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Report of the Comptroller and Auditor General of India for the year ended March 2013

Union Government
Scientific and Environmental Ministries/Departments

Report No. 27 of 2014
(Compliance Audit)

Contents

Preface

This Report for the year ended March 2013 has been prepared for submission to the President under Article 151 of the Constitution of India.

This report of the Comptroller and Auditor General of India contains the results of compliance audit of Union Government Scientific and Environmental Ministries/Departments in 2012-13.

The instances mentioned in this report are those, which came to notice in the course of test audit for the period 2012-13 as well as those which came to notice in earlier years, but could not be reported in the previous Audit Reports; matters relating to the period subsequent to 2012-13 have also been included, wherever necessary.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Audit wishes to acknowledge the cooperation received from Union Government Scientific and Environmental Ministries/Departments at each stage of the audit process.

Overview

Introduction

This report of the Comptroller and Auditor General of India (C&AG) relates to matters arising from compliance audit of the transactions of nine Scientific and Environmental Ministries/Departments of the Government of India. The report contains six chapters. Chapter I, in addition to explaining the objective of preparing this report, defines audit scope and methodology and also provides a synopsis of significant audit findings and observations. Chapters II to VI present detailed findings/observations arising out of the compliance audit of Scientific and Environmental Ministries/Departments and the research centres, institutes and autonomous bodies under them.

Important areas of concern highlighted in the current report fall under the following broad categories:

- **Inefficient project management;**
- **Weaknesses in procurement and contract management;**
- **Financial benefits extended to employees without requisite approvals; and**
- **Deficient internal controls**

An overview of the specific audit findings included in this report is given below:

Inefficient project management

Inordinate delay in realisation of SRE-2 mission

The launch of Space Capsule Recovery Experiment - 2 mission of Department of Space, originally scheduled for August 2008 was delayed for more than five years. This resulted in wasteful expenditure of ₹52 lakh due to expiry of parachutes and floats procured for the mission and non-achievement of objectives of the mission as of March 2014 in spite of incurring expenditure of ₹30.66 crore on the mission.

(Paragraph 4.1)

National Data Buoy Project

National Institute of Ocean Technology achieved limited success in achieving the objective of indigenising technology for production and deployment of buoys in the ocean even after 12 years of implementation. Low cost meteorological buoys developed indigenously to supplement the buoy project were not being used for intended purpose. Attempts to establish communication through Indian satellite remained at the trial stage as of July 2014. A dedicated vessel procured for deployment of data buoys was barely used for intended purpose.

(Paragraph 5.1)

Activities of Zoological Survey of India in exploration, identification and monitoring of faunal diversity

Ministry of Environment and Forests redefined the mandate of Zoological Survey of India (ZSI) to align it with the objectives of the international Convention of Biological Diversity (CBD) to which India is a signatory; and also prepared a comprehensive strategic plan covering the period from 1993 to 2020 for exploration, survey, inventorisation and monitoring of the faunal diversity of the country. As of March 2014, ZSI was lagging behind its targets for fulfilling the country's commitments under CBD in all the planned activities.

Exploration, survey and inventorisation of faunal diversity in the selected states, ecosystems and protected areas were not completed on schedule. There was no standard methodology for carrying out surveys and no system for oversight and assessment of the survey work carried out. Area and species wise monitoring of the faunal species had not commenced and no action plan in this regard had been prepared.

The working strength of Taxonomists was far below its sanctioned number. Scarcity of Taxonomists affected the taxonomic studies as only 34 *per cent* of the species collected were taxonomically identified. Even though Taxonomy was recognised as a highly specialised discipline, ZSI failed to depute its newly recruited scientists for training.

The review of threatened and endemic species was very limited. Of the 10 species targeted for review, status surveys were not initiated for seven species.

(Paragraph 6.1)

Inordinate delay in setting up of National Botanic Garden

Ministry of Environment and Forests failed to enter into a Memorandum of Understanding with NOIDA authority for development of National Botanic Garden on land allotted to it by the latter. Consequently, after incurring expenditure of ₹11.54 crore on development of the National Botanic Garden, status of ownership of the land remained unresolved even after 17 years and the envisaged objective of National Botanic Garden remained unachieved as of March 2014.

(Paragraph 6.2)

Non-establishment of model facilities for management of Municipal Solid Wastes

Model facilities for disposal of solid wastes in 10 States selected under a scheme implemented by Central Pollution Control Board (CPCB) were not set up even after 10 years of initiation of the projects and after incurring expenditure of ₹24.80 crore. There was inadequate monitoring of projects by CPCB and State Pollution Control Boards leading to incomplete work, foreclosure of projects, wasteful expenditure, idling of facilities created and unspent balances remaining idle under the projects. As a result, primary objective of assisting the States and urban local bodies to follow provisions of Municipal Solid Wastes Rules of the Ministry of Environment and Forests remained unachieved.

(Paragraph 6.4)

Weaknesses in procurement and contract management

Non-utilisation of equipment

Directorate of Purchase and Stores, Mumbai did not take effective action to repair equipment that was damaged in transit, which resulted in blocking of funds of ₹5.56 crore spent on its procurement.

(Paragraph 2.1)

Non-installation of equipment

Indian Association for the Cultivation of Science, Kolkata failed to identify site in time for installation of equipment, delayed preparation of site and also failed to ensure proper storage of the equipment in the interim period. As a result, equipment procured at a cost of ₹3.40 crore remained uninstalled for more than five years and suffered damage due to improper storage which was repaired at an additional cost of ₹21.17 lakh.

(Paragraph 3.2)

Avoidable expenditure due to improper contract management

ISRO Satellite Centre, Bengaluru included price escalation clauses in two fabrication contracts entered with Hindustan Aeronautics Limited, without specifying definite time periods for completing the fabrication works. Further, after three years from the date of signing the contracts, it amended the contracts by increasing the fixed ceiling of man hours without changing the scope of work. The improper contract management resulted in avoidable expenditure of ₹4.35 crore.

