



PREFACE

The indiscriminate utilisation of natural resources for meeting development demands, rapid industrialisation and unplanned urbanisation are adversely impacting the environment. Dumping of wastes into our rivers and lakes, clearing forest land for cultivation and increased emission of harmful pollutants into the environment have all contributed to degrading our environment. Trends towards environmental degradation can, however, be slowed and even reversed by active governmental interventions. Over the last decade in India, there has been an increase in efforts in the area of conservation of the environment. Funds allocated for environmental programmes have also been increasing.

In this context, this Report for the year ended 31 March 2009 has been prepared for submission to the President under Article 151(1) of the Constitution. Our objective, through this Report, is to create awareness and urgency about conservation and protection of the environment which need to be addressed by the Government. This Report contains audit findings relating to the themes of afforestation, biodiversity, pollution control and environmental education. We have made several recommendations in our Report which would serve as an aid to management in better governance of environment. This Report would also help in sensitising policy makers to look at environmental issues with a holistic approach and address the deficiencies in programmes/schemes/policies so that our environment is conserved more effectively.



Executive Summary

Protection and conservation of the environment is increasingly becoming important, especially in light of observed climate change which has devastating consequences for the survival of humanity. In this context, effective environmental governance by the Executive is of utmost importance. Accordingly, the thrust of this Audit Report is to highlight issues relating to the adequacy and effectiveness of programmes, schemes and interventions made by the Ministry of Environment and Forests to tackle important environmental issues like deforestation, biodiversity, control of pollution etc. This Report also contains 37 specific recommendations. The findings of audit and the recommendations made in this Report are expected to enable the Executive to take corrective action as also to frame policies and directives that will lead to improved environmental governance.

Chapter 1, in addition to explaining the planning and extent of audit, provides a synopsis of general audit findings, the significant audit observations reported in Audit Reports, position of outstanding utilisation certificates, brief analysis of the expenditure of Ministry of Environment and Forests (MoEF), significant deficiencies in accounts of autonomous bodies and the follow up of Audit Reports.

Chapters 2 to 5 present the findings/observations relating to environmental issues arising out of the audit of Ministry of Environment and Forests (MoEF) which is the nodal ministry in the Government of India for environmental issues. The audit findings have been discussed under separate thematic headings relating to Afforestation, Biodiversity, Pollution Control and Environmental Education.

An overview of the specific audit findings and key audit recommendations included in this Report is given below:

Theme: AFFORESTATION

Failure of a scheme for increasing tree cover (Paragraph 2.1)

Audit findings

National Afforestation and Eco-Development Board (NAEB) released ₹47.03 crore to Voluntary Agencies (VAs) and State Forest Departments (SFDs)/Forest Development Agencies (FDAs) for implementing 647 afforestation projects. Audit observed that only 3.57 per cent of the projects sanctioned to VAs and 23 per cent of the projects sanctioned to SFDs/FDAs could be completed. As these agencies did not come back to NAEB for release of further installments, the possibility of misutilisation/fraud could not be ruled out. More than 93 per cent of the projects did not achieve their targeted objectives; thereby seriously impacting the efforts to increase tree cover in India.

Key audit recommendations

- A thorough investigation into the utilisation of funds may be conducted by the MoEF and appropriate action taken against the defaulting agencies.
- Deficiencies in the implementation of Greening India Scheme should be addressed effectively in the proposed new Scheme for afforestation, so that the desired objectives of afforestation and increasing tree cover in India could be achieved.

Non-achievement of objective of developing forest resources *(Paragraph 2.2)*

Audit findings

National Afforestation and Eco-Development Board (NAEB) released ₹64 lakh to three Forest Development Agencies (FDAs) in Goa under the National Afforestation Programme for treating 1250 hectares of degraded forest land. However, only 85 hectares of land could be treated during the Tenth Plan period. NAEB could neither ensure successful implementation of the programme in the state nor recover the entire grant of ₹64 lakh and interest of ₹32 lakh from the concerned FDAs under the state government.

Key audit recommendation

- *Funds should be released to the implementing agencies in installments and before entrusting funds, MoEF should adequately assess the capacity of agencies in project implementation so that achievement of project objectives could be ensured.*

Theme: BIODIVERSITY

Regulation of Biodiversity in India *(Paragraph 3.1)*

Audit findings

National Biodiversity Authority (NBA) was established in 2003 by the Government of India for the regulation, conservation and sustainable use of bio-resources of India. Even six years after its formation, NBA could not notify important regulations like access to biodiversity, transfer of results of research and intellectual property rights etc. Lists of endangered medicinal plants in India and measures for their conservation were not drawn up. NBA's efforts in identifying threatened, endangered and endemic species and recommending guidelines for their conservation were inadequate as list of endangered species was prepared for only seven out of 28 states. It also failed to get the Peoples' Biodiversity Registers and database of biological resources prepared, both of which were vital for efforts at protection and conservation of biological resources. It had no information on grant of Intellectual Property Rights outside India on any biological resource obtained from India or knowledge associated with such biological resources which is derived from India.

Key audit recommendations

- *In order to effectively protect and conserve species that are on the verge of extinction or are likely to face extinction in the near future, NBA and MoEF may intensify their efforts, after ensuring cooperation from the states, to prepare the list of threatened, endangered and endemic species and to recommend regulations for their conservation.*
- *NBA may develop guidelines for documentation of local biodiversity, bio-resources and associated traditional knowledge and document a few selected areas/fields of 'traditional knowledge' for commercial exploitation.*
- *NBA may urgently set up a monitoring cell to keep track of IPRs granted outside India.*

Role of Botanical Survey of India in meeting India's commitments to the Convention on Biological Diversity *(Paragraph 3.2)*

Audit findings

The Convention on Biological Diversity (CBD) was ratified in 1994 by 150 countries including India. To implement the provisions of CBD, objectives of Botanical Survey of India (BSI) were remodeled. However, BSI was not effective in meeting its remodeled objectives as there was inadequate identification/ documentation and monitoring of plant species. Very few surveys and explorations were carried out to identify and document the Protected Areas and Fragile ecosystems. The Red Data Book was updated in 1990 and last updated version was printed in 2003 thereby impacting conservation efforts. Further, identification of different ethnic groups associated with usage of plant species for different purposes was not done. BSI did not generate adequate data for in-situ conservation and it did not carry out ex-situ conservation, which impacted conservation of biodiversity. As such, BSI could not effectively fulfill its role in meeting India's commitment to CBD.

Key audit recommendations

- *Ministry of Environment and Forests needs to ensure that all necessary infrastructure is provided to BSI to effectively ensure conservation of precious biodiversity and also to meet its commitments to CBD.*
- *BSI may strengthen its efforts to increase its survey and exploration activities so that the results can be disseminated for developing management plans and effectively conserving the Protected Areas.*
- *In order to ensure that locally endemic species particular to a Hotspot are identified and conserved, it is recommended that special attention be paid to comprehensive survey and documentation of Hotspots.*
- *BSI needs to increase its activities and undertake more schemes for identification, exploration and documentation of phytodiversity of Fragile ecosystems, so that the Fragile ecosystems can be effectively conserved.*

Theme: POLLUTION CONTROL

Non-achievement of objectives of Ecocity Programme *(Paragraph 4.1)*

Audit findings

Central Pollution Control Board (CPCB) initiated the 'Ecocity Programme' at a total cost of ₹30 crore under the Tenth Five Year Plan for implementation in six cities which were selected for the first phase of the programme in view of their cultural/historical/heritage and tourism importance. Works undertaken under the programme remained incomplete in all selected six cities and ₹1.88 crore was lying unspent with State Pollution Control Boards for over seven years. Thus, the objectives of the programme which were to improve the environment and bring in visible results through implementation of identified environmental improvement projects in selected towns and cities were not achieved.

Key audit recommendation

- *CPCB/MoEF should strengthen the project implementation mechanism and its control/ monitoring mechanism before the second phase of the programme is launched, so that it can effectively achieve the objectives set out for the Ecocity programme and improve facilities for tourists/pilgrims.*

Non-achievement of objectives of control of pollution caused by leather tanneries *(Paragraph 4.2)*

Audit findings

National River Conservation Directorate (NRCD) sanctioned interest-free loan of ₹67.72 crore to Government of West Bengal for construction of a Common Effluent Treatment Plant at Bantala, about 20 km south-east of Kolkata. The project was originally targeted for completion by November 1997 but could not be completed as of June 2010. NRCD has sanctioned only four out of seven components under the project as yet. Delay of more than 12 years in completion of the project adversely impacted the objective of ensuring safe disposal of toxic industrial effluents and solid waste from tanneries, causing immense environmental damage and health risks.

Key audit recommendation

- *MoEF may monitor execution of the project more closely to ensure its speedy completion and achievement of planned objectives in a time bound manner. MoEF may impose heavy penalties/close tanneries in case the tanneries do not route their effluents through Effluent Transportation System and Common Effluent Treatment Plant so that the damage to the environment is minimised.*

Theme: ENVIRONMENTAL EDUCATION

Activities of National Museum of Natural History, New Delhi *(Paragraph 5.1)*

Audit findings

National Museum of Natural History (NMNH) was set up to promote environmental education all over the country. Its collections were old and archaic and its galleries/exhibits had not been changed/updated in the last 20 years. It had not developed any museum based projects and its activities in reaching out to children to educate them about environment and conservation were extremely limited. It had not undertaken any research and had failed to develop linkages with other agencies working in this area. Review of activities of NMNH lead to the conclusion that NMNH did not justify its status of being a 'national' museum in light of its poor quality of exhibits and its amateurish efforts in the field of promoting environmental education in the country.

Key audit recommendations

- *NMNH may develop user friendly and high quality museum based educational material for children and adults, which would help it in effectively promoting environmental education. NMNH may regularly update its exhibits and organise temporary exhibitions regularly besides increasing the use of IT tools and multimedia like touch screens into the museum experience which will enable visitors to have easier and more enriching sources of information and knowledge.*
- *NMNH needs to pay serious attention a improvement of galleries and their exhibits so that they can achieve the highest level of quality to promote environmental education at a national level.*
- *NMNH needs to appoint an adequate number of guides for explaining the concepts displayed in the galleries which are spread over four floors of the building and thus educating young school children and general visitors in environment concepts. NMNH also needs to provide basic amenities to the visitors so that visits to the museum could be a comfortable and enriching experience.*



Chapter - 1

INTRODUCTION

This Report of the Comptroller and Auditor General of India relates to matters arising from audit of the transactions and performance of the Ministry of Environment and Forests. Ministry of Environment and Forests is the nodal agency in the Government of India for planning, promoting, coordinating and overseeing the implementation of environmental and forestry programmes. The principal activities undertaken by the ministry consist of conservation & survey of flora, fauna, forests & wildlife, prevention & control of pollution and afforestation & regeneration of degraded areas. The expenditure incurred by the ministry during 2008-09 was ₹1711.29 crore.

1. Introduction

1.1 About this Report

This Report of the Comptroller and Auditor General of India (C&AG) relates to matters arising from audit of the transactions and performance in the Ministry of Environment and Forests (MoEF) of the Government of India. MoEF is the nodal agency in the Government of India for planning, promoting, coordinating and overseeing the implementation of environmental and forestry programmes with a view to protect the environment and maintain a balance between conservation and development activities. The principal activities undertaken by MoEF consist of conservation & survey of flora, fauna, forests & wildlife, prevention & control of pollution and afforestation & regeneration of degraded areas. The expenditure incurred by MoEF during 2008-09 was ₹ 1711.29 crore. The activities of MoEF are carried out through its various attached/subordinate offices and autonomous bodies spread across the country.

Protection and conservation of the environment is increasingly becoming important, especially in light of observed climate change which has devastating consequences for the survival of humanity. In this context, effective environmental governance by the Executive is of utmost importance. Accordingly, the thrust of this Audit Report is to highlight issues relating to the adequacy and effectiveness of programmes, schemes and interventions made by the government to tackle important environmental issues like deforestation, biodiversity, control of pollution etc. The findings of audit and 37 recommendations made in this Report are expected to enable the Executive to take corrective action as also to frame policies and directives that will lead to improved environmental governance.

Chapter 1 of this Report, in addition to explaining the planning and extent of audit, provides a synopsis of general audit findings, the significant audit observations reported in Audit Reports, brief analysis of the expenditure of MoEF, position of outstanding utilisation certificates, significant deficiencies in accounts of autonomous bodies and the follow up of Audit Reports.

Chapters 2 to 5 deal with the findings/observations relating to environmental issues arising out of the audit of Ministry of Environment and Forests which is the nodal ministry in the Government of India for environmental issues. The audit findings have been discussed under separate thematic headings as detailed below.

Theme for Chapter 2: Afforestation

Theme for Chapter 3: Biodiversity

Theme for Chapter 4: Pollution Control

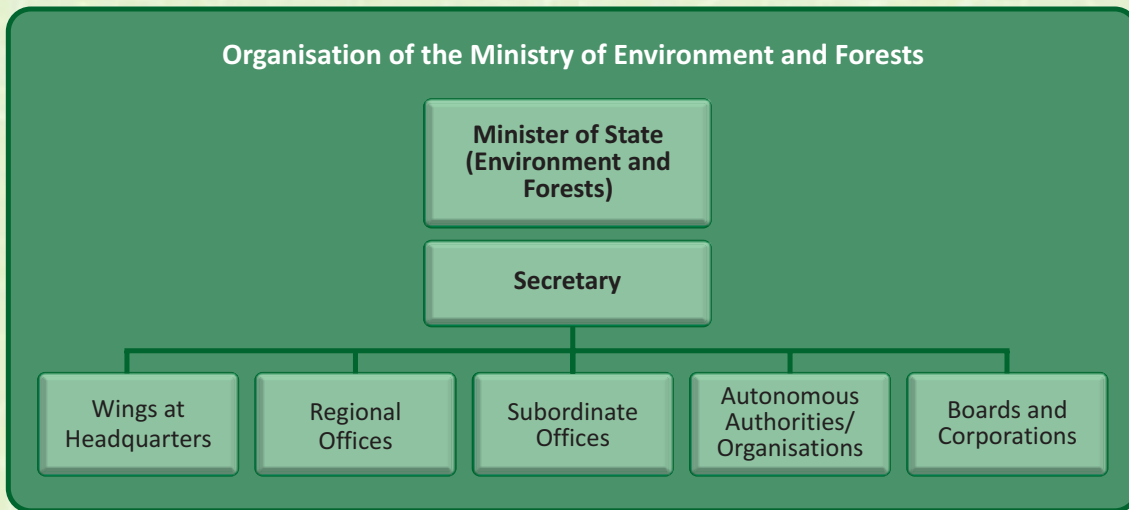
Theme for Chapter 5: Environmental Education

1.2 Auditee profile

The broad objectives of MoEF are:

- Conservation and survey of flora, fauna, forests and wildlife;
- Prevention and control of pollution;
- Afforestation and regeneration of degraded areas;
- Protection of the environment; and
- Ensuring the welfare of animals.

These objectives are supported by a set of legislative and regulatory measures aimed at preservation, conservation and protection of the environment. Some important legislations in this regard are 'The Water (Prevention and Control of Pollution) Act (1974)'; 'The Air (Prevention and Control of Pollution) Act (1981)'; 'The Environment (Protection) Act (1986)'; 'Wildlife (Protection) Act (1972)'; 'The Forest Conservation Act (1980)'; 'The Biological Diversity Act (2002)' etc. Besides these legislative measures, the 'National Conservation Strategy and Policy Statement on Environment and Development (1992)'; 'National Forest Policy (1988)'; 'Policy Statement on Abatement of Pollution (1992)' and the 'National Environment Policy (2006)' have also been promulgated by MoEF. To fulfil its mandate, MoEF has the following administrative structure:



The details of the organisational structure are given below:

- **Headquarters** at Delhi with five main wings (i) Environment (ii) Forests and Wildlife (iii) National Afforestation and Eco-development Board (iv) National River Conservation Directorate and (v) Animal Welfare;
- **Regional Offices** in Bangalore, Bhubaneswar, Bhopal, Shillong, Lucknow, and Chandigarh and offices of Wildlife Crime Control Bureau at Chennai, Kolkata, Mumbai, Jabalpur and Delhi;
- **Subordinate Offices** like Forest Survey of India (FSI), Indira Gandhi National Forest Academy (IGNFA) and Directorate of Forest Education (DFE) at Dehradun, Botanical Survey of India (BSI) and Zoological Survey of India (ZSI) at Kolkata, National Zoological Park (NZP) and National Museum of Natural History (NMNH) at Delhi and National Institute of Animal Welfare (NIAW) at Ballabgarh;
- **Autonomous Authorities/Organisations** like Central Zoo Authority (CZA), National Ganga River Basin Authority (NGRBA) and National Tiger Conservation Authority (NTCA) at Delhi, National Biodiversity Authority (NBA) at Chennai, Indian Council of Forestry Research & Education (ICFRE) and Wildlife Institute of India (WII) at Dehradun, Indian Institute of Forest Management (IIFM) at Bhopal, Gobind Ballabh Pant Institute of Himalayan Environment & Development (GBPIHED) at Almora and Indian Plywood Industries Research & Training Institute (IPIRTI) at Bangalore; and
- **Boards** like Central Pollution Control Board (CPCB) and National Afforestation and Eco-development Board (NAEB) at Delhi and Animal Welfare Board of India (AWBI) at Chennai and Andaman & Nicobar Islands Forest & Plantation Development Corporation Limited at Port Blair.

1.3 Authority for Audit

The authority for audit by the C&AG is derived from Articles 149 and 151 of the Constitution of India and the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 (DPC Act). C&AG conducts audit of expenditure of Ministries/Departments of the Government of India under Section 13¹ of the DPC Act. C&AG is the sole auditor in respect of four autonomous bodies under MoEF, which are audited under sections 19(2)² and 20(1)³ of the DPC Act. In addition, C&AG also conducts supplementary/superimposed audit of five other autonomous bodies under sections 14⁴ and 15⁵ of the DPC Act, which are substantially funded by the Government of India and whose primary audit is conducted by Chartered Accountants. Principles and methodologies for compliance audit are prescribed in the Regulations on Audit and Accounts, 2007 issued by the C&AG.

1.4 Planning and conduct of Audit

Audit process starts with the assessment of risk of the Ministry/Organisation as a whole and each unit based on expenditure incurred, criticality/ complexity of activities, level of delegated financial powers, assessment of overall internal controls and concerns of stakeholders. Previous audit findings and action taken thereon are also considered in this exercise. Based on this risk assessment, the frequency and extent of audit are decided. An annual audit plan is formulated to conduct audit on the basis of such risk assessment.

After completion of audit, Inspection Reports containing audit findings are issued to the heads of the units. The units are requested to furnish replies to the audit findings within one month of receipt of the Inspection Report. Whenever replies are received, audit findings are either settled, based on reported compliance or further action for compliance is advised. The important audit observations arising out of these Inspection Reports where compliance is inadequate or matter is significant enough to be brought to the notice of Parliament, are processed for inclusion in the Audit Reports which are submitted to the President of India under Article 151 of the Constitution of India.

During 2008-09, audit of 34 out of 77 units of MoEF all over the country was conducted. Our audit plan covered those units/entities which were vulnerable to significant risk, as per our assessment.

General Findings of Audit

1.5 Deficiencies reported in Inspection Reports

Our audit examination of various units/divisions of MoEF during the year 2008-09 highlighted some common deficiencies⁶ which impacted on the effectiveness of their functioning. The occurrence of these deficiencies across various units reflects weaknesses in the oversight mechanism. Some of the common deficiencies reflected in the Inspection Reports are as follows:

¹ Audit of (i) all expenditure from the Consolidated Fund of India, (ii) all transactions relating to Contingency Funds and Public Accounts and (iii) all trading, manufacturing, profit & loss accounts, balance-sheets & other subsidiary accounts.

² Audit of the accounts of corporations (not being companies) established by or under law made by Parliament in accordance with the provisions of the respective legislations.

³ Audit of accounts of any body or authority on the request of the President, on such terms & conditions as may be agreed upon between C&AG and Government.

⁴ Audit of (i) all receipts and expenditure of a body/authority substantially financed by grants or loans from the Consolidated Fund of India and (ii) all receipts and expenditure of any body or authority where the grants or loans to such body or authority from the Consolidated Fund of India in a financial year is not less than rupees one crore.

⁵ Audit of grant or loan given for any specific purpose from the Consolidated Fund of India to any authority or body, to scrutinise the procedures by which the sanctioning authority satisfies itself as to the fulfillment of the conditions subject to which such grants or loans were given.

⁶ These are instances reported in Inspection Reports of various units of MoEF and do not include the specific paragraphs highlighted in this Report.

Deficiencies reported in Inspection Reports

1. Non-achievement of objectives of projects

There were many projects which were undertaken by different units of MoEF which could not achieve the objectives for which they were undertaken. Some projects which failed to achieve their objectives were:

- (i) In a project on “Framework for women's participation in forest resource management – a study of Joint Forest Management villages in Jhabua district”, the project objectives relating to participation of women could not be achieved.
- (ii) In the project on “Impact of Wildlife (Protection) Act, 1972 on livelihood of snake charmers of Madhya Pradesh”, it was observed that the project did not provide alternatives to the snake charmers' communities for their livelihoods as envisaged.
- (iii) In a Research study on “Sustainable livelihoods of lepers through forest resources: a case study of Raigarh district in Chhattisgarh”, it was observed that due to lack of planning, the funds were exhausted before start of the project and more efforts were required to achieve the envisaged objectives regarding sustainable livelihood.
- (iv) In an In-house project on “Reclamation of highly eroded site of Cherapunjee, Meghalaya” implemented by ICFRE, the objectives were not achieved as the entire experimental plot got burnt twice.
- (v) Projects relating to management of Municipal Solid Waste and composting at Chhajarashi and Hyderabad were yet to be completed despite lapse of more than five years from the scheduled completion dates.

2. Significant delay in completion of projects

There were significant delays in completion of projects undertaken by different units of MoEF. As such, the purpose of undertaking these projects was not fully met. Some specific instances of incomplete projects were:

- (i) Project on “Utilization of Anode Mud and chips- the solid wastes generated in the Zinc industry for making value added products by Regional Research Laboratory, Bhopal” which was to be completed in two years could be completed after a delay of one and half years.
- (ii) Project on “Integrated technique for monitoring desertification using intelligent Geographic Information System”, which was to be completed in three years, was not completed as of May 2009, despite being scheduled for completion in April 2007.
- (iii) For “Setting up Regional Museum of Natural History at Sawai Madhopur, Rajasthan”, though completion of construction was scheduled for September 2009, the construction work has started only in February 2009 and revised date of completion has been fixed as October 2010.
- (iv) A project by ICFRE on “Quantitative estimation of biological active secondary metabolites in some of the arid zone medicinal plants to ascertain correct harvesting time” was delayed for two years after its scheduled date of completion.

3. Inadequate monitoring

Monitoring of projects was inadequate and this hampered the overall effectiveness of implementation of projects/schemes. Some of the projects/schemes which were impacted due to poor monitoring were:

- (i) In a Project on “Bio-remediation of Railadevi lake in Thane District, Maharashtra”, a monitoring committee constituted for the project met only once against four prescribed meetings leading to non-preparation of action plan, delays in completion of project and non-review of final technical report by the Monitoring Committee.
- (ii) A project on “Conservation and management of three lakes Laxminarayanbari, Durgabari and Dimsagar in Agartala” was inadequately monitored as NRC released grants to implementing agency without submission of PERT chart and linking it to the release of funds.

- (iii) A project on “Rehabilitation and rejuvenation of Banjara Lake at Hyderabad” was inadequately monitored as regular progress reports of the project were not received and just before completion of the project, NRCD noticed that the progress of implementation of the project was not satisfactory.

4. Idle equipment/Equipment lying un-utilised

Equipment purchased for monitoring, assessment, research etc., were lying uninstalled and hence could not be used for the intended purpose. As a result, the activities for which these were purchased were adversely impacted. Some instances of equipment lying idle/unused are the following:

- (i) Four “Plant Growth Chambers” purchased by Arid Forest Research Institute (AFRI) Jodhpur had not been utilised since 1997.
- (ii) An “Ion Selective Electrode Auto Chemistry System” had been lying idle since 1998 & “Dew Point Measures” were lying idle since 2000 due to non-availability of pollution related projects in AFRI Jodhpur.
- (iii) A “Paper plant” in Forest Research Institute (FRI), Dehradun was lying idle since 1999 due to shutdown of boiler and reduction of electricity load.

5. Weaknesses in conduct of Internal Audit

A strong Internal Audit system in any organisation aids in evaluating the adherence of the organisation to the policies laid down by management. Effective response to issues flagged by the Internal Audit mechanism coupled with timely intervention by the management improves the governance levels in the organisation. It was observed that MoEF did not conduct Internal Audit of any of the units under its jurisdiction during the period 2008-09. Further, in some of the units like ZSI Solan, NZP Delhi, GBPIHD Almora etc., no Internal Audit has ever been conducted.

Significant findings of Audit

1.6 Significant audit observations reported in Audit Reports

In the last few years, Audit has reported on several significant deficiencies in critical areas which impact the effectiveness of functioning of MoEF. In our previous report⁷, we had commented on performance of programmes in the paragraphs on non-achievement of objectives of a village tree plantation project⁸ and deficiencies in the functioning of Central Zoo Authority⁹. This year too, we have reported on deficiencies in the performance of various schemes/programmes in the paragraphs like (i) Failure of a scheme for increasing tree cover (ii) Non-achievement of objective of developing forest resources (iii) Non-achievement of objectives of control of pollution caused by leather tanneries and (iv) Non-achievement of objectives of the Ecocity programme.

We have also commented on the deficiencies in the performance of various units of MoEF through paragraphs like (i) Activities of National Museum of Natural History (ii) Regulation of Biodiversity in India by National Biodiversity Authority and (iii) Role of Botanical Survey of India in meeting India's commitments to the Convention on Biological Diversity. Most of these agencies/programmes are directly linked to the achievement of objectives of MoEF.

⁷ Report No. CA-16 of 2008-09.

⁸ Paragraph 6.1 of Report No. CA-16 of 2008-09.

⁹ Paragraph 6.3 of Report No. CA-16 of 2008-09.

Response to Audit

1.7 Follow-up on Audit Reports

In its Ninth Report (Eleventh Lok Sabha) presented to Parliament on 22 April 1997, the Public Accounts Committee had recommended that Action Taken Notes (ATNs) on all paragraphs pertaining to the Audit Reports for the year ended 31 March 1996 onwards be submitted to them, duly vetted by Audit, within four months from the laying of the reports in Parliament.

