79 lakh, Rs 35.34 lakh remained unspent at the close of March 2005.

5. Corbett, Uttaranchal

Activities carried out under eco-development component of Project Tiger were lagging behind. Out of Rs 81.20 lakh allocated by Government of India during the period 2001-02 and 2002-03, only Rs 27.25 lakh were utilized. Due to non utilization of funds under eco-development, soil and moisture conservation works could not be completed. As against sanctioned amount of Rs 5 lakh only Rs 1.37 lakh was utilized. Against physical target of 2 lakh plants only 50,000 plants were raised. This resulted in non-raising of sufficient trees on bunds and terrace to check soil erosion. Even eradication of unpalatable weeds such as Lantana over 100 hectares and planting of palatable grass on 100 hectares of agriculture land under habitat improvement was not implemented. Against an allocation of Rs 9.50 lakh, Rs 2.42 lakh only were spent. This affected the programme of habitat improvement.

Name of the Reserve/State and remarks

6. Sunderbans, West Bengal

Sunderbans Tiger Reserve (STR) authorities formed 25 Eco-development Committees (EDCs)/ Forest Protection Committees (FPCs) and 95 Self Help Groups (SHGs) with the beneficiary villagers for implementation of the scheme of augmentation of livelihood opportunities and generation of employment potential through supply of inputs for piggery, goatery, duckery, poultry etc. to the villagers under micro finance movement. SHGs were to function under the control of EDCs/FPCs. The STR authorities did not indicate the target of coverage of house holds in APO for 2003-05. However, as per the Performance Report of STR, an expenditure of Rs 30.53 lakh was incurred during 2003-05 towards 818 households through 86 SHGs under 16 EDCs/FPCs. Therefore, 7730 (8548-818) households included in the target were left out. Further, verification of cheque issue register with cash book revealed that cheques worth Rs 20.87 lakh only were issued on this account to those 16 EDCs/FPCs against Rs 30.53 lakh recorded in the Performance Report and reported to the MoEF. Exhibition of a closing balance of Rs 4.47 lakh under this head in the Performance Report indicated that a sum of Rs 9.66 lakh was irregularly withdrawn and spent. The Forest Department replied in July 2006 that out of total expenditure of Rs 30.53 lakh, Rs 20.87 lakh was directly given as inputs and Rs 9.65 lakh spent through concerned Range Officers towards holding meetings, identification of beneficiaries, supervision, execution and field visits by staff/officers. However, the reply was not supported by Government instructions permitting expenditure by Range Officers for such purposes nor were documents in support of actual expenditure furnished to Audit.

7.6.2 Eco-development under IEDP

IEDP was implemented in five Tiger Reserves at Pench (Madhya Pradesh), Periyar (Kerala), Ranthambore (Rajasthan), Palamau (Jharkhand), Buxa (West Bengal) and at two National Parks at Gir (Gujarat) and Nagarhole (Karnataka). While the Project Tiger Directorate (PTD) was responsible for the overall management of the Project, the responsibility of the field implementation of the project vested with the participating States. The expenditure at the end of the project was only US\$ 61.02 million against the initial projection of US\$ 67 million. The major components of the project, allocation of funds to these components as per the initial estimates after mid-term review and the expenditure at the end of the project were as indicated below:

<i>(US\$ in millions)</i>				
Sl. No.	Project Component	SAR	MTR	EOP
1.	Village eco-development to reduce negative impacts of local people on Protected Areas, reduce negative impacts of Protected Areas on local people, and increase collaboration of local people in conservation efforts (55 per cent of base cost)	36.09	35.00	32.75
2.	Improved Protected Area management, through strengthened capacity to conserve bio diversity and increased opportunity for local participation in Protected Area management activities and decisions (22 per cent of base cost)	15.31	15.00	15.49
3.	Development of more effective and extensive support for Protected Area management and eco-development through (i) environmental education and visitor management and (ii) impact monitoring and research to improve understanding of issues and solutions relevant	5.19	3.00	2.77

Sl. No.	Project Component	SAR	MTR	EOP
	to Protected Area management and interactions between Protected Areas and people (8 per cent of base cost)			
4.	Overall project management, including effective project administration, implementation guidelines, implementation reviews, policy and strategic framework studies, and publicity (4 per cent of basic cost)	5.83	9.50	9.35
5.	Preparation of future biodiversity projects including additional eco-development biodiversity and ex-situ conservation (3 per cent of base cost)	2.58	0.75	0.61
6.	Reimbursement of Project Preparation facility	2.00	0.05	0.05
TOTAL		67.00	63.30	61.02

SAR: Staff Appraisal Report
(initial project cost estimate)

MTR: Mid Term Review

EOP: End of Project

Even though the project identified preparation of future biodiversity projects as one of its major objectives and earmarked US\$ 2.58 million (item no. 5 in the above table), this activity was dropped after spending US\$ 0.61 million (Rs. 2.62 crore approximately) due to slow progress of the project in the beginning by the implementing States. Had activity been continued, it would have helped in developing a pipeline of large-scale biodiversity projects potentially eligible for future consideration by large financiers such as the Global Environmental Facility.

7.6.2.1 Village Eco-development

The major component of the IEDP project constituting 55 per cent of its estimated cost was village eco-development targeted to reduce the negative impacts of local people on Protected Areas and increase collaboration of locals in conservation efforts. This component comprised implementation of participatory micro plans aimed at generating employment potential for the villagers in and around (within a radius of 2 km) the Protected Areas. Micro plans included supply of inputs like livestock for poultry, goatery, piggery, dairy, implements for agriculture, van-rickshaw/rickshaw, and weaving/sewing machine etc. as per local needs for generation of employment opportunities.

Test check in Audit revealed that various activities under this component were not carried out efficiently resulting in avoidable expenditure and non accrual of benefits to the targeted groups. These included avoidable expenditure of Rs 2.03 crore on LPG, poor achievement of self employment generation, extra expenditure of Rs 2.04 crore on purchase of bela stones and extra expenditure

over Rs 1.07 crore on the procurement of various materials as detailed in the table below:

Gir

Avoidable expenditure of Rs 2.03 crore on LPG

Members of Eco-development Committees (EDCs) were to be provided with bio-gas and smokeless chullahs as alternate fuel to reduce the fuel wood collections. Audit observed that the project authorities provided 10279 LPG connections alongwith stoves to 4329 beneficiaries identified under the micro plans. The cost of these LPG connections was Rs 3.53 crore. As a result of issue of 10279 LPG connections, the project authorities incurred an excess expenditure of Rs 2.03 crore due to issue of 5950 LPG connections to un-identified persons. The contention of audit was further supported by the fact that in nine villages, 521 beneficiaries were given LPG connections though not provided in the micro plans. This indicated that the State Government provided LPG connections to other than identified beneficiaries also.

Purchase of belastones¹ costing Rs 4.52 crore

Members of EDCs were to be provided with material for repair and construction work. EDCs around the Park procured 40.67 lakh belastones at a cost of Rs 4.52 crore for house repair and construction of walls to cover 6815 beneficiaries. Audit observed that the purchase of belastones was made through local purchase at a rate higher than the approved rate of the State Government from an unauthorized dealer without following the procedure laid down by the State Forest Department/World Bank. It not only led to an excess expenditure of Rs 2.04 crore but deprived the State Government a royalty of Rs 20.92 lakh and sales taxes amounting to Rs 27.11 lakh as per taxation provisions of the State Government. It further revealed that belastones supplied to the Forest Department was from illegal mining, which is an offence and State Government has to take steps to recover a penalty of Rs 2.79 crore from the supplier.

Self Help Group

Self Help Groups (SHGs) were to be constituted in each village for improvement of socio-economic condition of poor and helpless people, particularly women. Out of 109 villages identified, 69 SHGs were constituted in 48 villages. The SHGs were not constituted in remaining the 61 villages. Thus, the project authorities could not constitute the SHGs in all the 109 villages covered.

Buxa

Energy conservation

Fuel-saving ovens costing Rs 10.16 lakh, supplied to 2257 households were lying idle due to non-utilization by the beneficiaries. Thus, the purpose of providing fuel saving ovens was defeated as households remained dependent on forests for fuel wood. This indicated that the park authorities had not conducted proper survey for assessing the requirement of fuel saving ovens.

Pench

Energy conservation

Park authorities identified 5,100 families for installation of biogas plants during 2000-05. Against this, biogas plants for 1331 families only were installed. Besides, Nutan stoves and LPG for 1186 and 1600 families respectively were provided without assessing availability of LPG gas and kerosene in the remote areas. Thus the Park authorities had not assessed the availability of LPG and kerosene to reduce fuel wood consumption.

Fuel for cooking

The Pench management, with a view to reduce demand of fuel by 50 per cent, had procured 8200 pressure cookers during 2000-05 at a cost of Rs 42.68 lakh. The management had distributed 7165 pressure cookers to the members of EDCs. The details of distribution of remaining 773 pressure cookers costing Rs 3.63 lakh was not available with management. Thus, the objective of reducing fuel demand to 50 per cent was not fully achieved.

¹ White stone like bricks that are utilised for construction works, (1 ton = 35 belastones)

Loan to landless labourers

EDCs provided soft term loan to the tune of Rs 26.03 lakh to 142 beneficiaries who were landless, to carry out small scale business during the period 2000-05. The loans were provided out of the funds created from villagers contribution and was repayable to EDCs in easy monthly instalments. However, Rs 2.01 lakh only was recovered against loan of Rs 26.03 lakh. The non-recovery of Rs 24.02 lakh deprived the EDCs for additional community investment under the project.

Nagarhole**Procurement of material**

The microplan of Nagarhole provided for procurement of pressure cookers of 5-10 litres capacity, LPG stoves and accessories, roofing materials, solar lanterns and sewing machines for distribution to EDC members. The Park authorities procured material worth Rs 4.76 crore locally during 1998-2002 without calling for tender enquiries. The purchases were also split to avoid approval of competent authorities. Audit pointed out the irregularity in 2001, and subsequently, the procurement was made as per the procedure of the Forest Department/ World Bank for the same material. On comparison, the rates paid earlier for the same material were higher than the rates for subsequent supply. The excess expenditure worked out to Rs 1.07 crore which was mainly on account of violation of purchase procedure. The distribution of the procured material to EDCs members was also not verified. The EDCs were not subjected to audit by competent authorities even after six years of their formation.

Overall shortfall in the achievement of objectives and the physical targets of this component is detailed in *Annexure-6*.

7.6.2.2 Deficiencies in the preparation of microplans

A test check in audit revealed deficient planning, shortfall in implementation, lack of monitoring, fraudulent withdrawal and diversion of funds which largely vitiated the eco-development programme in the Buxa Tiger Reserve while unauthorized expenditure of Rs 2.67 crore at Pench Tiger Reserve was noticed as indicated in the table below:

Buxa

The Management Plan identified 61 micro plans to benefit 9494 households in core and fringe areas without indicating the financial implication. However, park authorities prepared 58 microplans for 8891 households by engaging seven NGOs. PCCF approved the financial outlay of Rs 10.95 crore proposed for the activities under microplans. Audit observed that 35 EDCs were formed for implementation of an equal number of microplans covering 3883 households while 23 existing Forest Protection Committees (FPCs) constituted with villagers residing in the fringe area were associated with implementation of the remaining 23 microplans to benefit 5008 households. The following deficiencies were noticed.

- (i) 603 households though covered in both the Management Plan and APOs were left out during formulation of micro plans.
- (ii) Buxa authorities through their report of December 2005 brought out that inputs valued at Rs 2.82 crore supplied to 2256 households during 2000-05 did not physically exist with the result that the households could not sustain the benefits of microplans. The expenditure of Rs 2.82 crore was thus rendered unproductive.

Pench

Activities involving Rs 71.54 lakh were not undertaken in 34 EDCs though included in the microplans of 2000-01. These EDCs spent Rs 44.69 lakh during the same period on activities which were not included in the microplans. Subsequently, these EDCs also spent Rs 2.22 crore without preparing microplans during 2001-05. Thus, the purpose of preparing the microplans was defeated.

7.6.2.3 Population pressure not addressed in microplans

Further it was seen that population pressure was not adequately addressed in IEDP in the village eco-development component. The indicative plan of IEDP prepared by the Indian Institute of Public Administration in April 1994 identified a total population pressure of 15.95 lakh people for the seven selected Protected Areas. The population pressure criteria fixed for the project however restricted the impact zone to 2 km of radial distance from the Protected Area boundary instead of covering the entire impact zone ranging between 5 km and 10 km. The total population pressure in the seven Protected Areas and the beneficiaries of the project are depicted in *Annexure-7*. The IEDP benefited only 4.27 lakh people i.e., 27 per cent of the total population pressure. This left 73 per cent of 'population pressure' of the fringe area unattended. While accepting the observations, PTD stated in May 2006 that there is a need for delineating a proper impact zone around Protected Areas instead of an arbitrary radial zone of 2 km for eco-development, so that all stakeholders in the surrounding villages are addressed to ensure the desired support for biodiversity conservation. PTD also stated that the States have been directed to identify this zone around Tiger Reserves for fostering the co-existence agenda as recommended by the Tiger Task Force of 2005.

7.6.2.4 Village Eco-development Fund

The IEDP guidelines stipulated creation of a village development fund through collection of 25 per cent contribution from the beneficiary. Fifty per cent of the funds so created was to be deposited under fixed deposit schemes and remaining 50 per cent was to be utilised by the village eco-development committees. Short realization, failure to deposit collections into the funds, adhoc utilization of the funds, fraudulent withdrawals, etc. were noticed as detailed in *Annexure-8*.

7.6.2.5 Improved Protected Area management

The component "Improved Protected Area Management" under the IEDP project contemplated augmentation of staff quarters, road improvements, drinking water facilities, construction of fire/wireless watch towers, transportation, holding workshops and study tours etc. However, a test check

in audit revealed that there were considerable gaps between the achievements as against the identified targets in the components under "Improved Protected Area Management" as detailed in *Annexure-6*. Illustrative cases of shortfall in achievement in respect of various activities are indicated below :

Activities	Status
Workshop	Palamau, Pench, Periyar and Ranthambore did not hold any workshops as well as study tours under "Improved Protected Area Management".
Fire and Wireless towers	Construction of fire towers fell short by 80 per cent in Gir and no fire towers were built at Nagarhole, Periyar and Ranthambore. Construction of wireless towers at Nagarhole fell short by 45 per cent.
Field equipment	No Field Equipment was procured in Palamau, Pench and Periyar Tiger Reserves.
Survey and Demarcation	Survey and Demarcation targets achieved in Gir was 54 per cent whereas no survey and demarcation was done in case of Pench, Periyar and Ranthambore Tiger Reserves.
Road work	The road works were not completed in Buxa, Nagarhole, Palamau, Periyar and Ranthambore Tiger Reserves. These fell short of the targets (improvement of road, access track, bridge path etc.) by 11 per cent, 53 per cent, 29 per cent, 16 per cent and 53 per cent respectively in these Tiger Reserves.