(Paragraph 4.3)

Infructuous expenditure on procurement of components

ISRO Satellite Centre, Bengaluru failed to properly assess requirement of solid state switches for use in a project. The switches were eventually not used in the project, thereby resulting in infructuous expenditure of ₹1.47 crore incurred on their procurement.

(Paragraph 4.4)

Financial benefits extended to employees without requisite approvals

Irregular payment of gratuity

Ministry of Earth Sciences irregularly permitted its autonomous bodies to change the service conditions of their regular employees from those envisaged under the provisions of CCS Pension Rules, 1972 to The Payment of Gratuity Act, 1972. Based on this permission, National Institute of Ocean Technology, Chennai paid gratuity of ₹68.88 lakh to 54 regular employees who had resigned from service, with retrospective effect.

(Paragraph 5.2)

Deficient internal controls

Fraudulent payment of legal fees

Indian Association for the Cultivation of Science and Bose Institute paid legal fees of ₹83.55 lakh to an advocate without verifying actual attendance in court. Out of this, payment of ₹54.93 lakh was found to be fraudulent.

(Paragraph 3.1)

Loss in allocation of satellite capacity

Indian Space Research Organisation, Department of Space provided communication satellite capacity free of cost to the Government of Andhra Pradesh in violation of the decision of the Government of India to charge all users of satellite services, resulting in loss of revenue to the tune of ₹19.16 crore.

(Paragraph 4.2)

Wasteful expenditure on hiring of office accommodation

Ministry of Environment and Forests failed to utilise 13 out of 17 rooms in hired premises for nearly 29 months, thereby rendering expenditure of ₹91.12 lakh incurred on renovation and rent largely wasteful, besides incurring a liability of ₹4.43 crore towards outstanding dues of rent and interest.

(Paragraph 6.3)

CHAPTER - I

Introduction

1.1 About this Report

This report of the Comptroller and Auditor General of India (C&AG) relates to matters arising from compliance audit of transactions of Scientific and Environmental Ministries/Departments of the Government of India and the autonomous bodies under their administrative control, for the year 2012-13.

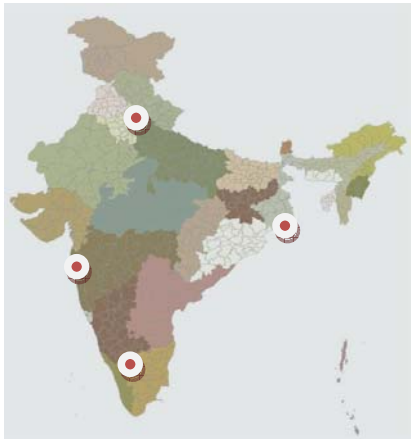
Compliance audit refers to examination of the transactions relating to expenditure, receipts, assets and liabilities of Government to ascertain that provisions of the Constitution of India and applicable laws, rules, regulations, orders and instructions issued by the competent authorities are being complied with. Compliance audit also includes an examination of the rules, regulations, orders and instructions to determine their legality, adequacy, transparency, propriety, prudence as also their effectiveness in terms of achievement of the intended objectives.

The primary purpose of the Report is to bring to the notice of the Parliament, important results of audit. Auditing Standards require that the materiality level for reporting be commensurate with the nature, volume and magnitude of transactions. The findings of audit are expected to enable the Executive to take corrective actions as also to frame policies and directives that will lead to improved financial management of the organisations, thus, contributing to better governance.

This chapter, in addition to explaining the planning and extent of audit, provides a synopsis of significant audit observations followed by a brief analysis of the expenditure of Scientific and Environmental Ministries/Departments, position of outstanding utilisation certificates, position of proforma accounts of departmentally managed government undertakings, losses and irrecoverable dues written off/waived and follow-up on audit reports. Chapters II to VI present findings/observations arising out of the compliance audit of Scientific and Environmental Ministries/Departments and research centres, institutes and autonomous bodies under them. Weaknesses that exist in the system of project management, financial management, internal controls etc., in various scientific and environmental institutions are also highlighted in the report.

1.2 Organisational Structure of the office of the Principal Director of Audit, Scientific Departments

The office of the Principal Director of Audit, Scientific Departments, New Delhi was established as a separate office in April 1986 for the audit of Ministries/Departments of Union Government operating in the field of Science and Technology. With the increasing attention on environment protection and conservation issues within the country and global trend among Supreme Audit Institutions for special focus on the audit of environment related matters, the C&AG designated the office of the Principal Director of Audit, Scientific Departments as the nodal office for Environmental Audit.



Location of Scientific Audit Offices

It has three branch offices located at Mumbai, Kolkata and Bangalore and a sub-office at Chennai, which assist the Principal Director of Audit, Scientific Departments in carrying out the audit of Union Government Scientific and Environmental Ministries/Departments as well as the subordinate/attached offices and autonomous bodies under them.

1.3 Profile of audited entities

The office of the Principal Director of Audit, Scientific Departments is responsible for audit of units under nine Scientific and Environmental Ministries/Departments of the Government of India, listed below:

- **Department of Atomic Energy (DAE)**
- **Department of Space (DOS)**
- **Ministry of Earth Sciences (MoES)**
- **Ministry of Environment and Forests (MoEF)**
- **Ministry of New and Renewable Energy (MNRE)**
- **Ministry of Science and Technology comprising of:**
  - **Department of Biotechnology (DBT);**
  - **Department of Science and Technology (DST); and**
  - **Department of Scientific and Industrial Research (DSIR)**
- **Ministry of Water Resources (MoWR)**

This report covers the audit findings in respect of the above Scientific and Environmental Ministries/Departments and their subordinate/attached offices and autonomous bodies only.

A brief profile of these Ministries/Departments is discussed in ***Appendix I***.