Due to heavy pendency in receipt of ATNs, C&AG made a presentation to the Central Public Accounts Committee in September 2009 and highlighted the problem of non-receipt of ATNs from the Ministries. PAC expressed serious concern on the large number of ATNs pending with Ministries and a separate Sub Committee was set up for detailed examination.

- (a) A review of outstanding ATNs on paragraphs included in the Reports of C&AG of India pertaining to MoEF as of March 2010 revealed that two ATNs were not submitted by Ministry even for the first time, indicating a delay of four months in submission of ATNs.

These are:

Table - 1

Sl. No.	Report No. and year	Paragraph No./ Chapter	Title	Delay in submission of ATNs (in months)
1.	CA 16 of 2008-09	6.2*	Inadmissible payment of Transport Allowance	4
2.	CA 16 of 2008-09	6.3	Functioning of Central Zoo Authority, New Delhi	4

*ATN was received from MoEF on 19 May 2010.

- (b) **Response of MoEF to Performance Audit on “Management of Waste in India”**

Based on the recommendations made in the Performance Audit on “Management of Waste in India”, MoEF set up a committee to draw up a roadmap for management of waste in India in September 2008. The committee consisted of senior officials of MoEF, CPCB, representatives from Non-Governmental Organisations and eminent persons in the field of waste management. The committee has submitted its report in March 2010. The roadmap suggested by the committee prescribes 103 specific recommendations for better management of waste in India. MoEF needs to ensure implementation of these recommendations in a time bound manner.

Findings of Audit regarding Financial Management

1.8 Budget and expenditure controls

The expenditure of MoEF during the last five years is given in the table below:

Table - 2

Year	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
₹ in crore	1036.19	1154.09	1254.52	1371.52	1583.24	1711.29
Percentage Increase/ decrease (-)	(-) 2.02 ¹⁰	11.38	8.70	9.31	15.45	8.09

¹⁰ The percentage change has been calculated on the basis of expenditure of ₹1057.52 crore in 2002-03.

The total expenditure of MoEF during 2008-09 was ₹ 1711.29 crore. While there was a moderate decline in expenditure during 2003-04 over 2002-03, expenditure has been gradually increasing during the period 2004-09.

The annual accounts of the Government, comprising of the Union Government Finance Accounts and the Appropriation Accounts, are prepared by the Controller General of Accounts. These documents are presented before the Parliament after their statutory audit by C&AG of India. Preparation and submission of Appropriation Accounts to the Parliament completes the cycle of budgetary process. Through Appropriation Accounts, Parliament is informed about the expenditure incurred against the appropriations made by the Parliament in the previous financial year. All the expenditures are duly audited and excesses or savings in the expenditure are explained.

A summary of Appropriation Accounts for the last five years from 2004-05 to 2008-09 in respect of MoEF is given below:

Ministry of Environment and Forests				
Year	Grant/ Appropriation (including supplementary)	Expenditure	(-) Unspent Provision/(+) Excess	Percentage of unspent provision
2004-05	1307.26	1154.09	(-)153.17	11.72
2005-06	1406.68	1254.52	(-)152.16	10.82
2006-07	1523.99	1371.31	(-)152.68	10.02
2007-08	1639.28	1583.24	(-) 56.04	3.42
2008-09	1736.29	1711.29	(-) 25.00	1.44

As can be seen from Table-3 above, there has been a significant improvement in the utilisation of Grants during the last five years as unspent balances have decreased from 11.72 *per cent* to 1.44 *per cent* of the total grant/appropriation.

1.9 Outstanding Utilisation Certificatess

Ministries and Departments are required to obtain certificates of utilisation of grants (UCs) from the grantees i.e., statutory bodies, non-governmental institutions etc., indicating that the grants had been utilised for the purpose for which these were sanctioned and where the grants were conditional, the prescribed conditions had been fulfilled. According to the information furnished by the Pay and Accounts Office of MoEF, 7916 UCs amounting to ₹ 596.79 crore were outstanding as given in Table 4:

Period to which grant relates	Number of utilisation certificates outstanding at the end of March 2010	Amount (₹ in lakh)
1981-82	15	5.79
1982-83	21	41.00
1983-84	90	58.50
1984-85	143	229.80
1985-86	121	495.40
1986-87	74	533.77
1987-88	278	6531.00

Period to which grant relates	Number of utilisation certificates outstanding at the end of March 2010	Amount (₹ in lakh)
1988-89	359	2543.18
1989-90	545	192.00
1990-91	70	123.30
1991-92	81	1439.00
1992-93	216	736.00
1993-94	64	74.18
1994-95	92	207.64
1995-96	85	179.24
1996-97	382	1870.93
1997-98	177	637.27
1998-99	380	1105.52
1999-2000	386	1933.64
2000-01	379	1287.24
2001-02	440	2763.95
2002-03	473	2758.41
2003-04	548	2063.67
2004-05	473	2391.80
2005-06	441	2650.06
2006-07	510	5858.71
2007-08	497	8706.05
2008-09	576	12261.64
Total	7916	59678.69

Age-wise analysis revealed that while UCs amounting to ₹426.75 crore (71.51 per cent) were pending adjustment for the last 10 years (1999 to 2009), a significant number of UCs amounting to ₹104.38 crore (17.49 per cent) were pending adjustment for periods more than 20 years. Age-wise details of pending UCs are given in Table 5 below.

Table - 5

Period to which grant relates	Number of UCs outstanding at the end of March 2010	Amount (₹ in lakh)	Percentage of value of outstanding UCs
UCs pending for more than 20 years (1981-1989)	1101	10438.44	17.49
UCs pending for more than 10 years (1989-1999)	2092	6565.08	11.00
UCs pending for the last 10 years (1999-2009)	4723	42675.17	71.51
Total	7916	59678.69	100.00

Such a large pendency of outstanding UCs indicated lack of monitoring and follow-up system in MoEF. In this context, the issue of non-submission of UCs for a scheme for Village Tree Plantation was highlighted by us in our previous Report¹¹ wherein 15 states/Union territories did not submit UCs worth ₹2.42 crore. Similarly, it was pointed out in another paragraph on Central Zoo Authority¹² that UCs aggregating

¹¹ Paragraph 6.1 of Report No. CA-16 of 2008-09.

¹² Paragraph 6.3 of Report No. CA-16 of 2008-09.

₹20.01 crore were outstanding from 60 zoos for funds released between 2000 and 2007. In the current Report also, this issue has been highlighted in paragraphs titled 'Failure of a scheme for increasing tree cover'¹³ and 'Non-achievement of objectives of Ecocity Programme'¹⁴.

Recommendation - 1

Since the receipt of UCs is an important mechanism to vouch that the funds have been utilised for the intended purpose, we recommend that the MoEF put in place a strong mechanism to ensure timely receipt of UCs. The possibility of fraud/misappropriation of funds cannot be ruled out in cases where the grantee organisations have abnormally delayed submission of UCs. MoEF should also conduct an indepth scrutiny of all UCs pending at present with the grantee organisations to reconcile the position and take necessary action to recover the pending amounts.

1.10 Audit of accounts of Autonomous Bodies

C&AG is the sole auditor of four autonomous bodies under the MoEF for which Separate Audit Reports (SAR) are prepared on their accounts under sections 19 (2) and 20 (1) of the CAG's (DPC) Act, 1971. The total grants released to these autonomous bodies during 2008-09 were ₹39.26 crore. In addition, C&AG also conducts supplementary/superimposed audit of five other autonomous bodies under Section 14 or Section 15 of the CAG's (DPC) Act, 1971. The total grants released to these autonomous bodies during 2008-09 were ₹185.15 crore.

Details of grants released to these autonomous bodies are given below:

Table - 6

Sl.No.	Name of the Autonomous Body	Amount of grants released in 2008-09 (₹in crore)
Under Section 19 and 20		
1.	Central Zoo Authority, New Delhi	17.50
2.	Wildlife Institute of India, Dehradun	16.20
3.	National Biodiversity Authority, Chennai	3.29
4.	National Tiger Conservation Authority, New Delhi	2.27
Total		39.26
Under Section 14 and 15		
1.	Central Pollution Control Board, New Delhi	50.64
2.	Indian Institute of Forest Management, Bhopal	9.06
3.	Indian Council of Forestry Research & Education, Dehradun	108.24
4.	Indian Plywood Industries Research and Training Institute, Bangalore	5.00
5.	Govind Ballabh Pant Institute of Himalayan Environment and Development, Almora	12.21
Total		185.15

¹³ Paragraph 2.1 of the current Report.

¹⁴ Paragraph 4.1 of the current Report.

We observed that there were delays in submission of accounts by these autonomous bodies to Audit. This issue along with some significant deficiencies reported in accounts is mentioned below.

(i) Delay in submission of accounts of autonomous bodies

The Committee on Papers Laid on the Table of the House recommended in its First Report (Fifth Lok Sabha: 1975-76) that after the close of the accounting year, every autonomous body should complete its accounts within a period of three months and make them available for audit and that the reports and the audited accounts should be laid before Parliament within nine months of the close of the accounting year. The position of submission of accounts for the year 2008-09 by Autonomous Bodies under MoEF is shown below:

Table - 7

Sl. No.	Name of the Autonomous Body	Actual date of submission of accounts to audit	Delay in days
1.	Wildlife Institute of India, Dehradun	7.07.2009	7 days
2.	Central Zoo Authority, New Delhi	15.07.2009	15 days
3.	National Biodiversity Authority, Chennai	23.07.2009	23 days
4.	National Tiger Conservation Authority, New Delhi	7.06.2010	342 days

It could be seen from Table 7 that all of these four autonomous bodies made available their accounts to Audit with delays ranging from 7 days to 342 days. The delay was significant in the case of National Tiger Conservation Authority, New Delhi where the accounts were submitted after a delay of 342 days.

(ii) Significant deficiencies in accounts

Some of the important issues highlighted in SARs on the accounts for the year 2008-09 are listed below:

1. In National Biodiversity Authority, Notes on Significant Accounting Policies at item number 6 states that depreciation was provided on Straight Line Method at the rates prescribed by the Income Tax Act, 1961. However, the depreciation was charged on Written Down value method. The accounting policy was deficient to this extent.
2. In Wildlife Institute of India, funds amounting to ₹ 28.87 lakh received for consultancy projects/outside funded projects during the financial year were wrongly shown under the head 'Other income' (Schedule 18) of Income and Expenditure account instead of Earmarked/Endowment Fund. This resulted in overstatement of income to the extent of ₹ 28.87 lakh.



Chapter - 2

THEME: AFFORESTATION

Forests are critically important habitats due to the ecological functions they serve and the biodiversity they contain. However, the process of development is destroying our forests and the needs of our development have to be balanced with the necessity of protection and preservation of our valuable forest resources. The total forest cover of the country, as per the 2007 assessment constitutes 21.02 per cent of the geographic area of the country. India is making vigorous efforts to increase the geographical area under forest cover to 33 per cent and the Green India Mission, under the National Action Plan for Climate Change plans to double the area to be taken up for afforestation/eco-restoration in India in the next 10 years.

2.1 Failure of a scheme for increasing tree cover

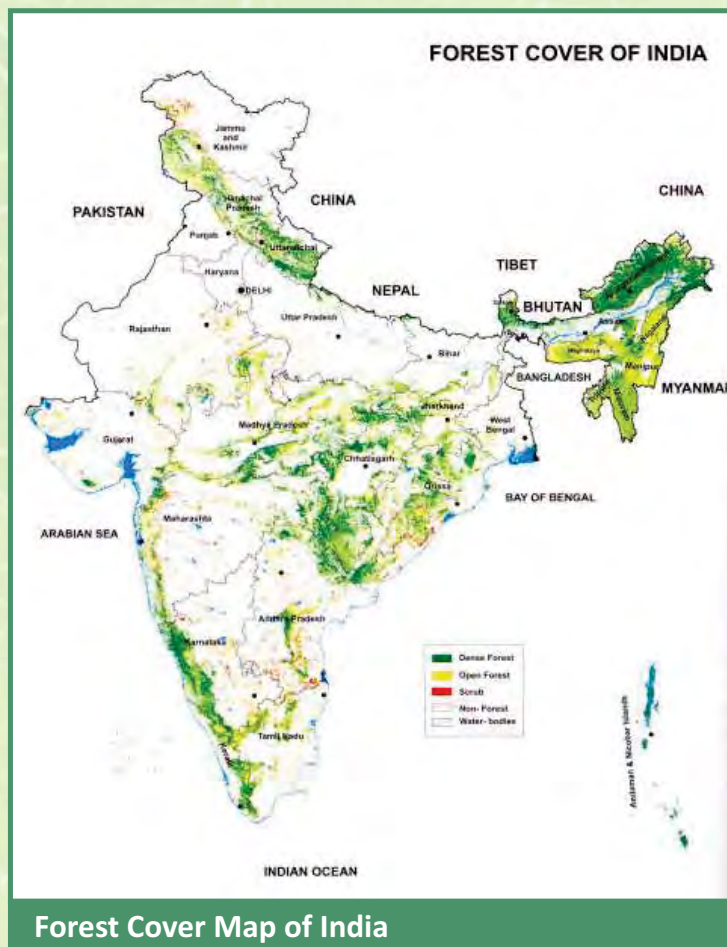
National Afforestation and Eco-Development Board (NAEB) released ₹47.03 crore to Voluntary Agencies (VAs) and State Forest Departments (SFDs)/Forest Development Agencies (FDAs) for implementing 647 afforestation projects. Audit observed that only 3.57 per cent of the projects sanctioned to VAs and 23 per cent of the projects sanctioned to SFDs/FDAs could be completed. As these agencies did not come back to NAEB for release of further installments, the possibility of misutilisation/fraud could not be ruled out. More than 93 per cent of the projects did not achieve their targeted objectives; thereby seriously impacting the efforts to increase tree cover in India.

2.1.1 Introduction

Planning Commission, in its Approach Paper in September 2001, had fixed the target of increasing the forest/ tree cover in India to 25 per cent of the geographical area of the country by the end of Tenth Five Year plan (2002-07) and 33 per cent by 2012. Further, it had also observed during discussions for the Tenth Five Year Plan that availability of land and quality planting material were major gap areas.

National Afforestation and Eco-Development Board (NAEB), under the Ministry of Environment and Forests (MoEF), is responsible for promoting afforestation, tree planting, ecological restoration and eco-development activities in the country.

Recognising these constraints, NAEB decided to restructure the existing 'Grants-in-Aid Scheme'¹⁵



¹⁵ Introduced in 1987.

providing assistance to voluntary agencies for tree planting' (VA Scheme) to meet the identified constraints. The restructured scheme, renamed as 'Grants-in-aid for Greening India' (Greening India Scheme), was approved by Expenditure Finance Committee (EFC) in March 2005 at a total cost of ₹49.50 crore to be implemented during the Tenth Five Year period (upto March 2007). While approving the modified scheme, Planning Commission had expressed its reservations and suggested that the lessons learnt from the VA Scheme be incorporated in the new scheme.

(i) Objectives of the schemes

The broad objective of the VA Scheme was to financially assist Voluntary Agencies for taking up afforestation, tree planting and eco-development activities. Greening India Scheme further extended these objectives by including components for setting up nurseries, training, evaluation activities etc. The main components of the scheme to achieve the overall objectives set out for the programme were:

- a) Tree planting;
- b) Production of quality planting material through hi-tech and satellite nurseries; and
- c) Awareness generation, extension and training.

(ii) Funding pattern

Funds under these schemes were to be given to the VAs¹⁶ (for tree planting projects) in three installments and SFDs¹⁷/FDAs¹⁸ (for production of quality planting material and awareness generation programmes) in two installments. The first installment was to be released immediately after the sanction of the project. After the UCs and progress reports for the first installment were received, NAEB was required to carry out midterm evaluation of the project through Principal Chief Conservator of Forests (PCCF) of the concerned state. Based on this, NAEB was to release the second installment. The third installment was payable after receipt of UCs for the second installment and final evaluation report by concerned PCCF. Thus, project completion was contingent on VAs/SFDs/FDAs getting all the three installments and submitting UCs, projects reports and evaluation reports to NAEB.

Audit Findings

2.1.2 Poor completion rate of projects under the scheme

During 2003 to 2008, NAEB had sanctioned 647 projects at a cost of ₹59.48 crore of which, 560 projects (87 per cent) were sanctioned to VAs and 87 projects (13 per cent) to FDAs/SFDs under the three components¹⁹. The total amount released during 2003-09 was ₹47.03 crore.

Audit observed that the project completion rate under the scheme was very poor and there was no assurance that the funds released to VAs and other agencies had been actually utilized by them for the purpose for which these were sanctioned.

Audit findings in respect of the 647 sanctioned projects are given in table below and discussed thereafter:

¹⁶ Voluntary agencies could be Non Government Organisations (NGOs), Registered Societies, Non-Profit Organisations, Cooperatives, Charitable Trusts etc. Only those agencies who had been registered at least for last five years and who had requisite experience in the field of environment/social sectors, were considered for financial assistance.

¹⁷ State Forest Departments (SFDs).

¹⁸ Forest Development Agencies (FDAs): These are registered under Society's Registration Act and consist of district level officers of relevant line departments of state departments and panchayat raj institutions, including private citizens.

¹⁹ (1) Production of quality planting material through hi-tech and satellite nurseries, (2) tree planting and (3) awareness generation, extension and training.

Table - 8

(Amount: ₹ in crore)

Audit findings in respect of the 647 sanctioned projects										
	Release of installments						Projects Dropped		Total	
	One Installment		Two Installments		All Installments		No.	Amount	No.	Amount
	No.	Amount	No.	Amount	No.	Amount				
Projects sanctioned to VAs	352	13.64	185	15.92	20	1.77	3	0.22	560	31.55
Projects sanctioned to FDAs & SFDs	47	3.59	35	3.20	NA*	NA*	5	0.50	87	7.29
Total	399	17.23	220	19.12	20	1.77	8	0.72	647	38.84

* Funds under these schemes were given to the SFDs/FDAs in two installments

(a) Projects sanctioned to Voluntary Agencies:

- Out of 560 projects sanctioned to VAs, in 352 projects (62.85 *per cent*) costing ₹30.70 crore, only first installment amounting to ₹13.64 crore was released but remaining two installments were not released as NAEB did not receive necessary documents viz., UCs and progress reports from the VAs concerned or the mid-term evaluation reports from concerned state government/PCCF. Thus, implementation of all of these projects was incomplete as VAs did not come back to NAEB for release of the second and third installments. This casts doubt on whether the VAs actually spent the funds released to them in the first installment and the possibility of misutilisation/ fraud cannot be ruled out.
- In 185 projects (33.04 *per cent*) involving ₹18.15 crore sanctioned to VAs, first and second installments were released (₹15.92 crore) but final installment (₹2.23 crore) was not released by NAEB due to non-receipt of final evaluation report and UCs from concerned state government/PCCF or necessary documents from VAs. Thus, these projects also remained incomplete.
- Only in 20 projects (3.57 *per cent*) costing ₹1.79 crore sanctioned to VAs, all the installments of grants were released (₹1.77 crore).
- Three projects (0.54 *per cent*) involving ₹22.44 lakh were dropped.

(b) Projects sanctioned to Forest Development Agencies and State Forest Departments:

- Out of 87 projects sanctioned to FDAs and SFDs, in 47 projects (54.02 *per cent*) involving ₹4.91 crore sanctioned to FDA/SFDs, only first installment amounting to ₹3.59 crore was released but remaining installments were not released as NAEB was yet to receive necessary documents/ progress reports from FDAs/SFDs. Thus, project implementation was incomplete in 54.02 *per cent* of the projects sanctioned to FDAs/SFDs.
- In 35 projects (40.23 *per cent*) involving ₹3.20 crore all the installments of grants were released. However, only in 20 projects (23 *per cent*) final progress report and UC were received.
- Five projects (5.75 *per cent*) involving ₹50 lakh were dropped.

Thus, only 3.57 *per cent* of the projects sanctioned to VAs were actually completed. In financial terms, only 5.65 *per cent* of the total funds were spent on these completed projects. The possibility of misutilisation/fraud is not ruled out as majority of the VAs neither came back to NAEB for the next installments after release of first installment nor did they furnish UCs/progress reports. NAEB also failed

to ensure recovery of funds from these VAs and it did not initiate any action against the defaulting VAs. In case of projects sanctioned to FDAs/SFDs, only 23 *per cent* of the sanctioned projects could be completed. As such, more than 93 *per cent* of projects did not achieve their targeted objectives, thereby affecting the overall objective of afforestation.



Afforestation project targeting degraded land

NAEB replied in December 2009 that it had filed seven FIRs and was in the process of filing another one and that suspected cases of mis-utilisation/fraud were being dealt with timely/appropriately with the SFDs taking action. NAEB also replied that in Chhattisgarh, two FIRs had been filed, Meghalaya had sent an enquiry report and was initiating further action and in Orissa, one VA had returned the money in November 2009. Further, it stated that SFDs were now submitting more evaluation reports, hence facilitating release of subsequent installments to more project implementing agencies. It further stated that number of tree planting projects receiving only one installment had come down to 270 (47.50 *per cent*), the number of second installment cases had increased to 250 (43.90 *per cent*) and that of the completed projects had increased to 49 (8.60 *per cent*).

2.1.3 Mid Term Evaluation of the Greening India Scheme

The Mid Term Evaluation of the Greening India Scheme carried out by Society for Social Services Madhya Bharat Chapter in November 2007 also revealed that the Society had mailed questionnaires to 170 VAs, out of which 15 questionnaires were returned due to unavailability of addresses and only 33 VAs responded to the questionnaires. In addition, the Society also selected 59 projects for field verification and evaluation. From the scrutiny of the 33 responses received and 59 cases inspected, following facts emerged:

- i. Out of these 59 projects inspected, eight VAs had misappropriated funds and 10 VAs had tried to avoid inspection.
- ii. Micro-plans were not prepared for any of the projects and the project proposals were treated as micro-plans.
- iii. In none of the cases, the expected benefits have been quantified.

In December 2009, NAEB replied that the action in doubtful cases had been initiated timely in consultation with the respective SFDs. The process would continue till its logical conclusion. It further stated that the on-going audit had accelerated the pace of follow up action.

Thus, the audit findings and the independent evaluation of the scheme revealed that the scheme failed to achieve the desired objectives and the funds released to various implementing agencies were also misappropriated by them.

Recommendation - 2

A thorough investigation into the utilisation of funds may be conducted by the ministry and appropriate action taken against the defaulting agencies.

Component wise implementation of the VA scheme and Greening India scheme is discussed below.

2.1.4 Tree planting

As per the guidelines, financial assistance was to be provided directly to VAs, farmers, societies, tree growers' cooperatives, etc., for plantation of trees in degraded government and private lands, abandoned mines and quarries, community land, road sides etc. Government agencies like urban and rural local bodies etc., would be provided money for tree plantation through SFDs.

In this regard, Audit observed the following:

(a) Non-achievement of targets for tree planting

According to information collected by Audit, it was observed that during the period 2003-05, NAEB had sanctioned 369 projects and released ₹17.39 crore under VA Scheme for tree planting. Further, during 2005-08, NAEB had sanctioned 194 projects and released ₹18.43 crore under the Greening India scheme for tree planting.

Table - 9

Performance of the Greening India scheme					
Year	2003-04 (VA Scheme)	2004-05 (VA Scheme)	2005-06 (Greening India Scheme)	2006-07 (Greening India Scheme)	2007-08 (Greening India Scheme)
Grant released (in crore)	8.42	8.97	7.60	4.24	6.59
Targeted Cover	No target set	No target set	6000 hectares (advance planting) and 7000 hectares (creation)	7000 hectares (advance planting) and 7000 hectares (creation)	No target set
Sanctioned Cover	8724 hectare	8510 hectare	4714 hectare	2481 hectare	1950 hectare
Achievements	NAEB could not provide the figures in respect of actual tree cover achieved under these schemes.				

It can be observed from the Table 9 that:

- No targets for tree planting were set by NAEB for the period 2003-05 and for 2007-08. As such it was impossible to assess the achievement of the extent of afforestation through tree plantation.
- During the period 2005-07, against the target of 27000 hectares of plantation, projects covering only 7195 hectares (26.65 per cent) of plantation were sanctioned.
- The actual area to be covered under tree plantation considerably declined from 8724 hectares covered in 2003-04 (under VA Scheme) to merely 1950 hectares of plantation done in 2007-08 (under Greening India Scheme). Thus, the success of the new scheme, despite setting up of high-tech nurseries, was doubtful.

In March 2009 and in December 2009, NAEB replied that the scheme was demand driven, subject to the submission of sound proposals by the SFDs and availability of funds. The reply was not acceptable as NAEB failed to take appropriate steps to generate adequate demand for tree plantation projects so as to achieve the prescribed targets.

(b) Inadequacies in project implementation and monitoring under the tree planting component

Audit examined 54 projects sanctioned during 2003-05 under the VA Scheme and 11 projects sanctioned during 2005-06 under the Greening India Scheme for detailed scrutiny of implementation as well as monitoring of the projects. The sanctioned cost of these 65 projects (out of 563 projects) was ₹5.58 crore and amount released was ₹3.92 crore. The sanctioned duration of each of these projects was three years and all of these were expected to be completed by March 2009. However, only 12 projects were completed wherein all installments were released by NAEB. The remaining 50 projects (excluding 3 dropped projects) could not achieve their objectives and remained incomplete due to following reasons:

- (i) NAEB did not initiate any correspondence with defaulting VAs and SFDs after the release of first installment of grant (9 cases).
- (ii) SFDs did not send mid-term evaluation reports to enable the release of second installment of grants to VAs by NAEB (7 cases).
- (iii) Though mid-term evaluation reports were received from SFDs, no action was initiated by NAEB to release second installment to these VAs (7 cases).
- (iv) SFDs did not send the final evaluation reports to enable the release of final installment of grants to VAs (13 cases).
- (v) In projects where final evaluation reports were received from SFDs, no action was initiated to release final installment of grants to VAs as the file was not processed further (7 cases).



Monitoring of Projects

- (vii) NAEB did not take any action to blacklist the VAs as required under GFRs who failed to abide by the terms and conditions of grants (7 cases). On this being pointed out by Audit, NAEB stated in December 2009 that four VAs have been blacklisted, one VA was referred to the SFD for evaluation and follow-up was pending for two VAs.