Several irregularities were noticed in the implementation of the improved Protected Area management activity. This included instances of wasteful expenditure, excess expenditure, non-recovery of advances from implementing agencies, etc. as mentioned in the table below:

Pench: Construction of veterinary laboratories, Eco-centre and Hostel Building

Park authorities constructed three buildings for utilization as permanent field veterinary laboratories at a cost of Rs 18.35 lakh during 1998-99 to 2002-03. Lab equipment worth Rs 4 lakh was also purchased. Audit observed that these buildings could not be put to proper use because neither any pathologist/lab assistant was posted nor were any required instruments stocked after 2002-03. Thus, the objective of setting up of the laboratories was not achieved thereby rendering expenditure of Rs 22.35 lakh infructuous. Similarly, the park authorities incurred expenditure of Rs 7.64 lakh and Rs 14.70 lakh towards construction of eco-centre and hostel building during 2002-03 to 2003-04. Audit observed that both these works were incomplete as of July 2006.

Buxa: Non recovery of advance

Park authorities paid an advance of Rs 61.24 lakh to the West Bengal Agro Industries Corporation during 2000-02 for sinking deep tubewells at seven locations including laying of pipelines at two locations. The Corporation, however, sunk four tubewells only at four locations and laid pipeline at one location by April 2001 at a cost of Rs 44.43 lakh, leaving a balance of Rs 16.81 lakh. Park authorities also paid an advance of Rs 21.00 lakh to West Bengal Forest Development Corporation in March 2002 towards construction of three suspension bridges over rivers in the Tiger Reserve. The Corporation could construct only one bridge in July 2002 at a cost of Rs 11.80 lakh. The unspent balance of Rs 26.01 lakh (Rs. 16.81 lakh plus Rs 9.20 lakh) in the above two cases was not refunded to the Buxa

Tiger Reserve authorities as of March 2006. Buxa Tiger Reserve authorities also made no efforts to recover the amount. Thus, an amount of Rs 26.01 lakh remained to be recovered even after four years.

Palamau: Excess expenditure of Rs 31.11 lakh

Park authorities had undertaken soil conservation work for 128 hectares in 2002-03 and for 1074 hectares in 2002-04. The above work was carried out under "Improved Protected Area Management" and the discretionary fund respectively. Audit observed that the contour trenches were made in 1202 ha utilizing 90,150 mandays instead of 41,999 mandays @ Rs 64.61 per manday as per orders issued by Principal Chief Conservator of Forests, Jharkhand in February 2003. The excess deployment of 48,151 mandays had resulted in an excess expenditure of Rs 31.11 lakh due to non adherence of orders of the PCCF.

Gir: Baseline Mapping

The Staff Appraisal Report provided for baseline mapping of each of the Protected Areas under the IEDP. Project authorities assigned the consultancy work for base line mapping to Space Applications Centre (SAC), Ahmedabad in February 1998 at an estimated cost of Rs 17.25 lakh. The consultancy work was to complete by August 1999. The Forest and Environment Department (FED) rejected the interim report furnished in August 1998 as the maps were incomplete and very sketchy. This led to serious differences of opinion between SAC and FED. FED returned all the 17 maps prepared by SAC and asked SAC in August 2001, not to prepare the final report. Equipment costing Rs 4.70 lakh purchased by SAC were not returned to FED. The Conservator of Forests agreed that in real terms for Gir Protected Area Management the achievement was nil. Thus, the expenditure of Rs 17.25 lakh incurred on baseline mapping was a waste.

7.6.2.6 Impact Monitoring and Research

The project contemplated research to improve understanding of issues and solutions relevant to Protected Area management. However, test check in Audit revealed that there were no significant research activities in the following reserves.

Ranthambore

An amount of Rs 10 lakh was earmarked in APO of the project of 2002-03 for carrying out 10 research activities. However, the Tiger Reserve did not undertake any research activity till the completion of the project i.e. 30 June 2004.

Periyar

The World Bank reduced the provision of Rs 2.76 crore made at SAR stage to Rs 1.86 crore at MTR stage. However an expenditure of Rs 1.14 crore was incurred thereby leaving Rs 72 lakh unutilised against MTR provision.

7.7 Research and Development initiatives in Project Tiger

The report of 1972 on Project Tiger accorded importance to research programmes aimed at devising sound management practices. The basic need conceived was to collect information about inter-relationship between predators, their prey and their habitat. The effect of habitat manipulation and

biotic influence on reproduction, dispersal and population dynamics of the prey animals, and in turn their relationship with the predators were required to be scientifically investigated for each vegetation type and the information derived was to be used to guide the management practices. Further, the scientific staff was required to keep a permanent record of pathological observations. Every case of unnatural death was to be utilized for collection of samples to be used for laboratory investigation of pathogens. PTD stated in March 2006 that the monitoring of changes in flora and fauna through field plots in Tiger Reserves could not be continued for want of regular posts of research officers in Tiger Reserves. PTD further stated that considerable research data have been generated from the Tiger Reserves and the knowledge on tiger has increased manifold since 1973. A test check in audit revealed that while there were no research facilities at Indravati, Palamau, Bandipur, Corbett, Manas, Valmiki and Ranthambore Tiger Reserves, research activities were not carried out in Namdapha, Sunderbans and Sariska Tiger Reserves despite having research facilities, as indicated in *Annexure-9*.

Recommendations :

- Priority should be accorded in the Tiger Reserves for eradication of weeds, availability of grasslands and abundant water resources to ensure sustenance of tiger population.
- The network of corridors for connecting the Tiger Reserves with the Protected Areas and other forest areas should be established without further delay.
- Government should lay down a clear-cut agenda for co-existence by addressing the needs of the people sharing habitat with tigers and at the same time ensuring that eco-sensitive areas are protected from human disturbances, without diluting the conservation efforts.
- PTD should exercise control over eco-development projects, both funded internally and aided by external agencies.

8. Protection of tigers

Data available at Project Tiger Directorate indicate that out of 173 deaths of tigers during 1999-2004, 83 were due to poaching. Out of the remaining, 60 deaths were due to natural causes, 13 due to electrocution, 7 due to poisoning and 10 due to infighting. Thus, loss of tiger life due to poaching, poisoning, and electrocution works out to 103, which accounts for more than 60 per cent of the tiger deaths. The accuracy of the data is doubtful, as an independent

survey had reported 200 tiger deaths during the same period of which 121 were due to poaching. However, both statistics indicate that the tiger deaths due to poaching far outweigh deaths from natural causes. The independent survey further reported that an annual average poaching figure of 22 tigers over a period of 6 years was alarming. These figures indicate failure of PTD and the States to take adequate stringent measures for preservation of tiger. PTD admitted in March 2006 that though it had issued detailed guidelines and instructions in June 2002 to the States for protection of tigers and wild animals, these were not implemented effectively and it was helpless in the enforcement of its own guidelines due to the absence of any statutory empowerment. PTD further stated that this situation is being remedied with the creation of National Tiger Conservation Authority with adequate statutory backing.

8.1 Measures to combat poaching

8.1.1 Absence of measures to combat poaching in States

Several cases of inaction in the face of tiger poaching in the Tiger Reserves over 2000-2005 were noticed in audit. Some symptomatic cases are given in the table below. The cases indicate lack of intelligence networking and monitoring failure at the field level. No special anti-poaching drive or any stringent action except to register the cases in the offence register was taken.

Name of States and Tiger Reserves

1. Sariska, Rajasthan

A test check in audit revealed that out of the 46 cases of poaching registered during 2000-05 in the Sariska Tiger Reserve, 13 were tiger cases. However the poaching cases were registered belatedly after seven to 48 months.

2. Ranthambore, Rajasthan

Special strike force as provided in the management plan of Ranthambore Tiger Reserve were not created. The poaching cases in Ranthambore Tiger Reserve increased from 15 in 2002 to 20 in 2003, 23 in 2004 and 26 in 2005. The increasing trend in the poaching cases indicated lack of effectiveness of the action taken by the reserve authorities to control poaching. Similarly, out of the 133 cases of poaching registered till March 2005 in the Ranthambore Tiger Reserve only 72 cases were disposed of during 2000-05.

3. Dudhwa, UP

Eight cases of poaching of tigers were reported from Dudhwa Tiger Reserve including Katarniaghat during 2000-05. All the cases were pending disposal in Courts as of March 2005.

Name of States and Tiger Reserves
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4. Bandipur, Karnataka

An attempted case of tiger poaching was reported by a tourist in Antharsanthe Range of Nagarhole extension of Bandipur Tiger Reserve to the forest staff where metal traps had been laid by 46 poachers hailing from Madhya Pradesh, the tiger was rescued and rehabilitated in Mysore Zoo. This indicated the inherent weakness in protection measures to control poaching in these Reserves. The death of a tiger in August 2004, aged about 6 to 7 years was treated as natural death at Bandipur Tiger Reserve. The post mortem report revealed evidence of injury and absence of nails, which indicated that it was a case of poaching. However, the Department did not investigate this.

8.1.2 Absence of Communication Network

Communication is the key to protection from fires, poaching, timber felling, grazing, encroachments and other illegal activities. As many as 9 Tiger Reserves, namely - Manas, Valmiki, Indravati, Melghat, Pench (Maharashtra), Tadoba-Andhari, Periyar, Sariska and Ranthambore Tiger Reserves were not equipped with adequate means of communication to counter illegal activities.

In **Manas Tiger Reserve**, 4 ranges, 14 beats and 2 check posts were functioning without wireless network. In Manas the percentage of damaged wireless sets was 78.26. Manas Tiger Reserve procured 87 wireless sets during 2000-01 of which 50 wireless sets became non-functional in 2002-03 and 22 sets were damaged in 2003-04. Thus, 72 sets became unserviceable within 3-4 years of procurement. The Tiger Reserve did not investigate the large scale damages to ascertain the reasons.

In **Valmiki Tiger Reserve** only 11 wireless stations were provided to 20 beats and 5 check posts. Further during 1998-99, Valmiki Tiger Reserve procured 77 wireless handsets for Rs 7.79 lakh to strengthen the communication network. Of these, only 27 sets were distributed among ranges as of March 2006, while the remaining 50 handsets were lying unutilized in the Divisional Office. Valmiki Tiger Reserve also did not utilize Rs 3.20 lakh provided during 2004-05 for procurement of 40 mobile sets.

In **Periyar Tiger Reserve**, out of 19 Entry points and 21 beats, 16 entry points and 3 beats were functioning without wireless sets.

In **Sariska Tiger Reserve**, 33 out of 75 beats were being operated without wireless hand sets.

Indravati Tiger Reserve had no wireless network.

The **Nagarjunsagar Tiger Reserve** could not utilize the available communication/wireless network as per the advice of police authorities due to extremist activities in the area and no persuasive action was taken by the forest authorities as of March 2006.

The State-wise status of wireless systems, stations and handsets lying in damaged and unserviceable condition as on 31 March 2005 was as under :

Name of the Tiger Reserve/ State	Total number of wireless sets/systems available	Wireless sets/systems lying in		Percentage
		damaged condition	unserviceable condition	
Nagarjunsagar, Andhra Pradesh	92	72	72	78.26
Bandhavgarh, Madhya Pradesh	NA	35	35	-
Periyar, Kerala	114	24	-	21.05
Sariska, Rajasthan	192	81	81	42.19
Dudhwa, Uttar Pradesh	234	123	-	52.56
Corbett, Uttaranchal	329	140	-	42.55
TOTAL	961	475	188	49.42

49 per cent of total wireless systems available with the 6 States were lying in damaged condition. Out of 475 damaged wireless systems, 188 were unserviceable as on March 2005.

8.1.3 Arms and ammunition

The forest staff is required to be armed with sophisticated weapons and other equipment to combat poaching and illicit trade effectively. Arms and ammunition were inadequate in 12 Tiger Reserves namely Namdapha, Indravati, Bandipur, Tadoba-Andhari, Melghat, Ranthambore, Sariska, Simlipal, Kanha, Bandhavgarh, Manas and Sunderbans. While arms were insufficient in some reserves, in others discrepancies/shortages in ammunition were noticed. Some specific cases seen in audit are given below.

- In Namdapha, Kanha, Bandhavgarh, Tadoba-Andhari, Melghat, Indravati and Simlipal Tiger Reserves the forest guards were not equipped with adequate arms and ammunition. Indravati Tiger Reserve had only 4 guns to protect the forest area of 2799.086 sq. km.
- Against the requirement of 123 and 191 weapons in Bandipur Tiger Reserve and its Nagarhole extension, only 31 and 21 weapons respectively were available. In Sariska Tiger Reserve, only seven weapons were available against the requirement of 26 weapons. Out of these seven, two weapons were lying in non-functional condition (since August 2002 and September 2003). In Ranthambore Tiger Reserve, out of 22 weapons purchased till 1998, only 9 were being utilized as 7 were non-functional since 1999 and the remaining 6 were not in use.
- In Manas Tiger Reserve, there was a discrepancy/shortage of 37 weapons and 2111 cartridges as per the Register of Arms and Ammunition. The stock record maintained by Sunderbans and Buxa Tiger Reserves depicted discrepancy/shortage of 5 and 83 weapons respectively upto 2004-05. The Tiger Reserve Management did not conduct any investigation of missing weapons in Buxa and Sunderbans Tiger Reserves.
- The authorities in Nagarjunsagar and Palamau Tiger Reserves withdrew the arms and ammunition from field staff due to risk/fear of snatching by extremists/naxals.

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- Two weapons were short out of 33 weapons available in Bandipur Tiger Reserve. In Corbett Tiger Reserve, out of 10 missing weapons, 7 were looted and 3 weapons deposited with Police Station in connection with offence cases.
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Besides availability of arms and ammunition, adequate training for their use is essential. As per the National Wildlife Action Plan (2002-2016), the States should have adequately trained personnel to man all positions right from Park Director down to forest guards. It was noticed that nine Tiger Reserves, namely, Manas, Periyar, Tadoba-Andhari, Pench (Maharashtra), Melghat, Kanha, Pench (Madhya Pradesh), Bandhavgarh and Panna Tiger Reserves did not provide training to their staff on regular/periodic basis. In Manas Tiger Reserve, the training imparted to staff was inadequate as it did not cover the areas of field craft, obstacle crossing and unarmed combat. The weapon training was limited to .315 rifles only. In Periyar Tiger Reserve, the system of pre-service training was not prevalent and only 27 forest guards out of 86 were imparted training during 2000-2005.