The comparative position of expenditure of the Scientific and Environmental Ministries/Departments during 2012-13 and in the preceding two years is given below:

(₹ in crore)

Table 1 - Details of expenditure incurred by Scientific and Environmental Ministries/ Departments

Sl. No.	Ministry/Department	2010-11	2011-12	2012-13
1.	Department of Atomic Energy	10,057.23	17,516.61	11,981.76
2.	Department of Biotechnology	1,144.87	1,208.43	1,282.84
3.	Department of Science and Technology	2,280.76	2,521.47	2,524.22
4.	Department of Scientific and Industrial Research	2,982.68	3,214.70	2,945.66
5.	Department of Space	4,482.23	3,790.79	4,856.28
6.	Ministry of Earth Sciences	1,098.08	1,174.60	1,177.14
7.	Ministry of Environment and Forests	2,608.92	2,270.00	1,996.69
8.	Ministry of New and Renewable Energy	994.81	1,365.22	1,243.72
9.	Ministry of Water Resources	992.79	1,066.03	1,055.59
Total		**26,642.37**	**34,127.85**	**29,063.90**
Percentage increase(+)/decrease(-)		**(+)5.62**[1]	**(+)28.10**	**(-)14.84**

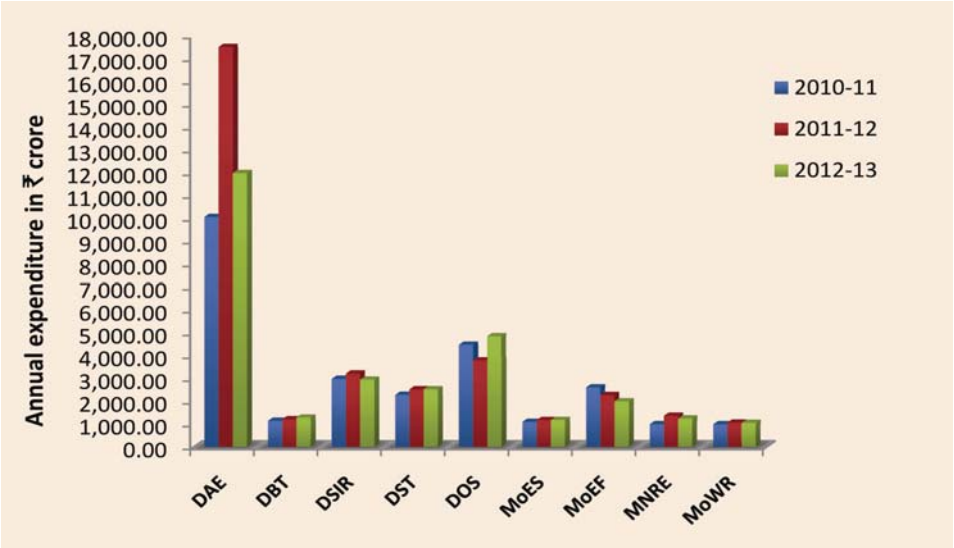
Source : Appropriation Accounts of the respective years

The total expenditure on above listed Ministries/Departments of the Government of India during 2012-13 was ₹29,063.90 crore. Of this, 41 *per cent* of the total expenditure was incurred by DAE, followed by DOS (17 *per cent*) and DSIR (10 *per cent*).

While there was a moderate increase of six *per cent* in the overall expenditure of the Scientific and Environmental Ministries/Departments during 2010-11 over 2009-10, the increase was a significant 28 *per cent* during 2011-12 over 2010-11. During 2012-13, however, there was a decrease in total expenditure by 15 *per cent*. This was mainly due to the reduction in expenditure of five out of nine Scientific and Environmental Ministries/Departments, viz. DAE (32 *per cent*), MoEF (12 *per cent*), MNRE (nine *per cent*), DSIR (eight *per cent*) and MoWR (one *per cent*).

[1] Calculated on the basis of expenditure of ₹25,224.52 crore incurred in 2009-10.

Chart 1 - Expenditure incurred by Scientific and Environmental Ministries/Departments



1.4 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 C&AG's (Duties, Powers and Conditions of Service) Act, 1971. C&AG conducts audit of expenditure of Ministries/Departments of the Government of India under Section 13[2] of the C&AG's (DPC)[3] Act. C&AG is the sole auditor in respect of autonomous bodies under the Scientific and Environmental Ministries/Departments which are audited under sections 19(2)[4] and 20(1)[5] of the C&AG's (DPC) Act. In addition, C&AG also conducts supplementary/superimposed audit of those autonomous bodies under Sections 14[6] and 15[7] of C&AG's (DPC) Act, which are substantially funded by the Government of India and whose primary audit is conducted by Chartered Accountants. Principles and methodologies

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2 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 and loss accounts, balance-sheets and other subsidiary accounts.

3 Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971.

4 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.

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

6 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 ₹ one crore.

7 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.

for compliance audit are prescribed in the Regulations on Audit and Accounts, 2007 issued by the C&AG.

1.5 Planning and conduct of Audit

Compliance audit is conducted in accordance with the principles and practices enunciated in the auditing standards promulgated by the C&AG. The audit process starts with the assessment of risk of the Ministry/Department as a whole and each unit based on expenditure incurred, criticality/complexity of activities, level of delegated financial powers, assessment of internal controls and concerns of stakeholders. Previous audit findings 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 of each unit, Inspection Reports containing audit findings are issued to the head of the unit. 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 or further action for compliance is advised. The important audit observations arising out of these Inspection Reports 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 2012-13, 3,536 audit party-days were used to carry out compliance audit of 211 out of 358 units of Scientific and Environmental Ministries/Departments. Our audit plan covered those units/entities which were vulnerable to significant risk, as per our assessment.