Thus, all these findings pointed to improper planning and lack of monitoring on part of NAEB to ensure successful and timely implementation of the projects taken up under the VA Scheme and Greening India Scheme with respect to tree planting. Most of the projects sanctioned to the VAs were not complete and no action was taken up against the defaulting VAs. Thus, the overall objective of increased afforestation could not be achieved.

2.1.5 Production of quality planting material through hi-tech and satellite nurseries

As per the guidelines, financial assistance was to be given to SFDs for facilitating production and availability of Quality Planting Material through establishment of hi-tech nurseries²⁰ and satellite nurseries²¹. SFDs were the nodal agencies for enabling production and making available Quality Planting Material. SFDs had to either produce the Quality Planting Material on its own or through collaborative arrangements with forestry/ agricultural research organisations/ FDAs/ farmers below poverty line/ tree growers' cooperatives and Panchayats. Individuals/ private entrepreneurs including farmers below poverty line interested in setting up their own nurseries were to be encouraged to set up satellite nurseries provided they were registered under provisions of relevant local acts and rules at the time of application.



High-tech Nursery

²⁰ High-tech nursery would have seedling capacity of 1 lakh with features of improved technology such as mist chamber, root trainers, sprinkler irrigation etc. These were to be set up by SFDs on their own or in collaboration and the project cost was ₹10 lakh.

²¹ Satellite nurseries had a seedling capacity of 1 lakh and were to be set up using locally available material like thatch shades, can sprinklers, vermi-compost etc., at a cost of ₹ 1 lakh. In addition to SFDs, these could be set up by individuals (including farmers below poverty line and private entrepreneurs).

Audit findings relating to setting up of satellite and hi-tech nurseries are discussed below:

(a) Non-fulfillment of targets for production of Quality Planting Material

In the approved EFC Memo, NAEB had targeted to spend ₹ 5.80 crore and ₹ 4.64 crore in 2005-06 and 2006-07 on establishment of high-tech and satellite nurseries respectively for production of Quality Planting Material. The details are mentioned in the table below.

Year	2003-04	2004-05	2005-06	2006-07	2007-08
Grant released (₹ in crore)	0	0	2.88	1.36	1.81
Target (Number of nurseries)	Component not included	Component not included	Hi-tech: 29 Satellite: 290	Hi-tech: 29 Satellite: 174	Hi-tech: No target sets Satellite: No target sets
Sanctioned (Number of nurseries)	Not Applicable	Not Applicable	Hi-tech: 29 Satellite: 0	Hi-tech: 17 Satellite: 0	Hi-tech: 21 Satellite: 0

It can be observed from the above table that:

- In 2005-08 there was no achievement under setting up of satellite nurseries, even though 464 such nurseries were targeted to be set up during 2005-06 and 2006-07. In December 2009, NAEB replied that no sound proposal for satellite nurseries was received and hence, none was approved. The reply illustrates that targets were fixed without any preliminary survey and NAEB also did not take adequate steps to generate demand for quality planting material.
- Targets were not set for 2007-08, making it difficult to assess achievement in that year.
- Out of 28 states, in 7 states, high-tech nurseries were not sanctioned at all and in 11 states, only one high-tech nursery each was sanctioned.

Thus, NAEB could not ensure adequate production of Quality Planting Materials throughout the country and the objective of generating quality planting material to serve as a source of genetically diverse quality planting material for encouraging afforestation was not achieved.

In December 2009, NAEB agreed that the objective of generating quality planting material to serve as a source of genetically diverse quality planting material for encouraging afforestation could be only partially achieved, even though, due emphasis was given to sanction maximum number of hi-tech/satellite nurseries.

(b) Inadequacies in project implementation and monitoring of projects for production of Quality Planting Material

Out of the 67 sanctioned projects, Audit examined 13 projects sanctioned for setting up hi-tech and satellite nurseries (10 projects sanctioned during 2005-06 and 3 sanctioned during 2006-07) in detail regarding project implementation and monitoring. These had a sanctioned cost of ₹1.20 crore and the amount released under these projects was ₹1.04 crore. The sanctioned duration of each of these projects was one year.

The audit findings in respect of these 13 projects are discussed below:

- NAEB was unaware of the actual progress of the work as neither the FDA had submitted the quarterly report and annual report, nor NAEB had reminded them to submit such reports.

- Midterm corrections could not be carried out under these projects as the projects were not monitored either by the SFDs or NAEB.



Quality Planting Material

Thus, against the target of setting up 58 high-tech nurseries, NAEB could sanction only 46 nurseries and released ₹4.24 crore during 2005-07. Also, though satellite nurseries were envisaged to be set up in every district of the country, no such nursery has been set up so far. Thus, the main objective of the modified scheme i.e., addressing inadequate supply of Quality Planting Material to encourage afforestation remained unachieved.

On this being pointed out in Audit, NAEB replied in December 2009 that concerted efforts were being made to obtain requisite reports from the SFDs and this issue had been highlighted at every available opportunity like the state nodal officers meetings or their visits to the Ministry. NAEB also stated that UCs had now been received in 3 out of the 13 projects.

2.1.6 Awareness generation, extension and training

As per the operational guidelines for the Greening India Scheme, financial assistance was to be provided to the SFDs through FDAs for:

- Creating awareness through printing and circulation of pamphlets on nursery/ planting techniques, economics and marketing of important tree species and guides on establishment of hi-tech/ satellite nurseries, assessment of species (type and quantum), and land availability;
- Training on production of Quality Planting Material, tree planting, micro planning;
- Estimation survey to ascertain the extent of availability of non-forest land and forest land/species for location of central/high-tech nursery.

Audit examination, however, disclosed the following:

(a) Non fulfillment of targets

In the approved EFC Memo, NAEB had targeted spending ₹2.32 crore in 2005-06 to generate awareness about the Scheme. However, it was observed in audit that only 12 projects were sanctioned and ₹88 lakh released during this period. Even during three years period (2005-08) NAEB could sanction only 18 projects and released ₹1.21 crore to 15 states. Further, in 13 out of 28 states NAEB did not sanction any project for awareness generation.

NAEB also did not receive any feedback from the concerned FDAs regarding effectiveness of the awareness and training programmes taken up under the Scheme.

Thus, NAEB did not spend adequately on projects for awareness generation, extension and training, which was one of the important components of the scheme. Consequently, the scheme failed in generating public interest to further the cause of afforestation in the country.

In December 2009, NAEB replied that the targets laid down in EFC memo were only indicative and hence might not be taken as basis for assessing the achievement. The reply of NAEB indicated that the targets were fixed without any realistic assessment and the fact remained that it failed to create adequate awareness about the scheme.

(b) Inadequacies in project implementation and monitoring under the awareness generation component

Out of the 18 sanctioned projects for awareness generation, Audit examined six projects sanctioned during 2005-06 involving ₹48 lakh. The amount released under these projects was ₹46.50 lakh. The sanctioned duration of each of these projects was one year.

The audit findings in respect of these six projects are discussed below:

- Comprehensive Quarterly Reports were neither submitted by the FDAs nor had NAEB reminded them to submit such reports.
- Periodic monitoring by SFDs and the officials of NAEB was not done despite the terms and conditions of the grant.
- Though the sanctioned duration was over, NAEB had not received completion report from the concerned SFDs.

Thus, there was total lack of monitoring of the projects sanctioned under the scheme for generation of public awareness.

2.1.7 Monitoring of the Greening India Scheme

(a) During EFC meeting held in March 2005 to approve Greening India Scheme, the Adviser, Planning Commission had suggested that evaluation reports and findings of projects/ scheme should be shared with the Planning Commission to update their feedback. In this regard, Audit requisitioned records relating to preparation of said evaluation reports and their submission to Planning Commission. In March 2009, NAEB replied that outcome of evaluation of all NAEB schemes, including this one had been communicated through progress reports and duly shared with Plan Coordination Division of MoEF. The reply needs to be viewed in the light of the fact that NAEB was required to share these reports with Planning Commission. Further, it did not provide any documentary evidence in support of its reply.

(b) NAEB failed to incorporate any clause in the sanction to ensure the direct monitoring of the scheme and left the monitoring solely at discretion of SFDs, whose role was only restricted to verifying the ground realities before recommending the same for second installment. In December 2009, NAEB replied that the scheme guidelines do not necessitate direct monitoring by NAEB but provide it through independent agencies. Accordingly, it has been carried out by the independent agency as well as SFDs. It further stated that visits of NAEB officers to the states are being contemplated for speeding up the process and monitoring the projects case by case.

(c) As per the instructions of Ministry of Finance, the Financial Adviser (FA) of the Ministry was to associate himself with the evaluation of progress/performance in case of projects and other continuing

schemes and to see that the results of such evaluation studies were taken into account in budget formulations. FAs were to be the nodal points for all activities relating to plan, budget and programme/project evaluations and any unit of the Ministry undertaking such evaluations etc., was to function under the overall supervision and control of the FA.

Further, as per Rule 64 of GFRs 2005, the Secretary of the Ministry was required to exercise duties and responsibilities as Chief Accounting Authority of the Ministry. The Secretary was responsible for ensuring efficient, economical & transparent utilisation of resources of the Ministry in achieving the objectives of a project whilst complying with performance standards. The Secretary was also required to review and monitor the performance of programmes and projects assigned to his Ministry to determine whether the stated objectives were achieved.

In this regard, the audit findings as mentioned above clearly indicated that the schemes did not achieve the stated objectives and NAEB was not aware of the extent of utilisation of funds released by it to the VAs/SFDs/FDAs for the purpose for which they were sanctioned. NAEB also failed to get the utilisation certificates/unspent funds from the defaulting VAs/SFDs/FDAs. It did not initiate any action for recovery of government funds from these agencies. All this pointed to the need for enhanced supervision and monitoring of the scheme/projects both by the FA and Secretary of the Ministry.

In December 2009, NAEB admitted that the scheme objectives had been only partially met. It further stated that, keeping in view the financial propriety, seemingly unsound projects were not approved. NAEB also stated that subsequent installments were not released unless UCs and related progress reports duly verified by SFDs were received.

2.1.8 Conclusion

The scheme of “Grants-in-Aid to voluntary Agencies” implemented by NAEB since 1987 and modified in 2005 as 'Grant in Aid for Greening India' by incorporating additional components of quality planting, material production facilities and creation of mass awareness, did not have the desired impact. In absence of specific monitorable targets for tree planting, achievement of overall aim of afforestation suffered. Only 3.57 *per cent* of the projects sanctioned to VAs and 23 *per cent* of the projects sanctioned to SFDs/FDAs could be completed and more than 93 *per cent* of projects did not achieve their targeted objectives. The possibility of misutilisation/fraud is not ruled out as majority of VAs/SFDs/FDAs neither came back to NAEB for the next installment after release of first installment nor did they furnish UCs/progress reports.

Though NAEB modified the VA scheme, it failed to address the implementation level problems as objectives of Greening India scheme also remained largely unachieved. Thus, after continuing with a scheme for increasing the tree cover right from 1987 and modifying it in 2005, NAEB finally closed it. NAEB again launched a new scheme in July 2008 “Gram Van Yojna” by more or less subsuming the objectives of earlier scheme at a total cost of ₹900 crore, to be implemented during Twelfth Plan period.

Recommendation - 3

Deficiencies in the implementation of Greening India Scheme should be addressed effectively in the new Scheme, so that the desired objectives of afforestation and increasing tree cover in India could be achieved.

2.2 Non achievement of objective of developing forest resources

National Afforestation and Eco-Development Board (NAEB) released ₹64 lakh to three Forest Development Agencies (FDAs) in Goa under the National Afforestation Programme for treating 1250 hectares of degraded forest land. However, only 85 hectares of land could be treated during the Tenth Plan period. NAEB could neither ensure successful implementation of the programme in the state nor recover the entire grant of ₹64 lakh and interest of ₹32 lakh from the concerned FDAs under the state government.

National Afforestation and Eco-Development Board (NAEB), under Ministry of Environment and Forests (MoEF), operated a pilot scheme Samanvit Gram Vanikaran Samridhi Yojna (SGVSY) in the Ninth Five Year Plan (1997-2002), utilising the delivery mechanism of Forest Development Agencies (FDA) and Joint Forest Management Committees. With the good experience observed under this scheme, MoEF initiated the National Afforestation Programme (NAP) Scheme in the Tenth Five Year Plan (2002-07) by scaling up SGVSY project experience and converging all afforestation schemes of the Ninth Plan Period.

The overall objective of the NAP scheme was to develop the forest resources with people's participation, with focus on improvement in livelihoods of the forest-fringe communities, especially the poor. The scheme aimed to support and accelerate the ongoing process of devolving forest protection, management and development functions to decentralised institutions of Joint Forest Management Committees at village level and Forest Development Agencies at forest division level.



Afforestation projects in degraded land

For implementation of the NAP scheme in the state of Goa, NAEB sanctioned three projects to three Forest Development Agencies²² in March 2004 at a total cost of ₹2.39 crore. These projects were to be implemented during 2004-07 by South Goa FDA, North Goa FDA and Goa Wildlife FDA for treating 1250 hectares of degraded forest land. The scheduled date for completion of all the three projects was March 2007. NAEB released ₹64 lakh to the three FDAs in March 2004.

It was observed in audit that as of July 2009, only 85 hectares of degraded forest land had been treated under the programme. Goa Wildlife FDA had reported no progress and the entire fund of ₹22 lakh was lying unspent with them. South Goa FDA utilised only ₹9.20 lakh as of March 2009 and had treated 85 hectares of forest land and North Goa FDA had spent only ₹5.05 lakh during 2004-09 and had reported no progress. Thus, out of a target of treating 1250 hectares of degraded forest land, only 7 per cent of the target was actually achieved and an amount of ₹49.75 lakh was still lying unspent with these societies.



Forest in degraded land

It was observed in audit that all the three FDAs were constituted in February/March 2004 and the money was transferred to these FDAs in March 2004 itself. Achievement under the scheme was zero per cent as of March 2005 and NAEB requested the Goa State Government in May 2005 to review the scheme urgently and report the action taken to improve the performance. In view of no further progress under the project, in May 2006, NAEB directed the Chief Conservator of Forests, Government of Goa to direct these FDAs to immediately return the grants in whole along with interest thereon as per rate on government securities. The entire grant of ₹64 lakh along with ₹32 lakh as interest²³ has not been recovered as of October 2009 from these FDAs inspite of the following enabling provisions which could have aided NAEB in recovering the funds:

- The FDAs had furnished a bond wherein they agreed to the terms and conditions of the sanction of funds by NAEB. The sanction for the project stipulated that in case the FDAs failed to execute the projects within stipulated time, NAEB may in its discretion require the FDAs to refund the grant in whole or in such part along with interest thereon.

²² These are registered under Society's Registration Act and consist of district level officers of relevant line departments of state governments and panchayati raj institutions, including private citizens.

²³ Calculated at the rate of 10 per cent for 5 years.

- According to General Financial Rules 2005, in the event of the grantee failing to comply with the conditions or committing breach of the conditions of the bond, the signatories to the bond should be jointly and severally liable to refund to the President of India, the whole or a part amount of the grant with interest at 10 *per cent* per annum thereon or the sum specified under the bond.
- NAEB did not initiate action against the FDAs even though it directed the FDAs to return the funds way back in May 2005.

After being pointed out in audit in April 2009, all the three FDAs submitted their revised work programme for approval of NAEB in July 2009. However, these were not approved by NAEB and in October 2009, NAEB again requested the FDAs to refund the entire amount of ₹64 lakh along with the interest accrued thereon.

Thus, NAEB failed to ensure that NAP scheme was successfully implemented in the state. It also could not recover the entire grant of ₹64 lakh and interest thereon from these FDAs by enforcing the conditions of the sanction order.

Recommendation - 4

Funds should be released to the implementing agencies in installments and before entrusting funds, MoEF should adequately assess the capacity of agencies in project implementation so that achievement of project objectives can be ensured.



Chapter - 3

THEME: BIODIVERSITY

Biodiversity is the degree of variation of life forms within a given ecosystem and is a measure of the health of an ecosystem. Life on Earth today consists of many millions of distinct biological species and India is one of the 17 identified mega biodiverse countries of the world. With only 2.4 per cent of the total land area of the world, the known biodiversity of India contributes 8 per cent to the known global biodiversity. It has been estimated that at least 10 per cent of the country's recorded wild flora, and possibly the same percentage of its wild fauna, are on the threatened list, many of them on the verge of extinction.

3.1 Regulation of Biodiversity in India

National Biodiversity Authority (NBA) was established in 2003 by the Government of India for the regulation, conservation and sustainable use of bio-resources of India. Even six years after its formation, NBA could not notify important regulations like access to biodiversity, transfer of results of research and intellectual property rights etc. Lists of endangered medicinal plants in India and measures for their conservation were not drawn up. NBA's efforts in identifying threatened, endangered and endemic species and recommending guidelines for their conservation were inadequate as list of endangered species was prepared for only seven out of 28 states. It also failed to get the Peoples' Biodiversity Registers and database of biological resources prepared, both of which were vital for efforts at protection and conservation of biological resources. It had no information on grant of Intellectual Property Rights outside India on any biological resource obtained from India or knowledge associated with such biological resources which is derived from India.

3.1.1 Introduction

(i) Biodiversity in India

The term 'biodiversity' is used to refer to all aspects of variability in the living world, including diversity within and between individuals, populations, species, communities and ecosystems. Often, the term 'biodiversity' is used to refer to all species and habitats in a given area for the variety of life and includes plants, animals and micro-organisms, their genes and the systems they inhabit. India is one of the 17 identified mega biodiverse countries of the world. From about 70 *per cent* of the total geographical



Biodiversity in India

area surveyed so far, 45500 plant species²⁴ and 91000 animal species representing about seven *per cent* of the world's flora and 6.5 *per cent* of the world's fauna, respectively, have been identified. From the biodiversity standpoint, India has 59353 insect species, 2546 fish species, 240 amphibian species, 460 reptile species, 1232 bird species and 397 mammal species, of which 18.4 *per cent* are endemic²⁵ and 10.8 *per cent* are threatened. With only 2.4 *per cent* of the total land area of the world, the known biological diversity of India contributes 8 *per cent* to the known global biological diversity. It has been estimated that at least 10 *per cent* of the country's recorded wild flora, and possibly the same percentage of its wild fauna, are on the threatened list, many of them on the verge of extinction.

(ii) Threats to Biodiversity in India

Traditional and substantial dependence on biodiversity resources for fodder, fuel wood, timber and minor forest produce has been an accepted way of life for the rural population that accounts for nearly 74 *per cent* of India's population²⁶. With radical demographic changes, the land to man ratio and forest to man ratio has rapidly declined.



Aconitum ferox-a critically endangered species

Lifestyles and biomass resource needs having remained unchanged, the remaining forests have come under relentless pressure of encroachment for cultivation and unsustainable resource extraction, rendering the very resource base unproductive and depleted of its biodiversity. Coupled with these incongruities and aberrations in land use, unsound development strategies have led to increasing threats to biodiversity resources by way of illegal encroachment of forests and clearing of forests for purposes like agriculture, construction of industries and townships etc. Human activities are directly and indirectly responsible for current high rates of biodiversity loss.

²⁴ Including fungi and lower plants.

²⁵ Endemic, in a broad sense, can mean 'belonging' or 'native to', 'characteristic of', or 'prevalent in' a particular geography, group, field, area, or environment; native to an area or scope.

²⁶ State of Environment Report 2009, Ministry of Environment and Forests.

(iii) Global and Indian response to threats to biodiversity

To encourage the protection of biodiversity by national governments, Convention on Biological Diversity (CBD), an international legally binding treaty, was adopted by the United Nations Conference on Environment and Development, Rio de Janeiro in 1992.



Cutting down of forests

CBD has three main objectives, (i) conserving biological diversity, (ii) using biological diversity in a sustainable fashion and (iii) sharing the benefits of biological diversity fairly and equitably. India became a party to this treaty in 1994.

CBD committed India to the protection of its biodiversity and to provide for conservation, sustainable utilisation and equitable sharing of the benefits arising out of utilisation of its genetic resources. To give effect to CBD, the Biological Diversity Act (Act) was enacted in 2002. The Act listed provisions for regulated access to biological resources by bonafide end-users for various purposes including scientific research, commercial activities and sustainable use of non-timber forest produce. The Act was to be



Non timber forest products

implemented through three functional bodies, viz., the National Biodiversity Authority at the national level, State Biodiversity Boards (SBBs) in different states and Biodiversity Management Committees (BMCs) at the level of local communities.

As provided in the Act, the Central Government established a National Biodiversity Authority (NBA) in October 2003 in Chennai for implementing the provisions of the Act. NBA is under the administrative control of the Ministry of Environment and Forests (MoEF) and consists of a Chairman as the Chief Executive and 10 ex-officio members appointed by the Central Government and five non-official members to be appointed from amongst specialists and scientists, representatives of industry, conservers, etc. MoEF sanctioned 19 regular posts including Chairman and Secretary to carry out day to day functioning of the Authority of which NBA could fill up 13 regular posts as of April 2009. During 2004-05 to 2008-09, NBA received grants worth ₹9.43 crore from MoEF and incurred an expenditure of ₹8.07 crore.

In March 2009, Audit reviewed the functioning of NBA with respect to its role in regulation of biodiversity, covering the period from 2004 to 2009. The important audit findings noticed during the review are detailed in the succeeding paragraphs.

Audit Findings

3.1.2 Protection and Conservation of biodiversity

(a) State Biodiversity Boards

The Act provided for establishment of State Biodiversity Boards (SBB) for advising State Governments on conservation of biodiversity, sustainable use of its components, equitable sharing of benefits, regulating grant of approvals etc. In terms of the Biodiversity Rules 2004, NBA was to coordinate the activities of SBBs and provide them technical assistance and guidance and also issue directions to SBBs and Biodiversity Management Committees in writing, for effective implementation of the Act.



Berberis Aristata- an endangered species

While 21 states had established SBBs, seven states (Maharashtra, Rajasthan, Bihar, Orissa, Meghalaya, Jammu & Kashmir and Assam) had not established SBBs as of April 2009. NBA informed Audit that it neither had reasons for non establishment of SBBs in the seven States nor did it have information on how the functions outlined in the Act were carried out in the states in the absence of SBBs.

NBA stated in October 2009 that they, along with MoEF, had taken several steps for persuading the states to set up SBBs through letters & reminders by Minister, Secretary etc. MoEF stated in March 2010 that Government of Orissa had since constituted its Biodiversity Board in November 2009 and efforts were being made to persuade the remaining states to constitute Biodiversity Boards.

Recommendation - 5

Being a statutory body responsible for conservation of biodiversity all over the country, NBA may make proactive efforts to persuade the remaining states to constitute State Biodiversity Boards.

(b) Functioning of State Biodiversity Boards and creation of Peoples Biodiversity Registers

The Act empowered SBBs to grant approval to Indian citizens, in consultation with local bodies, for commercial utilisation of biological resources. SBBs may also prohibit/restrict use of such resources for practicing indigenous medicines by local people who were growers and cultivators of biodiversity and who were otherwise exempted from obtaining such approval from SBBs. It was observed in audit that only seven out of 22 SBBs established so far, had notified its Biological Diversity Rules as of March 2009. It was further observed that there was no mechanism available in NBA to monitor effectively the functioning of SBBs.



Podophyllum hexamdram-- a critically endangered species

Biodiversity Management Committees (BMCs) were to be constituted in all local bodies for promoting conservation, sustainable use and documentation of biodiversity resources. It was observed that BMCs were constituted in only 29125 (12 *per cent*) out of more than 2.4 lakh local bodies in the states. The main function of the BMCs was the preparation of Peoples Biodiversity Registers²⁷ (PBRs) in consultation with the local people. PBR was to contain comprehensive information on availability and knowledge of

²⁷ Containing comprehensive information of availability and knowledge of local biological resources, their medicinal or any other use or any traditional knowledge associated with them.

local biological resources or any other traditional knowledge associated with them. The establishment of comprehensive PBRs would not only help to inventorise and document the local biological and genetic resources, it would also help to conserve and sustainably use the biological resources. It was observed that these PBRs were not maintained by a majority of BMCs. Thus, information on biodiversity remained undocumented though NBA was expected to consult BMCs before granting approvals for commercial utilization of biological resources under the Act.

NBA instructed SBBs in September 2008 to compile information on use of biological resources by bio-industries and complete the work before March 2009 and also assured them financial assistance of ₹2 lakh to ₹3 lakh for this work. However, it was observed that SBBs did not furnish the required information as of March 2009.



Acropora Echinata—a vulnerable species

NBA initially replied in April 2009 that it did not have information with regard to the work entrusted to SBBs and pointed out again in October 2009 that a task force would be constituted for assessing the requirements of finance, manpower and infrastructure in SBBs/BMCs. Regarding PBRs, MoEF stated in March 2010 that a simplified model had been finalised and circulated among SBBs and action ultimately had to be completed by the State level functionaries and NBA had been pursuing the matter with SBBs/BMCs. As regards project on compiling of information on the use of biological resources by the industries, MoEF replied that it had been discussed recently and results presented were being fortified and augmented by including additional information.

The fact remains that a large percentage of the biodiversity existing in India remains undocumented and their conservation and sustainable use cannot be effectively promoted in the absence of such documentation.

Recommendation - 6

For effective conservation and documentation of biodiversity at the field level, it is important that NBA makes added efforts to get the states to constitute BMCs in all local bodies for promoting conservation, sustainable use and documentation of biodiversity resources. It is also vital that comprehensive PBRs to inventorise and document the local biological and genetic resources are prepared urgently and updated regularly.

(c) Database of biological resources

The Biological Diversity Rules²⁸ stipulated that NBA should take steps to build up a database and create information and documentation systems for biological resources and associated traditional knowledge through biodiversity registers and electronic databases. NBA initially decided in November 2003 to have an exclusive database containing the information required. Later, in August 2004, it decided to get the gaps filled in the database already available on the subject and also to establish a Biodiversity Resource Centre.

In January 2006, NBA constituted an Expert Committee to develop guidelines for the purpose. In June 2006, the Expert Committee recommended a pilot project proposal for Indian Biodiversity Information System (IBIS). NBA included the proposal to create IBIS in the Eleventh Five Year Plan period (2007-12) document and sent it to MoEF in August 2006 for approval. However, the proposal was yet to receive the approval of MoEF.