8.1.4 Deficiencies in creation of strike forces/intelligence network

The National Wildlife Action Plan (2002-16) emphasised the importance of reorganizing forest staff into viable units and arming them with sophisticated weapons and other equipment; provision of secret funds to assist the State Governments for intelligence gathering in cases of illegal trade and seizure of wildlife species and their products; strengthening the outreach of all enforcement agencies especially police, paramilitary forces, customs, coast guards, intelligence agencies and the like through meetings and training programmes. The Project Directorate had also from time to time issued directives towards protection initiatives in Tiger Reserves which included constitution of squads and special instructions to squads/parties covering several aspects. While funds were not allocated for creation of strike force/intelligence network in some reserves, in others they were not created though funds were available. Besides, wildlife staff in some States was not provided status on par with police required to combat wildlife crime. Cases noticed in audit are given below:

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- Though Rs 51.40 lakh and Rs 91.61 lakh were sanctioned for the creation of strike force at Manas and Simlipal Tiger Reserves respectively, no action was taken by these reserves for creation of strike force. Similarly, in the case of Melghat, Tadoba-Andhari, Pench (Maharashtra), Kanha, Bandhavgarh and Periyar Tiger Reserves, neither were any strike forces created nor any funds allocated for the same.
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- No system of intelligence network was in place in Bandipur, Melghat, Tadoba-Andhari, Kanha, Panna, Bandhavgarh, Sunderbans, Sariska and Ranthambore Tiger Reserves. No provision of 'secret funds' was made in Bandipur, Melghat, Pench, Tadoba-Andhari and Dudhwa Tiger Reserves.
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- Though National Wildlife Action Plan emphasised the need for the delegation of status to the Forestry and Wildlife personnel status at par with police, this status was not delegated to the Forestry and Wildlife personnel by many states viz. Jharkhand, Madhya Pradesh, Uttaranchal etc.
 - Though National Wildlife Action Plan envisaged setting up of Regional Wildlife Forensic Labs by 2003, these were not set up in the States like Jharkhand, Maharashtra, Tamil Nadu, Kerala, Uttaranchal, Bihar and Orissa.
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8.1.5 Non implementation of measures to combat wildlife crime

Subramanian Committee constituted by MoEF in 1994 and National Wildlife Action Plan suggested various measures to streamline enforcement mechanism to control wildlife crime. These proposals included establishment of Regional Forensic labs even at State level, security of international borders with Nepal, Bhutan, Myanmar and Bangladesh and coastal waters to prevent smuggling of wild life, etc. The committee also recommended setting up of National Wildlife Crime Cell (NWCC) with links to similar units at the State level, a professional set-up for intelligence gathering on wildlife criminals for effective and timely actions on priority basis and effective amelioration of man-animal conflicts. National Wildlife Action Plan envisaged existence of effective systems and practices on these issues by 2003. However, even as of March 2006, many of these proposals were yet to be implemented or were under various stages of implementation.

The Subramanian Committee as well as National Wildlife Action Plan had emphasized the need for setting up special courts for the expeditious disposal of cases of forest offences and cases registered under the Wildlife Protection Act, 1972. However, a test check in audit revealed that some States had not set up such courts resulting in large pendency of cases in these States. These were Maharashtra, Karnataka, Madhya Pradesh, Orissa, Kerala, Uttar Pradesh, Uttaranchal and West Bengal.

PTD stated in March 2006 that the proposal for National Wildlife Crime Control Bureau (NWCCB) is being recast as per the advice of the Union Ministry for Law and Justice. While claiming that it is closely liaising with WII and the States for implementing the actions indicated in National Wildlife Action Plan, PTD admitted that its directives and advisories very often were not honoured by States and the situation is being redressed by the creation of National Tiger Conservation Authority. Inordinate delay in the creation of NWCCB and achievement of other milestones in the National Wildlife Action Plan has affected prevention of wildlife crimes.

8.2 Deficiencies in fire protection in the Tiger Reserves

Forest fire kills valuable fodder species and encourages lantana. Excessive spread of lantana depletes the fodder resources for the herbivores and in turn impacts carnivores like tiger, too. Fires affect habitat quality of reserves for tigers as well as other supporting wildlife. Hence, it is necessary to prevent fires and quickly extinguish fire when they occur in the reserves. Forest fires are controlled through fire lines. Fire line is a pathway created in the forest to surround an area that is burning or is scheduled to be burnt in order to prevent the fire from spreading. Fire towers are erected in forests to observe the endangered area prone to forest fire. MoEF in its guidelines in July 2000 on prevention and control of forest fire stipulated that forest fire protection be a priority item for budget allocation. Audit noticed that many Tiger Reserves were affected by forest fire during 2000-05 due to improper maintenance of fire lines/ towers, inadequate fire lines and non supply of fire fighting equipment as detailed in the *Annexure-10*. Palamau, Bandipur, Kanha, Panna, Melghat, Tadoba-Andhari, Pench (Maharashtra), Simlipal, Periyar, Kalakad Mundanthurai and Buxa Tiger Reserves were some of the worst affected reserves due to fire during 2000-05.

8.3 Inadequate patrolling in Tiger Reserves

8.3.1 Area norms of patrolling camps not adhered to

Patrolling is integral to ensuring protection and conservation of wildlife in the reserves. Responsibility of securing the Protected Areas by and large rests with the forest guards and foresters as their duties include patrolling and watching, camping at chowkis to facilitate patrolling deep inside the forests, carrying out anti-poaching raids and maintaining fire lines. PTD in June 2002 instructed the Chief Wildlife Wardens that an area of 25-30 km² should be brought under the jurisdiction of each patrolling camp and chowki in the Tiger Reserves to ensure desired amount of legwork by beat guard and camp followers posted in such patrolling camps/chowkis. At the national level, 28 Tiger Reserves were covered by 1070 patrolling camps and chowkis, which indicate coverage of about 35 km² under each camp. However, wide divergences in coverage were noticed among the various Tiger Reserves. While in the Tiger Reserves at Panna, Corbett and Kanha, patrolling camp/chowki existed for every 10.04 km², 10.53 km² and 11.31 km² respectively, only one patrolling camp existed in Kalakad Mundanthurai Tiger Reserve for its entire area of 800 km². In Nagarjunsagar, Namdapha, Valmiki and Sunderbans Tiger Reserves the average area under each patrolling camp

and chowki was as large as 713.60 sq km, 397 km², 120 km² and 129.25 km² respectively. The table given below gives the area covered in the Tiger Reserves by the patrolling camps/chowki.

Illustrative cases where the coverage of area by a patrolling camp/chowki is better than the prescribed norm (25-30 sq. km)					Illustrative cases where the coverage of area by a patrolling camp/chowki is poorer than the prescribed norm (25-30 sq. km)				
Sl. No.	Name of Tiger Reserve	Total area (sq. km)	No. of PC ⁺ / Chowkis	Area Covered by each PC /chowkis	Sl. No.	Name of Tiger Reserve	Total area (sq. km)	No. of PC/ Chowkis	Area covered by each PC/chowkis
1.	Corbett	1316	125	10.53	1.	Simlipal	2750	46	59.78
2.	Kanha	1945	172	11.31	2.	Sunderbans	2585	20	129.25
3.	Melghat	1677	90	18.63	3.	Buxa	759	8	94.88
4.	Palamau	1026	65	15.78	4.	Indravati	2799	11	254.45
5.	Pench (Madhya Pradesh)	758	41	18.49	5.	Nagarjunsagar	3568	5	713.60
6.	Panna	542	54	10.04	6.	Namdapha	1985	8	248.13
7.	Bhadra	492	26	18.92	7.	Kalakad Mundanthurai	800	1	800.00
					8.	Valmiki	840	8	105.00
					9.	Tadoba-Andhari	620	14	44.29
					10.	Dampha	500	3	166.67
					11.	Bandipur	1509	31	48.68

8.3.2 Lack of guards at patrolling camps

In case of Corbett, Kanha and Bandipur Tiger Reserves, though there existed 125, 172 and 31 patrolling chowkis, only 106, 148 and 47 forest guards were available. The patrolling camps in Kanha and Pench (Madhya Pradesh) were operated by unskilled labourers. PTD admitted in March 2006 that the protection measures in the Tiger Reserves were adversely affected due to shortage of manpower and the situation has not improved despite addressing the States at various levels. PTD further stated that the National Tiger Conservation Authority would address the issue by providing statutory provision in the Memorandum of Understanding with the project States.

8.3.3 Lack of manpower norms

The quality of protection in a Tiger Reserve will depend upon the quality of its manpower. PTD has not determined norms for the field staff in the Tiger

* Patrolling camp

Reserves except that an area of 25-30 km² should be under the jurisdiction of each patrolling camp and chowki. PTD stated in March 2006 that it is difficult to fix a uniform normative standard for all Tiger Reserves and this has to be worked out by the States on a site specific basis.

8.3.3.1 Forest guards and foresters

The availability of manpower and patrolling camps/ chowkis in the Tiger Reserves as of March 2005 is indicated in *Annexure-11*. On an average while a forest guard covers an area of 14.94 km², a forester covers an area of 53.29 km². Besides, the statistics indicate huge variation in the area covered by the forest guard and the forester in different Tiger Reserves. While Buxa Tiger Reserve had a forest guard for every 3.63 km², Namdapha Tiger Reserve had only one forest guard for every 330.83 km². Similarly, Pench (Maharashtra) Tiger Reserve with an area of only 257 km² and only 14 tigers had 47 forest guards, Sunderbans Tiger Reserve with an area of 2585 km² and 245 tigers had only 39 forest guards. The area covered by a forester in Bandipur, Sunderban, Simlipal, Namdapha, Indravati and Dampa Tiger Reserves were in the range of 110 and 467 km² as against the national average of 53.29 km². Huge vacancies ranging between 43 to 62 per cent existed in the cadre of forest guards and watchers in Sunderbans, Namdapha, Bandipur, Simlipal, Palamau and Indravati reserves while there was surplus staff at Bandhavgarh, and Bori-Satpura Tiger Reserves. At Melghat, Valmiki, Tadoba-Andhari, Manas and Indravati Tiger Reserves, vacancies in foresters cadre were in the range of 38.89 to 53.85 per cent. PTD admitted in March 2006 that the staff situation in Tiger Reserves were below the desired level. It may be emphasised though that the onus rests with PTD to fix the manpower norms of frontline staff in each Tiger Reserve with due consideration to the specific eco-systems/habitats in consultation with the concerned State Governments.

8.3.3.2 Deployment of aged staff in frontline duties in Tiger Reserves

The average age recommended by WII for frontline forest staff is 18-35 years. It was seen that the average age of the forest guards posted in the reserves was 43 years and that of foresters was 47 years (*Annexure-11*). At Palamau, Ranthambore, Simlipal and Pench (Maharashtra) Tiger Reserves, the average age of a forest guard was in the range of 50 to 53 years. The forester's average age was above 50 years in Kanha, Palamau, Ranthambore, Simlipal, Sariska, Indravati, Dudhwa, Pench (Madhya Pradesh), Tadoba-Andhari, Satpura and Bandhavgarh Tiger Reserves. Deployment of aged forest guards and foresters would undermine conservation and protection efforts in the reserves.

8.4 *Structural and organisational weakness at Project Tiger Directorate*

The mandate of PTD included overall control of the project implementation under the guidance of the Steering Committee, scrutiny of Annual Plan of Operations, budgetary sanctions, sanction of major works, review of progress of implementation and evaluation of Project Tiger in co-ordination with the concerned State Government. In addition, co-ordination with international organizations, voluntary bodies and all administrative matters relating to Project Tiger, and implementation of externally aided projects are other important items of work with the Project Directorate.

The Special Task Force for Project Tiger 1972 contemplated the need for creation of 38 posts including a Director, two Deputy Directors, a post of Joint Director, and posts of Naturalists, Research Officers etc. for monitoring and control of the nine Tiger Reserves created initially. However, even after establishment of 28 Tiger Reserves, MoEF restricted the sanctioned strength of PTD at 13 only. PTD was actually functioning with only seven officials including the Director and the Joint Director as of March 2006. The evaluation of Project Tiger (1996) subsequent to recommendations of a Parliamentary Committee found that one of the most serious shortcomings of Project Tiger has been the puny sized PTD at New Delhi. It held that each Tiger Reserve has its own attributes and problems, which need to be dealt with individually and therefore PTD must have a detailed planning wing for preparing management plans for each Tiger Reserve. However even after ten years, MoEF has not taken any action to strengthen PTD. The effect of low staffing at the apex was reflected in non-adherence to guidelines and procedures while creating new Tiger Reserves, lack of monitoring of the MPs and watching compliance to various instructions issued by PTD to the States where the conservation activities suffered most.

Sariska Tiger Reserve presents a typical case of the ineffectiveness of PTD. Though disturbing reports were received way back in 1996, effective steps were not taken by the PTD to remedy the situation. There was no information regarding poaching of tigers in the Reserve at PTD. Though the incidence of tiger sighting by the staff at Sariska had reduced to nil by 2002 in comparison to 17 sightings reported in 1998, the reserve continued to report to the PTD of the existence of 17 to 27 tigers in the Reserve during 1998-2004 as indicated below.

Year	1998	1999	2000	2001	2002	2003	2004
Tiger Sighting by staff	17	6	5	3	0	1	0
Tiger population as per annual estimates	24	26	26	26	27	26	17

While PTD reported decline in poaching incidences during 2003-05 later reports of 2005 by CBI indicated extinction of tigers in Sariska and serious problems in Ranthambore. This raises serious doubts on the integrity of data available at PTD. PTD stated in March 2006 that since the field implementation of Project Tiger was done by the States it could not directly fix accountability on State Government officials. However, PTD admitted in March 2006 that the estimated figures of tiger reported by the Reserves could not be construed as realistic and attributed it to the shortcomings prevalent in the tiger estimation method.