1.6 Significant audit observations

In the last few years, Audit has reported on several significant deficiencies in critical areas which impact the effectiveness of functioning of Scientific and Environmental Ministries/Departments. The specific audit findings that have emerged from the audit of these Ministries/Departments during the last five years have been listed in ***Appendix II.***

The current report brings out deficiencies in critical areas which impact the effectiveness of functioning of Scientific and Environmental Ministries/ Departments/Organisations. The significant areas of concern requiring corrective action include:

- **Inefficient project management;**

- **Weaknesses in procurement and contract management;**
- **Financial benefits extended to employees without requisite approvals; and**
- **Deficient internal controls**

1.6.1 Inefficient project management

One of the most significant deficiencies, which audit has been pointing out is the inability of the scientific institutions to achieve project objectives set out by themselves in the project proposals. This issue is especially important as projects are taken up with clearly laid down deliverables, in the areas of both pure as well as applied scientific research. While we recognise the fact that the success of scientific endeavour cannot be predicted, the deficiencies pointed out are largely a result of poor project management, which is well within the control of these institutions.

The current report includes three long paragraphs on (i) Activities of Zoological Survey of India (under MoEF) in exploration, identification and monitoring of faunal diversity; (ii) issues in the implementation of National Data Buoy Project of National Institute of Ocean Technology, Chennai under MoES and (iii) Non-establishment of model facilities for management of municipal solid wastes by Central Pollution Control Board (under MoEF). In addition, the report also contains paragraphs on inordinate delays in executing projects such as realisation of SRE-2 mission by DOS and setting up of National Botanic Garden by MoEF.

1.6.2 Weaknesses in procurement and contract management

Scientific and Environmental Ministries/Departments spend a significant part of their budget on procurement of stores, equipment and services for successful implementation of projects. Some of these Departments like Atomic Energy and Space exercise enhanced financial powers in the purchase of stores and equipment in comparison to other Ministries/Departments of the Government of India.

The current report points out instances of weaknesses in procurement and contract management systems that resulted in non-installation of costly imported equipment by Atomic Minerals Directorate for Exploration and Research, Hyderabad (under DAE) and Indian Association for the Cultivation of Science, Kolkata (under DST). The report also includes observations on infructuous expenditure in procurement of items that were eventually not utilised for the intended purpose as well as avoidable expenditure due to

unjustified revision of contractual terms of agreements by ISRO Satellite Centre, Bengaluru (under DOS).

1.6.3 Financial benefits given to employees without requisite approvals

Most of the autonomous bodies under the Scientific and Environmental Ministries/Departments are largely funded from grants provided by the Government of India. Their efforts to generate internal revenues have not yielded the desired results and in many cases, their dependence on government funding has increased over the years. Despite such dependence on the government for financial support, there have been instances of these institutions granting substantially higher benefits to their employees. These benefits are extended irregularly, without the approval of the Ministry of Finance, thus, putting extra financial burden on the central exchequer.

The current report includes audit findings on grant of financial benefits to employees of National Institute of Ocean Technology, Chennai, an autonomous body under MoES, without obtaining requisite approval of Government of India/Ministry of Finance.

Such instances of grant of higher benefits by autonomous institutions must be reviewed by the Ministries concerned to ensure that extra financial burden is not put on the government without its approval.

1.6.4 Deficient internal controls

Internal controls are necessary to regulate the means by which the organisation's resources are mobilised and utilised economically and effectively. Government organisations need to impose stringent internal control measures and employ financial prudence in expenditure to ensure that public funds are spent in accordance with rules and regulations and losses and wastages are minimal.

The current report brings out instances of inadequate internal control and financial management such as fraudulent payment of legal fees by two autonomous institutes under DST, loss of revenue by DOS due to non-compliance with Government decisions and wasteful expenditure in hiring of office accommodation by MoEF.

1.7 Budget and expenditure controls

A summary of Appropriation Accounts for 2012-13 in respect of Scientific and Environmental Ministries/Departments is given in Table 2:

(₹in crore)

Table 2 - Details of grants received and expenditure incurred by Scientific and Environmental Ministries/Departments

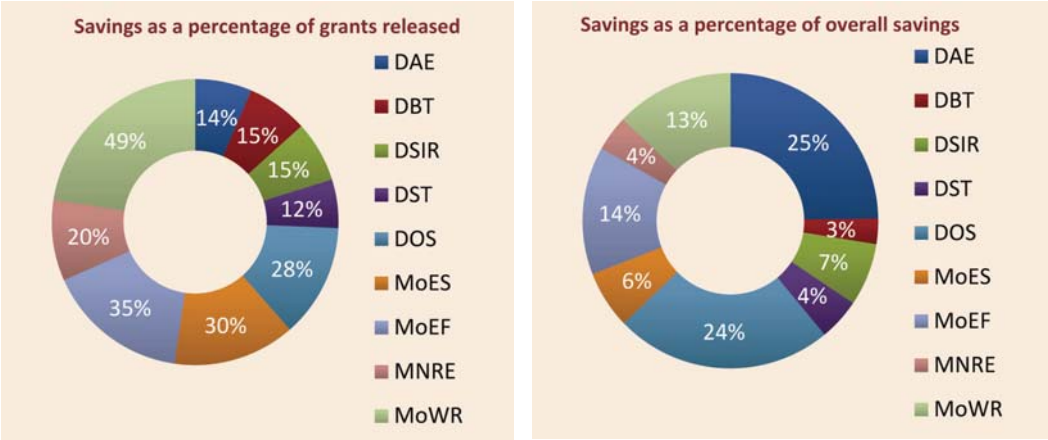
Sl. No.	Ministry/Department	Grant/ Appropriation (including supplement-ary grant)	Expenditure	(-) Savings/ (+) Excess	Percent-age of unspent provision
1.	Department of Atomic Energy	13,917.64	11,981.76	(-) 1,935.88	14
2.	Department of Biotechnology	1,500.40	1,282.84	(-) 217.56	15
3.	Department of Science and Technology	2,882.88	2,524.22	(-) 358.66	12
4.	Department of Scientific and Industrial Research	3,484.00	2,945.66	(-) 538.34	15
5.	Department of Space	6,715.06	4,856.28	(-) 1,858.78	28
6.	Ministry of Earth Sciences	1,672.41	1,177.14	(-) 495.27	30
7.	Ministry of Environment and Forests	3,092.97	1,996.69	(-) 1,096.28	35
8.	Ministry of New and Renewable Energy	1,548.48	1,243.72	(-) 304.76	20
9.	Ministry of Water Resources	2,067.63	1,055.59	(-) 1,012.04	49
Total		**36,881.47**	**29,063.90**	**(-) 7,817.57**	**21**

Source: Appropriation Accounts of the Ministries/ Departments for 2012-13

It can be seen from the above table that with reference to total budget allotment of ₹36,881.47 crore, the Scientific and Environmental Ministries/ Departments had an overall savings of ₹7,817.57 crore which constitutes 21 *per cent* of the total grant/appropriation. DAE, DOS, MoEF and MoWR had significant savings of over ₹1,000 crore during the year.