Heliopora Coerulea- an endangered blue coral

²⁸ Came into force in 2004 and stipulated the roles and responsibilities of NBA and its members.

In March 2006, MoEF instructed NBA to provide information on rare and endangered biological material being utilised by ayurvedic companies to make products and the source of such material and reminded NBA for this information in May 2007. In the absence of the database, NBA could not furnish information even as of March 2009 and the possibility of ayurvedic companies using rare and endangered species cannot be ruled out. MoEF, in April 2010, stated that IBIS was still in a very elementary form needing substantive further work and NBA had recently constituted an Expert Committee on the subject.

Reply of MoEF indicated that no concrete decision could be taken by MoEF on the issue even after a lapse of seven years of decision taken to have a database.

Recommendation - 7

NBA needs to put in place a database of biological resources for creating information and documentation systems for biological resources and associated traditional knowledge through electronic databases. MoEF may expedite the approval for creation of IBIS and also release the required funds.

(d) Grant of Intellectual Property Rights outside India

The Act empowered NBA to oppose, on behalf of the Central Government, the grant of IPR in any country outside India on any biological resource obtained from India or knowledge associated with such biological resources which is derived from India. For this purpose, the Biological Diversity Rules envisaged appointment of legal experts by NBA.

It was observed that though NBA appointed a legal consultant in November 2005, it did not take effective action to contest questionable IPRs. It also did not set up a monitoring cell within NBA to keep track of IPRs granted outside the country. It was also observed that though NBA had assured²⁹ Parliament in February 2006 that it would set up a monitoring cell to identify and contest IPRs granted outside the country and that steps would be taken to protect IPR for neem, basmati rice and turmeric, NBA had neither set up the monitoring cell nor did it obtain legal opinion on neem, basmati rice and turmeric IPRs.

NBA stated in April 2009 that it was in the process of establishing a legal cell based on instructions of MoEF. MoEF replied in March 2010 that constitution of legal cell had taken time since few legal professionals had expertise in biodiversity and, therefore, it had to be very careful in selecting the competent expert in the field. MoEF further stated that NBA would have a monitoring cell shortly.

Recommendation - 8

NBA may urgently set up a monitoring cell to keep track of Intellectual Property Rights granted outside India.

(e) Protection of knowledge of locals on biological diversity

With a view to protecting the knowledge of local people on biological diversity, the Act envisaged that NBA should make recommendations to Central Government on such unique measures that include registration of such knowledge at local, state and national levels.

After a lapse of four years of establishment of NBA, an Expert Committee was constituted in November 2007 for developing guidelines within 90 days for documentation of local biodiversity, bio-resources

²⁹ In response to Rajya Sabha Question Dy.No.S3021 regarding steps proposed to be taken for appropriate and expeditious action to file patent claims on geographical indicators like Neem, Basmati rice and turmeric etc.

and associated traditional knowledge and to develop ways and means for documentation of a few selected areas of traditional knowledge for commercial exploitation. It was observed in audit that this Committee did not meet even once as of March 2009. Consequently, no recommendations on this vital area dealing with livelihood of tribal and other communities that depended on biodiversity were available.

NBA stated in October 2009 that draft rules finalised in consultation with leading lawyers was under circulation amongst SBBs and other stakeholders. It added that national consultation would also be held to finalise these rules. MoEF also reiterated in March 2010 that outcomes finalised by leading lawyers were circulated among stakeholders and India had hosted an Expert group meeting on traditional knowledge in June 2009. MoEF also added that a national consultation involving stakeholders would also be held in April 2010.

In the absence of documentation of biodiversity, bio-resources and associated traditional knowledge, effective efforts at protection and conservation were not possible.

Recommendation - 9

NBA may develop guidelines for documentation of local biodiversity, bio-resources and associated traditional knowledge and document a few selected areas/fields of 'traditional knowledge' for commercial exploitation.

3.1.3 Regulatory and advisory functions

Section 64 of the Act stipulated that NBA should make regulations for implementing provisions of the Act, with prior approval of the Central Government and by notifying these regulations in the Gazette of India. Further, according to the Section 3 (1) of the Act, no person, without approval of NBA, was to obtain any biological resource occurring in India or knowledge associated thereto for research, commercial utilisation, bio-survey and bio-utilisation.

It was observed in audit that during six years of its existence, NBA had notified only three regulations viz., Guidelines on (i) Enforcement of the Act, (ii) Collaborative research, and (iii) Establishment of repositories. Other important regulations on matters such as access to biological resources, sharing of benefits arising out of the use of accessed biological resources, advice to Government on conservation of biodiversity etc., had not been notified as of March 2009.

NBA stated in October 2009 that it was pursuing the matter vigorously with various committees and added that finalisation of regulations was a continuous process requiring several deliberations and consultation at national level. MoEF also added in March 2010 that framing guidelines was a time consuming and long drawn, lengthy process. The replies of NBA and MoEF needed to be viewed in light of the fact that delay in finalisation of guidelines resulted in delays in effective implementation of the Act and posed a risk to the protection and conservation of biodiversity in India.

Non-finalisation of regulations hampered critical functions expected to be carried out by NBA as detailed in the following paragraphs.

(a) Regulation of access to biodiversity, transfer of results of research and intellectual property rights

It is the mandate of NBA to regulate activities regarding access to biodiversity in order to ensure equitable sharing of benefits arising out of the use of accessed biological resources among persons applying for license, local bodies concerned and benefit claimers. The relevant sections of the Act are as follows:

- Section 3 of the Act prohibits Non-Resident Indians, foreigners and bodies not incorporated in India from having any access to biological resources occurring in India or knowledge associated thereto for research or for commercial utilisation, without previous approval of NBA.
- Section 4 prohibits any person from transferring results of any research to aforesaid persons without the prior approval of NBA.
- Section 6 stipulates that no person should apply for Intellectual Property Rights (IPR) in or outside India for any invention based on any research or information on biological resources obtained from India, without obtaining previous approval of NBA.

Regulations on access to biodiversity and transfer of results of research

It was observed in audit that for finalising regulations on access and benefit sharing and material transfer agreement (relating to Section 3), NBA constituted an Expert Committee in October 2005. The draft regulations prepared by the Expert Committee were approved in June 2007. In November 2007, NBA also approved the guidelines on results of research (relating to Section 4) finalised by another Expert Committee which was constituted in May 2009 for preparation of these guidelines. Though both of these were referred to MoEF in July 2007 and January 2008 respectively, MoEF did not notify them as of March 2010 despite reminders from NBA in August 2008, February and March 2009.

Regulations on IPR

It was further observed in audit that NBA constituted another Expert Committee headed by an Assistant Director General, Indian Council of Agricultural Research in November 2007 for developing regulations for approval of applications for IPRs and for benefits sharing (relating to Section 6). This Committee did not meet at all till March 2009 for want of expert consultant on the specialised subject.

Thus, none of the regulations required to be issued under Section 3, 4 and 6 of the Act have been notified so far. Despite the regulatory framework not being in place, Audit observed that NBA issued approvals in 13 out of 61 applications, it received for access to bioresources. It also received 13 applications for transfer of results of research and issued approvals in nine cases. It further received 325 applications relating to IPR and issued approvals in 33 cases. In the absence of notified regulations, issue of approvals can be questioned on the grounds of transparency and objectivity. NBA had itself opined in its first meeting held in November 2003 that it was not legally empowered or administratively in a position to process and issue approvals in the absence of notified regulations.

NBA stated in October 2009 that to safeguard bio-resources, pending notification of regulations, it would continue to process applications for issue of approvals. MoEF stated in March 2010 that applications were scrutinised and examined by the Expert Committees and recommendations were placed before NBA. After NBA's approval, agreements were entered into with the applicants. MoEF further stated that all approvals given were legally valid as NBA had entered into agreement with the applicants. MoEF further stated in April 2010 that access and benefit sharing being a complex issue, draft guidelines on this matter were still being deliberated upon and the revised draft guidelines inviting comments were posted on NBA's website in February 2010. As regards guidelines on transfer of research results, MoEF stated that guidelines prepared by the Committee were utilised for finalising the format for agreement on transfer of research results. Thus, the process of finalising regulations to control activities regarding access to biodiversity among persons applying for license was not completed even after a lapse of more than four years and no realistic target was also fixed for finalisation of these important regulations.

Recommendation - 10

NBA/MoEF may draw a specific timeframe for finalisation of regulations to control access to biodiversity among persons applying for license and notify them within that timeframe so that effective regulation and control of biodiversity in India can be exercised.

(b) Conservation of rare and endangered medicinal plants

After four years of its establishment, NBA constituted an Expert Committee on medicinal plants in January 2008 to:

- provide a list of medicinal plants normally traded in India,
- discuss and develop guidelines for benefit sharing of cultivated and wild medicinal plants,
- regulate bio-resources of medicinal plants to prevent bio-piracy,
- suggest ways and means of safeguarding traditional knowledge related to medicinal plants,
- suggest a list of endangered medicinal plants/develop guidelines for their conservation, and
- suggest measures to implement Section 6 of Biological Diversity Act 2002.



Dactylorhiza hatagirea—a high value medicinal plant

The Committee was to complete its work within 90 days. It was observed in audit that the Committee met only once in April 2008 and regulations had not been finalised even as of March 2009. The finalisation of these regulations was not expedited despite concerns raised in the Parliament³⁰ in March 2008 regarding extinction of herbal plants in the country.

NBA stated in April 2009 that it proposed to reconstitute the Expert Committee for developing regulations and that till notification of regulations, provisions of the Wildlife Act governed the endangered species. MoEF replied in March 2010 that Botanical Survey of India (BSI) was asked to prepare a state-wise list of threatened species of plants and comments on the list of endangered

³⁰ Rajya Sabha Unstarred Question No.S2492 regarding “Extinction of Herbal Plants” due for reply in March 2008.

species were received from some of the State Governments. After examining their comments, lists were notified between March and September 2009, for seven states namely, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Kerala, Orissa, Mizoram and Meghalaya. MoEF further stated that matter was being pursued with other state Governments.

Recommendation - 11

NBA may draw a time bound action plan to ensure that the list of endangered species in rest of the 21 states is notified as quickly as possible so that the risk of exploitation of medicinal plants for commercial purposes and consequent threats to their conservation can be minimised.

(c) Conservation of micro-organisms

The use and transfer of biological resources including micro-organisms³¹ required prior approval under the Act. Further, NBA was to ensure equitable sharing of benefits arising out of use of micro-organisms. To achieve this purpose, NBA constituted an Expert Committee in January 2008 to develop guidelines on soil, sediment and microbial diversity including transfer and exchange of different categories of micro-organisms and mechanism for benefits sharing. It was observed in audit that the Committee met thrice in 2008 and prepared the guidelines. However, these guidelines were not notified as required. As a result, it was not possible to ensure that research organisations transferred and used micro-organisms by sharing benefits, as envisaged in the Act.



Cladosporium-a micro organism

NBA stated in October 2009 that it would modify the regulations prepared by Expert Committee, based on discussions and forward it to the Ministry for notifying. MoEF also replied in March 2010 that some more work on the draft was required and discussion was underway.

Recommendation - 12

NBA may draw specific timelines to develop guidelines on soil, sediment and microbial diversity including transfer and exchange of different categories of micro-organisms and mechanism for benefits sharing so that these activities could be effectively regulated.

(d) Normally traded commodities

Section 40 of the Act empowered the Central Government to exempt from its purview, any item or biological resources normally traded as commodities, in consultation with NBA. In this connection, NBA was required to prepare a list of biological materials which were normally traded as commodities and notify the same. NBA constituted an Expert Committee in October 2005 to define Normally Traded Commodities (NTC), prepare an inventory of NTC and to develop guidelines incorporating reciprocal livelihood measures to protect interest of those concerned in the country, duly considering measures to promote conservation of species that were under heavy pressure of trading.

³¹ Any of various microscopic organisms including algae, bacteria, fungi, protozoa and viruses.

It was observed in audit that the Expert Committee met thrice and recommended the first list of normally traded commodities containing 1040 species in March 2008. Later on, it was decided to notify only the medicinal plants, vegetables, fruits, food crops, spices and condiments which were mainly cultivated. Accordingly, fresh draft guidelines including only 180 species of medicinal plants were sent to MoEF in February 2009.

MoEF stated in March 2010 that the matter required wide ranging consultations with different stakeholders and based upon consultations, the list was finalised and notified in October 2009. MoEF further stated that there had been no adverse effect on trade as the same was regulated by Director General of Foreign Trade (DGFT).

The reply needs to be viewed in the light of the fact that the first list containing 180 species of medicinal plants only was notified as against 1040 species prepared by NBA that too after inordinate delay. Thus, the list notified was only partial and did not cover other species like marine fruits, vegetables, species etc. The reply also needs to be viewed in light of the fact that in the absence of notification of a complete list, there was bound to be loss of biodiversity due to trading of species without appropriate regulations. The contention that trade has been regulated by DGFT and hence there would be no adverse effect is to be viewed in the background of the fact that according to the Act, it was the responsibility of NBA to prepare a list of biological materials that were normally traded as commodities and to notify the same.

Recommendation - 13

NBA may prepare a comprehensive inventory of Normally Traded Commodities and guidelines for protection of livelihood and promote conservation of species that were under heavy pressure of trading.

(e) Protection of endangered species

The Act empowered the Central Government to notify any species that was on the verge of extinction or was likely to face extinction in the near future as threatened species and take appropriate steps to conserve them. NBA, in discharge of its responsibility of providing advice to the Central Government on matters relating to the Act, constituted an Expert Committee in October 2005. This Expert Committee



Gaurus - a large wild ox on the verge of extinction

was to develop guidelines within 90 days to identify, notify and de-notify rare, threatened, endangered and endemic species and also to recommend the final list and regulations for conservation. The Expert Committee made its recommendations in April 2006 and NBA approved them in June 2007 and forwarded the draft regulation to MoEF in July 2007. MoEF directed BSI and Zoological Survey of India (ZSI) to prepare state-wise list of critical species of plants and animals and prepare guidelines to prohibit or regulate collection of these species, along with measures to rehabilitate and preserve them. ZSI prepared the list in August 2008 and BSI prepared the list and guidelines in October 2008. MoEF requested all the states in October 2008 to send their views/approval on the list of threatened species in their states and also directed NBA in October 2008 to take follow up action with State Biodiversity Boards (SBBs) and State Governments for their response within one month. It was observed in audit that NBA did not revisit the list of critically endangered species of mammals, birds, reptiles, amphibian and fishes as requested by MoEF. It was further observed in audit that NBA also did not have any information on the receipt of information from the SBBs/State Governments regarding the list of critically endangered species. As a result, the list of critically endangered species could not be notified and measures to ensure their conservation also could not be put in place.

NBA stated in October 2009 that MoEF had notified the species of plants and animals which were on the verge of extinction and prohibited /regulated their collection in four states viz., Himachal Pradesh, Kerala, Uttar Pradesh and Uttarakhand during March - April 2009. MoEF stated in March 2010 that only seven states had responded by offering comments on the list prepared by BSI and hence list of species were notified for these states including Orissa, Mizoram and Meghalaya for which notification was issued in September 2009. MoEF further added that the matter was being pursued with other state Governments.

Recommendation - 14

In order to effectively protect and conserve species that are on the verge of extinction or are likely to face extinction in the near future, NBA and MoEF may intensify their efforts, after ensuring cooperation from the states, to prepare the list of threatened, endangered and endemic species and to recommend regulations for their conservation.

(f) Biodiversity Heritage Sites

The Act empowered the State Governments to notify, in consultation with the local bodies, areas of biodiversity importance as Biodiversity Heritage Sites (BHS). State Governments were to frame rules for management and conservation of BHS and to formulate schemes to provide compensation to those that were economically affected by such BHS. Accordingly, NBA constituted two Expert Committees – one in July 2006 for preparing guidelines on establishment of BHS and another in January 2009 for preparing rules for management and conservation of BHS.

The Expert Committee on establishment of BHS submitted its recommendations in June 2008. It was observed in audit that MoEF, after initially instructing NBA in July 2008 not to proceed further on the issue as the establishment of BHS was the responsibility of State Governments, again instructed NBA in September 2008 to prepare the draft rules. However, these rules have not been finalised and notified as of March 2009.

Audit also observed that the Expert Committee on management and conservation of BHS met only once in February 2009 and though draft rules were prepared, these have not been finalised as of March 2009, despite assurances³² given to the Parliament that these would be finalised by December 2008.

³² Lok Sabha Unstarred Question No. 2330 dated 29 August, 2007 seeking clarification as to whether the Expert Committee of the NBA has formed guidelines for identifying, declaring and managing bio-diversity heritage sites in the country.

NBA stated in October 2009 that the recommendations of the Expert Committee as approved by it were circulated among SBBs. It further stated that four states i.e., Arunachal Pradesh, Manipur, Punjab and Uttarakhand forwarded lists of areas of biodiversity importance that were threatened by overuse and negligence. MoEF also reiterated in March 2010 that guidelines were circulated among SBBs and NBA was making efforts in supporting SBBs for declaration of BHS. MoEF added that matter had to be discussed with experts as it was a complex issue and an ongoing exercise and, therefore, there was no delay. In April 2010, MoEF further stated that NBA was in the process of setting up a legal cell and draft rules would be prepared with legal assistance after setting up of the legal cell.

Replies of NBA and MoEF needs to be viewed in light of the fact that in the absence of uniform regulations for conservation and protection of BHS, even the sites identified as BHS would not be adequately conserved. The contention that there was no delay is also not acceptable since NBA could not notify the guidelines even after a lapse of more than five years of its establishment. Further, the legal cell was not set up by NBA so far as discussed in detail in paragraph 3.1.2 (d) and, therefore, preparation of draft rules for BHS was likely to be further delayed.

Recommendation - 15

NBA may set up a legal cell immediately to expedite the preparation of guidelines on establishment of BHS and framing of rules for management and conservation of BHS.

(g) Agro biodiversity

The Act provided for constitution of a Committee to deal with agro biodiversity³³. In this context, NBA constituted an advisory committee on agro biodiversity in December 2005 for defining clearly, the areas of overlap and explicit differences in the Act, the Seed Act and the Plant Variety Protection & Farmers Rights Act and to prepare guidelines on how the Act could be interpreted in relation to the provisions contained in the aforesaid and similar Acts. The Committee was also to identify the position of the Act in light of the provisions contained in the Patents Act and the Geographical Indications Act and to prepare guidelines for the origin of domesticated diversity and documentation of agro biodiversity issues.

It was observed in audit that the Committee met only once in December 2005 and was yet to submit the deliverables. Thus, the issues relating to agro biodiversity concerns remained unaddressed.



Agro biodiversity in India—pigeon pea

NBA stated in October 2009 that the Committee met in December 2005 and submitted recommendations on guidelines for collaborative research projects. It further stated that proposal for reconstitution of the Committee was under its consideration. MoEF replied in January 2010 that Committee had been reconstituted and it held its first meeting in January 2010. MoEF added in March 2010 that the reconstituted committee would come out with deliverables for different issues concerning agro biodiversity. The fact remained that the important issues identified by NBA on agro biodiversity in October 2005 remained unaddressed even as of March 2009 which would impact agro biodiversity in India.

³³ Biological diversity of agricultural related species and their wild relatives.

Recommendation - 16

In light of the critical nature of agro biodiversity, NBA may intensify its efforts for preparation of guidelines for the origin of domesticated diversity and documentation of agro biodiversity issues, apart from reconciling rules relating to agro biodiversity prescribed under various Acts.

3.1.4 Meetings of National Biodiversity Authority

As against the stipulation in the Biological Diversity Rules of holding the meetings of NBA four times normally in a year with a gap of three months, NBA, during the five year period 2004-09, met only 12 times against a requirement of 20 meetings. Apart from Authority meetings, NBA did not prescribe any periodical returns. This led to inadequate monitoring of functioning of various committees and of various steps taken to implement the Act as discussed in the above paragraphs.

NBA in October 2009 noted the observations for future compliance and MoEF also agreed to make efforts to organise meetings in time regularly.

3.1.5 Financial Management**(a) Finances**

The details of grants received, utilised and percentage unutilised during 2004-09 were as under.

Table - 11 (₹ in crore)

Expenditure against the grants received during 2004-09			
Year	Grant received	Actual expenditure	per cent savings
2004-05	0.71	0.59	16.90
2005-06	1.37	1.37	0.00
2006-07	2.09	1.40	33.01
2007-08	2.15	1.90	11.63
2008-09	3.11	2.81	9.65
Total	9.43	8.07	14.42

As could be seen from the table, NBA could not utilise the funds made available in full in any of the years except in 2005-06. The amount remaining unspent was revalidated by the MoEF for being utilized for next year. MoEF stated that all efforts would be made to fully utilise the grants sanctioned to NBA.

(b) Utilisation of funds released

NBA released a sum of ₹1.60 crore to 19 SBBs as grant-in-aid during 2004-09 for creation of infrastructural facilities. Of this, utilisation certificates (UCs) for ₹67.10 lakh, comprising 54 per cent of the sums released had not been received as of March 2009 from 12 SBBs. Similarly, UCs for ₹57.22 lakh released during 2006-09 to 36 organisations for undertaking projects / awareness programmes had not been received as of March 2009. Final reports for many of these projects / programmes had also not been received as of March 2009. Thus, the receipt of UCs/final reports was not effectively monitored in NBA.

NBA stated in April 2009 that the matter for obtaining UCs was being pursued vigorously. MoEF replied in March 2010 that SBBs did not have full time Chairman, Secretary and supporting staff to carryout

various jobs and hence sanctioned amount could not be spent by SBBs. Admitting that there was problem in monitoring the progress due to inadequate staff, MoEF added that matter of obtaining UCs was being pursued vigorously.

(c) National Biodiversity Fund

The Act provided for creation of a National Biodiversity Fund by NBA by crediting it with all charges and royalties received. The Fund is to be utilised for channeling benefit to claimers, conservation of biological resources and development of areas from which these resources were accessed. NBA, however, did not so far utilise the funds for the purpose for which it was intended. Instead funds were kept in short term deposits in banks and interest earned was also credited towards the Fund. As of March 2009, there was a balance of ₹38.84 lakh in the fund Account as detailed below.

Table - 12

₹ in crore)

Balance of funds in NBA during 2004-09				
Year	Opening Balance	Receipts	Utilised	Closing Balance
2004-05	0.00	0.00	0.00	0.00
2005-06	0.70*	1.35	0.00	2.05
2006-07	2.05	3.76	0.00	5.81
2007-08	5.81	4.41	0.00	10.22
2008-09	10.22	28.62	0.00	38.84

* Transfer from another account.

NBA stated in October 2009 that an Expert Committee had been constituted to propose draft guidelines for application of funds which could be finalised for submission to the Authority. MoEF also replied in March 2010 that Expert Committee constituted in June 2009 met in August 2009 and draft guidelines prepared by them would be further deliberated and finalised. The fact remains that funds meant for conservation of biological resources had been kept idle due to inaction on the part of NBA in framing the guidelines for application of funds.

3.1.6 Conclusion

National Biodiversity Authority was established in 2003 by the Government of India for the regulation, conservation and sustainable use of bio-resources of India. Even after six years of its formation, NBA could not notify important regulations for implementation of vital provisions for preservation of biodiversity, as required under the Act. Performance of its regulatory and advisory functions was inadequate as it failed to notify all the required guidelines for regulating access to biological resources, sharing of benefits arising out of use of accessed biological resources, advice to government on conservation of biodiversity etc. Lists of endangered medicinal plants in India and measures for their conservation were not drawn up and guidelines to regulate the use and transfer of micro-organisms were yet to be notified. NBA's efforts to identify threatened, endangered and endemic species and to recommend regulations for their conservation were inadequate as list of endangered species was prepared for only seven out of 28 states. It also failed to get the Peoples' Biodiversity Registers and database of biological resources prepared, both of which were vital to efforts at protection and conservation of biological resources. It had no information on grant of Intellectual Property Rights outside India on any biological resource obtained from India or knowledge associated with such biological resources which is derived from India. It failed in its efforts at documentation of biodiversity, bio-resources and associated traditional knowledge, without which effective efforts for protection and conservation were not possible.

3.2 Role of Botanical Survey of India in meeting India's commitments to the Convention on Biological Diversity

The Convention on Biological Diversity (CBD) was ratified in 1994 by 150 countries including India. To implement the provisions of CBD, objectives of Botanical Survey of India (BSI) were remodeled. However, BSI was not effective in meeting its remodeled objectives as there was inadequate identification/ documentation and monitoring of plant species. Very few surveys and explorations were carried out to identify and document the Protected Areas and Fragile ecosystems. The Red Data Book was updated in 1990 and last updated version was printed in 2003 thereby impacting conservation efforts. Further, identification of different ethnic groups associated with usage of plant species for different purposes was not done. BSI did not generate adequate data for in-situ conservation and it did not carry out ex-situ conservation, which impacted conservation of biodiversity. As such, BSI could not effectively fulfill its role in meeting India's commitment to CBD.

3.2.1 Introduction

(i) Biodiversity in India

The Convention on Biological Diversity (CBD) was ratified in 1994 by 150 countries including India. CBD has three main objectives i.e., conserving biological diversity, using biological diversity in a sustainable fashion and sharing the benefits of biological diversity fairly and equitably.

(ii) Role of Botanical Survey of India in meeting commitments to CBD

The Botanical Survey of India (BSI) was established in 1890 at Kolkata. It is a subordinate office under the Ministry of Environment and Forests (MoEF) which is the nodal office in India for the implementation of CBD. Its basic objective was undertaking surveys by exploring the plant resources of the country and identifying flora with economic virtues. After ratification of CBD in February 1994 by the Government of India, a larger role for the BSI was envisaged and objectives of BSI were remodeled in light of India's ratification of the CBD.

Some of the major objectives of BSI in line with the provisions of CBD are as below:

1. Exploration, inventorisation and documentation of phytodiversity³⁴ in general and protected areas, Hotspots, Fragile ecosystems and Sacred Groves³⁵ in particular; publication of national, state and district floras. (*Article 7 of CBD: Identification and Monitoring*)
2. Identification of red list species³⁶ and species rich areas needing conservation; (*Article 7 of CBD: Identification and Monitoring*)
3. Survey and documentation of traditional knowledge (ethnobotany³⁷) associated with plants. (*Article 7 of CBD: Identification and Monitoring*)

³⁴ Phytodiversity is the enumeration of total number and variety plant species of an area.