8.5 Prevention of Illegal trade in wildlife

Smuggling of wildlife parts and derivatives in and around Protected Areas presents a low risk lucrative trade opportunity. Smuggling acts as an incentive for poaching. Tiger bone among other items has a great value in international illegal wildlife trade. This calls for special measures for effective control of illegal trade to protect wildlife. The Wildlife Division of MoEF is the nodal agency for coordinating and initiating measures for the prevention of illegal wildlife trade. Four Regional Wildlife Offices headed by Deputy Directors (RDD) at Delhi, Mumbai, Kolkata and Chennai along with 3 sub-regional offices at Guwahati, Amritsar and Cochin operated under the Wildlife Division of MoEF as of March 2006. The Regional Offices assist the State authorities in enforcement of provisions of the Wildlife Protection Act (WPA), 1972. They conduct investigations of the offences detected either by their staff or by the State authorities; assist the customs authorities in checking and identification of species at the time of export to prevent unauthorized trade and visit the National Parks, Sanctuaries and Zoos in the respective jurisdiction to evaluate their functioning. The Regional Offices also assist in implementation of the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

8.5.1 Lack of adequate manpower in the Regional Wildlife Offices

The four Regional Offices functioned with total staff strength of 11 (Northern), 9 (Western), 11(Southern) and 12 (Eastern) as on March 2006. Evidently the staff strength was inadequate for proper discharge of multifarious duties assigned to RDDs. The staff position at the sub-regional offices (SRO) was also critical. RDD, Eastern Region had a Sub Regional Office (SRO) at Guwahati. The SRO started functioning with effect from 08 February 1993 with one Assistant Director, one Wildlife Inspector, and one Technical Assistant. However, the post of Assistant Director was vacant between October 1997 and December 2003 which was subsequently abolished in January 2004. At present the SRO was running only with one Technical

Assistant, one LDC and a driver. During the period 2000-05, SRO, Guwahati detected/booked only two offence cases under the Wildlife Protection Act, 1972. MoEF stated in May 2006 that the need for augmentation of manpower and logistics has been considered and included in the proposed National Wildlife Crime Control Bureau (NWCCB). The reply needs to be viewed against the fact that the 1994 Subramanian Committee on prevention of illegal trade in wildlife and wildlife products had recommended its creation which has been inordinately delayed. Pertinently, considering the inadequate staff position and the increasing incidents of poaching and a spurt in wildlife crimes due to porous borders, the Working Group on Wildlife Sector of MoEF for the X Plan also reported that all the four RDDs needs to be strengthened. It further advocated that a Wildlife Crime Cell at the Centre was to be created for intelligence gathering and coordination with other enforcement agencies.

8.5.2 *Lack of training of staff*

The Committee on Prevention of Illegal Trade in Wildlife and Wildlife Products recommended in August 1994 that field staff, especially the Wildlife Inspectors were to be trained in unarmed combat, tracking, and preservation of the scene of crime as well as handling and forwarding of scientific material evidence to the authorities without damaging them. However, this recommendation was not implemented by RDD, Southern Region, on the ground that the recruitment rules did not prescribe any training and further contended that they would be fine tuned under the guidance of the supervisory officers. MoEF stated in May 2006 that the observation was noted for further examination and corrective action.

8.5.3 *Functioning of RDDs*

8.5.3.1 *Inadequacy of Inspectors*

RDDs handle consignments received at entry or exit points as well as from customs department. The volume of consignments handled by RDDs was very large. RDD, Northern Region handled 17852 consignments, RDD, Southern Region 2763 consignments, RDD, Western Region 21740 consignments and RDD, Eastern Region 8601 consignments over 2000-2005. However, the post of Inspector at RDD Southern Region remained vacant from September 2002 and in the other RDDs there were only one Inspector or two to undertake random check of consignments.

8.5.3.2 Failure to enforce the provisions of the Wildlife Protection Act (WPA), 1972

Section 50 of the WPA, 1972 empowers the RDDs to investigate offence cases detected by them and to book the offenders. Section 51 provides for penalties for offences committed and Section 55 empowers RDDs to lodge complaints in the courts for cognizable offences. A test check in audit revealed that the RDDs had detected 502 offence cases during the period 2000-05 for violation of the Wild Life Protection Act 1972, the Export Import (EXIM) Policy and CITES. These cases were not pursued to any logical conclusion as given below :

RDD	Cases detected	Classification of Cases	Remarks
Eastern Region	328	EXIM/ CITES/ WPA(328)	RDD, Eastern Region failed to file even a single case in the court. Only seven items out of 32 items of seized materials were kept in their custody due to non-availability of storage facilities for seized materials and inadequate staff, as stated by RDD, Eastern Region.
Western Region	148	EXIM/CITES (95), WPA(53)	Only 7 cases pertaining to EXIM were settled while none of the 53 cases of raids was settled. Except 71 offence cases worth US\$ 19353 and Rs 4.39 crores, no other details were made available to Audit. The details of seizures in 484 cases upto 1999-2000 were not on record.
Southern Region	26	WPA(26)	Out of 5 cases pursued by the RDD, four cases were pending finalization. The RDD was not aware of the status of 17 cases handed over to the State Forest Authorities.
Total	502		

MoEF stated in May 2006 that the protection of Wildlife is a subject under the concurrent list and accordingly the protection machinery also exists in each State with the Chief Wildlife Warden as a statutory authority, independently deriving powers from the Wildlife Protection Act. It further stated that the law recognizes only the State Wildlife machinery for taking the cases to their logical conclusion. However due to poor coordination with State Forest Authorities, Customs and courts, most of the cases detected were not pursued.

8.5.3.3 Inadequate coverage of airport, seaport, land border and check posts

The duties and responsibilities of RDDs required them to assist and advise the customs authorities in the checking and identification of flora, fauna and their derivatives to ascertain their exportability/importability. However, a test check

revealed that the mechanism for regular deployment at the points prone to illegal trade in wildlife were very inadequate as depicted below.

RDDs	Remarks
<p>Southern Region</p>	<p>Southern Region had 12 exit points but only two points viz., Chennai and Kochi are monitored by regular inspection. While only one Inspector caters to the needs of 12 Container Freight Stations, 1 Dock, 1 Air Cargo Complex and 2 Foreign Post Offices at Chennai, the lone Assistant Director discharges the functions of Wildlife Inspector at Kochi. One post of Wildlife Inspector which was temporarily transferred in 1978 for a short duration was not restored even after more than 25 years. Other ten exit points remained unmanned. Thus it is imperative that ten exit points not hitherto monitored be manned by adequate staff. Although the need for posting officers at the International Air Port was emphasized in the Steering Committee Meeting of Project Elephant held in the year 2002, these exit points remained unattended. Since 90 <i>per cent</i> of the products of flora and fauna of wild origin are prone to smuggling out of India as indicated in the Report of the Committee on Prevention of Illegal Trade in Wildlife of 1984, the matter of non monitoring of ten exit points needs to be addressed on priority basis.</p>
<p>Western Region</p>	<p>Western Region had 36 customs exit/entry and other checking points. In Mumbai alone, there were 26 exit/entry points. Two Wildlife Inspectors were stationed at different customs exits/entry points in Mumbai to examine the exports/imports cargos. The number of consignments increased steadily from 3741 in 2000-01 to 4953 in 2004-05, but the men-in-position remained static for over 26 years. Moreover, prescribed norms for deployment of manpower was not available on the records of RDD Western Region, Mumbai. In some instances, office staff like UDC, Stenographer, was involved in the raids, though, it was not falling within the purview of their job profile.</p>
<p>Northern Region</p>	<p>Northern Region had 10 customs points under their jurisdiction. Out of these, only one customs point namely IGI, Air Cargo, New Delhi was being regularly attended and the other points were being attended on the basis of sealed samples forwarded by the customs authorities. Scientific methods for selection of consignments were not in place. RDD, Northern Region stated that the officials of their office made random visits to the other nine points as and when required and they were always in touch with customs officer on the other points. The contention of RDD, Northern Region was not tenable as the regular but not intermittent deployment at the remaining nine points would have minimized the scope for violation of the provisions of WPA 1972, CITES and EXIM policy as the export/ import consignments at these points could have remained unchecked due to inadequate coverage.</p>
<p>Eastern Region</p>	<p>Eastern Region's coverage vis-à-vis distribution of exit points within its jurisdiction showed that RDD, Eastern Region visited the airport, seaport</p>

RDDs	Remarks
	<p>and foreign post office at Kolkata on an average of thrice in a week, five days in a week and twice in a month respectively during the period 2000-05. RDD, Eastern Region stated in March 2006 most of the import/export of animal product was done through Kolkata. Therefore, with the availability of only a meagre staff, more importance was given to Kolkata. They had also stated in January, 2006 that the exit points of Kolkata and Guwahati were manned by technical manpower and for other exit points technical expertise was extended on case to case basis when asked for by the concerned customs authority. There was thus no mechanism for regular deployment of manpower at the points, other than Kolkata and Guwahati, prone to illegal trade concerning wildlife.</p>

While accepting the facts MoEF in May 2006 attributed the deficiencies to inadequate manpower and infrastructure and contented that the proposed National Wildlife Crime Control Bureau would address these deficiencies.

Recommendations :

- Efforts should be made to improve communication and intelligence network, for creation of strike force, provision of adequate arms and ammunition. NWCCB should be set up early for overall support in combating wildlife crime.
- Firelines and fire towers should be created and maintained adequately.
- For effective patrolling of the reserves, number of camps/ chowkis and forest guards and foresters in the camps should be augmented. The staff deployed should be physically fit, capable of carrying out patrolling duties and adequately trained.
- Efforts should be made to augment the manpower capacity at PTD to equip it as an effective oversight agency.
- Efforts should be made at augmenting the capacity of the Regional Wildlife offices for effective control of illegal trade in wildlife.
- Vulnerable exit points should invariably be covered by the RDDs. Besides efforts need to be made at improving the co-ordination among the various agencies involved in control of illegal wildlife trade.

9. Monitoring and Evaluation

9.1 Functioning of monitoring committees

9.1.1 Central monitoring

The Steering Committee (SC) is the apex body for guidance as well as overseeing the implementation of Project Tiger. The Steering Committee is required to meet once in six months. During 1997-2006, against the required 18 meetings, Steering Committee met only four times (October 1998, May 2000, January 2003 and April 2005). There was a gap of 32 months between the meetings held in May 2000 and January 2003 respectively. The Steering Committee was also expected to undertake a review of the Project Tiger once in two years. Subsequent to 1987 the project was reviewed only thrice, in 1993, 1996 and 2005. PTD stated in March 2006 that no periodicity has been fixed for the Steering Committee's meeting. It further stated that the Tiger Reserves have been monitored by PTD through experts. However, the Steering Committee itself in its report of 1987 stated that the committee should meet regularly, at least once in six months. Absence of a regular review at the Steering Committee would be detrimental to smooth functioning of the project.

9.1.2 State monitoring

9.1.2.1 State Board for Wildlife

The Wildlife Protection (Amendment) Act 2002, provided that the State Government would create a State Board for Wildlife (SBWL) within six months from the date of commencement of the Act and SBWL would meet twice in a year. The Board was to advise the State Government on matters like management, monitoring, evaluation, and protection of wildlife. While SBWL was not created in Jharkhand and Karnataka, no meetings of SBWL were held in Rajasthan, Tamil Nadu and Uttaranchal. SBWL did not hold regular meetings in Arunachal Pradesh, Assam, Andhra Pradesh, Bihar, Madhya Pradesh, Maharashtra, Orissa and West Bengal. Follow up action on the recommendations were also not taken in Madhya Pradesh and West Bengal.

9.1.2.2 Tiger Conservation cell

According to the affidavit submitted by MOEF to the Hon'ble Supreme Court of India in August 2000, a Tiger Conservation Cell was to be constituted in the States having higher tiger population for monitoring and evaluation of the implementation of the project. The State Governments of Arunachal Pradesh, Assam, Bihar, Jharkhand, Maharashtra and Uttaranchal had not constituted the Tiger Conservation Cell as of June 2006.

9.1.2.3 Monitoring and Evaluation Committee

MoEF had directed the States (September 2001) to form a Monitoring and Evaluation Committee for each Tiger Reserve. The State Governments of Assam, Bihar, Jharkhand, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal had not set up any such committee.

9.2 Census of tigers

9.2.1 Deficiency in annual estimation of tigers

As per guidelines (June 2001) of MOEF, tiger census was to be carried out annually. The guidelines were to be scrupulously followed for estimation of tigers and other prey species in all Tiger Reserves and reported to PTD latest by 30 June of the next year. The status of tiger estimation in the Tiger Reserves depicted in *Annexure-12* reveals that tiger estimation was not done annually in most of the Tiger Reserves. Tiger Reserves that showed a decline in population are given in the table below:

Name of the Tiger Reserve	Population				Decrease (nos.)
	Base year		Later base		
Manas	89	(1997)	65	(2001)	24
Valmiki	56	(2002)	33	(2005)	23
Bandipur	123	(1997-98)	42	(2001-02)	81
Melghat	69	(2002)	67	(2005)	2
Ranthambore	47	(2004)	26	(2005)	21
Sariska	16	(2004)	NIL	(2005)	16
Dudhwa	115	(2002)	106	(2005)	9
Katarniaghat	67	(2002)	58	(2005)	9
Periyar	46	(1991)	32	(2002)	14

Reasons for decrease in number of tigers were neither investigated nor analysed.

9.2.1.1 Methodology of census

The last official national tiger census figures available pertain to 2001-02. The estimation of tiger was done by counting pugmarks which is not considered a fool proof methodology by experts. Other techniques available for tiger census like camera trappings, DNA analysis of scat, mark on the trees by the cat family, number of cubs in a reserve and sighting of tigers and radio telemetry were not used. Experts in the field were not involved in the census exercise. PTD stated in March 2006 that in collaboration with WII it had since refined the methodology for tiger estimation addressing all the concerns and shortcomings and a hand book in this regard has been distributed to States in regional languages and Tiger Reserves have been directed to send monthly reports on presence of tiger evidences in the prescribed formats as a part of routine monitoring. PTD further stated that the intensive monitoring of tigers using radio telemetry has been initiated in the Tiger Reserves at Kanha, Pench (Madhya Pradesh) and Sunderbans. In view of the initiatives it contended that the earlier directive to form core groups had become redundant. However, the status of receipt of the monthly monitoring of tiger evidences for 2005-06 revealed that while Indravati and Pakhui Tiger Reserves did not submit a single report, Bandipur, Dudhwa, Manas, Melghat, Nameri, Palamau, Ranthambore, Satpura Tiger Reserves did not submit reports for over six months and Corbett, Kalakad Mundanthurai, Panna, Periyar and Valmiki Tiger Reserves did not submit the report for three months despite reminders from PTD.

9.2.1.2 Monitoring by PTD

The Tiger Reserves did not submit the returns on estimation of tigers to PTD regularly. Reserves that submitted the returns over 2001-05 are shown in the table below:

Year	No. of reserves submitting the return
2001	1 (Sunderbans)
2002	7 (Bandhavgarh, Kanha, Panna, Pench (Madhya Pradesh), Simlipal, Satpura, Periyar)
2003	9 (Nagarjunsagar, Tadoba-Andhari, Palamau, Simlipal, Dudhwa, Ranthambore, Corbett, Sariska, Kalakad Mundanthurai)
2004	8 (Sunderbans, Melghat, Ranthambore, Sariska, Valmiki, Simlipal, Indravati, Palamau)
2005	1 (Valmiki)

Check in PTD indicated inadequate action on the reports.