As a proportion of the grants released to the Scientific and Environmental Ministries/ Departments, the savings of MoWR were the highest (49 *per cent*), followed by MoEF (35 *per cent*) and MoES (30 *per cent*). Of the total savings of the Scientific and Environmental Ministries/ Departments, the proportion of savings made by DAE was the highest, followed by DOS.

Chart 2- Ministry/ Department wise percentage of savings



Budget and expenditure controls in the Scientific and Environmental Ministries/Departments continue to be an area of concern, requiring attention and strengthening of control and oversight systems. C&AG's Report No.1 of 2014 mentions some of these areas which are briefly recapitulated below.

Retention of public funds outside government accounts

(a) The Compensatory Afforestation Fund Management and Planning Authority (CAMPA) is the custodian of all Compensatory Afforestation Funds (CAF) collected from user agencies while allowing diversion of forest land for non-forest purposes under the Forest (Conservation) Act, 1980 and also the amounts received towards net present value of the forest land so diverted. The collected money is held in trust by CAMPA for each State/UT and released to respective State/UT Governments based on approved annual plans. It was observed that there existed no system to report incomes and outgoings in respect of these funds to either the Parliament or the State Legislatures and funds amounting to ₹26,384.73 crore were lying outside the government accounts.

(b) It was observed that two centres of DOS withdrew sums from the Consolidated Fund of India and transferred these sums to banks by opening escrow accounts[8] to allow these to be spent over extended periods. From 2002-03 onwards, DOS transferred ₹831.11 crore in 19

[8] Escrow account is a trust account held in borrower's name in a bank to pay obligations such as property taxes, insurance premia, etc. where money has to be physically transferred to bank before release of payment and the bank would disburse the money to the contractor on pro-rata basis on submission of certain documents as proof of completion of various contractual obligations.

escrow accounts and as of 31 March 2013, the balance available in these accounts was ₹139.90 crore. This was in serious violation of Parliamentary authorisation. As there is no provision in Government accounting and financial rules to retain public funds outside Government accounts, the retention of public funds amounting to ₹139.90 crore as of 31 March 2013 outside Government account was irregular.

Under-utilisation of cess collected under Research and Development Cess fund

The Research and Development Cess Act, 1986 provided for the levy and collection of a cess on all payments made for the import of technology for encouraging commercial application of indigenously developed technology and for adapting imported technology to wider domestic applications. The fund for this purpose is administered by Technology Development Board (TDB), under DST. It was observed that during 1996-97 to 2012-13, funds to the extent of ₹4,139.17 crore were collected by way of cess, out of which only ₹528.91 crore (12.77 *per cent*) were disbursed to TDB. TDB, in turn disbursed financial assistance and loans of ₹1,118.67 crore to industrial concerns. Thus, though the collection of cess under the Act was substantial its utilisation for the intended objectives was not optimum.

Savings of ₹100 crore or more

Savings in a grant or appropriation indicates deficient budgeting as well as shortfall in performance. Further, savings of ₹100 crore or above in any section of the grant entails a detailed explanatory note to the Public Accounts Committee. Savings in excess of ₹100 crore were noticed under both Capital and Revenue heads in DAE and DOS. There were savings above ₹100 crore under revenue heads in the grants of MoES, MoEF, DST, DBT, DSIR, MNRE and MoWR. The unspent provisions ranged between ₹217.56 crore (DBT) to ₹1,859.62 crore (DAE).

Persistent savings were observed in DAE under both Capital and Revenue heads. The savings had increased progressively in DAE under Capital head, from four *per cent* (2009-10) to 17 *per cent* (2010-11), 24 *per cent* (2011-12) and 32 *per cent* (2012-13). In MoES, the savings increased under Revenue head from seven *per cent* (2010-11) to 16 *per cent* (2011-12) and 28 *per cent* (2012-13). Similarly, in MoWR, the savings increased under Revenue head from 12 *per cent* (2010-11) to 14 *per cent* (2011-12) and 50 *per cent* (2012-13).

Surrender of savings and surrenders made in excess of total savings

MoES and MoWR surrendered major portion of their savings on the last day of the fiscal year. While MoES surrendered 96 *per cent* of its total savings on 31 March 2013, MoWR surrendered 87 *per cent* of its savings. It was also observed that DST surrendered amount (₹18.65 crore) that was more than the savings (₹18.53 crore) under the grant.

Unrealistic budgeting

Budgeting in the Scientific and Environmental Ministries/Departments was observed to be unrealistic. There were huge unspent provisions within the grants and funds received after supplementary grants and re-appropriations were eventually not utilised, indicating poor budgeting. Some of the significant observations in this regard are as given below:

- DAE made re-appropriation of ₹54 crore to one sub-head which was injudicious, as the final savings under that sub-head was ₹104.44 crore. The original provision under that sub-head was therefore more than adequate.
- DAE made re-appropriation from one sub-head (₹54 crore) which was injudicious as there was excess expenditure under this sub-head (₹104.44 crore) over the final available provision after re-appropriation.
- DAE sought a supplementary provision of ₹ eight crore under the Capital (Charged) Section, which was eight times the original provision of ₹ one crore.
- In 19 cases under DAE, MoES, MoEF, DSIR, DOS and MoWR, the entire budget provision in the sub-heads remained unutilised.
- In 15 cases under DAE, MoES, MoEF, DST, DOS and MoWR, the unspent provision under the sub-heads alone was in excess of ₹100 crore.
- In 11 cases under DAE, MoEF, MNRE, DOS and MoWR, there was unspent provision of 47 to 100 *per cent* of the budgeted provision under the sub-heads.