³⁵ Sacred Groves are groups of plants or a small forest protected by humans inhabiting near or around them due to their religious belief.

³⁶ Red listed species are those threatened species under various categories, which are listed in the International Union for Conservation of Nature (IUCN) list.

³⁷ Ethnobotany is the scientific study of the relationships that exist between people and plants.

4. Ex-situ conservation of critically threatened taxa³⁸ in botanical gardens, develop and maintain botanical gardens, musea³⁹ and herbaria to aid conservation. (Article 8 of CBD: in-situ conservation and Article 9: ex-situ conservation)
5. Revisionary/monographic studies on selected plant groups. (Article 12 of CBD: Research and Training)
6. Environment Impact Assessment of areas assigned to BSI for study. (Article 14 of CBD: Impact Assessment and Minimising Adverse Impacts)

(iii) About BSI

BSI is headed by the Director who is assisted by Additional Directors, Joint Directors, Deputy Directors and other officers as well as a Research Advisory Committee. Besides headquarters at Kolkata, there are 11 circle offices in Itanagar, Shillong, Gangtok, Allahabad, Noida, Dehradun, Jodhpur, Pune, Hyderabad, Coimbatore and Port Blair. During 2002-09, BSI received ₹53.53 crore as Plan funds, against which it incurred an expenditure of ₹50.87 crore. Against receipt of Non-Plan funds of ₹97.17 crore, BSI incurred an expenditure of ₹90.43 crore.

Audit Findings

3.2.2 Financial Management and Manpower

Audit reviewed the role of BSI relating to CBD, especially in light of Articles 7, 8, 9, 12, and 14 of CBD during the period 2002-2009. We observed in audit that BSI did not get the projected funds from MoEF during 2002-09 as detailed in the table given below :

(₹ in crore)

Funds required and sanctioned by MoEF									
Funds asked for by BSI during 2002-2009			Funds released by MoEF during 2002-09			Actual expenditure during 2002-09			
Year	Plan	Non Plan	Total	Plan	Non Plan	Total	Plan	Non Plan	Total
2002-03	10.65	12.38	23.03	5.15	12.38	17.53	4.97	10.97	15.94
2003-04	11.33	12.27	23.60	6.41	12.27	18.68	5.83	10.62	16.45
2004-05	14.38	12.42	26.80	8.78	12.42	21.20	7.89	11.61	19.50
2005-06	16.97	13.10	30.07	6.50	13.10	19.60	6.73	12.43	19.16
2006-07	23.26	13.83	37.09	8.00	13.83	21.83	7.52	12.90	20.42
2007-08	8.00	13.84	21.84	8.00	13.84	21.84	7.66	13.09	20.75
2008-09	10.69	15.13	25.82	10.69	19.33	30.02	10.27	18.81	29.08
Total	95.28	92.97	188.25	53.53	97.17	150.70	50.87	90.43	141.30

Against the projected requirement of ₹95.28 crore towards plan activities during 2002-09, BSI got ₹53.53 crore which was only 56.18 per cent of the projections made by BSI. Further, of the ₹53.53 crore, BSI could spend ₹50.87 crore. The above funds were required by BSI during Tenth and Eleventh Five Year Plan to implement various schemes like studies on floristic diversity of wetlands/protected areas, mapping of medicinal plants, study of sacred-groves, survey & monitoring of wild plants in trade, effective collection, conservation and maintenance of germplasm/gene bank etc.

³⁸ It is plural of "Taxon" which is a taxonomic unit from the rank of Family downwards e.g., Family/genus/species (and its different infra-specific categories like subspecies, variety, sub-variety and forma) which have characters in common differentiating the unit from other such group.

³⁹ It is a depository for living and non-living objects having scientific value.

It was also observed in audit that there were number of vacancies in the various cadres of manpower at BSI as shown below:

Table - 14

Details of Sanctioned strength and men in position in BSI						
Position as on	Scientific			Non-Scientific		
	Sanctioned Strength	Men-in-position	Vacancy	Sanctioned Strength	Men-in-position	Vacancy
As on 01.04.2006	459	283	176 (38.34)	825	618	207 (25.09)
As on 01.04.2007	441	275	166 (37.64)	822	592	230 (27.98)
As on 01.04.2008	441	270	171 (38.78)	817	585	232 (28.40)
As on 01.04.2009	441	268	173 (39.23)	817	587	230 (28.15)
As on 01.04.2010	439	245	194 (44.19)	799	551	248 (31.04)

It could be seen from above that there were significant shortages of manpower in scientific cadres. MoEF replied that no proposal from BSI regarding manpower was pending with it.

The shortage of funds coupled with vacancies in scientific cadres severely impacted various activities taken up by BSI as is clear from the audit findings discussed in succeeding paragraphs. **The Audit findings, based on the revamped objectives of BSI, on meeting India's commitments to CBD are discussed below.**

3.2.3 Exploration, inventorisation and documentation of phytodiversity

Earlier botanical surveys were confined to the collection and documentation of plants species. A review conducted by MoEF/BSI in 2002 studied the activities of BSI from inception upto 2002 and found wide gaps in the status of inventorisation of phytodiversity in India. The review also found that Fragile ecosystems⁴⁰, Hotspots⁴¹ and Protected Areas⁴² like biosphere reserves⁴³, national parks and wildlife sanctuaries which need special attention, had either not been studied at all or had been inventorised in general while studying phytodiversity of districts wherein they were located. The report further stated that keeping the above gaps in mind, documentation of phytodiversity of Protected Areas, Sacred Groves and Fragile ecosystems had to be given top priority post 2002, followed by documentation of phytodiversity of other important regions.

In addition, CBD mandated national governments to undertake the following with regard to identification and monitoring:

- Identify components of biological diversity important for its conservation and sustainable use, especially those ecosystems and habitats which contain high diversity, large numbers of endemic or threatened species;
- Monitor, through sampling and other techniques, the components of biological diversity, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use;

⁴⁰ A fragile environment is an ecosystem which lacks resilience or which is so heavily impacted by an 'un-natural' event that it changes in unexpected and undesirable ways.

⁴¹ Hotspots are areas that support natural ecosystems that are largely intact and where native species and communities associated with these ecosystems are well represented.

⁴² Protected Areas are locations which receive protection because of their environmental value, or environmental plus cultural values.

⁴³ The purpose of the formation of the biosphere reserve is to conserve in situ all forms of life, along with its support system, in its totality, so that it could serve as a referral system for monitoring and evaluating changes in natural ecosystems.

- Identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques; and
- Maintain and organise, by any mechanism, data derived from identification and monitoring listed above.



Nilgiri Biosphere Reserve, Tamil Nadu

Thus, the added responsibility of CBD and its own report which pointed out shortcomings in identification and monitoring activities necessitated that BSI explore, inventorise and document phytodiversity in general and in Protected Areas, Hotspots, Fragile ecosystems and Sacred Groves in particular, in a sustained and detailed manner. The activities of BSI on survey of flora within the above four geographical areas are discussed in the succeeding paragraphs.

3.2.3.1 Exploration, inventorisation and documentation of phytodiversity in ecologically vulnerable areas

(a) Protected Areas

Protected Areas (National Parks, Wildlife Sanctuaries and Biosphere Reserves) are one of the most widely accepted and practical approaches to biodiversity conservation the world over. India, one of the



Kanha National Park, Madhya Pradesh

twelve megadiversity centres in the world, too, has an extensive Protected Area network, covering about 4.2 per cent of its total landmass. There were 89 National Parks, 13 Biosphere Reserves and 487 Wildlife Sanctuaries comprising total area of 208628 sq. km in India as of April 2002. As per the Review Report of the functions and organization of BSI undertaken in 2002 by MoEF, an area of 135296 sq. km⁴⁴ (64 per cent) remained under-explored/not explored by BSI as of April 2002.

(i) Non-dissemination of research results

We observed that in 2002, BSI proposed to undertake a scheme titled '*Floristic Diversity of Protected Areas (Biosphere Reserves, National Parks and Sanctuaries)*' at an estimated cost of ₹5 crore during the Tenth Five Year Plan. The scheme was proposed with an objective to develop management plans to sustainably manage and conserve plant resources occurring in these Protected Areas. Release of publications in respect of 45 Biosphere Reserves and National Parks which were not earlier explored was also proposed. This included periodic survey/exploration and identification work in the first three years, compilation of data during the fourth and publication in the fifth year.

The results of periodic survey/exploration and identification work by BSI during 2002-09 are depicted in the table below:

Table - 15

Results of periodic survey/exploration and identification work by BSI				
Protected Areas	Number (Total area)	Number (area) explored during 2002-09	Number (area) explored for the first time during 2002-09	Number (area) remaining unexplored
National Parks	89 (37372 sq. km)	32 (16604 sq. km)	21 (9123 sq. km)	57 (20768 sq. km)
Biosphere reserves	13 (54812 sq. km)	6 (29643 sq. km)	4 (14494 sq. km)	7 (25169 sq. km)
Wildlife sanctuaries	487 (116444 sq. km)	31 (11580 sq. km)	27 (10864 sq. km)	456 (10486 sq. km)

It could be seen from above that:

- Only 21 National Parks, 4 Biosphere Reserves and 27 Wildlife Sanctuaries covering 34481 sq. km were fully explored/partially explored for the first time during 2002-09.
- As of 2009, 64 per cent National Parks, 54 per cent Biosphere Reserves and 94 per cent of the Wildlife Sanctuaries remained to be explored.

Thus, periodic survey/exploration and identification work relating to Protected Areas was inadequate. With regard to dissemination of results of survey and exploration, it was further observed in audit that:

- No data was disseminated in the form of publications from this new coverage of 21 National Parks and four Biosphere Reserves till 2009.
- Seven documentations⁴⁵ of phytodiversity (National Parks) were published which covered an area of 6577.41 sq. km only out of 22630 sq. km which pertained to area already explored prior to April 2002.
- Only one documentation was published pertaining to a newly explored Wildlife Sanctuary (Pobitora Wildlife Sanctuary, Assam) covering an area of 38.83 sq. km.

⁴⁴ National Parks 37372 sq. km., Wildlife Sanctuaries 116444 sq. km. and Biosphere Reserves 54812 sq. km.

⁴⁵ Bandhavgarh National Park (Madhya Pradesh), Desert National Park (Rajasthan), Gulf of Mannar National Park (Tamil Nadu), Indravati Tiger Reserve (Chattisgarh), Kanha National Park (Madhya Pradesh), Pin Valley National Park (Himachal Pradesh), and Sanjay Gandhi National Park (Maharashtra).



Pin Valley National Park, Himachal Pradesh

As such, of the total 135296 sq. km, dissemination of research results for only 38.83 sq. km (0.03 per cent) was made, pertaining to area explored for the first time during 2002-09.

MoEF replied in March 2010 that it did not approve the scheme proposed by BSI and no work was undertaken by BSI. MoEF further replied that work of publishing in respect of 40 documentations was still going on, as 13 documentations of phytodiversity had been reviewed and 27 were being evaluated by experts.

Since the work pertaining to coverage of new Protected Areas was not undertaken by BSI as envisaged, it resulted in non-dissemination of research results from the coverage of new areas.

Recommendation - 17

BSI may strengthen its efforts to increase its survey and exploration activities so that the results can be disseminated for developing management plans and effectively conserving the Protected Areas.

(ii) Failure to conduct population studies and mapping

Population study is conducted to determine the total number of individuals of a taxon in the area explored while mapping is done to determine the range of distribution of that particular species. These two are the essential tool for monitoring of species. BSI proposed in the review report submitted in 2002 that while undertaking explorations, scientists were also required to undertake population study and mapping of rare and threatened species.

We reviewed 35 tour reports out of 694 tour reports submitted by scientists and observed that:

- a. In none of the cases, activities relating to population study and mapping were conducted during survey of the above areas.
- b. Tour reports did not contain adequate information for monitoring of plant species.
 - Expected outputs of the investigation were not available in the Tour Reports. As such, there were no criteria to assess/verify extent of achievement of outputs.
 - Detailed map of Protected Area including area surveyed in respect of tours undertaken was also not available in the tour reports. As such, coverage of area could not be worked out. Moreover, effective database of Protected Area could not be maintained which is one of the primary objectives of BSI.
 - Findings on Rare, Endangered and Threatened (RET) species were also not mentioned in the tour reports. Thus, status of distribution of plant species in the particular area and requirement for conservation could not be known.

BSI replied in October 2009 that mapping and population study could not be conducted due to lack of manpower. MoEF replied in March 2010 that BSI's scientists and technical staff were not trained/equipped to prepare detailed maps of the area surveyed or to undertake population studies. The reply of MoEF may be viewed in light of the fact that by not undertaking mapping and population study, BSI could not monitor plant species effectively.

MoEF further stated that findings on RET species could not form part of the tour report as it was very difficult to authentically identify specimens in the field. The reply of MoEF needs to be viewed in the light of the fact that while conducting the review in 2002, BSI itself proposed that during conduct of explorations, the scientists would undertake population study and mapping of rare and threatened species. Also, instead of studies and findings of RET species to be incorporated in the tour reports, tour reports contained only the number of RET species collected. Further, in the absence of information about expected outcomes, the actual outcome could not be measured in audit.

Recommendation - 18

The format of tour reports may prescribe the parameters including expected output of the investigation, methodology followed, photographs of identified interesting species, detailed map of the Protected Area, Hotspots, Fragile ecosystem and Sacred Groves. These tour reports may also include the area surveyed field tour-wise, mapping and population study findings on RET species etc.

(b) Biodiversity Hotspots

Biodiversity Hotspots are areas that support natural ecosystems that are largely intact and where native species and communities associated with these ecosystems are well represented. They are also areas with a high diversity of locally endemic species that are not found elsewhere or are rarely found outside the Hotspot and at the same time face a higher degree of threat. The following are the four biodiversity Hotspots in India.

- Himalayas: Includes the entire Indian Himalayan region
- Indo-Burma: includes entire North-eastern India, except Assam and Andaman group of Island
- Western Ghats
- Sundalands: Includes Nicobar group of Islands.



Western Himalayas- Biodiversity Hotspot

We observed that during 2002-09, nine out of 12 circle offices of BSI did not conduct specific tours for exploration of Hotspots even though exploration, inventorisatation and documentation of phytodiversity in Hotspots, Fragile ecosystems and Sacred Groves in particular was one of the objectives of BSI.

BSI stated in October 2009 that it had undertaken 261 survey and exploration works in Hotspots like Western Himalaya, Eastern Himalaya etc., as per Annual Action Plan. However, scrutiny of Annual Action Plan revealed that the survey work was undertaken during the course of survey work of district/state/Protected Area/wet land flora and not Hotspots in particular, as envisaged in the objectives of BSI.

MoEF stated in March 2010 that exploration made by BSI in these states/areas was in the Hotspot areas since the Hotspots encompass a larger landscape than district/state/Protected area/Fragile ecosystems as pointed out by Audit. The reply needs to be viewed in light of the fact that Hotspots are identified areas of high diversity of locally endemic species and survey work covering limited number of districts/states cannot be construed as covering a Hotspot comprehensively.

Recommendation - 19

In order to ensure that locally endemic species particular to a Hotspot are identified and conserved, it is recommended that special attention be paid to comprehensive survey and documentation of Hotspots.

(c) Fragile ecosystems

A fragile environment is an ecosystem which lacks resilience or which is so heavily impacted by unnatural events that it changes in unexpected and undesirable ways. Fragile ecosystems comprise of wetlands, cold desert regions, glacial moraines etc. BSI undertook survey work on wetlands of international and national importance.

With respect to wetlands of international importance (Ramsar Sites⁴⁶) comprising of 25 geographical⁴⁷ areas and covering 677131 hectares, we observed that:

⁴⁶ 25 designated wetlands of international importance come into force for India on 1.2.1982.

⁴⁷ List of wetlands of international importance as per Ramsar - Upper Ganga River, Surinsar-Mansar Lakes, Rudrasagar Lake, Renuka Wetland, Hokera Wetland, Chandratat Wetland, Vembanad-Kol Wetland, Tsomoriri, Sasthamkotta Lake, Ropar, Pong Dam Lake, Point Calimere Wildlife and Bird Sanctuary, Kolleru Lake, Kanjli, East Calcutta Wetland, Deepor Beel, Bhoj Wetland, Bhitarkanika Mangroves, Ashtamudi Wetland, Wular Lake, Sambhar Lake, Loktak Lake, Keoladeo National Park, Harike Lake and Chilka Lake.



Chilka Lake, Orissa- Fragile ecosystem

- Out of 25 geographical areas, only one geographical area (Chilka lake) having surface area of 116500 hectares was explored by BSI as of 2002. Thus, an area of 83 *per cent* of Fragile ecosystems remained unexplored as of 2002.
- During 2002-09, BSI explored another three geographical areas (East Kolkata Wetland, Wetland of Himachal Pradesh viz., Pong, Renuka & Chandratal and Deepor Beel, Assam) of these 25, having a total surface area of 32,231 hectares.

Thus, BSI explored only six *per cent* out of 83 *per cent* of the unexplored areas during the last seven years. Of 32,231 hectares explored, research results in the form of published documentation were disseminated only in respect of 19731 hectares⁴⁸ (four *per cent*).



Chandratal, Himachal Pradesh- Fragile ecosystem

⁴⁸ Wetlands of Himachal Pradesh (viz. Pong, Renuka and Chandratal) and Deepor Bill, Assam.

We further observed that BSI proposed to undertake three schemes during the Tenth Five Year Plan at a total cost of around ₹10 crore i.e., (i) Studies on floristic diversity of wetlands for conservation and management, (ii) Limnological⁴⁹ investigation in some lakes of national importance for conservation and management, and (iii) Floristic studies on selected critical and fragile ecosystems. However, none of these schemes were undertaken by BSI, as MoEF did not approve the same, as BSI did not have adequate infrastructure to undertake such studies. BSI stated in October 2009 that only those projects were undertaken which were within the Annual Action Plan and approved by Research Advisory Council in the absence of specific approval/funds from MoEF.

The reply of BSI needs to be viewed in light of the fact that the proposals for these three schemes indicated that funds requirement would be met from regular grants of BSI.

MoEF stated that it was not possible for BSI to undertake the above schemes without prerequisites i.e., additional manpower and funds. The reply of MoEF is not acceptable as it did not release the projected funds to BSI to carry out its activities. Further, there were significant vacancies in the scientific cadres who carry out survey and exploration activities at BSI. Thus, only four *per cent* area of fragile ecosystems of international importance was explored and data was disseminated to the scientific community and no data was generated from fragile ecosystems of national importance.

Recommendation - 20

BSI needs to increase its activities and undertake more schemes for identification, exploration and documentation of phytodiversity of Fragile ecosystems, so that the Fragile ecosystems can be effectively conserved.

(d) Sacred Groves

The objective of exploration of Sacred Groves is to inventorise the biodiversity of the Sacred Groves to conserve them and to study the ethno-botanical values of the components of biodiversity of the Sacred Groves.



Mawphlong Sacred Groves, Meghalaya

We observed that there were 15,397 Sacred Groves situated in 22 states, of which only one grove (Mawphlong Sacred Groves, Meghalaya) was explored by BSI as of 2002. We further observed that one more Sacred Grove (Kabi Sacred Grove, Sikkim) was studied during 2002-09. However, the report of the

⁴⁹ Scientific study of the life and phenomena of fresh water, especially lakes and ponds.

work is yet to be published (March 2010). Thus, only 2 out of 15,397 sacred groves were studied by BSI so far, which impacted biodiversity identification and proper management of these Sacred Groves.

MoEF stated that BSI, with its existing resources, undertook the study and documentation of floristic diversity in Kabi Sacred Grove in Sikkim. The reply of MoEF needs to be viewed in light of the fact that no targets were fixed for conducting survey of Sacred Groves. Further, study and documentation of floristic diversity in only two out of 15,397 Sacred Groves was undertaken by them so far. Due to lack of adequate resources, it would be difficult for BSI to achieve their remodeled objectives for fulfilling commitments of CBD.

Recommendation - 21

BSI may conduct more studies on Sacred Groves so that the objective of inventorising, studying and conserving biodiversity and ethno-botanical values of the Sacred Groves can be fulfilled.

3.2.3.2 Identification of red list species⁵⁰ and species rich areas needing conservation

While botanical 'survey' is conducted for collection and documentation of plants, 'status survey' is the exploration of a region which had been surveyed previously to study improvement or deterioration of the flora therein. BSI felt in 2002 that during botanical exploration and inventorisation of the phytodiversity, attention should also be focused on the taxa/ecosystems which are under threat and need conservation. Such species/habitats should be critically studied to determine the degree of threat. Subsequently, these taxa are to be documented in "Red Data Books". Thus, for effective conservation, status survey is required to be carried out. Two examples of rare and endangered species are given alongside in boxes 1 and 2.

Status survey of plant species was to be done by (i) Status survey of RET plant species which were listed in Appendices of CITES⁵¹ by conducting studies on 30 different parameters like taxonomy, biological parameters, population, estimation of distribution range etc., and (ii) Status survey and population study of RET species of Indian flora which were listed in the IUCN⁵² Red List Categories with a view to exploring areas known for the distribution of threatened species and to collect data and assess their present population status.

During this survey, species/habitats were to be critically studied to determine degree of threat. Subsequently, these taxa would be



Sapria Himalayana

Status: Rare, surviving only in Namdapha area. Destruction of its habitats is the main threat factor for its decline.

Distribution: Arunachal Pradesh, Manipur and Meghalaya.

Habitat and Ecology: It grows in dense, undisturbed forests near 40th mile in the Namdapha Biosphere Reserve, in damp moist places on the roots of Cissus elongate and other species of Vitaceae, as a complete root parasite.

Conservation measures proposed: This species has to be conserved in situ in the Namdapha forest area which is under protection, as other means of conservation are difficult because of its parasitic habit.

Biology and potential value: A very interesting species of the family Rafflesiaceae with large flowers of ca 12-16 cm across, and of considerable botanical interest. Earlier it was reported from different parts of NE Region. The whole plant is represented by its flower; other parts much reduced or absent having its roots attached to the host plant.

Box 1: Sapria Himalayana, a rare and endangered species

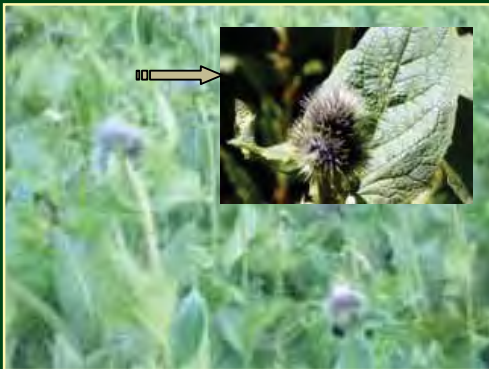
⁵⁰ Red listed species are those threatened species under various categories which are listed in IUCN list.

⁵¹ Convention on International Trade in Endangered Species of Wild Fauna and Flora.

⁵² International Union for Conservation of Nature.

documented in Red Data Books and would be taken up for ex-situ conservation in gardens. For in-situ conservation of species, information will be transmitted to concerned authorities to help them manage these species/ecosystems. We observed that:

- During 2002-09, BSI did not conduct any status survey of plant species.
- Red Data Books which represented the present status of threatened, rare, endangered, endemic, vulnerable, extinct species were updated in 1990 and last updated version was printed in 2003. As no status surveys have been conducted by BSI, the same has not been updated since then.



Saussurea Costus

Status: Endangered due to indiscriminate collection and loss of habitat.

Distribution: Jammu and Kashmir, Himachal Pradesh (Chamba), Uttar Pradesh, Pakistan.

Habitat and Ecology: In sub-alpine Himalayas, on open hill-slopes, in the altitudes of 3200-3800 m.

Conservation measures taken: None for the wild populations of its habitats, however, the species is now included in the Appendix 1 of the CITES.

Conservation measures proposed: Baseline data on the distribution and ecological status, population density, etc.; rehabilitation in its depleting habitats or ecologically akin to natural habitats in its distribution range; protection of natural habitats.

Biology and potential value: 'Kuth' is cultivated for its roots used in perfume industry. The dry root is commercially known as 'costus' root which is strongly scented and yields aromatic oil. It is also used to make insecticides. The root contains an alkaloid known as Saussurine which has medicinal properties and is good for stomach ailments. It is an antiseptic and is also used in chronic skin diseases, asthma, high blood pressure etc.

Box 2: Saussurea Costus, a rare and endangered species

BSI agreed in July 2009 that it had not conducted status survey during 2002-09. MoEF stated in March 2010 that surveys conducted by BSI during the period under review had helped in rediscovery of a number of endemic and endangered species after a gap of more than 50–150 years. The reply of MoEF needs to be viewed in the light of the fact that the scope of 'survey' is different from the scope of 'status survey'. MoEF further stated that BSI carried out specific status survey in respect of five plant species with the existing resources, though it did not spell out the period of carrying out such status survey. However, the fact remains that BSI did not conduct status survey during the period under review i.e., 2002-09, which is an essential tool for monitoring of plant species.

Recommendation - 22

BSI needs to gather and disseminate data on distribution, degree of threat, biological parameters, utilisation etc., of the plant species explored. It is further recommended that status of the threatened species in the Red Data Book may be updated urgently so that conservation efforts can be made more effective.

3.2.3.3 Survey and documentation of traditional knowledge (ethnobotany⁵³) associated with plants

Ethnobotanical studies document the traditional knowledge of different ethnic groups associated with usage of plant species for different purposes such as food, fodder, shelter, medicine, veterinary, cultural, psychosomatic etc. India presents a colourful mosaic of about 563 tribal communities which have acquired considerable knowledge on uses of plants for their livelihood, health care and other purposes through their long association with the forests, inheritance, practices and experiences. With the advancement of civilisation, this ethnobotanical information has been depleting at an alarming rate. Therefore, recording and documenting ethnobotanical data is critical for providing information which would lead to sustainable utilisation of bio-resources. While reviewing the functions and organisation of BSI in 2002, MoEF observed that BSI, during surveys, should also collect ethnobotanical data documentation of the bio-resources of the country, which could be sustainably utilised for economic development of the area.