9.2.1.3 Monthly reports on tiger mortality

According to the instruction issued by PTD in September 2001, monthly reports relating to mortality of tigers, co-predators and other wild animals in the prescribed format were to be submitted to PTD by all Tiger Reserves by the 15th of every month. However during 2000-05, Manas, Indravati, Bandipur, Bhadra, Melghat, Tadoba-Andhari, Pench (Maharashtra), Simlipal, Pench (Madhya Pradesh), Bandhavgarh and Panna Tiger Reserves did not submit these reports to PTD. Though post mortem was mandatory, the same was not carried out in six out of 13 cases of tiger deaths at Kanha Tiger Reserve and in the case of death of a tiger cub at Pench Tiger Reserve, during 2000-05.

9.3 Deficiencies in concurrent monitoring

The Project Tiger Directorate is to do the concurrent monitoring of the Tiger Reserves by obtaining the monthly, quarterly, half-yearly and annual progress reports from the Tiger Reserves. These reports were not being regularly received in PTD :

Name of Report	Status of receipt
Monthly Progress Report	In the year 2003, only eight Tiger Reserves submitted the monthly progress reports. Out of these, none of the Tiger Reserves had submitted the monthly reports for all the twelve months. While Namdapha Tiger Reserve submitted the monthly progress reports for seven months, Kanha and Simlipal Tiger Reserves submitted the reports for four months, other four Tiger Reserves submitted it only for one or two months. In 2004, monthly progress reports were received only from three reserves out of which Namdapha Tiger Reserve submitted reports for seven months and other two reserves for three and four months. In 2005, only Namdapha Tiger Reserve submitted the monthly progress report and that too only for one month.
Quarterly Progress Report	Quarterly progress report during 2003-04 was received only for one quarter from Namdapha Tiger Reserve. During 2004-05 Bhadra, Namdapha and Pench(Madhya Pradesh) Tiger Reserves submitted report for one quarter. None of the other 25 Tiger Reserves had submitted the quarterly reports for 2003-05.
Half yearly Report	While during 2003-04, only three Tiger Reserves at Satpura, Dampa and Namdapha submitted one half yearly reports each; during 2004-05, only Palamau and Pench (Madhya Pradesh) Tiger Reserves submitted half yearly reports. Other 26 Tiger Reserves did not submit the half yearly reports at all.
Annual Report	During 2002-03, while nine Tiger Reserves submitted the Annual Report, during 2003-04 the report was received only from five Tiger Reserves. During 2004-05, the Directorate received the Annual Reports only from two Tiger Reserves. Annual Reports were not received from the other 26 Tiger Reserves.

PTD stated in March 2006 that the experience of implementing Project Tiger as a high level administrative body based on directives and recommendations has not proved effective. PTD further stated that due to the absence of statutory empowerment, the guidelines and directives issued from Project Tiger were not enforceable, and transgression did not attract penal provisions of the law. PTD claimed that the proposed legislation for creating the National Tiger Conservation Authority would enable effective implementation of plans for tiger conservation apart from addressing violations of directives. The reply has to be viewed against the fact that way back in 1987, the Steering Committee had advocated the need for clearly laying down the authority and responsibilities including financial powers of PTD besides strengthening overall authority and responsibility of Field Directors by delegating magisterial powers within the jurisdiction of the Reserve, similar to those exercised by "Railway" and "Canal" Magistrates in their respective jurisdictions.

Recommendations :

- Monitoring mechanisms at the Centre and the State levels need to be strengthened. An effective system of follow up of recommendations should be instituted and the accountability of officials at various levels needs to be enforced.
- Census/ estimation of tigers should be done regularly. Techniques of tiger estimation need to be refined so that the reliability of census data is enhanced.

10. Impact of measures for conservation and protection of tigers

Tiger population in any habitat is dependent upon prevailing welfare measures and decimating factors. Welfare measures tend to increase the population, while the decimating factors tend to decrease the population. The efforts of the Government have been directed at tiger conservation and protection in the Tiger Reserves. An analysis revealed that despite conservation and protection measures, of the 15 Tiger Reserves created between 1973 and 1984, eight Tiger Reserves namely Periyar, Melghat, Ranthambore, Sariska, Indravati, Palamau, Sunderbans, and Manas had not registered increase in tiger population over a period 1984-2002, as indicated below :

Sl. No	State-wise Name of Tiger Reserve	Tiger population in the States as a whole including in the Tiger Reserves and population of the tigers in the reserves from 1984 to 2001-02					Remarks
		1984	1989	1993	1997	2001-02	
1 (1)	Andhra Pradesh	164	235	197	171	192	In the Tiger Reserve there was an increase in population of only 2 tigers between 1984-2002 whereas during the same period overall tiger population in the State had increased.
	Nagarjunsagar	65	94	44	39	67	
2 (1)	Karnataka	202	257	305	350	401	While the overall tiger population in the State had increased by 100 per cent, the tiger population in the Reserves had increased by 55 per cent only.
	Bandipur	53	50	66	75	82	
3 (1)	Kerala	89	45	57	73	71	Despite increased conservation measures, there was a decrease in the total population of tigers in the reserve from 44 in 1984 to 36 in 2001-02.
	Periyar	44	45	30	40	36	
4 (1)	Maharashtra	301	417	276	257	238	Despite increased conservation measures, there was a decrease in the total population of tigers in the reserve from 80 in 1984 to 73 in 2001-02.
	Melghat	80	77	72	73	73	
5 (2)	Rajasthan	96	99	64	58	58	The overall population of tigers in the State as well as both the Tiger Reserves had registered a decline and shockingly the tiger population outside the Tiger Reserves had become extinct as is evident by the fact that there were 32 tigers outside the reserves in 1984 which had come down to one in 2001-02.
	Ranthambore	38	44	36	32	35	
	Sariska	26	19	24	24	22	
	Total	64	63	60	56	57	
6 (2)	Madhya Pradesh	786	985	912	927	710	Though there was an increase in the tiger population in Kanha over the period 1984-2002, there was a decline in the population of tigers in Indravati from 38 in 1984 to 29 in 2001-02. Similarly the overall tiger population in the State had sharply declined from 985 in 1989 to 710 in 2001-02.
	Kanha	109	97	100	114	127	
	Indravati(now in Chattisgarh)	38	28	18	15	29	
	Total	147	125	118	129	156	

Sl. No	State-wise Name of Tiger Reserve	Tiger population in the States as a whole including in the Tiger Reserves and population of the tigers in the reserves from 1984 to 2001-02					Remarks
		1984	1989	1993	1997	2001-02	
7 (1)	Uttar Pradesh	698	735	465	475	284	Though Corbett Tiger Reserve had registered a second best increase in tiger population in the country by 52 per cent during 1984-2002, there was a shocking reduction in the overall population of tigers in the State from 698 in 1984 to 284 in 2001-02.
	Corbett (now in Uttaranchal)	90	91	123	138	137	
8 (1)	Bihar	138	157	137	103	76	The overall tiger population in the State as well as in the Tiger Reserve had registered a sharp decline of 45 per cent and 48 per cent during 1984-2002.
	Palamau (now in Jharkhand)	62	55	44	44	32	
9 (1)	Orissa	202	243	226	194	173	Though the Tiger Reserve had registered an increase in the tiger population, the overall population of tiger in the State had gone down from 243 in 1989 to 173 in 2001-02.
	Simlipal	71	93	95	98	99	
10 (2)	West Bengal	352	353	335	361	349	As compared to Buxa Tiger Reserve which had doubled its tiger population during the period, Sunderbans Tiger Reserve did not register an equivalent increase in population with reduction in the figure from 264 in 1984 to 245 in 2001-02.
	Sunderbans	264	269	251	263	245	
	Buxa	15	33	29	32	31	
	Total	279	302	280	295	276	
11 (1)	Assam	376	376	325	458	354	There was a sharp decline in the population of tigers in the Manas Tiger Reserve by 47 per cent i.e. from 123 in 1984 to 65 in 2001-02.
	Manas	123	92	81	125	65	

Sl. No	State-wise Name of Tiger Reserve	Tiger population in the States as a whole including in the Tiger Reserves and population of the tigers in the reserves from 1984 to 2001-02					Remarks
		1984	1989	1993	1997	2001-02	
12 (1)	Arunachal Pradesh	219	135	180	NA	NA	The overall tiger population in the State for the years 1997 and 2001-02 was not available for the purpose of carrying out the analysis.
	Namdapha	43	47	47	57	61	
12 (15)	Total						
	A. States as a whole	3623	4037	3479	3427	2906	
	B. Total in Tiger Reserves only	1121	1134	1060	1169	1141	

Note: *The period 1984 to 2002 was taken for comparison because these Tiger Reserves were created between 1973 to 1984 and the period of 18 years from 1984 to 2002 was considered a reasonably long period for the conservation efforts to show results. Since the official census figures for 2005-06 have not been published, the last official census figures relating to 2001-02 were taken for comparison purpose.*

The Project Tiger started with the prime objective of attaining a viable population of tigers in the country. But the acceptable norms of sustaining a viable tiger population were yet to be framed. As per the above table, the population of tigers outside the reserves was 2502 as of 1984 and declined to 1765 by the end of 2001-02. During the same period, the population of tigers in the reserves increased from 1121 to 1141.

PTD stated in March 2006 that the tiger population does not increase exponentially over the years nor is there any defined rate of increase every year and the difference in population estimates over the years should not be construed as a failure of conservation as the real tiger numbers in the country were never free from controversy. PTD contended that due to these reasons it never probed decrease in tiger numbers unless and until the overall trend is alarming. PTD further contended that the status of habitat was more important and relevant in the present context rather than tiger numbers. The reply has to

be viewed against PTD's own admission that tigers have a short gestation period and a remarkable power of recovery if the habitat is well protected and sustainable. PTD further admitted that the biotic disturbance in the form of human settlements and other land uses in the Tiger Reserves in addition to non compliance with its conservation directives by the States were the contributory factors for the shrinkage in the tiger population and the situation is being remedied with the creation of the National Tiger Conservation Authority with statutory provisions for addressing tiger conservation in Tiger Reserves. However the fact remains that though the prime objective of the Project Tiger was to attain a viable population of the tigers in the country, acceptable norms for sustaining viable tiger population was yet to be framed and the net increase in tiger population in 15 Tiger Reserves over 18 years was only 20.

11. Conclusion

The Performance Audit of conservation and protection of tigers in Tiger Reserves revealed that Government efforts had helped in bringing into focus important conservation issues needing attention, such as ecosystem approach, human dimensions in wildlife conservation, eco-development in the surroundings of the Tiger Reserves and had also drawn attention to wildlife conservation in general.

However, the Performance Audit revealed that there is lack of focussed approach to conservation in Tiger Reserves in the absence of committed personnel and cooperation of concerned State Governments besides weakness in the Project Tiger Directorate to provide efficient monitoring. As a result, poaching and unnatural deaths of tigers outnumbered the natural deaths. There was a decline in the tiger population in many reserves. Conservation efforts in the Tiger Reserves by and large remained ineffective due to inordinate delays in the settlement of acquisition rights under the Wildlife Protection Act 1972, inadequate wildlife corridors connecting Tiger Reserves with other Protected Areas, slow progress of relocation of villages outside the Tiger Reserves as well as poor tourism management. In sum, the Government efforts at conservation and protection of tigers were at crossroads due to several long-standing problems. The onus rests with the MoEF and the States to make tiger conservation more meaningful and result oriented by evolving

the most appropriate mechanism to implement the project to save tigers and realize the goal of a viable tiger population in the country.

The matter was referred to the Ministry of Environment and Forests in June 2006; their reply was awaited as of July 2006.



(R.P. SINGH)

Principal Director of Audit,
Scientific Departments

New Delhi

Dated : 4 AUG 2006

Countersigned



(VIJAYENDRA N. KAUL)

Comptroller and Auditor General of India

New Delhi

Dated : 17 AUG 2006

ANNEXURE-1/PARA 4.3

Statement depicting the gaps between the annual financial projections made in the MPs, APO and the actual sanctions by PTD

(Rupees in crore)

Sl. No	Name of Tiger Reserve	Year	Projections as per MP	Projections as per APO	Fund released	Percentage of Short release of APO
1	Corbett, Uttaranchal	2000-01	5.43	3.56	1.84	48
		2001-02	5.77	5.56	3.24	42
		2002-03	3.20	5.92	2.49	58
		2003-04	2.82	5.39	2.64	51
		2004-05	2.37	5.30	2.91	45
2	Dudhwa, Uttar Pradesh	2000-01	6.77	4.08	1.82	56
		2001-02	7.90	4.39	1.55	65
		2002-03	7.67	5.64	0.87	85
		2003-04	6.56	5.88	1.56	73
		2004-05	6.57	11.49	2.09	82
Figure for 2000-03 relate to Dudhwa only as Katarniaghat was included in Project Tiger from 2003-04)						
3	Kalakad Mundanthurai, Tamil Nadu	2000-01	1.50	2.29	1.41	38
		2001-02	N.A	2.84	1.34	53
		2002-03	N.A	17.52	1.32	92
		2002-03	N.A	2.15	0.85	60
		2004-05	N.A	13.35	2.59	80
4	Sunderbans, West Bengal	2000-01	3.35	1.76	1.37	23
		2001-02	3.71	1.93	1.85	04
		2002-03	3.93	2.71	1.93	29
		2003-04	3.66	3.66	2.08	53
		2004-05	3.69	3.68	3.20	13
Figure include State share also						
5	Pench, Maharashtra	2000-01	N.A	1.85	0.88	53
		2001-02	N.A	2.20	1.41	36
		2002-03	N.A	3.28	1.27	61
		2003-04	N.A	3.14	1.20	62
		2004-05	N.A	4.11	1.09	74
6	Tadoba-Andhari, Maharashtra	2000-01	N.A	1.29	0.69	43
		2001-02	N.A	1.20	0.82	31
		2002-03	N.A	13.93	4.66	67
		2003-04	N.A	5.92	4.98	16
		2004-05	N.A	3.22	1.60	50