Rush of expenditure

The quantum of expenditure incurred by DSIR during the month of March 2013 and during the last quarter of the financial year was to the extent of 85 *per cent* of the budget estimates which was in excess of the prescribed limit of 15 *per cent* and 33 *per cent* respectively.

Failure to obtain legislative approval for augmenting provision

In the following cases, augmentation of budget provisions was done without obtaining prior approval of the Parliament:

- In one case, expenditure of ₹21 lakh was incurred by augmenting the provision under 'Grants in aid - General' by DOS.
- In one case, expenditure of ₹76.73 crore was incurred by augmenting the provision under 'Grants for Creation of Capital Assets' by DOS.
- In 82 cases of two Departments (DAE and DOS), funds aggregating to ₹248.98 crore were augmented under the object heads 'Major Works' and 'Machinery and Equipment'.

Misclassification of expenditure

- Capital expenditure to the extent of ₹580.11 crore was misclassified and booked under Revenue expenditure by MoES, DOS and MoWR.
- Revenue expenditure to the extent of ₹14.67 crore was misclassified and booked under Capital expenditure by DAE, DOS and MoWR.

Misclassification within Object heads under the same section of the grant

Rule 8 of the Delegation of Financial Powers Rules 1978 (DFPR) prescribes standard primary units of appropriation with the description/definitions for the purpose of classification of expenditure up to the sixth tier i.e. object head. Audit noticed that in four cases of three Ministries/Departments, viz. MNRE, DAE and DOS, funds aggregating to ₹85.31 crore were misclassified in these primary units of appropriation i.e. object heads.

Expenditure incurred without prior authorisation

As per Rule 58 (2) of GFR, if honouring of a claim is certain to produce an excess over the allotment or appropriation at the disposal of the disbursing officer, he should take the orders of the administrative authority before authorising payment. The administrative authority will arrange to provide funds either by re-appropriation or by obtaining a Supplementary grant or an advance from the Contingency Fund. It was observed that DOS incurred expenditure of ₹4.15 crore in excess of the available provision and no re-appropriation orders were issued to provide for the funds before incurring expenditure.

Further, DOS incurred an excess expenditure aggregating to ₹586.71 crore in 168 cases over the available provision prior to issue of re-appropriation orders.

Issue of deficient sanction orders

As per Rule 25 (1) of the GFR, all sanctions to expenditure shall indicate details of the provisions in the relevant grant or appropriation wherefrom such expenditure is to be met. It was observed that sanction orders issued by DOS did not distinctly specify the amount of expenditure to be debited separately to revenue and capital accounts and plan and non-plan heads. The amount of expenditure to be classified was also specified only up to the sub head level i.e. the fourth tier of classification, instead of giving complete directions up to the sixth tier of classification, as required. Thus, the sanction orders issued by the authorities in the DOS were deficient.

1.8 Audit of accounts of Autonomous Bodies

Principal Director of Audit, Scientific Departments is the sole auditor of 12 autonomous bodies for which Separate Audit Reports (SARs) are prepared on their accounts under sections 19 (2) and 20 (1) of the C&AG's (DPC) Act, 1971. The total grants released to 11[9] autonomous bodies during 2012-13, including unspent balances of the previous year, were ₹3,987.69 crore, as detailed below:

(₹ in crore)

Table 3- Details of grants released to Central Autonomous Bodies

Sl.No.	Name of the Autonomous Body	Ministry/ Department	Amount of Grant released during 2012-13
1.	Science and Engineering Research Board, New Delhi	DST	405.29
2.	Sree Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram	DST	91.01
3.	Technology Development Board, New Delhi	DST	*
4.	Council of Scientific and Industrial Research, New Delhi	DSIR	2,976.28
5.	Animal Welfare Board of India, Chennai	MoEF	25.81
6.	Central Zoo Authority, New Delhi	MoEF	19.16
7.	National Biodiversity Authority, Chennai	MoEF	25.67
8.	National Mission for Clean Ganga, New Delhi	MoEF	283.84
9.	National Tiger Conservation Authority, New Delhi	MoEF	15.38
10.	Wildlife Institute of India, Dehradun	MoEF	19.43
11.	Brahmaputra Board, Guwahati	MoWR	76.00
12.	National Water Development Agency, New Delhi	MoWR	49.82
Total			**3,987.69**

Source: Separate Audit Reports of the Autonomous Bodies for the year 2012-13
**Accounts not received*

[9] Accounts of one autonomous body (Technology Development Board, New Delhi) for 2012-13 were not received in audit

In addition, supplementary/superimposed audit of 62 other autonomous bodies are conducted under Sections 14 or 15 of the C&AG's (DPC) Act, 1971. The total grants released to 49[10] autonomous bodies during 2012-13 were ₹2,818.26 crore, details of which are indicated in ***Appendix III***.

1.8.1 Delay in submission of accounts

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.

For the year 2012-13, seven out of 12 autonomous bodies submitted their accounts within the prescribed time limit of three months after the close of the accounting year. The position of submission of accounts for the year 2012-13 is indicated below:

Table 4- Position of submission of accounts by Autonomous Bodies

Sl. no.	Name of Autonomous Body	Ministry/ Department	Date of submission of accounts to audit	Delay in submission of accounts (in months)
1.	Science and Engineering Research Board, New Delhi	DST	26.08.2013	2
2.	Sree Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram	DST	10.06.2013	-
3.	Technology Development Board, New Delhi	DST	Accounts not received	Accounts not received
4.	Council of Scientific and Industrial Research, New Delhi	DSIR	02.08.2013	1
5.	Animal Welfare Board of India, Chennai	MoEF	14.06.2013	-
6.	Central Zoo Authority, New Delhi	MoEF	08.08.2013	1
7.	National Biodiversity Authority, Chennai	MoEF	04.06.2013	-
8.	National Mission for Clean Ganga, New Delhi	MoEF	04.10.2013	3
9.	National Tiger Conservation Authority, New Delhi	MoEF	04.07.2013	-
10.	Wildlife Institute of India, Dehradun	MoEF	02.07.2013	-
11.	Brahmaputra Board, Guwahati	MoWR	11.06.2013	-
12.	National Water Development Agency, New Delhi	MoWR	18.06.2013	-

[10] Information in respect of 13 autonomous bodies was not furnished.