While reviewing its strategies and objectives keeping in view its commitment towards CBD in 2002, BSI identified 112 districts of 17 States/Union Territories⁵⁴ to carry out ethnobotanical studies by 2009. Of these, ethnobotanical studies in 30 districts were to be completed for publication by 2009. In the remaining States/Union Territories, it was to carry out these studies simultaneously while studying Fragile ecosystem and Protected Areas. In this regard, we observed that:

- Eight out of 12 circles did not undertake any ethnobotanical studies during 2002-09. Two circles (AP and Northern) did not furnish information in this regard. Only BSI headquarters and A&N Circle undertook 19 studies during 2002-09.
- Except in A&N where one ethnobotanical study (Jarawa contact expedition) was conducted during 2002-03, no information was gathered from other states.
- Examination of 18 ethnobotanical study tour reports by Audit revealed the following:
 - As against 30 districts identified by BSI for undertaking ethnobotanical studies by 2009, only five districts were covered during this period. BSI also covered six more districts other than the identified districts.
 - Though BSI collected specimens of 2729 ethnobotanically important species in the abovementioned 18 tours, no ethnobotanical information about the usage of 1426 plant species (52 *per cent*) by the tribal communities for different purposes such as food, fodder, shelter, medicine, veterinary, cultural, psychosomatic was reported.
 - Though ethnobotanical information for 1303 plant species and their usage by the tribal communities for different purposes was recorded, no publication in this regard was released till date.

⁵³ Ethnobotany is the scientific study of the relationships that exist between people and plants.

⁵⁴ Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Delhi, Goa, Gujarat, Himachal Pradesh, Jammu and Kashmir, Kerala, Madhya Pradesh, Mizoram, Orissa, Sikkim, Tamil Nadu and West Bengal.



Nyishi women- ethnobotanical study

BSI stated in October 2009 that ethnobotany of two major tribes viz 'Adi' and 'Nyishi' of Arunachal Pradesh were published in the Annual Report of MoEF in 2007. It further stated that three⁵⁵ more publications on ethnobotany were brought out. The reply of BSI needs to be viewed in light of the fact that traditional knowledge and ethnobotany of only 5 out of 563 tribal communities were disseminated as of 2009.

MoEF further stated that the review by BSI in 2002 was a stocktaking exercise to identify gaps and propose action plan to bridge the gaps, keeping in view the optimal manpower, infrastructure and financial requirements. MoEF further stated that it did not review the functions and organisation of BSI in 2002. The reply of MoEF may be viewed in light of the fact that the review was done and gaps assessed at a workshop organised by MoEF at Jaipur in February 1997 and the objectives of BSI were remodeled in 2002 following the recommendations of the workshop vis-à-vis MoEF's commitments to CBD which was ratified in 1994.

Further, the fact remains that BSI conducted this review and formed strategy to bridge the gaps identified to fulfill the commitments under CBD, keeping in view the then existing sanctioned strength.

Recommendation - 23

BSI may prepare specific plan to survey and inventorise ethnobotanically important plant species with specific targets on distinct parameters and bring out publications for sustainable utilisation of bio-resources.

⁵⁵ Ethnobotany of Dadra, Nagar-Haveli and Daman (2001), Madhya Himalaya ki Paramparaen Evam Paramparik Gyan (2004), Ethnobotany of Mysore and Coorg, Karnataka State (2007).

3.2.4 Ex-situ⁵⁶ and In-situ⁵⁷ conservation of critically threatened taxa

Conservation is the next step after exploration and identification of plant species. According to CBD, each country needs to undertake in-situ and ex-situ conservation of species and communities which are threatened, contain high diversity, large numbers of endemic or threatened species. CBD lists out various measures to be undertaken for ex-situ and in-situ conservation, some of which are:

- Adopt measures for the ex-situ conservation of components of biological diversity, preferably in the country of origin of such components;
- Establish and maintain facilities for ex-situ conservation of and research on plants, animals and micro-organisms, preferably in the country of origin of genetic resources;
- Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;
- Regulate or manage biological resources important for the conservation of biological diversity whether within or outside Protected Areas, with a view to ensuring their conservation and sustainable use.

Efforts of BSI in the area of ex-situ and in-situ conservation are discussed below.

(a) Inadequate ex-situ conservation

The objective of ex-situ conservation is to adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions. Thus, BSI was to conserve, multiply threatened taxa in botanical gardens and reintroduce them into natural habitats after multiplication.

We observed that only 163 threatened species were conserved in 10 Botanical Gardens of BSI in 118 years (since inception) which was 15 *per cent* of the total threatened species (1076) assessed by BSI to be conserved.

BSI stated in October 2009 that due to inadequate manpower, it had not been possible to even complete survey and identification/exploration activities. MoEF, in its reply in March 2010, stated that to introduce, acclimatise and multiply wild plant species in gardens was a big project by itself and needed dedicated manpower to make trials of their nursery technique etc. It further stated that due to lack of timely action in initiating proposal for filling up the vacant posts, a number of posts fell into deemed abolished category and MoEF initiated action to revive all scientific posts in 2007. MoEF also stated that mentioning the lack of manpower in a five year plan could not be taken as a requisition for increasing the manpower and that no proposal from BSI was pending in the Ministry.

Thus, lack of manpower was a result of inadequate action by MoEF and BSI. MoEF needs to provide dedicated manpower in BSI so that activities regarding multiplication, reproduction and reintroduction can be carried out by BSI and India's commitments to CBD can be effectively fulfilled.

(b) Inadequate data generation for in-situ conservation

In-situ conservation is the process of protecting an endangered plant or animal species in its natural habitat, by protecting the area in form of Wildlife Sanctuary/National Park/Community Conservation area/ Biosphere Reserve/Forest Preservation Plots etc. In this regard, BSI was required to monitor threatened plant species and disseminate data to the management authority for establishment of a system of Protected Areas or areas where special measures need to be taken to conserve biological

⁵⁶ It is a process of protecting an endangered species of plant or animal by removing part of the population from a threatened habitat and placing it in a new location which may be a wild area or botanic garden, zoo etc.

⁵⁷ It means 'on-site conservation'. It is the process of protecting an endangered species of plant or animal in its natural habitat, by protecting the area in form of wild life sanctuary, national park or bio-sphere reserve etc.

diversity. In this regard, we observed that BSI did not conduct monitoring work adequately for in-situ conservation.

BSI stated in October 2009 that due to lack of manpower, except in certain specific cases like Nanda Devi Biosphere Reserve in Western Himalaya, population of *Cycas beddomei* in Deccan Plateau, population of *Trachycerpus takil* in Western Himalaya and population of *Corypha talliera* in West Bengal, monitoring work could not be taken up. MoEF stated in March 2010 that BSI's mandate was to provide baseline information on the diversity and distribution of plants in protected areas to facilitate their monitoring and management and it had provided baseline information on some species. However, the fact remains that the same was not adequately done.

Recommendation - 24

BSI needs to strengthen monitoring work adequately for in-situ conservation so that data can be disseminated to the management authority for setting up Protected Areas or areas where special measures need to be taken to conserve biological diversity.

3.2.5 Studies on selected plant groups

According to CBD, Governments need to:

- (a) Establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and its components and provide support for such education and training for the specific needs of developing countries;
- (b) Promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries; and
- (c) Promote and cooperate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources.

BSI undertook research on two topics during the Tenth Five Year Plan i.e., (i) Pollen studies of Indian Angiosperms costing ₹80 lakh and (ii) Taxonomic Revisionary studies of the flora of the country costing ₹2.08 crore, for a duration of ten and five years respectively.

The objective of the first project was to provide exhaustive palynological account of angiospermic taxa including family and genus using both light microscopic and scanning electron microscopic studies. BSI, however, did not furnish information on procurement and usage of the Scanning Electron Microscope and also the number of reference collection of pollen studies of angiospermic taxa. The project is still going on.

The objective of the second project was to survey and inventorise the floral wealth of the country in view of the fast deteriorating environmental conditions due to urbanisation, forest clearing and other biotic interferences. BSI did not furnish information on status of the progress of the work.

Thus, effectiveness of BSI in promoting and encouraging research activities could not be ascertained in audit.

3.2.6 Environment Impact Assessment of areas assigned to BSI

Studies for assessment of impact of various development activities on natural resources and environment are known as Environment Impact Assessment (EIA) studies. Result of comparative analysis of data through these studies helps in taking mitigating measures for the protection of environment and proper environmental management.

According to CBD, national governments need to:

- (a) introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimising such effects and, where appropriate, allow for public participation in such procedures;
- (b) introduce appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account.

We observed that only one study was conducted in 2005 on 'EIA of Iron ore mining in Rawghat Iron Ore deposit'. BSI stated in October 2009 that 'EIA studies' were only carried out by BSI as and when specifically instructed by MoEF.

MoEF did not intimate the reasons and offer any comments as to why BSI was not assigned the task of conducting EIA studies despite huge environmental degradation taking places in various areas of the country due to various developmental activities.

Recommendation - 25

MoEF may indentify important areas affected by environmental degradation due to developmental activities and get EIA studies conducted through BSI for initiating appropriate corrective measures.

3.2.7 Conclusion

BSI is the nodal research organisation under Ministry of Environment and Forests playing an important role towards fulfillment of India's commitments to various international conventions, especially Convention on Biological Diversity.

The objectives of BSI were remodeled to conduct survey in Protected Areas, Fragile ecosystems, Hotspots and Sacred Groves in particular with a view to implementing the provisions of CBD. BSI needs to increase its efforts for identification/documentation and monitoring of plant species to identify and document the Protected Areas and Fragile ecosystems. Specific publications documenting these areas also needed to be brought out. BSI needs to conduct population studies, mapping and status surveys, all of which affect its identification and monitoring activities. It also needs to update the status of threatened species in the Red Data Book so that efforts at conservation can be made more effective. Further, identification of traditional knowledge of different ethnic groups associated with usage of plant species for different purposes needs to be done for wider dissemination and conservation. BSI needs to generate adequate data for in-situ conservation and carry out ex-situ conservation, which impacts conservation of biodiversity. Though BSI identified action to be taken to fill the gaps while remodeling their objectives in line with CBD, they were not supported/approved by the Ministry by providing required infrastructure.

MoEF stated that the recommendations were laudable but for their implementation, necessary wherewithal in terms of state-of-the-art infrastructure, trained manpower and in-service skill augmentation was an important prerequisite.

Recommendation - 26

MoEF, being the nodal ministry for implementation of Convention on Biological Diversity in the country, needs to properly plan and ensure that all necessary infrastructure is provided to BSI to effectively ensure conservation of precious biodiversity and also to meet its commitments to the Convention on Biological Diversity.



Chapter - 4

THEME: POLLUTION CONTROL

Pollution Control is the process of reducing or eliminating the release of pollutants (usually man-made) into the environment. It is regulated by various environmental agencies that establish limits for the discharge of pollutants into the air, water and land. Non compliance to the laid down standards for pollution control poses risks to human health and the environment.

4.1 Non-achievement of objectives of Ecocity Programme

Central Pollution Control Board (CPCB) initiated the 'Ecocity Programme' at a total cost of ₹30 crore under the Tenth Five Year Plan for implementation in six cities which were selected for the first phase of the programme in view of their cultural/historical/heritage and tourism importance. Works undertaken under the programme remained incomplete in all selected six cities and ₹1.88 crore was lying unspent with State Pollution Control Boards for over seven years. Thus, the objectives of the programme which was to improve the environment and bring in visible results through implementation of identified environmental improvement projects in selected towns and cities were not achieved.

4.1.1 Introduction

Central Pollution Control Board (CPCB), a statutory organisation under the Ministry of Environment and Forests (MoEF), conceptualized an 'Ecocity programme', the overall objective of which was to improve the environment of selected cities and bring in visible results in environment through implementation of identified environmental improvement projects. The programme, in the long run, was expected to help create awareness and local dynamics for decreasing environmental burden/stress, improving living conditions and help in achieving sustainable development in the city through a comprehensive urban improvement system. CPCB initiated the 'Ecocity Programme' at a total cost of ₹30 crore under the Tenth Five Year Plan, for the period 2002-07.

Keeping in view the cultural/historical/heritage and tourism importance of the cities/towns, 12 cities/towns⁵⁸ were selected for implementation of the Ecocity programme, in the first phase. However, the programme was initiated in only six towns viz; Ujjain, Puri, Tirupati, Kottayam, Vrindavan and Thanjavur. More towns were to be covered later, based on the results from these towns.

(i) Implementation of the programme

The Ecocity programme was to be coordinated and executed by CPCB and was to be implemented by municipalities with local coordination and fund management by the respective State Pollution Control Boards (SPCBs).

(ii) Funding Pattern

Municipalities of the selected towns were to submit 'Detailed Project Reports (DPRs)' to CPCB which would place them before an Expert Committee for evaluation. Based on recommendations of the Expert Committee, CPCB would approve the proposal. Of the total cost of the project, CPCB was to contribute 50 *per cent* and the balance was to be borne by the municipality, either from its own funds or through financial institutions/any other means. The funds were to be released by CPCB to SPCBs who were required to release payments to the respective municipalities in four instalments.

⁵⁸ Mathura, Vrindavan (Uttar Pradesh), Ujjain (Madhya Pradesh), Puri (Orissa), Vapi (Gujarat), Thanjavur (Tamilnadu), Bharatpur (Rajasthan), Shillong (Meghalaya), Deogarh (Jharkhand), Rishikesh (Uttaranchal), Tirupati (Andhra Pradesh) and Kottayam (Kerala).

Detailed audit findings

It was observed in audit that works undertaken under the programme remained incomplete in all the six cities selected for the first phase of the programme. In Puri, no progress was made on three projects sanctioned and entire fund released was lying unspent with SPCB/Municipality for more than seven years. In Kottayam, both the projects identified and sanctioned remained incomplete and none of the activities identified later were implemented. In Ujjain, the projects being implemented remained incomplete. In Vrindavan, no project was implemented under the Ecocity programme and the entire fund sanctioned to the SPCB was lying unutilised with it for more than seven years. In Thanjavur, no projects were even started under the Ecocity programme and in Tirupati; only three out of six projects were implemented.

It was further observed in audit that CPCB did not take any action to revive any of the projects after August-September 2008, leaving the works undertaken under the programme incomplete. In addition, the second phase of the project was not initiated at all. Thus, the objectives of the programme to improve the environment through implementation of identified environmental improvement projects in towns and cities of cultural/historical/heritage and tourism importance were not achieved.

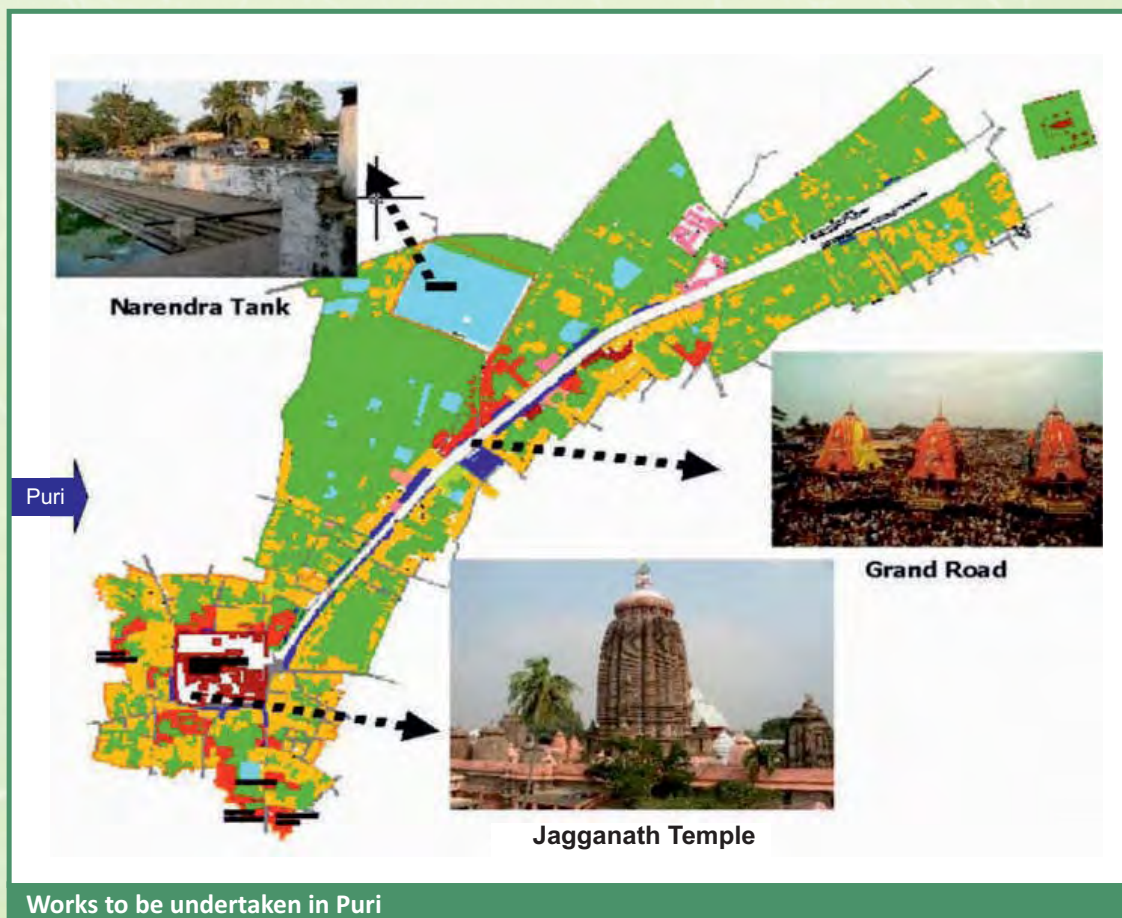
Detailed audit observations relating to the implementation of the Ecocity programme in all the six cities taken up in the first phase of the programme are discussed in the succeeding paragraphs.

4.1.2 Puri

CPCB, in April 2006, approved three projects namely, (1) Construction of cement concrete drain with cover slab along the roads around Jagannath Temple; (2) Improvement of drinking water point at lions gate near Jagannath Temple; and (3) Improvement of public toilet near Narendra tank with scheduled date of completion between August and December 2006. The total cost of these projects was ₹64 lakh with share of CPCB being ₹32 lakh. CPCB authorised Orissa SPCB to release the first installment to the municipality in June 2007. In this regard, it was observed in audit that:

- CPCB received the draft DPR in November 2003 which was not upto the mark and was, therefore, returned in December 2003 to the Puri municipality for modifications. The final revised DPR was received from Orissa SPCB only in June 2006 i.e., after a delay of more than two and half years. The reason for delay was attributed to the DPR not being as per the required procedure/format.
- Without receipt/approval of DPR, CPCB released ₹56 lakh as advance to Orissa SPCB in March 2003. CPCB authorised Orissa SPCB to release the first installment to the municipality in June 2007. Orissa SPCB released ₹9.62 lakh to Puri municipality only in February 2008, i.e., much after the targeted date of completion of August/December 2006. Reasons for delay were not made available by CPCB/Orissa SPCB.
- CPCB last reviewed the progress of the project in August 2008 wherein it was decided that Orissa SPCB would seek commitment from the Puri municipality for completion of sanctioned activities and that Orissa SPCB would identify more schemes⁵⁹ for inclusion under the Ecocity programme. In November 2008, Orissa SPCB sent a proposal for five schemes for approval from CPCB. However, CPCB did not make any further efforts to approve/implement these projects.
- No progress was reported under the programme till February 2010.

⁵⁹ Other than already identified under Jawaharlal Nehru National Urban Renewal Mission (JNNURM).



Thus, it can be concluded that CPCB hurriedly released ₹56 lakh (in March 2003) to Orissa SPCB without receipt/approval of DPR and firm commitment from the Puri municipality. As a result, Municipality did not execute the project seriously and the Ecocity programme failed to achieve its objectives. Moreover, the entire amount of funds released was lying unspent with Orissa SPCB/Municipality for more than seven years.

In February 2010, MoEF replied that there has not been any significant progress in case of Puri. It further stated that since this town was also covered under the JNNURM programme, the Ecocity programme for Puri was, therefore, being closed and the SPCB was being pursued to return the unspent amount along with accrued interest thereon. The reply was not acceptable in audit as these projects were scheduled for completion between August and December 2006, however even after a delay of more than three and half years, CPCB failed to get the project work executed by the municipality. Moreover, the reply was silent as to whether this particular incomplete work covered under ecocity programme has been included in the JNNURM programme.

4.1.3 Kottayam

In January 2005, after approval of the DPR, CPCB sanctioned two projects namely, rejuvenation of Mundar river and renovation of Kacherikadavu boat jetty canal for ₹1.29 crore with scheduled date of completion by March 2005. The total share of CPCB was ₹64.33 lakh. CPCB released ₹21.55 lakh as advance to Kerala SPCB in March 2003 and released the remaining amount between April 2006 and July 2007. Kerala SPCB in turn released ₹51.47 lakh to Kottayam municipality. In this regard, it was observed in audit that:



Boat Jetty, after partial renovation, Kottayam

- The first installment of ₹21.55 lakh was released by CPCB to Kerala SPCB without approval of the DPR by the Expert Committee.
- In January 2008, a physical verification of the project site carried out by the CPCB Zonal office, Bangalore indicated that the work relating to only one of the projects⁶⁰ was complete and the other project⁶¹ was partially complete. However, in December 2008, Kerala SPCB sent a revised proposal of ₹40.94 lakh for completing both the pending projects. This is indicative of the fact that both the projects were incomplete. CPCB took no action on the revised proposal.

As a result, both the projects identified under the Ecocity programme remained incomplete leading to wasteful expenditure of ₹51.47 lakh. In addition, ₹12.86 lakh was lying unutilised with Kerala SPCB for more than seven years.

In February 2010, MoEF replied that most of the schemes have been completed in Kottayam and that the matter is being followed up for completion of the rest of the schemes and furnishing of utilisation certificates for this town.



Mundar river, Kottayam after partial work under Ecocity scheme

⁶⁰ Kacherikadavu boat jetty canal.

⁶¹ Rejuvenation of Mundar river.

The reply of MoEF was not supported by the completion reports for the projects. In the absence of completion reports and utilisation certificates from the Kottayam municipality, it is not clear as to how MoEF satisfied itself about the completion of the projects.

4.1.4 Ujjain

CPCB released an advance of ₹67.42 lakh to Madhya Pradesh SPCB in March 2003 for implementing a project “Mahakal Core Area Development” at a total cost of ₹11.70 crore. In view of the upcoming Simhastha⁶² in 2004, the Ujjain Municipal Corporation (UMC) took up a sub-component “Excavation/Embankment of Rudrasagar” of the project on priority. The DPR for the said sub-component was approved by CPCB in May 2003 at a cost of ₹94.88 lakh, of which CPCB's share was ₹47.44 lakh. The project was to be completed by March 2004 which was extended to March 2005. In this regard, it was observed in audit that:



On going work at Rudrasagar, Ujjain

- In July 2004, UMC submitted audited utilisation certificate (UCs) for an amount of ₹63.21 lakh for the work done under the project. CPCB, in June 2004, requested Madhya Pradesh SPCB to verify the work but Madhya Pradesh SPCB, in the inspection conducted by it in July 2004, was not satisfied with the desiltation operation and was not in a position to verify the claim of UMC due to waste water entering the water body. Despite this, in January 2005, CPCB authorised Madhya Pradesh SPCB to release ₹14.23 lakh to UMC.
- In July 2005, Madhya Pradesh SPCB recommended that CPCB keep the Ecocity programme in abeyance due to unsatisfactory implementation of the earlier sanctioned projects.
- Two more review meetings were held in May 2007 and in August 2008 but the new schemes to be implemented with the unspent funds lying with Madhya Pradesh SPCB were yet to be identified. CPCB did not take any efforts to get the project re-started. No further progress was reported as of date.

⁶² Simhastha is a bathing festival of Ujjain and a dip in the river during the bathing festival is considered holy.

Thus, the projects being implemented under the Ecocity programme remained incomplete and ₹73.58 lakh already spent on the project was rendered wasteful. Further, UMC had submitted UCs for work worth ₹63.21 lakh against the work claimed to be done (₹73.58 lakh). Thus, UC for work worth ₹10.37 lakh was still pending.

In February 2010, MoEF agreed that there has not been any significant progress in case of Ujjain. MoEF also stated that this town was also covered under the JNNURM programme. The Ecocity programme for this place is, therefore, being closed and SPCB is being pursued to return the unspent amount along with accrued interest thereon.

However, the reply was silent as to whether this particular incomplete work covered under ecocity programme has been included in the JNNURM programme. Thus, the Ecocity programme failed to get implemented in Ujjain even after seven years of release of funds.

4.1.5 Vrindavan

CPCB released an advance of ₹43 lakh to Uttar Pradesh SPCB in March 2003 for implementation of a project "Vrindavan Ecozone" at a total cost of ₹2.87 crore. The share of CPCB towards the project was ₹1.43 crore. MoU for implementation of the activities namely, (i) improvement of 2 km stretch from Kaliadaha Ghat to Kesi Ghat of parikrama path (ii) improvement of Banke bihari area in Vrindavan' and (iii) comprehensive improvement along the road connecting all major pilgrim/tourist and restoration/development of Gandhi Park identified under the programme was signed with Vrindavan Nagar Palika Parishad (VNPP) and Uttar Pradesh SPCB in August 2006. In this regard, it was observed in audit that:



Re-development of Parikrama Marg, Vrindavan

- None of the projects sanctioned under the Ecocity programme could be taken up for implementation because VNPP was not able to provide commitment for its share of 50 per cent funds as agreed in the MoU.
- In a review meeting held in August 2008, it was decided that in case there was no commitment for the matching funds for the project from VNPP or through any other agency, Uttar Pradesh SPCB should identify appropriate schemes to be taken up under the Ecocity programme within 40 days.
- No further progress was reported as of date and CPCB did not make any efforts to get new projects identified. In October 2007, it asked Uttar Pradesh SPCB for refund of the pending amounts which has not been returned so far (February 2010).

Thus, no project was implemented under the Ecocity programme and the entire amount (₹43 lakh) released to Uttar Pradesh SPCB was lying unutilised with it for more than seven years.

In February 2010, MoEF replied that there has been no progress under the project and that Uttar Pradesh SPCB has been asked to return the amount released along with accrued interest.

4.1.6 Thanjavur

In June 2006, the Expert Committee recommended the project “Renovation of four old tanks” for implementation. However, the administrative approval was accorded in March 2007 at an estimated cost of ₹76 lakh with CPCB's share of ₹38 lakh. In this regard, it was observed in audit that:

- Though the agreement for implementation was sent to Tamil Nadu SPCB in March 2007, the signed agreement was returned by Tamil Nadu SPCB to CPCB only in August 2008, i.e., after a delay of more than 17 months.
- Tamil Nadu SPCB had agreed to take only some parts of the project⁶³ at a total cost of ₹44 lakh. CPCB did not make any effort to sanction the works which Tamil Nadu SPCB had agreed to take up under the programme. As a result, no projects could be implemented till date under the Ecocity programme.