Sl. No	Name of Tiger Reserve	Year	Projections as per MP	Projections as per APO	Fund released	Percentage of Short release of APO
7	Melghat, Maharashtra	2000-01	N.A	3.24	1.60	50
		2001-02	N.A	4.13	1.43	65
		2002-03	N.A	4.29	0.94	78
		2003-04	N.A	4.52	1.85	59
		2004-05	N.A	15.18	1.28	92
8	Manas, Assam	2000-01	Management Plan 2002-07 though prepared in December 2001 remained to be approved by Govt of Assam as of February 2006	2.15	1.58	-
		2001-02		1.66	0.40	-
		2002-03		1.53	0.25	81
		2003-04		7.47	0.50	93
		2004-05		2.07	0.12	95
		Includes States share and depicts actual release of funds				
9	Bandipur, Karnataka	2000-01	N.A	1.06	0.97	
		2001-02	N.A	0.99	0.93	
		2002-03	N.A	1.64	1.60	
		2003-04	N.A	2.00	1.39	31
		2004-05	N.A	2.13	1.53	
10	Nagarhole, Karnataka	2003-04	N.A	0.18	0.15	
		2004-05	N.A	3.72	2.27	39

Statement showing illustrative cases of delay in the release of Central Assistance by State Governments

(Rupees in lakh)

Tiger Reserve	Year	Month and the fund released by Government of India		Month and fund released by State Government		Period of delay in months	Unspent balance at the beginning of year
		Month	Release	Month	Release		
Bandipur, Karnataka	2002-03	27.9.2002	50.00	8.11.2002	50.00	1	
	2002-03	30.12.2002	63.45	25.3.2003	63.45	3	
	2004-05	25.6.2004	75.00	5.8.2004	75.00	1	
Bhadra, Karnataka	2002-03	1.8.2002	15.00	26.11.2002	15.00	3 1/2	
	2002-03	24.9.2002	35.00	11.12.2002	35.00	1 1/2	
	2002-03	18.12.2002	12.25	31.3.2003	12.25	2	
	2003-04	7.7.2003	30.37	20.9.2003	30.37	2	
	2003-04	18.11.2003	63.93	12.1.2004	63.93	1 1/2	
	2003-04	18.12.2003	5.00	3.3.2004	5.00	2 1/2	
	2004-05	25.6.2004	45.00	16.8.2004	45.00	1 1/2	
	2004-05	31.12.2004	36.49	4.3.2005	36.49	2	
Nagarhole extension, Karnataka	2002-03	27.9.2002	7.80	18-3-2003	7.80	5 1/2	
	2003-04	30.7.2003	15.20	17.1.2004	15.20	5 1/2	
	2004-05	30.8.2004	72.50	8-11-2004	72.50	2	
Manas, Assam	2000-01	August 2000	53.43	December 2000	70.27		
		November 2000	1.50	Not released			
		January 2001	51.40				
		February 2001	16.10	N.A			
	2001-02		40.00	September 2001	30.70		76.75
				February 2002	9.30		
	2002-03	August 2002	25.00	March 2003	4.00		63.30
	2003-04	July 2003	50.00	January 2004	11.00		84.30
				February 2004	39.00		
	2004-05	October 2004	84.30	March 2005	84.30		84.30
Sariska, Rajasthan	2000-01	31.7.2000	43.42	18.9.2000	43.42	>1	
		3.8.2000	80.00	5.1.2001	39.00	5	
		4.9.2000	39.00	5.1.2001	4.00	4	
		22.1.2001	15.00	28.3.2001	15.00	2	
	2001-02	16.8.2001	77.06	17.11.2001	77.06	3	
		22.11.2001	36.71	23.01.2002	36.71	2	
	2002-03	26.9.2002	50.00	15.11.2002	50.00	>1	
		11.12.2002	5.00	10.02.2003	5.00	>2	
		29.07.2002	26.99	12.03.2003	26.99	>7	
	2003-04	27.02.2004	24.18	29.03.2004	24.18	1	
2004-05	23.7.2004	37.50	05.03.2005	37.50	>7		

Tiger Reserve	Year	Month and the fund released by Government of India		Month and fund released by State Government		Period of delay in months	Unspent balance at the beginning of year
		Month	Release	Month	Release		
Tadoba-Andhari, Maharashtra	2000-01	31.07.2000	14.92	30.03.2001	14.92	8	
	2001-02	22-8.2001 / 8.10.2001	10.35	18.3.2002	10.35	>5	
	2003-04	3.12.2003	92.00	1.3.2004	92.00	3	

ANNEXURE - 3 / PARA 6.1.2

Details of Tiger Reserves where final notification/demarcation of boundaries was not completed

Sl. No.	Name of the Tiger Reserve	Year of creation	Remarks
A. Absence of final notification of area of Tiger Reserve/National Park			
1.	Nagarjunsagar, Andhra Pradesh	1982-83	As per APO of 2001-02, as additional area of 2700 sq. km. that was to be notified had not been done (April 2006).
2.	Namdapha, Arunachal Pradesh	1982-83	Notification of inclusion of 177.415 sq. km. of reserve forest declared for addition to Namdapha Tiger Reserve as buffer zone by the State Government in 1987 had not been issued till date.
3.	Indravati, Chattisgarh	1982-83	The entire area of the Reserve had not been finally notified till date.
4.	Palamau, Jharkhand		Proposal for final notification under Section 26 of the Wildlife Protection Act, 1972 was sent to Government of Bihar in 1999 but the same had not been sent to Government of Jharkhand. 46.73 sq. km of the Reserve has still not been notified under Section 18(1) of the Act.
5.	Bandipur including Nagarhole extension, Karnataka	1994-95	132 sq. km of the Reserve notified as Tiger Reserve during January 1941 and proposed for inclusion in the 1 st Management Plan had however not been included in the network of the Reserve either during initial (March 1985) or final notification (2001). No revised notification issued excluding the leased area of 89.94 hectares to Kuvempu University in spite of directions by Indian Board for Wildlife.
6.	Periyar, Kerala	1978-79	Intention to declare core area as National Park was issued in October 1982 but final notification not yet issued.
7.	Kanha, Pench, Bandhavgarh and Panna, Madhya Pradesh	1973-74 1992-93 1993-94 1994-95	Final notification not issued Kanha, Panna and Bandhavgarh Tiger Reserves
8.	Simlipal, Orissa	1973-74	Core area of 845.70 sq. km. not finally notified till date.
9.	Kalakad Mundunthurai, Tamil Nadu	1988-89	The entire area of the Reserve has not been notified till data.
10.	Corbett, Uttaranchal	1973-74	270.64 hectares of land included in the Reserve in 1993-94 on account of relocation of 3 villages not notified till date.

Sl. No.	Name of the Tiger Reserve	Year of creation	Remarks
B. Non demarcation of boundaries			
1.	Indravati, Chattisgarh	1982-83	No boundary demarcation.
2.	Ranthambore and Sariska, Rajasthan	1973-74 1978-79	Boundary demarcation job had not been completed as 7060 pillars are still not constructed.
3.	Buxa, West Bengal	1982-83	Only 14 per cent of the total area of the Reserve area of 240 sq. km. considered for demarcation of which only 34 sq. km. had been completed.

ANNEXURE -4/PARA 6.2.1

Statement showing year of creation of Tiger Reserves with area and the number of villages and families living in the core and overall area in the tiger reserve as of July 2005

Year	No of Tiger Reserves notified	Area in sq. km	Number of Tiger Reserves, villages and families living core area of Tiger Reserves as of July 2005			Number of Tiger Reserves, villages and families living in the over all areas of Tiger Reserves as of July 2005		
			No. of Tiger Reserve	No. of Villages	No. of families	No. of Tiger Reserve	No. of Villages	No. of families
1973-74	9	16339	6	106	5332	8	727	27067
1978-79	2	1643	1	11	6337	2	31	8392
1982-83	4	9111	3	82	2192	4	296	12906
1987-88	1	811	1	1	35	1	37	1295
1988-89	1	800	1	15	1703	1	16	1728
1989-90	1	840	0	0	0	1	20	700
1992-93	1	758	0	0	0	1	99	3465
1993-94	2	1782	1	6	210	2	81	2835
1994-95	2	1042	1	45	1565	2	106	3700
1998-99	2	749	1	1	52	2	6	119
1999-2000	3	2692	1	6	224	2	68	2744
1999-2000	(2)	1194	643 sq. km and 551 sq. km were notified in 1999-2000 as Nagarhole extension and Katarniaghat extension to Bandipur and Dudhwa Tiger Reserves notified in 1973-74 and in 1999-2000 respectively.					
Total	28	37761	16	273	17650	26	1487	64951
Tiger reserves where there were no human settlements			Sunderbans and Pakhui					
Tiger reserves where human settlement exist even in core area			Bandhavgarh, Bandipur, Dudhwa, Indravati, Kanha, Kalakad-Mundanthurai, Melghat, Nagarjunsagar, Namdapha, Palamau, Panna, Pench (Maharashtra), Ranthambore, Sariska, Satpura, Simlipal					

ANNEXURE-5 / PARA 6.4 AND 6.5

A. Biotic pressure at Reserves due to activities of other Departments

B. Encroachment and Biotic Pressure on account of activities of other Departments in and around the Reserve area

Sl. No.	Name of Reserve	Nature of encroachment
A. Encroachment by other departments		
1.	Nagarjunsagar, Andhra Pradesh	<p>i. In spite of the awareness of the negative impact, 1000 hectares in Chitral and 447.22 hectares in Peddagattu area of the Reserve was diverted for Uranium mining with approval of the NBWL. Despite willingness of the user agency to provide financial inputs for improving degraded areas of the forests, no action had been taken in this regard nor any compensatory afforestation action been taken.</p> <p>ii. Though no permission had been granted, insulated lines were laid in 'Vaterlapalli' village by the Electricity Department in violation of the Honourable Supreme Court's orders.</p>
2.	Periyar, Kerala	<p>i. 8.57 hectares of land was leased to Kerala Tourism Development Corporation (KTDC) for 25 years for running hotels, boating and other related activities. The lease period expired on 6 August 1996. Though Government of India had turned down the request for extension of lease period on the ground that running of hotels within the Protected Area was against the spirit of conservation, KTDC was still holding the property and doing business. No lease rent was being collected from August 1996.</p> <p>ii. 2.86 ha leased to Kerala Labour Welfare Fund Board for 25 years to run a Holiday Resort was under the possession of the Board.</p>
3.	Ranthambore, Rajasthan	Due to lack of vigilance of Forest Department, there was unauthorised mining on 40,133 sq metre of forest land besides enabling misuse of 179 bigha and 17 biswa of forest land.
4.	Sariska, Rajasthan	In the Tiger Reserve, Revenue Department unauthorisedly allotted (April 1998) forest land (<i>Khasra</i> no. 681 and 682) to M/s Heritage Resorts adjoining its existing <i>Khasras</i> (679 and 680) in village Ajabgarh. Lack of vigilance of the Department at all levels led to unauthorised encroachment of 30 <i>bigha</i> forest land.
5.	Corbett, Uttaranchal	An area of 13.26 hectare of land out of 8998.15 hectares of land handed over to it for construction of dam is still under encroachment (February 2006) by the Irrigation Department. Central Empowered Committee of the Hon'ble Supreme Court found that the forest land under Corbett Reserve was retained in excess of their minimum requirement unauthorisedly by Irrigation Department of UP and Uttaranchal Jal Vidyut Nigam. On a petition of Wildlife Protection Society of India the Hon'ble High Court of Allahabad directed the Irrigation Department in August 1999 to keep only the land required by it for upkeep of or running of the dam establishment and to return the balance forest area to the Forest Department.
6.	Kalakad Mundanthurai, Tamil Nadu	An extent of 8373.57 acres in the core area of the Tiger Reserve which formed part of the erstwhile Singampatti Zamin Estate in Tirunelveli was leased out by the former Zamin to M/s Bombay Burma Trading Corporation Limited (BBTC) for a period of 99 years from February 1929 for cultivation of coffee, tea and other commercial plantations, except timber. Even after passing the Madras Estate Act the company was allowed to continue to possess the entire leased out land for the rest of the lease period subject, <i>inter alia</i> , to the condition that the Company should not clear any catchment area of Kusangaliar River measuring 970 acre. The lease was liable to be terminated in the event of violation of any condition in the lease agreement. Though the Department identified that the company had cleared an extent of 249 acres of catchment area of Kusangaliar River in November 1987 itself, no effective and concerted action was taken by

Sl. No.	Name of Reserve	Nature of encroachment
		the Government of Tamil Nadu to cancel the lease agreement and evict the Company. A remote sensing image taken by the Department (March 2004) revealed that the company had unauthorisedly occupied natural watershed area and cultivated tea, coffee and other plantations and an enquiry was ordered (December 2005) by the Commissioner of Land Administration, Chennai.
B. Biotic Pressure on Reserves due to permitted activities, highways, roads, places of worship		
1.	Nagarjunsagar, Andhra Pradesh	<p>i. The core area includes the Srisailem temple which though dereserved is surrounded on all sides by the core area adding to the biotic pressure of the Reserve.</p> <p>ii. No studies have been conducted to know the levels of pollution and its effect on the local flora and fauna on account of the paper mills and other industries whose affluents join the Krishna river.</p> <p>iii. The Reserve encompasses the areas occupied by temple complex, Srisailem Dam project, irrigation project, hydro electric power project. As a result, approximately one lakh vehicles pass through the Reserve and effects of pollution due to vehicular traffic was not assessed.</p>
2:	Valmiki, Bihar	<p>i. A National highway passes through the Reserve and no traffic census has been done to judge the impact of the same on the Reserve.</p> <p>ii. 59 hectares of land of the Reserve has been transferred to Railways in 1992-99 for construction of Bagaha-Chhitauni rail lines through buffer zone causing a barrier to movement of wildlife.</p>
3.	Bhadra Wildlife Sanctuary, Karnataka	The State Government accorded (February 1979) sanction for leasing out 89.94 hectares of the Sanctuary for a period of 20 years for setting up of a University. Permission was accorded (August 2002) by the Indian Board for Wildlife for extension of the lease beyond February 1999 by stipulating, <i>inter alia</i> , that the Department exclude the leased area from the Reserve and compensate the same with an addition of 339 hectares of contiguous forest land to the Reserve within 90 days. However, the process of identifying and adding the contiguous forest land had not been completed (March 2006) even after more than 3 years.
4.	Periyar, Kerala	<p>i. 3239 hectare of land was leased for 999 years to Tamil Nadu Public Works Department in 1885 for constructing Mullapperiyar dam.</p> <p>ii. 41.48 hectares of land were transferred for permissible use to Travancore Devaswom Board to meet the requirement of the Holy Sabarimala Temple at various times. Of these 5.26 ha was with the temple authorities prior to 1960 and the remaining areas leased during the period 1960 to 1999. Government of India had also cleared (October 2005) a proposal to release another 12.7 hectares of land.</p> <p>iii. 50 cent of land was given to Kerala Public Works Department for permissive use.</p>
5.	Melghat, Maharashtra	Two State Highways viz. Amravati, Paratwada, Dharni, Burhanpur, Indore and Harisal, Akot crosses the Tiger Reserve. Traffic during night hours posed serious threat to wildlife and management. Accidental deaths of wild animals was reported during 2001-2005 on these highways. Heavy vehicular traffic in core as well as buffer area create danger for long term wildlife and bio-diversity conservation and pose security threat in the Tiger Reserve.
6.	Dudhwa, Uttar Pradesh	45 km of railway line and 48 kilometer of road passed through Katarniaghat.
7.	Panna, Madhya Pradesh	<p>i. An area of 1489 hectares has been leased up to the year 2010 to Uttar Pradesh Irrigation Department (Gangau Dam). The Gangau dam authority is leasing about 500 hectares (out of 1489 hectares) on annual basis to the cultivators of the area. The entire area of 1489 hectares leased to UP Irrigation Department falls under the Panna Tiger Reserve.</p> <p>ii. Three places of worship covering an area of 0.04 sq. km where annual visit of nearly 6900 to 9500 pilgrims occurs have been reported in the core area.</p>

Sl. No.	Name of Reserve	Nature of encroachment
8.	Nagarhole Extension, Karnataka	10 Temples (attracting about 5000 pilgrims annually) are located within the Reserve.
9.	Ranthambore, Rajasthan	Six temples are situated in the Tiger Reserve.
10.	Kalakad Mundunthurai, Tamil Nadu	Three temples are situated in the Tiger Reserve.
11.	Panna, Madhya Pradesh	National Mineral Development Company a Central Government Company had been mining diamonds in the area which adds to the biotic pressure on the Reserve. The case of National Mineral Development Company is pending before the Supreme Court.