It can be seen from the above table that four autonomous bodies submitted their accounts after delay ranging between one to three months. Accounts of Technology Development Board for the year 2012-13 were not received.

1.8.2 Significant deficiencies in accounts

Some of the important issues highlighted in SARs on the accounts for the year 2012-13 are listed below:

General observations:

- Internal Audit was incomplete in two[11] autonomous bodies.
- Internal audit for 2012-13 was not conducted in four[12] autonomous bodies.
- Physical verification of the fixed assets for the year 2012-13 was not conducted in three[13] autonomous bodies.

Significant specific observations on the accounts of a few autonomous bodies were as below:

Council of Scientific and Industrial Research (CSIR), New Delhi

- The balance of the Capital Fund as on 31st March 2013 ₹ (-)705.92 crore included an adjustment entry of ₹ (-)304.19 crore. The Council did not provide the details of this adjustment entry and therefore audit was not able to assure that the Capital Fund was correctly reported.
- An amount of ₹36.85 crore, which was due for refund in externally aided projects, was not shown in accounts resulting in understatement of Current Assets and Current Liabilities each by the same extent.
- Due to incorrect/non-accounting of the interest earned on 'Deposits in margin money for opening of LC[14]', 'Term Deposit Receipts' and 'Savings Account', the liabilities of CSIR towards government were understated by ₹35.15 crore and income was overstated by ₹33.65 crore.
- An amount of ₹22.04 crore, which was refunded by the Council to Government out of a refundable amount of ₹249.20 crore, was not reduced from its liabilities. Thus, the liabilities were overstated by ₹22.04 crore.

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[11] Brahmaputra Board and National Water Development Agency

[12] National Biodiversity Authority, Wildlife Institute of India, Animal Welfare Board of India and Science and Engineering Board

[13] Brahmaputra Board, National Tiger Conservation Authority and Sree Chitra Tirunal Institute of Medical Science and Technology

[14] Letter of credit

- Out of 44 companies to whom loans of ₹246.47 crore were provided by CSIR under New Millennium Indian Technology Leadership Initiative (NMITLI) Scheme, loans provided to seven companies amounting to ₹55.21 crore were under default of repayment where legal action was stated to be on. Against these companies, a penal interest of ₹41.93 crore was imposed by the CSIR which was also recoverable from them. However, CSIR neither separately depicted the entire loan of ₹55.21 crore under default nor the amount of ₹41.93 crore towards penal interest, which resulted in understatement of assets by ₹41.93 crore in the accounts besides non-disclosure of the defaulted loans in Notes on Accounts.

Science and Engineering Research Board

- Funds of ₹5.29 crore received from Ministry of Food Processing Industries for their projects, of which ₹4.06 crore was expended, were wrongly treated as income and expenditure of the Board and the unspent balance was included in surplus instead of being reflected as liability.
- Income included ₹73.00 lakh on account of Grant spent on procurement of Capital Assets which resulted in overstatement of Surplus of Income over expenditure.

Sree Chitra Tirunal Institute of Medical Science and Technology

- The Receipt and Payment account was revised based on the comments of Audit. Receipt side and payment side of the Receipt and Payment account was decreased by ₹383.53 crore.

Wildlife Institute of India

- An amount of ₹19.86 lakh was shown as fixed assets under the head - 'Campus Development', which was actually revenue expenditure for the year 2012-13 resulting in overstatement of fixed assets to the tune of ₹18.43 lakh after adjustment of depreciation of ₹1.43 lakh and understatement of expenditure to the same extent.

Brahmaputra Board

- During 2012-13, Brahmaputra Board earned accrued interest of ₹39.67 lakh on investment of ₹16.00 crore in four term deposits. Out of ₹39.67 lakh, only ₹4.51 lakh was accounted for and the balance ₹35.16 lakh remained unaccounted for, resulting in understatement of income and current assets by ₹35.16 lakh.

1.9 Outstanding Utilisation Certificates

Ministries and Departments are required to obtain certificates of utilisation of grants 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 seven[15] Ministries/Departments, 9,981 Utilisation Certificates (UCs) due by March 2013, for grants aggregating ₹1,877.11 crore were outstanding as given in ***Appendix IV***.

Out of the 9,981 UCs awaited in respect of the six Ministries/Departments, 8,016 certificates amounting to ₹ 523.89 crore were pending for more than two years. A total of 6,676 UCs amounting to ₹ 327.56 crore were outstanding for more than five years.

Ministry/Department-wise position of outstanding UCs is given in Table 5:

(₹ ***in crore***)

Table 5- Position of outstanding Utilisation Certificates

Sl. No.	Ministry/Department	UCs pending for more than two years		UCs pending for more than five years	
		No.	Amount	No.	Amount
1.	Department of Atomic Energy	233	18.38	105	2.85
2.	Department of Biotechnology	Not available			
3.	Department of Science and Technology	Nil			
4.	Department of Scientific and Industrial Research	Not available			
5.	Department of Space	179	11.81	113	8.13
6.	Ministry of Earth Sciences	1,042	87.48	800	51.77
7.	Ministry of Environment and Forests	6,366	381.74	5,635	258.32
8.	Ministry of New and Renewable Energy	64	10.96	2	5.34
9.	Ministry of Water Resources	132	13.52	21	1.15
TOTAL		8,016	523.89	6,676	327.56

1.10 Departmentally Managed Government Undertakings - Position of Proforma Accounts

Rule 84 of the General Financial Rules, 2005 stipulates that departmentally managed government undertakings of commercial or quasi-commercial nature will maintain such subsidiary accounts and proforma accounts as may be prescribed by the Government in consultation with the C&AG.