In February 2010, MoEF agreed that there has been no progress in the case of Thanjavur and stated that there had been no release of funds in this case.

4.1.7 Tirupati

In March 2003, CPCB released an advance of ₹49.35 lakh to Andhra Pradesh SPCB for a project “Core Area Development”, the total cost of which was ₹8.07 crore and the contribution of CPCB was ₹1.64 crore. The balance amount of ₹6.43 crore was to be contributed by other agencies, including Tirupati Municipal Corporation (TMC). It was observed in audit that:

- CPCB sanctioned only three projects namely (i) Covering of storm water drains on the northern, southern & western side of the Govindarajaswamy temple, (ii) connecting Koneru to Narsimha Tirtha by pipeline to replenish water on permanent basis and (iii) Cleaning/ desilting of drains in the Core Area out of the fifteen projects submitted by TMC. The total cost of the three projects was ₹39.97 lakhs with CPCB's share of ₹19.99 lakhs.

⁶³ Renovation of only two tanks instead of four tanks.



Work relating to covering of storm water drains, Tirupati

- Andhra Pradesh SPCB sent three more proposals⁶⁴ for Tirupati at a cost of ₹4.78 crore. However, CPCB did not take any action to sanction these projects.
- In August 2008, Andhra Pradesh SPCB intimated that the three sanctioned projects were completed and the same was verified by CPCB's Zonal office.

Thus, only three out of six projects sanctioned under the Ecocity programme were carried out for Tirupati, that too after a delay of four years.

It was further observed in audit that no action had been taken by CPCB after August-September 2008 on the Ecocity project, leaving the works undertaken under the programme incomplete in all the six cities. This resulted in non-achievement of the objectives for which the programme was initiated. In addition, the second phase of the project, which was to be built on the successes of the first phase, was not yet initiated.

In February 2010, MoEF replied that most of the schemes have been completed in Tirupati and that the matter was being followed up for completion of the rest of the schemes and furnishing of utilisation certificates for this town. The fact remained that work was done in only one out of six cities under the Ecocity programme and that too, partially.

4.1.8 General audit findings

In addition to the specific city-wise audit observations discussed above, there were some common deficiencies observed in Ecocity programme implementation which are discussed below:

- **Unspent balance not refunded:** CPCB released ₹2.79 crore to SPCBs against which SPCBs released ₹92 lakh to municipalities. The unspent balance of ₹1.88 crore was lying with SPCBs. CPCB did not approach SPCBs for refund of the unspent funds lying with them since March 2003. In February 2010, MoEF replied that the matter of refund was being pursued by CPCB

⁶⁴ (i) construction of Public toilets at appropriate locations, public drinking water facilities etc., (ii) covering of drains and (iii) multi-storied parking facility.

- **Interest accrued by the SPCBs not disclosed:** As per MoUs, SPCBs were to keep a record of the interest accrued on the budget releases by CPCB and same was to be provided to CPCB while submitting request for release of subsequent installments. The interest accrued was to be adjusted while releasing subsequent installments to SPCBs. It was observed in audit that only two SPCBs, Kottayam and Puri had disclosed the accrued interest earned on payments released to them and that too only once in a span of the seven year duration. In February 2010, MoEF replied that all the SPCBs involved in the project have a separate account for this project. The refund of the unspent amount will therefore include interest accrued in their accounts. The reply is not acceptable as three SPCBs namely, Vrindavan, Ujjain and Tirupati had not intimated the actual accrued interest earned by them to CPCB.
- **Commitment from the municipalities not taken:** It was observed that CPCB did not take firm commitment from municipalities regarding contribution of matching fund. As a result, in the case of the cities of Puri and Vrindavan, work could not be started till date as there was no commitment from the municipalities for the matching fund. In February, 2010, MoEF replied that the award and implementation of the project was based on the tripartite agreement, which is a binding instrument and involves commitment for all parties including municipalities. The reply is not acceptable as CPCB did not include any penalty clause in the agreement which can be invoked in the event of default.
- **Delay in implementation of the projects:** On an average, the duration of the projects sanctioned by CPCB was for six months. However, there were delays of almost four years in implementation of these projects and they continued to be implemented without any sanction for extension by CPCB. Accepting the facts, in February 2010, MoEF replied that these are operational issues and CPCB has been directed to frame revised guidelines to address these issues.

4.1.9 Conclusion

The overall objective of the Ecocity programme was to improve the environment of cities having cultural/historical/heritage and tourism importance and bring in visible results through implementation of identified environmental improvement projects in these towns and cities.

It was observed in audit that no commitment was taken from municipalities regarding contribution of matching fund and works undertaken under the programme remained incomplete in all selected six cities. Moreover, ₹1.88 crore was lying unspent with SPCBs for over seven years.

In February 2010, MoEF replied that CPCB has been asked to recast the entire Ecocity programme in order to dovetail the environmental concerns with municipal functions and budget to ensure participative and pragmatic planning as well as to take care of shortcomings in the implementation of the scheme.

Recommendation - 27

CPCB/MoEF may strengthen the project implementation mechanism and its control/monitoring mechanism before the second phase of the programme is launched, so that it can effectively achieve the objectives set out for the Ecocity programme and improve facilities for tourists/pilgrims.

4.2 Non-achievement of objectives of control of pollution caused by leather tanneries

National River Conservation Directorate (NRCD) sanctioned interest-free loan of ₹67.72 crore to Government of West Bengal for construction of a Common Effluent Treatment Plant at Bantala, about 20 km south-east of Kolkata. The project was originally targeted for completion by November 1997 but could not be completed as of June 2010. NRCD has sanctioned only four out of seven components under the project as yet. Delay of more than 12 years in completion of the project adversely impacted the objective of ensuring safe disposal of toxic industrial effluents and solid waste from tanneries, causing immense environmental damage and health risks.

4.2.1 Introduction

Hon'ble Supreme Court of India, in a public interest litigation case, ordered in April 1995 that 538 tanneries located in three clusters in Kolkata and generating about 30 million litres per day (mld) of effluents be shifted from the city to a leather complex and a Common Effluent Treatment Plant (CETP) be provided to treat the effluent generated from the proposed leather complex. Accordingly, the Government of West Bengal (GWB) decided to relocate the tanneries in a 1100 acre integrated leather complex, Calcutta Leather Complex (CLC) at Bantala, about 20 km south-east of Kolkata. In May 1995, National River Conservation Directorate (NRCD) received a proposal from GWB in this regard. The Cabinet Committee on Economic Affairs (CCEA), in its meeting held in October 1995, approved the proposal to set up 30 mld CETP in Calcutta Leather Complex. Accordingly, in November 1995, NRCD issued administrative approval for setting up of CETP, indicating that the expenditure sanction would be issued after the Detailed Project Report (DPR) was approved. Out of the total estimated project cost of ₹65 crore, the share of NRCD was ₹32.50 crore and balance of ₹32.50 crore was to be contributed by GWB. GWB decided to implement the project on Build, Operate and Transfer (BOT) basis and an agency was identified for implementation. The share of Central Government was in the form of interest free loan to GWB. The project was to be completed by November 1997.

However, it was observed that the estimated project cost of ₹65 crore did not include the cost estimates of Effluent Transportation System (ETS), Common Chrome Recovery System (CCRS), Safe Solid Waste Disposal System (SSWDS) and Treated Effluent Sump and Pumping station (TESPS) which were integral parts of the CETP network and the working of the CETP was incomplete without these components. Only in November 2007, CCEA approved the revised proposal for the CETP with seven components at a revised cost of ₹135.44 crore with NRCD's share being ₹67.22 crore. The scheduled date of completion of the project was March 2010. The overall project envisaged construction of : (i) module 1 and 2 of CETP: 2 CETPs of 5 mld capacity each, (ii) module 3 and 4 of CETP: 2 CETPs of 5 mld capacity each, (iii) module 5 and 6: 2 CETPs of 5 mld capacity each, (iv) Effluent Transportation System, (v) Common Chrome Recovery System, (vi) Safe Solid Waste Disposal System, and (vii) Treated Effluent Sump and Pumping station.

NRCD released ₹42.24 crore to GWB against which an expenditure of ₹39.52 crore was incurred on the project as on 31 March 2009. In July 2005, CLC had started partial operations with completion of four modules of CETP. However, as of February 2010, the Common Chrome Recovery System, Safe Solid Waste Disposal System, and Treated Effluent Sump and Pumping Station are yet to be completed even after 15 years of the decision of the Supreme Court.

The audit findings with respect to the implementation of the project are given below:

4.2.2 Delay in implementation

The entire project was envisaged to be completed by March 2010 as per revised EFC (original completion date was November 1997). The current status of implementation of seven components approved by CCEA under the project is summarised in table below:

Table - 16

Status of implementation of seven components		
Sl. No.	Name of the component	Remarks
1.	CETP Modules 1 & 2 (5 mld capacity each)	Completed after a delay of nine months
2.	CETP Modules 3 & 4 (5 mld capacity each)	Completed
3.	CETP Modules 5 & 6 (5 mld capacity each)	Not sanctioned
4.	Effluent Transportation System (ETS)	Completed after a delay of two years
5.	Common Chrome Recovery System (CCRS)	Completed
6.	Safe Solid Waste Disposal System (SSWDS)	Not sanctioned
7.	Treated Effluent Sump and Pumping Station (TESPS)	Not sanctioned

Thus, even after delay of more than 12 years, NRCD could sanction only four out of seven components under the project and the project remained incomplete as of June 2010.

4.2.3 Irregular release of interest-free loan from Grants-in-Aid head

According to Government Accounting Rules 1990, provision for the release of grants-in-aid and loans to State/Union Territory Governments under Central Plan Schemes and Centrally-sponsored Plan Schemes should be made in the Union Budget under the major heads '3601/3602-Grants-in-aid to State/Union Territory Governments' and '7601/7602 Loans and Advances to State/Union Territory Governments' respectively. However, it was noticed in audit that NRCD did not make any budgetary provisions for sanctioning the loan under the project. Instead, during 2001-09, NRCD released interest free loan of ₹42.24 crore to GWB from its Grants-in-Aid head. This was in violation of provisions of Government Accounting Rules 1990. In July 2009, NRCD replied that subsequent to the signing of loan agreement, the account under the loan head would be created and funds released so far would be adjusted as loan amount accordingly. The reply was not acceptable as all these provisions were to be complied with before releasing the loan.

4.2.4 Loan agreement not signed

According to Rule 219 of General Financial Rules, 2005 (GFRs), all sanctions to loans should specify the terms and conditions of loan including repayment terms. However, it was noticed that NRCD was yet to finalise the terms and conditions for repayment of loan and sign the loan agreement. In July 2009, NRCD replied that the draft loan agreement had not been submitted by GWB despite repeated requests. As such, further funds would not be released till the loan agreement was signed. In Audit's opinion such formalities should have been completed before release of funds.

Further, NRCDD stated in November 2009 that GWB had signed an agreement with CLC Tanners Association in May 2005 whereby the tanners were to return the cost of construction of the CETP. It was, however, noticed that the Association was now reluctant to pay back the construction cost and was requesting that the loan be converted to a grant, raising the prospect of GWB not returning the loan to NRCDD. In Audit's opinion such request of CLC Tanners Association should not be entertained as it will go against the 'polluters pay principal'.

4.2.5 Improper monitoring by NRCDD

As per the terms and conditions of the sanction, the progress of the project would be reviewed from time to time by the Steering Committee (SC) headed by Secretary, MoEF. The SC had to meet at least once in three months. However, it was noticed in audit that the SC was not meeting regularly and during 2002-2009 only six meetings of SC were held. Further, four components of the project namely (i) CETP Modules 1 & 2, (ii) CETP Modules 3 & 4, (iii) ETS and (iv) CCRS were completed but NRCDD was yet to receive formal completion report from GWB. Moreover, NRCDD had also not carried out any evaluation of these components as required under the approved guidelines.

4.2.6 Idling and improper maintenance of equipment

In April 2008, Deputy Director, NRCDD visited the site of CETP at Calcutta Leather Complex for monitoring and observed that:

- i. Most of the industries were not doing proper pre-treatment which had led to the choking of ETS at some locations. Few tanneries were not discharging into the ETS and were bypassing it by releasing untreated effluents which had contaminated the water in the storm water drains.
- ii. The CCRS costing ₹5.96 crore had not started its operations even though the same had been constructed more than two years back.
- iii. CLC Tanners Association, the agency managing the operations of CETP, had not employed technical persons with adequate qualification and experience. As a result, CETP was not functioning properly creating a situation where disposal of the untreated/ partially treated wastewater might create further environmental pollution in CLC.



Defunct aerator tank

- iv. CLC Tanners Association had been illegally depositing the sludge on the land earmarked for CETP Modules 5 & 6.
- v. The temporary hazardous wastes storage sites created within CETP had completely filled up and further storage facility was not available. Further, no activity had been initiated on the site earmarked for disposal of hazardous solid wastes of the CLC.
- vi. The filter presses in the CETP Modules 3 and 4 were not in working condition. Also, most of the filter presses in CETP Modules 1 & 2 were not working.



Defunct filter press

In May 2008, NRCd requested GWB to follow up with the agencies concerned so that the performance of CLC was improved and all mandatory environmental norms were complied with. However, GWB was yet to intimate the follow up actions taken by it and NRCd had also not reminded GWB to expedite the same. NRCd replied in November 2009 that GWB had been repeatedly reminded for improving the performance of the components already commissioned.

4.2.7 Environmental impacts of non-achievement of objectives

It was observed that only 15 mld waste water was reaching the CETP from around 250 tanneries operating in CLC. Few tanneries were not discharging effluent into ETS and a major portion of the effluent was either percolating to the ground water or creating cesspools in CLC and not reaching the designated disposal point, since there was no proper final disposal point for the treated effluent from CETP.



Effluents flowing along the boundary of CETP

Further, MoEF, Eastern Regional Office, Bhubaneswar observed the following in February 2009:

- The aerator tank, primary and secondary clarifiers were found not functioning properly. The colour of final discharge of treated effluent into the main course was found to be black and spreading bad odour.
- Analysis report revealed that levels of TSS⁶⁵, COD⁶⁶, BOD⁶⁷, Cr⁺⁶ (hexavalent chromium⁶⁸) and total chromium were much higher than the prescribed limits and were in gross violation of norms.
- Saving dust (end cuts of finished leather products), flesh linings and trimmings were seen dumped on the roadside. Since, saving dust, flesh linings and trimmings contain chromium, its dumping would pollute the surface water and therefore, further dumping should be stopped and all the dumped materials should also be removed immediately to the Common Solid Waste Disposal Facility.
- The solid wastes were chromium bearing residue and sludge, which might also leach and contaminate the ground water and create water pollution.
- Some of the individual tanneries were releasing plant effluents in the open area outside their boundary, instead of discharging into common drains set up for the purpose, from where effluents were sent to CETP.

⁶⁵ Total Suspended Solids

⁶⁶ Chemical Oxygen Demand

⁶⁷ Biological Oxygen Demand

⁶⁸ Hexavalent chromium is recognized as a human carcinogen.



Savings dust being dumped at roadside

Also, as per the report of Central Pollution Control Board, Zonal Office, Kolkata (visit to CLC in January 2009), the following environment impacts were reported:

- Analytical results show that the performance of CETP is not proper and yet to be stabilised.
- Two fixed chromium recovery units were not in use and the total chromium concentration of about 25mg per kg of ETP sludge was a matter of serious concern.



Effluents from the tanneries accumulating in the open

4.2.8 Conclusion

Thus, the project failed to achieve its stated objective of ensuring safe disposal of industrial effluents and solid waste from tanneries, causing immense damage to the environment. The project still remained incomplete even after more than 12 years of the original scheduled date of completion. Further, the possibility of recovery of interest free loan of ₹42.24 crore released to the Government of West Bengal is also doubtful.

Recommendation - 28

MoEF may monitor execution of the project more closely to ensure its speedy completion and achievement of planned objectives in a time bound manner. The sanction of remaining components may be expedited after ensuring that the technologies adopted for them is not obsolete. MoEF may involve its state units to provide continuous feedback on actual usage of infrastructure by the tanneries situated in CLC and insist on imposing heavy penalties/closure of tanneries in case the tanneries do not route their effluents through ETS and CETP so that the damage to the environment is minimised and it serves as a deterrent to not only tanneries situated in CLC but also at other places.



Chapter - 5

THEME: ENVIRONMENTAL EDUCATION

Environmental Education is a process of developing skills necessary for understanding and appreciating the inter-relationship among human beings, their culture and their bio-physical surroundings. In India, environment education is imparted through methods like infusion of environmental concepts in the textbooks at the school/college level, natural history museums, programmes like National Environment Awareness Campaign, National Green Corps etc.

5.1 Activities of National Museum of Natural History, New Delhi

National Museum of Natural History (NMNH) was set up to promote environmental education all over the country. Its collections were old and archaic and its galleries/exhibits had not been changed/updated in the last 20 years. It had not developed any museum based projects and its activities in reaching out to children to educate them about environment and conservation were extremely limited. It had not undertaken any research and had failed to develop linkages with other agencies working in this area. Review of activities of NMNH lead to the conclusion that NMNH did not justify its status of being a 'national' museum in light of its poor quality of exhibits and its amateurish efforts in the field of promoting environmental education in the country.

5.1.1 Introduction

National Museum of Natural History, New Delhi (NMNH), a unit under the Ministry of Environment & Forests (MoEF), owes its genesis to the former Prime Minister of India, Smt. Indira Gandhi, who, while considering new projects to be initiated in 1972 on the occasion of the 25th anniversary of India's Independence, decided that the country needed a museum of Natural History to depict its flora, fauna and mineral wealth to provide an out of school facility for education of children and to promote environmental awareness among the masses. NMNH opened its doors to the public in a building rented from Federation of Indian Chambers of Commerce and Industry (FICCI) on Barakhamba Road on 5 June 1978, coinciding symbolically with the World Environment Day. The long term vision of NMNH was to be an institution recognised nationally and internationally in the field of environmental education and professional natural history museology. As a public service institution, the resources of the Museum were also to be made available and accessible to all visitors. NMNH had also established Regional Museums of Natural History in Mysore in 1995, in Bhopal in 1997 and in Bhubaneswar in 2004. The fourth museum was slated to be completed in 2009 in Sawai Madhopur in Rajasthan but the work of construction of the museum was still not complete.

Against budget estimates of ₹10.98 crore during 2004-09, NMNH received ₹12.50 crore at the revised estimate stage during this period. NMNH, however, spent ₹11.38 crore with savings of ₹1.12 crore.

(i) Organisational structure

NMNH, New Delhi is headed by a Director and it has four main units viz Art Unit, Exhibit Preparatory Unit, Taxidermy Unit and Audio Visual Unit. In MoEF, Advisor (Research Education and NMNH) oversees its functioning. Against a sanctioned strength of 84, there were 60 men in position (Group A-7, Group B-13, Group C-22, and Group D-18) as of 2009.

(ii) Objectives of NMNH

The aims and objectives of NMNH are as follows:

Educational

- To develop NMNH in the country's capital to achieve the highest level of quality to promote environmental education on a national level;
- To develop museum-based educational projects so as to help school curriculum on environmental education;
- To develop resource materials (such as audio-visual aids, low-cost teaching aids, school loan kits, etc.) to promote environmental education;

Research

- To undertake research (museological and collection based) consonant with the scope and resources of the museum;

Extension activities

- To develop regional offices (regional museums of natural history) in various regions of the country in order to extend its activities at the regional/local levels;
- To extend professional help to other agencies/organisations regarding natural history collections/museums; and
- To develop national and international cooperation/collaboration with other organisations/ professional bodies/museums related to natural history/ environmental education.

Audit findings relating to the functioning of NMNH, New Delhi, are discussed in the succeeding paragraphs.

5.1.2 Educational activities of the Museum

The museum's objectives include activities to promote environmental education (EE) by developing museum-based educational projects to help school curriculum on EE and EE resource materials (such as audio-visual aids, low-cost teaching aids, school loan kits, etc.) to promote EE.

(a) Non-development of museum based educational projects

One of the main objectives of NMNH was to develop and structure museum-based education projects at the formal and the non-formal level. This was to be used to promote education about the environment amongst the public, and especially for children. In this regard, it was observed in audit that:

- NMNH did not have any consultation with NCERT⁶⁹ for the development of curriculum for schools which would help them in structuring and standardising environment education.
- No audio visual (AV) aids were developed for EE during 2004-09. Only in the year 2008-09, one interactive aid 'Nature Study kit for Juniors' was developed.
- NMNH in 1986 had developed 20 school loan kits (total 70 sets) like shells, echinoderms, termites, food chain, insects, skin, corals, beaks and claws etc., at a cost of ₹45,000. During

⁶⁹ National Council of Educational Research and Training



Damaged school loan kits

audit it was observed that after 1986, no new kit was developed or purchased by NMNH for the use of school children. Moreover, it was found that all the school loan kits were not in use for over 10 years. Considering the fact that there were more than 4930 schools in Delhi, NMNH's efforts in this regards were woefully inadequate. Further, the Advisory Committee of NMNH in December 2006 had observed that the mandate of the museum was not reflected in the activities undertaken by NMNH. It had also observed that galleries and exhibits had deteriorated and activities undertaken by NMNH were not innovative.

- NMNH did not develop any non-formal educational projects; however, they organised non-formal educational activities and programmes like celebration of environmental-oriented days like World Wetland Day, Earth Day, World Environment Day, International Ozone Day, Wildlife Week, Conservation Day and International Disabled Day.

Thus, NMNH had not developed any effective formal and non-formal material and resources to promote environmental education in the country.

NMNH stated in October 2009 that it was essentially a non-formal educational institution and that new Audio Visual kits would be developed in the future and the existing kits would be evaluated. It further added that after arrival of internet facilities, the role of loan kits has been found minimal and that kits were also damaged by school children and therefore, its requirement was being assessed. NMNH also stated that the formal educational programmes of the museum would be reviewed and if found necessary, other means of environment education would be explored.

The reply is to be viewed in light of the fact that the objectives of NMNH clearly provide for developing and structuring museum-based educational projects at the formal and non-formal level to promote education about the environment to the public and especially for children.

(b) Inadequate efforts in promotion of Environment Education

(i) Permanent exhibitions

NMNH has four permanent galleries depicting various aspects of environment. These four galleries are named 'Introduction of Natural History'⁷⁰, 'Nature's network: Ecology'⁷¹, 'Conservation'⁷² and 'Cell: The Basic Unit of Life'⁷³. These galleries were opened between June 1978 and June 1989.

⁷⁰ It portrays the origin and evolution of life and presents the variety and diversity of the flora and fauna in the country.

⁷¹ It presents an overview of major ecosystems of the world, role of plants as primary producers, food chains, food webs, decomposition, bio-geochemical cycles.

⁷² It deals with many aspect of conservation of nature.

⁷³ It highlights cell as the structural and functional unit of life.



Empty displays

It was observed in audit that these galleries were not updated or changed to reflect current issues in environment and conservation and the exhibits remained the same during the last 20 years. Current issues like climate change, global warming, afforestation, tsunami, depletion of ozone layer, conservation of energy, application of eco-friendly items in daily life, steps to control air and water pollution, rain water harvesting, combating desertification, utilization of solar energy etc., were not depicted in the galleries. It was further observed that though the Advisory Committee of NMNH, in December 2006, had advised that the restoration of galleries and exhibits of NMNH be completed by March 2007 but this was not done. It also recorded in March 2007 that the exhibits in some galleries were archaic and suggested that the development of galleries be outsourced immediately and some skilled workers be taken on contract basis; however this was not done.

Besides, the exhibits being very old and very limited in scope, they were very amateurish and not presented in a way to encourage people to explore and learn various concepts of natural history. The exhibits did not present advances in the field of environment or natural history and thus, were outdated. This detracted from NMNH's utility as a center for promoting environmental education and its status as a national museum.

NMNH stated in October 2009 that since the permanent galleries were permanent in nature, only occasional restructuring was undertaken and on account of lack of filling up post of curator/scientist in charge of technical section, maintenance and restructuring of permanent exhibitions in the galleries could not be undertaken and that efforts were also on to restructure certain sections of the permanent exhibition. It also stated that a review of all the galleries would be undertaken and corrective measures implemented. The reply of NMNH needed to be viewed in light of the fact that despite 37 years of its existence, NMNH was not able to achieve the highest level of quality to promote environmental education on a national level as envisaged at the time of setting up of the museum.



Exhibits without any labels

(ii) Temporary exhibitions

One of the primary objectives of NMNH is to promote environmental awareness by organising temporary exhibitions on specific themes from time to time. However, it was noticed in audit that during the period 2004-09, NMNH organised only six temporary exhibitions that too, were not conceptualised by NMNH. Five exhibitions were organised by NMNH in which mainly models, projects, posters, paintings etc., made by Delhi/NCR school children on different environmental issues conducted by NMNH during different programmes were displayed and one exhibition was organised by a Non Governmental Organisation (NGO) on vultures (Public Art Ecology). Audit also observed that there was no record in NMNH to confirm the number of visitors to these temporary exhibitions and no feedback of the visitors was available in NMNH about their comments/experience on quality of exhibits//learning items, the knowledge gathered from the temporary exhibitions etc.

In its reply, NMNH stated in October 2009 that the temporary exhibition hall of NMNH has been handed over to FICCI in May 2008; hence NMNH has discontinued organising the temporary exhibitions. It also stated that the matter would be discussed in its Advisory Committee, to explore the possibility of replacement of Gallery 4 by a temporary exhibition hall.

(c) Non-development of Information Technology tools and Multi-media

In the Tenth Five Year Plan, ₹5 crore were earmarked for the purpose of adopting new Information Technology (IT) tools and multimedia into their exhibits and activity areas for better dissemination of information to the masses. NMNH also created a Bio-science computer room to provide school and college students a variety of interactive multi-media computer programmes for understanding various biological phenomena besides teaching people to handle computers for getting more information of multi-media programmes on various natural sciences and environmental issues.