Statement showing physical targets and achievements under various components of India Eco-development Project

Component	No.	Description	Unit	Buxa		Gir		Nagarhole		Palamau		Pench		Periyar		Ranthambore		Total	
				T	A	T	A	T	A	T	A	T	A	T	A	T	A		
Improved Protected Area Management	A	CIVIL WORKS																	
	1	Survey and documentation	Km	190	194	170	92			120	240	105	0	292	0	1065	0	1942	526
	2	Total Improvement of amenities for field staff/Quarters/wall	No.	43	52	51	44	50	41	12	8	34	28	26	39	53	49	269	261
	3	Drinking water facilities for staff																	
	(a)	Boring pump and tank								9								9	0
	(b)	Hand pump								13								13	0
	4	Facility for ecosystem management																	
	(a)	Wireless towers	No.	19	21	4	9	9	5			6	7	27	27	4	4	69	73
	(b)	Fire towers	No.			10				5		6	7	6		7		34	7
	(c)	Watch towers	No.	2	2	0		6	0									8	2
	(d)	Improve. Of bride path for better protection in trans. Bor. region Road Improvement (Bridge/ culvert), Access Track, Animal Control Barriers	Km	290	257	120	197	1345	633	376	267	160	859	261	218	120	57	2672	2488
	B	TRANSPORTATION																	
	(a)	Four wheel drive	No.	4		2		11		1		3		3		5		29	0
	(b)	Motor Cycle	No.	10		6						2		26				44	0
	(c)	Tractor	No.													2		2	0
	(d)	Boats	No.											3				3	0
	(e)	LC vehicle for HQ office	No.	1														1	0
	C	EQUIPMENT																	
	1	Information technology																	
	(a)	Photocopier	No.	1						1		1		3				6	0
(b)	Laptop computer	No.	1														1	0	
2	Other Equipments																		

Component	No.	Description	Unit	Buxa		Gir		Nagarhole		Palamau		Pench		Periyar		Ranthambore		Total		
				T	A	T	A	T	A	T	A	T	A	T	A	T	A			
	(a)	Wireless Sets	No.	51	51	22	5	143	97	1	0	23	51	116	58	91	91	447	353	
	(b)	Field Equipment	No.	0		96	609	0		202	0	67	0	260		0		625	609	
	D	MANAGEMENT DEVELOPMENT PROGRAM																		
	1	Local Fellowship and courses																		
	(a)	PA management courses for park staff	course	19												34		53	0	
	2	Workshops and tours																		
	(a)	Technical workshop for park staff	No.	21	22					5	0	10	0	16		12		64	22	
	(b)	Study tours for guards/ foresters/ junior staff	tour	7	10					9		7	0	11		10		44	10	
	(c)	Project Management	course							10				4				14	0	
Village Eco Development Programme	A	PROGRAMME MANAGEMENT																		
	1	Team training	course	9		7				3		3		8		21		51	0	
	2	NGO training	course	7		3				11				9				30	0	
	3	Village study tour and exchange	tour	11		10						4				6		31	0	
	4	Staff study tour	tour	4		10				4		6		20		6		50	0	
	5	Transportation	No.	2		2				1		1				8		14	0	
	B	IMPLEMENTATION SUPPORT AND SUPERVISION																		
	1	Staff performance awards	EDC												16				16	0
	2	Village performance awards	EDC	10		8				16					41		12		87	0
	C	VILLAGE ECO-DEVELOPMENT PROGRAM																		
	1	Special Program																		
(a)	Discretionary fund	EDC	15															15	0	
(b)	JFM plantation program	EDC	1386												600			1986	0	
Environment Education Awareness Campaign	A	DEVELOPMENT OF CONCEPTUAL FRAMEWORK																		
	1	Workshop	No.							1								1	0	
	2	Strategy formulation	No.							1								1	0	
Impact Monitoring and Research	A	SUPPORT FACILITIES																		
	1	Civil works																		

Component	No.	Description	Unit	Buxa		Gir		Nagarhole		Palamau		Pench		Periyar		Ranthambore		Total	
				T	A	T	A	T	A	T	A	T	A	T	A	T	A		
	(a)	Main field station	No.	1						1		1		2		1		6	0
	(b)	Sub-field station	No.	2										6		1		9	0
	(c)	Tower	No.										1				1	0	
	2	Vehicles																	
	(a)	Van (Tata 407)	No.	1														1	0
	(b)	4-wheel drive	No.	1		1								1		5		8	0
	(c)	Boat	No.										2					2	0
	3	Equipment																0	0
	(a)	Pentium computer with laser printer	Unit	4		1												5	0
	B	RESEARCH AND MONITORING PROGRAM																	
	1	Socio-economic and ecological research																	
	(a)	Workshop																	
	(i)	Research planning	No.			1				1								2	0
	(ii)	Research review meetings	No.	2		2				2								6	0
	(iii)	Research seminars	No.	3						2								5	0
	(b)	Short-term research project			17	10	17		35		8		10		36		1	10	124
	A	IMPROVED PROTECTED AREA MANAGEMENT																	
Information Technology Equipment	1	Digitiser	No.	1		1		1		2		1				1		7	0
	2	Pentium Computers with laser printer	No.	1		1				1		1				3		7	0
	3	Air conditioner	No.	1		1				1		1				2		6	0
	4	Office software application	Set	1								1				3		5	0
	5	Fax machine	No.					1										1	0
	6	Laptop	No.					2		1								3	0
	7	Xerox machine	No.					2										2	0
	8	Laser Printer colour	No.							1								1	0
	9	Terminal Unit	No.							3								3	0
	B	COMPUTER & ACCESSORIES FOR IMPACT MONITORING & RESEARCH																	
	1	Personal computer	No.							1								1	0

Component	No.	Description	Unit	Buxa		Gir		Nagarhole		Palamau		Pench		Periyar		Ranthambore		Total	
				T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A
	2	Printer	No.							1								1	0
	3	UPS	No.							1								1	0

NOTE :

1. 'T' depicts Target and 'A' depicts Achievement
- 2.. 'No.' depicts Number

Statement showing details of biotic pressure in seven sites of India Eco-development Project

(Amount in Rupees)

Sl. No.	Name of the site	Population in National Park/ Tiger Reserves as per Indicative Plan			Population pressure around Protected Area as per Indicative Plan				Actual beneficiary	
		Village	Human Habitat	Population	Village	Population	Cattle	Kilometer	EDC ¹	Population
1.	Buxa Tiger Reserve, West Bengal	37	N.A.	13236	69	236249	71684	5	59	36000
2.	Gir National Park, Gujarat	71	N.A.	7099	97	131087	94600	6	109	72000
3.	Nagarhole National Park, Karnataka	54	N.A.	6145	238	226435	27600	5	108	70000
4.	Palamau Tiger Reserve, Jharkhand	72	3804	22370	173	79243	43000	5	65	75000
5.	Pench Tiger Reserve, Madhya Pradesh	1	N.A.	111	183	73012	8000	10	99	48000
6.	Periyar Tiger Reserve, Kerala	1	N.A.	1820	N.A.	636937	2000	10	72	62000
7.	Ranthambore Tiger Reserve, Rajasthan	29	738	4277	268	211695	N.A.	N.A.	62	64000
TOTAL		265		55058	1028	1594658	246884		574	427000

¹ Eco-development Committee

Statement on Village Eco-development Fund**RANTHAMBORE****Eco-development surcharge**

The amount realized on account of eco-development surcharge was to be put in a separate revolving fund. The State Government created a separate revolving fund out of tourist receipts. The Tiger Reserve received Rs 4.99 crore from tourists during 2000-05. The park authorities put the entire amount in the State Government treasury instead of putting it in the revolving fund. The park authorities did not finalize the modalities for the management and use of the funds through establishing revolving fund despite recommendation of supervision mission of the World Bank in October 2002. The Deputy Conservator of Forests (DCF), Ranthambore Tiger Reserve (Core), stated in January 2006 that for utilization of eco-development surcharge proposals were sent to higher authorities in March 2004. The competent authorities however, did not issue any orders on the proposal. This indicated that the purpose of levying surcharge for development of protected area and surrounding areas was defeated.

Village Eco-development Fund (VDF)

The Tiger Reserve had an accumulated fund of Rs 3.01 crore contributed by 62 Eco-development Committees (EDCs) up to June 2004 under VDF. Audit observed that the park authorities did not deposit 50 *per cent* of the fund in fixed deposit schemes and also did not explore possibility of expediting loan to EDC members. The EDCs could have earned Rs 16.01 lakh on interest^o, if the fund, was kept in fixed deposit. The DCF (Core) replied in January 2006 that 50 *per cent* share could not be reinvested due to higher rate of interest i.e. 12 *per cent* in comparison with other loans available in the market. The remaining 50 *per cent* share could not be deposited under term deposit scheme due to denial by postal authority. The reply of the Divisional authority was not tenable as rate of interest of 12 *per cent* was approved in the meeting of EDCs and the remaining 50 *per cent* could be deposited with Nationalised Banks. Further, the reduction in interest rate could have encouraged the beneficiaries to make use of the funds. The fact remained that the park authorities failed to comply with the World Bank guidelines on the matter.

PERIYAR – FINALIZATION OF THE OPERATIONAL MANUAL

A Community Development Fund generated by the repayment of financial assistance by EDC members as individual or on group basis received the project fund for conducting any activity under the project. This amount would be recouped to a separate account and would act as a revolving fund in the EDCs. The money accumulated would be ploughed back to community development fund by EDCs to sustain the project.

Accordingly, a semi-autonomous Government owned Trust viz., Periyar Foundation was formed on 22 September 2004 to sustain the project beyond June 2004. The eco development surcharge collected from the tourists and the revenue collected from professional EDCs who were involved with the eco tourism activities form the corpus of the Periyar Foundation Trust. An accumulated amount of Rs 1.20 crore collected as eco development surcharge was lying with the trust as of March 2006. The operation manual of the foundation was yet to be finalized. Thus, the park authorities did not undertake the detailed study after the post project period to assess the extent of commitment of community.

^o Calculated at the rate of 6 *per cent* per annum for 22 months with effect from 25 May 2004

NAGARHOLE – VILLAGE ECO-DEVELOPMENT FUND (VDF)

The Project guidelines stipulated collection of 25 per cent contribution from the beneficiary. The park authorities released an amount of Rs 13.04 crore to the EDCs till the end of the project. Audit however, observed that an amount of Rs 2.37 crore against Rs 3.26 crore, was collected from the beneficiaries and kept in bank account as 'Village Development Fund (VDF)'. Thus there was short realization of Rs 88.96 lakh due to non-receipt of contribution from the beneficiaries. Further, it was observed that despite the availability of funds of Rs 2.37 crore under VDF as of June 2003, the park authorities did not have plan to utilize the fund. Thus, post-project sustainability could not be achieved.

BUXA – WITHDRAWAL OF MONEY FROM VDF

The withdrawal of money from the VDF required authorization through resolutions adopted in meeting of the respective EDC/FPC¹. VDF had a total deposit of Rs 2.33 crore. Audit observed that the Beat Officers and the Secretaries/Presidents (as operators of bank accounts) of 46 EDCs/FPCs at Buxa had withdrawn Rs 92 lakh from the bank without resolutions adopted in meetings of EDCs/FPCs. The withdrawal of Rs 92 lakh was unwarranted and unauthorised. Buxa Tiger Reserve authorities however failed to furnish any information in the matter.

¹ Forest Protection Committee

ANNEXURE-9/PARA 7.7

Statement on deficiencies in the area of Research in the Tiger Reserve

Sl. No.	Name of Tiger Reserve	Remarks
A. Reserves where no separate research facilities or research activities exist		
1.	Indravati, Chattisgarh	No separate Research Centre or research facilities through consultancy programmes with universities, WII etc. had been provided as a result of which the Reserve was deprived from inputs for habitat improvement.
2.	Palamau, Jharkhand	-do-
3.	Bandipur, Karnataka	No infrastructure for conducting Research had been provided hence benefit of research did not accrue to Protected Area management in the entire area of wildlife management.
4.	Bandhavgarh, Kanha, Pench and Panna, Madhya Pradesh	Though permission for research in the areas of improvement to habitat, status, enhancement of biodiversity etc. to various agencies was granted, no departmental projects were taken up during 2000-2005.
5.	Melghat, Tadoba-Andhari and Pench, Maharashtra	No Research Laboratory/facility had been established in any of the three Reserves nor any studies conducted to assess qualitative gains such as improvement to habitats, status, enhancement of biodiversity.
6.	Corbett, Uttaranchal	No research facility set up nor any study conducted towards improvement of habitat.
7.	Manas, Assam	No research project was undertaken during the period in spite of appointment of a laboratory assistant.
8.	Valmiki, Bihar	No plans for research and development activities were made nor any studies conducted.
9.	Ranthambore, Rajasthan	No Research wing was created nor any research conducted during the period.
10.	Kalakad Mundunthurai, Tamil Nadu	No Research laboratory/facility set up.
B. Reserves where no research activities were taken up in spite of existence of Research Facilities		
1.	Namdapha, Arunachal Pradesh	Though a research wing was functioning during the period, no research activity had ever been conducted.
2.	Sunderbans, West Bengal	One field laboratory cum field data processing centre was constructed at a cost of Rs 3 lakh in 2001-02, however no research activities had been carried out in the field laboratory. Geographical Information System linkage including Global Positioning System and other accessories procured at a cost of Rs 2 lakh during 2003-04 were not utilized till date.
3.	Sariska, Rajasthan	A research wing was established and an amount of Rs 9.58 lakh incurred on pay and allowances of the staff during 2000-05 however no research study were conducted, resulting in nugatory expenditure.

Sl. No.	Name of Tiger Reserve	Remarks
4.	Dudhwa, Uttar Pradesh	No departmental research projects were taken up in spite of identified and approved Research areas in the Management Plan of the Reserve.

ANNEXURE-10/PARA 8.2

Statement showing deficiencies in fire protection observed in Tiger Reserves

Sl. No.	Name of Tiger Reserve	Total Area Burnt during the period 2000-2005 (in hectare)	Remarks
1.	Palamau, Jharkhand	2613.27	No site specific fire fighting measures were identified. Improper maintenance of firelines and towers observed. Total loss was estimated at Rs 4.35 lakh.
2.	Bandipur, Karnataka (inclusive of Nagarhole and Bhadra Wildlife Sanctuary)	10130	Loss was not assessed in case of Bandipur and Nagarhole. Occurrence of fires was mainly attributed to man made intentional fires within and outside the Reserves. There was no practice of recording impact of fire in terms of monetary loss. No fireline management system was in place. Total loss in Bhadra Wildlife Sanctuary was estimated at Rs 11.91 lakh.
3.	Kanha, Madhya Pradesh	1501.95	Reason for increase in forest fires was not investigated. Loss due to fire was assessed as nil as loss of grass, bushes only were observed. An amount of Rs 170 lakh, Rs 40.76 lakh, Rs 126.53 lakh and Rs 61.92 lakh has been spent on fire protection works at Kanha, Bandhavgarh, Panna and Pench Tiger Reserves respectively. However the fire protection works had failed to protect the food chain of herbivores present in the Reserves.
4.	Bandhavgarh, Madhya Pradesh	273.14	
5.	Panna, Madhya Pradesh	1269.40	
6.	Pench, Madhya Pradesh	13.80	
7.	Melghat, Maharashtra	29649.00	
8.	Tadoba-Andhari, Maharashtra	7544.00	Though fires had engulfed large areas of the Reserves, loss was assessed as nil as loss of grass, bushes only were observed.
9.	Pench, Maharashtra	2675.00	
10.	Simlipal, Orissa	23652.90	Due to non supply of fire fighting equipments the area affected by fire incidents could not be checked. Loss of forest property was not assessed and causes of fires were also not recorded.
11.	Periyar, Kerala	2883.00	No fire fighting equipments was available to extinguish the fires. Proper assessment of causes and impact of fire incidences was not done so as to take preventive measures
12.	Ranthambore, Rajasthan	21.89	Value of loss sustained was neither assessed nor the offenders traced and booked. Against proposed three fire watch towers and 84 kms of firelines, only one watch tower and 17 km fire lines were constructed.
13.	Sariska, Rajasthan	174.00	Loss sustained by the fire in four out of ten cases was not assessed. No expenditure was incurred for maintenance of existing fire lines during 2003-04 in spite of the fact that ten cases of fire were reported during the period 2000-05.
14.	Kalakad Mundanthurai, Tamil Nadu	1004 acres	Poor maintenance of fire lines resulted in the occurrence of 168 forest fire damaging 1004 acres of forest land during 2000-05. Incidentally, it was seen that maintenance of the entire fire line during 2004-05 had prevented the fire accidents during that year.
15.	Dudhwa, Uttar Pradesh (including Katarniaghat extension)	200.96	The area affected by forest fire increased from four hectares (2000-01) to 18.20 hectare (2004-05).
16.	Corbett, Uttaranchal	609.10	The Reserve had not done any study/review in this regard and this resulted in a consistent increase in the number of fire incidents during 2000-01 to 2004-05.

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Sl. No.	Name of Tiger Reserve	Total Area Burnt during the period 2000-2005 (in hectare)	Remarks
17.	Buxa, West Bengal	NA	20415 hectare (27 per cent of total area) was affected by fire in 1998. There was no survey of wild fire/man-made fire after 1998. As against eight fire-watch towers needed, only four towers were constructed during five years (2000-05).
18	Manas, Assam	NA	No permanent firelines have been created and fire fighting equipments were also not available.
19	Valmiki, Bihar	NA	Against required length of 848.25 km only 460 km of firelines were in existence. There were instances of fire due to ill maintenance of available fire lines resulting in soil stratum damage, humus loss, regeneration loss, spreading of weeds and xerophytes species and soil erosion.

ANNEXURE-11/PARA 8.3.3.1 AND 8.3.3.2

Statement showing manpower data regarding frontline staff and number of patrolling camps/chowkis

Sl. No	Name of the Tiger Reserve	Year of creation	Total Area (in Sq. km)	Tiger Population in 2001-02	Forest Guards and Watchers				Foresters				Patrolling Camps/ chowkis
					Sanctioned strength	Men in position	Average age	Area covered by a staff	Sanctioned strength	Men in position	Average age	Area covered by a staff	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Bandipur	73-74	1509 [▼]	82	101	47 (nil)	40	32.11	24	11(nil)	48	137.18	31
2	Corbett	73-74	1316	137	116	106(104)	45	12.42	18	32(20)	48	41.13	125
3	Kanha	73-74	1945	127	NA	148 (53)	45	13.14	NA	54 (6)	50	36.02	172
4	Manas	73-74	2840	65	279	212(NA)	N.A	13.40	59	32(NA)	NA	88.75	NA
5	Melghat	73-74	1677	73	222	215(nil)	45	7.80	72	44(nil)	45	38.11	90
6	Palamau	73-74	1026	32	175	90(nil)	53	11.40	28	20(nil)	51	51.30	65
7	Ranthambore	73-74	1334	35	135	131(NA)	50	10.18	58	54(NA)	50	24.70	85
8	Simlipal	73-74	2750	99	108	53(nil)	49	51.88	37	25(nil)	52	110.00	46
9	Sunderbans	73-74	2585	245	103	39(15)	40	66.28	23	20(nil)	40	129.25	20
10	Periyar	78-79	777	36	145	129(15)	35	6.02	37	31(10)	43	25.06	36
11	Sariska	78-79	866	22	64	63(nil)	47	13.75	25	23(nil)	54	37.65	33
12	Buxa	82-83	759	31	276	209(nil)	45	3.63	28	20(nil)	45	37.95	8
13	Indravati	82-83	2799	29	70	40(11)	41	69.98	13	6 (2)	53	466.50	11
14	Nagarjunsagar	82-83	3568	67	312	287 (nil)	45	12.43	65	61(nil)	45	58.49	5
15	Namdapha	82-83	1985	61	15	6(nil)	45	330.83	8	6 (nil)	45	330.83	8
16	Dudhwa	87-88	1362 [†]	76	195	168(nil)	46	8.11	87	75 (nil)	50	18.16	60

▼ Includes Nagarhole extension of 643 sq. km created in 1999-2000

† Includes Katarniaghat extension of 551 sq. km created in 1999-2000

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Sl. No	Name of the Tiger Reserve	Year of creation	Total Area (in Sq. km)	Tiger Population in 2001-02	Forest Guards and Watchers				Foresters				Patrolling Camps/ chowkis
					Sanctioned strength	Men in position	Average age	Area covered by a staff	Sanctioned strength	Men in position	Average age	Area covered by a staff	
17	Kalakad-Mundanthurai	88-89	800	27	88	86(17)	40	9.30	13	13 (7)	40	61.54	1
18	Valmiki	89-90	840	53	77	54(NA)	40	15.56	20	11(NA)	40	76.36	8
19	Pench/MP	92-93	758	40	37	34(25)	45	22.29	33	34 (5)	53	22.29	41
20	Tadoba-Andhari	93-94	620	38	56	56(nil)	34	11.07	11	6(nil)	50	103.33	14
21	Bandhavgarh	93-94	1162	56	50	56(11)	46	20.75	16	21 (3)	50	55.33	53
22	Panna	94-95	542	31	74	66(38)	42	8.21	19	13	46	41.69	54
23	Dampa	94-95	500	4	3	3 (3)	47	166.67	2	2 (2)	40	250.00	3
24	Bhadra	98-99	492	35	46	33(nil)	40	14.91	17	13(nil)	45	37.85	26
25	Pench/Mah	98-99	257	14	50	47(nil)	40	5.47	8	6(nil)	40	42.83	-
26	Pakhui	99-00	862	NA	15	12(nil)	32	71.83	9	9(nil)	48	95.78	5
27	Nameri	99-00	344	26	9	15(nil)	36	22.93	14	8(nil)	36	43.00	15
28	Bori-Satpura, Panchmarhi	99-00	1486	35	121	122	40	12.18	48	47	51	31.62	55
Total			37761	1576	2944	2527(292)	1153		792	708(60)	1268		1070
National average of the area covered by Forest guard/forester and patrolling camps/chowkis with reference to men-in-position				$37761 / 2527 = 14.94$ sq. km			43		$37761 / 708 = 53.33$ sq. km.		47	$37761/1070 = 35.29$ sq. km. i.e. 1 patrolling camp/chowki per 35 sq. km	

Note : Figures in the bracket at column 7 and 11 indicates the trained manpower

ANNEXURE- 12/PARA 9.2.1

Statement showing number of tigers in the Tiger Reserves during 2001-05

State/Tiger Reserve	2001	2002	2003	2004	2005
ARUNACHAL PRADESH					
Namdapha	61	-	64	-	-
ASSAM					
Manas	65	-	-	-	-
BIHAR					
Valmiki	-	56	52	-	33
CHATTISGARH					
Indravati	19	21	25	27	27
JHARKHAND					
Palamau	-	38-40	36-38	38	-
KARNATAKA					
Bhadra Wild Life Sanctuary	-	-	-	-	-
Bandipur	-	82	-	-	-
Nagarhole Extension	-	55-60	-	-	-
MAHARASHTRA					
Melghat	69	69	69	69	67
Tadoba-Andhari	35	38	39	44	41
Pench	15	16	27	23	24
ORISSA					
Simlipal	-	99	-	101	-
RAJASTHAN					
Ranthambore	38	43	45	47	26
Sariska	NA	26-28	25-28	16-18	NIL
UTTAR PRADESH					
Dudhwa	102	101	115	110	106
Katarniaghat	49	67	No census	61	58
MADHYA PRADESH					
Pench	50	55	57	56	-
Panna	31	33	33	37	34
Bandhavgarh	56	66	66	67	-
Kanha	-	128	129	-	-
UTTARANCHAL					
Corbett	-	137	-	143	-
KERALA					
Periyar	-	32	-	-	-
ANDHRA PRADESH					
Nagarjunsagar	57	59	64	70	70

DEFINITIONS

- **Habitat :** Includes land, water or vegetation which is the natural home of any wild animal.
- **National Park:** Means an area declared, whether under Section 35 or Section 38 or deemed under sub section (3) of Section 66 of the Wildlife (Protection) Act, 1972.
- **Protected Area:** Means an area notified under Sections 18, 35, 36A of the Wildlife (Protection) Act, 1972.
- **Sanctuary:** Means an area declared by notification under Section 18 of the Wildlife (Protection) Act, 1972, and includes a deemed sanctuary under sub section (4) of Section 66 of the Wildlife (Protection) Act, 1972.
- **Core area:** Areas/habitats in the Tiger Reserve which are to be fully protected and where no disturbance of any kind is permitted. In the core area forestry operations, collection of minor forest produce, grazing, human settlement and other human disturbances are not allowed.
- **Buffer area:** Area where strictly controlled wildlife oriented forestry operations and grazing are allowed.
- **Wildlife:** Includes any animal, aquatic or land vegetation, which forms part of any habitat.
- **Wildlife Corridor:** Wildlife corridor is the artificial joining of fragmented habitats. This helps to increase the gene flows between the individual habitats, which improves the fitness of the species. Wildlife corridors are created as a means of conservation or general improvement of the environment.
- **Biodiversity:** Means the variability among living organisms from all sources and the ecological complexes of which they are part and includes diversity within species or between species and of eco-systems.
- **Global Environment Facility (GEF) :** The Global Environment Facility (GEF) is an independent financial organization that provides grants to developing countries for projects that benefit the global environment and promote sustainable livelihoods in local communities. Established in 1991, GEF helps developing countries fund projects and programs that protect the global environment. GEF grants support projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. GEF funds are contributed by donor countries.
- **Eco-development :** Eco development means 'development' that is ecologically, socially and economically sustainable. It is initiated through site specific village level planning by villagers themselves to achieve sustainable development of village resources, alternatives to fuel, fodder and timber and schemes to provide job alternatives to individuals and families in order to eradicate forest dependent livelihood patterns and ensure people's active participation in protection of PA resources.

REFERENCES

I. Acts and Policies

- (i) Wildlife Protection Act, 1972
- (ii) The Wildlife Protection Amendment Act, 2002 (No. 16 of 2003)
- (iii) Environmental Protection Act, 1986
- (iv) Forest (Conservation) Act, 1980 - Rules & Guidelines (as amended on 25.10.1992)
- (v) The National Environment Appellate Authority Act, 1997, (Act No. 22 of 1997)
- (vi) National Forest Policy, 1988
- (vii) National Wildlife Action Plan 2002-16
- (viii) Export –Import Policy, 2002 -2007

II. Other Documents

- (i) Management Effectiveness Evaluation of Finland's Protected Areas, 2005
- (ii) 'State of the Parks – 2004', Department of Environment and Conservation (NSW), Sydney
- (iii) Report on 'Better Communication of Roles and Responsibilities Is Needed to Strengthen Partnership with the National Park Service', United States General Accountability Office, 2004
- (iv) Report on 'The Management of Commonwealth National Parks and Reserves', Conserving our Country, Australian National Audit Office, 2001-02
- (v) Parks Canada Program– Department of Environment, Report of the Auditor General of Canada, 1983
- (vi) Report on 'Ecological Integrity in Canada's National Parks', Report of the Auditor General of Canada, 2005
- (vii) Report of the Working Group on Wild Life for the X Five year Plan (2002-2007), Document of the Planning Commission, October 2001
- (viii) State of Forest Report, Forest Survey of India, Dehradun, 1999
- (ix) State of Forest Report, Forest Survey of India, Dehradun, 2001
- (x) State of Forest Report, Forest Survey of India, Dehradun, 2003
- (xi) Project Tiger 1973-1983, Project Tiger Directorate, MoEF
- (xii) Project Tiger – 1990, Project Tiger Directorate, MoEF