It was, however, observed in audit that during the period 2004-2009, NMNH had purchased only three LCD projectors, one VCD player and 12 DVDs/VCDs and did not make any further efforts to develop new IT /audio-visual aids for dissemination of information. NMNH had not setup or adopted any of the multi-media facilities like touch screens, guide-phones, video walls, animations, virtual reality etc. It had also not adopted latest web-based technology for current data information and dissemination, especially among kids. In the Bio Science room, eight computers were installed in March 2004 with facilities of

internet, multimedia DVDs and interactive CDs on nature and environment. Audit observed that only 107 visitors/students/teachers used the Bio Science computer room during 2004-09 indicating that Bio-Science Laboratory did not fulfill the purpose for which it was set up.

NMNH stated that three LCDs were being used regularly (one by the Director, another one by the Education Division and the third one in the Auditorium). The Bio Science room was now closed to the students/public and was in the process of being converted into an extension library for public utilisation. It also stated in October 2009 that the audit suggestions would be taken care of.

Thus, NMNH failed to incorporate the use of IT tools and multimedia into its museum experience which would have enriched the experience of visitors and helped in wider dissemination of environmental education.

(d) National Photographic Index

During Ninth Five Year Plan, ₹1 crore was earmarked for setting up a National Photographic Index on the flora, fauna and ecosystems of India at NMNH, with a purpose to document, catalogue and preserve the acquired/prepared slides, negatives and photographs on the plants, animals and ecosystems. Creation of the National Photographic Index was also included in the Tenth and Eleventh Five Year Plan. However, it was observed in audit that the National Photographic Index on the the flora, fauna and ecosystems of India had not yet been set up in NMNH.

NMNH stated in October 2009 that efforts would be initiated to review the project and take remedial measures on a priority basis.

Thus, it can be seen that NMNH failed to develop museum based educational projects. Its permanent exhibition had not been changed or updated in the last 20 years, and it had no policies or procedures to guide acquisition of collections or display of collections. NMNH did not organise temporary exhibitions. Its Bio Science computer room served very limited use. NMNH failed to fruitfully utilise IT tools and multimedia to disseminate concepts of the environment and to enrich the museum experience of visitors to the museum and it failed to develop a national photographic index. Hence, NMNH's objective of promoting environment education was not fully achieved.

Recommendation - 29

NMNH may develop user friendly and high quality museum based educational material for children and adults, which would help it in effectively promoting environmental education. NMNH may regularly update its exhibits and organise temporary exhibitions regularly besides increasing the use of IT tools and multimedia like touch screens into the museum experience which will enable visitors to have easier and more enriching sources of information and knowledge.

5.1.3 Research activities of the Museum

One of the major objectives of NMNH was to undertake research (museological and collection based) activities consonant with the scope and resources of the museum. In this regard, it was, however, observed that no research was being conducted in NMNH. Four scientists posted in NMNH had not undertaken any research activities to further the quality of environment conservation. The scientists are highly specialised in their fields and are being paid higher remuneration based on their qualification and skills. NMNH was using scientists for doing routine jobs. The Memorandum for the Tenth Five Year Plan proposals for NMNH stated that trained scientific human resources were being diverted in planning, designing, execution and administrative works. Hence, very little time was left to conduct and direct research in the areas consonant to the scope of the museum.

NMNH stated in October 2009 that research was one of the functions among many functions performed by scientists. It however, agreed that efforts would be increased to have more museum research works related to various functions of natural history museums in particular and museology in general.

Recommendation - 30

It is recommended that NMNH may ask its scientists to undertake scientific research which is one of the mandates of NMNH. This would help NMNH in expanding the scope of activities currently undertaken by NMNH and add more updated and relevant exhibits to its collection.

5.1.4 Extension activities

The extension activities of NMNH comprised of extending professional help to other agencies/organisations regarding natural history collections/museums and developing national and international cooperation/collaboration with other organisations/ professional bodies/ museums related to natural history/ environmental education. In this regard, the following was observed in audit:

(a) Absence of national and international cooperation/collaboration

In the follow-up action on the recommendations of the Advisory Committee meeting held in November 2007, it was stated that NMNH should collaborate with other institutions in organising new innovative programmes. But it was noticed in audit that NMNH had not undertaken any national/international cooperation/collaboration programmes/projects during the period 2004-05 to 2008-09. NMNH has not signed any Memorandum of Understanding (MoU) with any natural history museums/environmental educational institutions for collaborating in research in environmental issues.

NMNH stated in October 2009 that it was planning MoUs/collaboration with different agencies like Aligarh Muslim University and with NGOs. It further stated that audit suggestions would be followed up.

Recommendation - 31

NMNH needs to intensify its efforts in developing collaboration with different agencies so that it can extend its activities in the fields of environment education and thus, broaden its own research activities and knowledgebase.

(b) Lack of exchange/training programmes

The Advisory Committee of NMNH had emphasised in December 2006 that NMNH needs to strengthen networking with other institutions. The Advisory Committee meeting held in November 2007 (follow-up action) had re-emphasised the development of exchange programmes with natural history museums abroad. However, it was noticed in audit that no such exchange programmes had been conducted with any natural history museums and none of the officials of NMNH were sent for training during 2004-09.

NMNH stated in October 2009 that it has initiated efforts to have international and national cooperation with museums and other professional agencies. It also stated that proposals had been submitted to the Ministry (MoEF) for exchange/training programmes. However, none of these proposals were made available to audit.

(c) Inadequate outreach activities for children

One of the objectives of NMNH is to organise year-round educational programmes and outreach activities for children. During the period 2004-09 NMNH had organised only 16 outreach programmes. The Advisory Committee of NMNH had also observed in December 2006 that there was *'no focus on the outreach activities for children, particularly special children, who might find it difficult to visit the museum due to certain limitations'*. There are more than 4930 schools in Delhi alone and NMNH covered only 147 schools for its programmes (only 2.98 per cent). This shows that outreach activities undertaken by NMNH were insufficient in promoting environmental education, especially among children.

NMNH replied in October 2009 that Audit's suggestions would be taken care of.

Thus, the objectives of NMNH relating to extending professional help to other agencies/organisations, to develop national and international cooperation/collaboration with other organisations across the world and carrying out outreach activities for promoting environmental education, especially among children, were not achieved.

(d) Programmes for Persons with Disabilities

One of the aims of NMNH was to organise regular programmes for all categories of persons with disability.

However, it was observed in audit that:

- During the period 2004-2009, NMNH had organised only 20 programmes for disabled children which were mainly for one day only.
- No research work was undertaken by NMNH to create/initiate any new programme for physically handicapped children and no kits developed for physically challenged children during 2004-09. Further only 2 wheelchairs, though purchased for handicapped children in 2005, were never issued. During audit it was also observed that the wheel chairs were lying rusted and were not in a usable state.
- The FICCI building, where NMNH is located had two lifts. One lift was permanently closed down for want of replacement and other one was prone to frequent breakdowns/ not in working condition as it was more than 35 years old. Since the museum is spread over 4 floors, it is evident that disabled persons would not be able to access most of NMNH. NMNH had not taken any action to replace/refurbish the lifts. It was observed in audit that no ramps were provided for easy access to all the floors of NMNH.

Thus, NMNH was not friendly to disabled persons and discouraged the visit of children with special needs and senior citizens, who would have benefitted immensely from the museum experience.

NMNH replied in October 2009 that the new campus of NMNH expected to come up soon would have fully accessible infrastructure for physically handicapped visitors. It also stated that since NMNH did not have specialised staff for special education, efforts were on to involve volunteers and have collaboration with NGOs working for the welfare of the disabled. It further stated that the programmes for the disabled were highly specialised and these would be reviewed with NGOs working in the field.

Recommendation - 32

NMNH needs to plan more programmes for the disabled in consultation with NGOs so that enriching museum experience could be provided by the museum to disabled persons, especially children.

(e) Generation of public interest (Publicity)

Publicity materials like pamphlets, brochures, flex board etc., and publicity by means of advertisement in dailies, hoardings at prominent places etc. are required for creating awareness among the public regarding different programmes, temporary exhibition and other activities conducted by NMNH from time to time. During audit it was observed that neither was any publicity materials displayed nor was any newsletter of NMNH published as suggested and agreed in Advisory Committee meetings of 2006 and March 2007.

NMNH stated in its reply in October 2009 that audit suggestion would be followed up.

5.1.5 Maintenance/creation of the infrastructure by NMNH**(a) Non-establishment of NMNH on its own land in a suitably designed building**

When the proposal for setting up of a Natural History Museum in Delhi was approved in April 1973, it was suggested that the museum be temporarily created in the FICCI building until a permanent building was ready.

Since then, NMNH has been functioning from a rented building and has not constructed its own building. Despite a proposal for acquiring land and construction of the museum being included in the Ninth and Tenth Five Year Plan, no progress could be achieved as of March 2009. Some efforts to acquire land had been made from the Ministry of Urban Development and National Zoological Park, however these did not yield any results and NMNH continued to function from the rented building. An amount of ₹8 crore was also earmarked in the Tenth Five Year Plan for acquisition of land and construction of building for NMNH, New Delhi. Audit observed that NMNH had paid an amount of ₹3.77 crore towards rent during the last five years (2004-2009) alone. Thus, due to non-construction of its own building, NMNH continued to incur avoidable expenditure of ₹75 lakh per annum on account of rent paid for hired accommodation which was inadequate and unsuitable.

The space constraint and the shabby nature of the building has severely restricted the scope of activities of NMNH and NMNH needs to make efforts in this regard so that a modern museum with good collection and facilities, worthy of national museum, can be established as soon as possible.

NMNH stated in October 2009 that MoEF would be requested to speed up efforts to get land for the proposed permanent headquarters for NMNH in New Delhi.

(b) Poor condition of galleries

It was further observed in audit that the Advisory Committee had repeatedly raised concerns in December 2006, March 2007 and November 2007 about the deteriorating condition of galleries and exhibits and the need for taking up their renovation and improvement. However, NMNH did not take up repair work of galleries and therefore the galleries were in highly damaged condition. Even the routine maintenance of the galleries was not being carried out. Some of the glasses of the cabin/cabinet/enclosures in the galleries were not dusted and were covered with sticky material; the exhibits in some galleries were archaic and did not have labels; some of the specimens were in a state of decay. In the rainy season, the galleries were flooded with water. Gallery walls suffer from leakage of rain water/seepage resulting in damage to exhibits and a shabby air. In case of power failure, there is no power backup system viz; generator, inverter etc., for which small children had to face difficulties while moving in the dark galleries.

NMNH stated in October 2009 that not much money was invested in repair and maintenance as the building was rented and the infrastructure was damaged and dilapidated. It also stated that audit suggestions would be followed up. NMNH reply highlights the need for expediting the process of acquisition of land and construction of its own building, which is pending for last 37 years.



Poor condition of galleries

Recommendation - 33

NMNH needs to pay serious attention a improvement of galleries and their exhibits so that they can achieve the highest level of quality to promote environmental education at a national level.

(c) Lack of maintenance of Taxidermy Unit and Reserve Collection unit

NMNH has a taxidermy unit which is responsible for activities like mounting and preparation of zoological specimen, collection and preservation of zoological specimen, day to day maintenance of taxidermy specimens in the gallery, receipt of specimen from wild life department, curing and maintenance, producing it in court and taking custody of the specimen etc.

During audit it was observed that:

- Though specimens of 102 birds, 180 mammals and 15 reptiles were kept in Taxidermy unit, only 26 items like painted stork, hog deer, python, tiger cub, musk deer etc., were exhibited in the galleries. Audit observed that some of them were dumped in cupboards and above the almirahs of a room in the Taxidermy unit. Many of these were very valuable and their trade is prohibited under law.
- It was observed that upkeep of this cell was very poor as many of the items in the Taxidermy Unit were in a deteriorated condition and malodorous.
- NMNH has neither conducted any physical inspection/verification of these collections kept in this unit nor had maintained complete list of all of these items.

NMNH also has a Reserve Collections Unit, where specimens of various insects, birds, eggs etc. and forests products are collected and preserved for future use in the museum. These collections are sent to the temporary exhibitions and to the regional museums of NMNH. They also serve as replacement of the specimens in the galleries of NMNH. However, the Reserve Collection Unit of NMNH did not maintain any record to confirm the number of items sent to exhibitions or to the regional museums or to the galleries of NMNH and the collections received back from the exhibition etc.



Exhibits which have been dumped

During audit, it was observed that there are 5560 collections in the Reserve Collection Unit of NMNH like invertebrates, fishes, reptiles, mammals etc., as found in the accession register. There were no new collections after September 2004.

Thus, the Taxidermy unit and the Reserve Collection unit were not functioning as envisaged and valuable skins, tusks etc., were deteriorating due to lack of care.

NMNH replied in October 2009 that many specimens were old and damaged due to poor maintenance as the Museum was in a rented building. It also assured that corrective measures would be taken for updating records for better documentation. It further stated that the issues of framing a collection policy would be discussed in the third party evaluation and the suggestions made would be taken care of.

Recommendation - 34

NMNH may engage a professional taxidermist so that such valuable assets are not lost through poor maintenance.

(d) Non-documentation of the activities of Art unit and Exhibit Preparatory unit (Modeling unit)

Art Unit of NMNH assists scientists in architectural drawing of exhibitions, designing of exhibitions, preparing the mock-up of models of exhibition, etc. It also helps in design of the cover of Annual Action Plan, proposals and other booklets of museum. The Exhibit Preparatory unit helps in preparation and designing exhibitions, making models of plant/animal and making moulds and casts of model in different media like fiber glass, plaster of paris, latex, papier-mâché etc.

It was observed in audit that the unit did not maintain any register to record the work done. There was also no documentation in respect of details of work orders received, date of receipt and date of completion of work etc.

NMNH replied in October 2009 that efforts would be initiated to correct this situation.

(e) Poor maintenance of Library and books

One of the prerequisites for a good museum is an extensive library with latest and relevant books which serve and further promote and spread conservation and environment awareness. It was noticed in audit that the library, situated in the sixth floor, purchased 2134 books during 2004-09. During 2008-09, NMNH purchased 155 books which were based on general topics like healthcare, marriage, meditation, reference books, etc. Only 34 per cent of the total books purchased were on environmental education.



Materials lying in Modeling Unit

It was further observed in audit that the library software installed for easy access to the library books was not working since 2006. Further, during the last five years, only 643 people visited this library at the rate of just one person visiting the library in about three days. Audit also observed that the condition of library was very poor and there are no proper sitting arrangements where a visitor can sit and make use of library books. Most of the collections/books were covered with thick layer of dust. The roof of the library has been damaged at many places and in the rainy season, rainwater entered the library and damaged books and almirahs containing the books. There was no signage showing where the library was located. The Advisory Committee meeting held in March 2007 had also recorded that the conditions in the library were fast deteriorating and that it was being misused by the members of the staff. It further stated that library was not conducive to reading and most of the books were covered by dust.

Audit also observed that 580 books were stated to have been lost as of March 2009. No action had been taken and no responsibility was fixed so far, for the missing books which constitute an important resource of a library. 286 books were issued to various members of office since 1981 onwards had not been received back in the library.

NMNH replied in October 2009 that the library needed to have books on all kinds of subjects. Agreeing with the audit conclusion, it further stated that in future, more books on environment and related topics including environment education would be purchased. It also stated that action would be taken to enrich the library for public service.

Recommendation - 35

NMNH needs to put in place a modern well equipped library with latest books on environment and environmental education. It also needs to put in place library software to ensure that books were tracked and returned to the library timely.

(f) Guide facility

A guide is necessary to explain the details of exhibits in the galleries, especially to children and to make them aware of the concepts of environment and conservation. During the audit, it was observed that no guides were provided for visitors. Some of the remarks given by the visitors in visitors book were '*There was no one in the galleries to watch the visitors*', '*There was no staff or guide to provide us information*', '*No signs, no guides, no system worked*', etc. The Advisory Committee in December 2006 had also observed that there were no guides to explain the exhibits to children visiting the museum.

NMNH in its reply in October 2009 stated that available strength of staff was not sufficient and efforts would be made to have more manpower for visitor services. It also stated that audit's suggestions would be followed up.

(g) Basic amenities

With regard to basic amenities it was observed in audit that:

- NMNH lacked basic amenities like seating arrangement in the galleries of each floor where the children, specially the handicapped children, can take rest.
- In the absence of Air Conditioning in the galleries, the visitors, especially young school children had to face a lot of difficulties during the hot summer of Delhi. Even the fans were not working and some cases of children falling sick, had also been reported.
- Many times electronic appliances like oral commentary, music etc., installed in the galleries were not working.
- There were no public conveniences like washrooms, toilets, drinking water facilities in each floor of the museum for the public use except two toilets and taps for drinking water in the ground floor which are very dirty and in unhygienic condition.
- No parking facilities were available in NMNH for the visitors.

Thus, NMNH was severely lacking in basic amenities for visitors. NMNH stated in October 2009 that audit suggestion would be followed up.

Recommendation - 36

NMNH needs to appoint an adequate number of guides for explaining the concepts displayed in the galleries which are spread over four floors of the building and thus educating young school children and general visitors in environment concepts. NMNH also needs to provide basic amenities to the visitors so that visits to the museum could be a comfortable and enriching experience.

Thus, NMNH has not been able to set up the museum in its own land which has seriously constrained its activities in the field of environment education. The conditions of the galleries are very poor, with no maintenance and upkeep. The basic amenities are lacking in NMNH impacting interest of visitors. Thus, NMNH performs very poorly as a public service institution.

5.1.6 Monitoring and Evaluation of the Museum

(a) Absence of Policies and Procedures

Each museum needs to have a policy governing acquisition of exhibits, collection and display of exhibits, research framework to guide research activities undertaken by the museum, strategic plan to guide the development of the museum etc. The Advisory Committee in its meeting in December 2006 expressed concern that NMNH had not come upto the mark and had directed NMNH to prepare a vision document to guide its functioning.

It was observed in audit that:

- i) NMNH had not developed any vision document as of March, 2009.
- ii) Though the galleries and exhibits had deteriorated, NMNH did not evolve any documented policies that would govern the care of its collection and display of exhibits, research framework etc, which would guide research activities undertaken by the museum.
- iii) No detailed action plan to guide the development of the museum had been developed.
- iv) NMNH has also not prescribed any procedure to be followed so that it can ensure that adequate care of collections, their documentation arrangements, proper use and replacement of these collections are in place.
- v) NMNH has not submitted any report to the Ministry with respect to the care of collections. MoEF also did not ask for any such report from NMNH.

Without such policies and plans, NMNH would find it difficult to acquire specimens in keeping with its mandate, sustain and care effectively its collection as well as expand its activities in keeping with the objectives for which it was set up.

NMNH replied in October 2009 that it did not have a policy and audit suggestion would be taken up during the meeting of Advisory Committee as well as proposed third party evaluation of the Museum.

(b) Monitoring Committee

Audit observed that no monitoring committee was setup by NMNH since its inception to monitor its activities in NMNH and its regional offices. An advisory committee had been setup by MoEF to give advice on improvement of the Museum galleries, which was to meet quarterly. However, the first meeting of the Advisory Committee was held only in December 2006 and during 2004-09, only three meetings were held and more than 19 months have already lapsed since the last meeting in November 2007. No internal audit was conducted in NMNH since 2002.

NMNH stated in October 2009 that meetings of the Advisory Committee could not be undertaken due to the fact that there was no regular Director for many years.

(c) Visitors in NMNH

The main objective of NMNH, New Delhi is promotion of environment education and creation of conservation awareness among general public. The objective is achieved by the museum through its exhibit galleries both permanent and temporary, activities in-house as well as outreach. Children and teachers from various schools including handicapped and physically challenged children and general visitors visit the NMNH, Delhi. As per the reply of NMNH the number of visitors who visited the permanent galleries during last five years is as detailed below.

Table - 17

Number of visitors		
Year	Number of general visitors	Number of school students
2004-05	Not available	42,384
2005-06	Not available	42,288
2006-07	Not available	50,613
2007-08	80,087	56,936
2008-09	77,893	67,191
Total	1,57,980	2,59,412

During audit, it was observed that there was no authenticity regarding number of visitors visiting NMNH as no records giving details of the visitors were maintained by NMNH. Hence, the number of visitors who had visited the museum could not be verified in audit.

NMNH did not charge for the entry of the visitors to the museum and its galleries. To create interest among the public on the issues relating to the environmental education and natural history and to generate funds for proper upkeep of the galleries and exhibits, entry ticket of a minimum charge should be encouraged/introduced for the benefit of the museum as is being done for other such similar institutions like National Zoological Park etc., under MoEF.

NMNH stated in October 2009 that suggestions would be followed up and proposal will be sent to MoEF for charging of entry tickets.

(d) Visitors Comments

The comments of visitors in the visitors' book provide important feedback on the quality of maintenance and efficiency of functioning of any place/museum/art gallery etc. Audit requested for visitors' books for the period 2004-09; visitors' books for the period from 10th December, 2004 to 15th March, 2006, were not made available to audit. Visitors' book of NMNH mainly consisted of the comments regarding the dilapidated condition of the museum. Some of the adverse remarks in visitors' book were:

- 'In very poor condition-needs cleanliness, lift arrangements, water coolers. No proper presentation and guidance. Some broken parts need to be replaced'
- 'No manpower engaged, most electrical appliances were not working, lifts out of order, it seems no care is here.'
- 'Very very ill maintained, a very bad and dirty place'
- 'No renovation has been seen since last five years'
- 'The film show was of poor quality'
- 'Poor maintenance, water flooded at upper floor exhibition area'
- 'No one to attend to us, most of the instruments, lights, sound and music are not working'
- 'This Museum does not make sense being named National Museum'
- 'This museum should be closed immediately as the facilities are even worse than any small school whereas it is occupying world class space.'
- 'There is nothing to be seen except filthy building and non-working models'

Thus, the comments of visitors underlined the poor maintenance and quality of exhibits and galleries in NMNH.

NMNH stated in October 2009 that visitors were facing hardships due to the fact that the building was rented. It also stated that MoEF was making concerted efforts to have a new campus where public amenities would be of utmost priority. It further stated that efforts would be taken to evaluate the comments of visitors and undertake corrective measures.

(e) Feedback forms

In the Advisory Committee meeting for NMNH held in March 2007, the Director-in-charge pointed that the proforma, in which data was compiled, was substandard, inadequate and confusing. NMNH should formulate new proforma for collection of data on visitors and their comments and suggestions on the Museum's utility in environmental education and the efficacy of the staff in explaining the different exhibits. But during audit, it was noticed that the new proforma for exhibits has not yet been prescribed. There were no feed-back forms for the visitors attending temporary and permanent exhibitions. No separate register was maintained to record the number of visitors/public visiting temporary exhibitions.

NMNH stated in October 2009 that efforts would be initiated to collect feedback from visitors and undertake corrective measures.

(f) Reports and returns

No returns are prepared in NMNH, except a monthly report only on educational programmes conducted by NMNH. Thus, all the activities of NMNH were not monitored. In the absence of proper monitoring systems, it was not clear as to how MoEF assessed the achievement of objectives for which NMNH was set up.

NMNH stated in October 2009 that monthly, quarterly and mid-year reports, as per the formats suggested by MoEF were being regularly prepared. However, none of these reports were produced to audit except monthly report of educational programmes conducted by NMNH. Further, NMNH itself had stated in September 2009 that no prescribed proforma for reports/returns had been received from MoEF.

Thus, all the activities of NMNH were not monitored. In the absence of monitoring systems, it was not clear as to how MoEF assessed the achievement of objectives for which NMNH was set up. The Advisory Committee did not meet adequately to discuss the issues impacting functioning of NMNH. Visitors recorded their poor opinions about the lack of basic amenities in NMNH.

Recommendation - 37

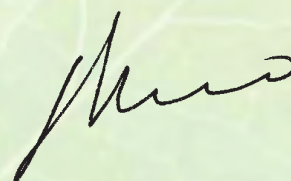
In order to systematize acquisition, collection and display of exhibits and ensure their adequate care, NMNH needs to put proper policies and plans in place so as to emerge as a leading center for environment education and conservation. NMNH also needs to strengthen its monitoring mechanism, draw a time bound roadmap indicating its vision and methods by which it would achieve the milestones laid down in the roadmap. There should be a system to evaluate feedback received from the visitors and take action on suggestions that are aimed at improving the visibility and facilities in NMNH

5.1.7 Conclusion

NMNH was set up to promote environmental education all over the country. It was also mandated to conduct research as well as build networks with other agencies/institutions in the field of environmental education. NMNH failed to achieve any of the objectives for which it was established. Its collections were old, antiquated and archaic and its exhibitions had not been changed or updated in the last 20 years. It had not developed any museum based projects to promote environmental education. Its activities in reaching out to children to educate them about environment and conservation were extremely limited. It had not put into place any policies or procedure which would guide its acquisitions as well as display of its exhibits. It had failed to set up the national photography index which would have been a source of information about plants, animals and ecosystems. It had not undertaken any research in the field of environment and conservation and had failed to develop linkages with other organizations/agencies in this area, both of which would have gone a long way in improving the quality of activities undertaken by NMNH. NMNH failed miserably as a public service institution as exhibits were dirty and not maintained according to good standards, no guides were available to provide information on the collections, and basic amenities like clean drinking water, clean toilets, lifts etc., were not available. Monitoring was non-existent and there was no control over the functioning as well as the quality of functioning of NMNH. Visitors had a very poor view of the facilities of NMNH as well the educational inputs provided by it.

Review of activities of NMNH lead to the conclusion that NMNH did not justify its status of being a 'national' museum in light of its poor quality of exhibits and its amateurish efforts in the field of promoting environmental education in the country. It has also failed in its long term mission of being recognised nationally and internationally in the field of environmental education and to serve as a public service institution. Further, it failed to meet the vision of the former Prime Minister Mrs. Gandhi who had said that "Our Natural History Museum should be nothing less than first rate. Its conceptual themes, collections and the manner of presentation should be sophisticated and imaginative". Further, she had expressed apprehensions that "a temporary museum is being created in the FICCI building till the time a permanent building is ready. This will result in unnecessary expenditure. The haste with which the exercise is being conducted will also result in poor quality." The review of the functioning of NMNH revealed that the former PM's apprehensions quoted above did prove to be true as NMNH failed to fulfill the vision of the former Prime Minister.

New Delhi
Dated: 10 November, 2010



(RAJ G. VISWANATHAN)
Principal Director of Audit,
Scientific Departments

Countersigned

New Delhi
Dated: 10 November, 2010



(VINOD RAI)
Comptroller and Auditor General of India