[15] DST, DAE, DOS, MoEF, MNRE, MoES and MoWR

There were two departmentally managed Government Undertakings of commercial or quasi-commercial nature as of 31 March 2013 under audit jurisdiction of this office viz. Nuclear Fuel Complex, Hyderabad and Heavy Water Board, Mumbai under DAE. The financial results of these undertakings are ascertained annually by preparing proforma accounts generally consisting of Trading Account, Profit and Loss Accounts and Balance Sheet. However, proforma accounts of both Nuclear Fuel Complex and Heavy Water Board for the period 2012-13 were not received for audit as they were under preparation even after delay of more than one year.

In the absence of proforma accounts, cost of services provided by these organisations, which are intended to be managed on commercial basis, could not be ascertained. It was also not possible to work out performance indicators like return on investment, profitability etc. for their activities.

1.11 Losses and irrecoverable dues written off/waived

Statement of losses and irrecoverable dues written off/waived during 2012-13 furnished by seven[16] Ministries/Departments is given in ***Appendix V*** to this Report. It will be seen from the Appendix that while in 29 cases involving ₹11.30 lakh the amounts were written off for 'other reasons', one case involving ₹ 3,000 pertained to neglect/fraud and two cases of ₹11.14 lakh pertained to waiver of recovery which were written off during 2012-13.

1.12 Response of the Ministries/Departments to Draft Audit Paragraphs

On the recommendations of the Public Accounts Committee, Ministry of Finance (Department of Expenditure) issued directions to all Ministries in June 1960 to send their response to the Draft Audit Paragraphs proposed for inclusion in the Report of the C&AG within six weeks.

The Draft Paragraphs are forwarded to the Secretaries of the Ministry/Departments concerned drawing their attention to the audit findings and requesting them to send their response within six weeks. It is brought to their personal attention that in view of likely inclusion of such Paragraphs in the Audit reports of the C&AG, which are placed before Parliament, it would be desirable to include their comments in the matter.

[16] DAE, DOS, DSIR, DST, DBT, MNRE and MoES

Draft Paragraphs proposed for inclusion in this report were forwarded to the Secretaries concerned between February 2014 and April 2014 through letters addressed to them personally.

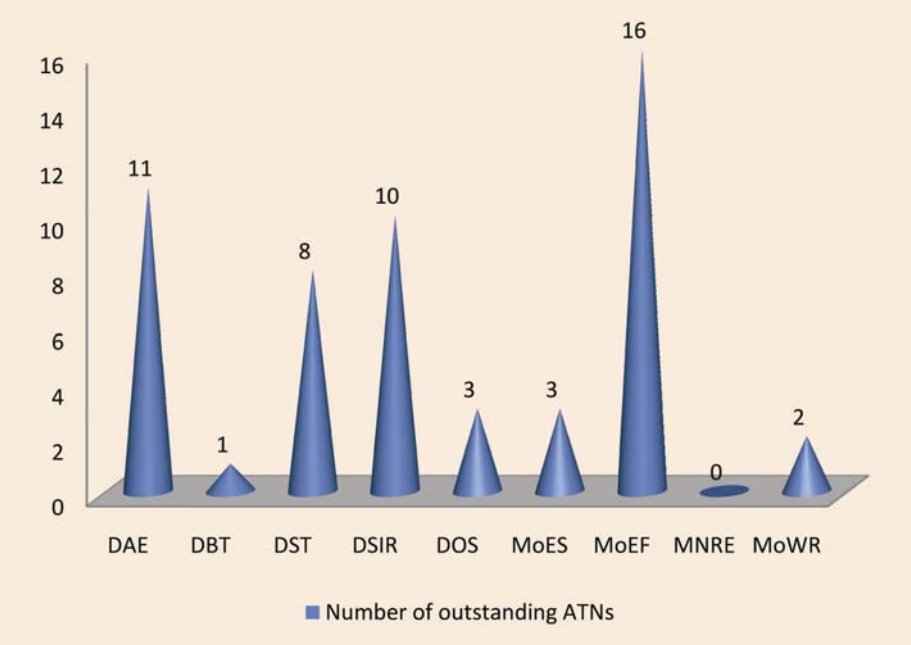
Concerned Ministries/Departments did not send replies to two out of the 13 Paragraphs featured in Chapters II to VI. The responses of concerned Ministries/Departments received in respect of 11 paragraphs have been suitably incorporated in the Report.

1.13 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.

A review of outstanding ATNs on paragraphs included in the Reports of the C&AG pertaining to Scientific and Environmental Ministries/ Departments as of March 2014 (details in ***Appendix VI***) revealed that a total of 13 ATNs pending from six Ministries/ Departments were not received even for the first time indicating delay in submission of ATNs ranging between two to 78 months. Also revised ATNs in respect of 41 paras were pending from eight Ministries/ Departments ranging from two to 156 months (***Appendix VII***).

Chart 3- Number of outstanding ATNs of Audit Reports



CHAPTER - II

Department of Atomic Energy

2.1 Non-utilisation of equipment

Directorate of Purchase and Stores, Mumbai did not take effective action to repair equipment that was damaged in transit, which resulted in blocking of funds of ₹5.56 crore spent on its procurement.

Atomic Minerals Directorate for Exploration and Research, Hyderabad (AMDER), a unit of Department of Atomic Energy (DAE) is engaged in identification and evaluation of uranium resources for successful implementation of the atomic energy programme of the country. AMDER proposed (April 2009) procurement of an 'Electron Probe Micro Analyser (EPMA) SX-100' at an estimated cost of ₹6.50 crore for use in evaluation of geological and other natural and synthetic solid materials including alloys. Accordingly, Directorate of Purchase and Stores, Mumbai (DPS), which is the central procurement agency of DAE, placed a purchase order (November 2010) on Cameca, France through the vendor's Indian agent[17] for supply, installation and commissioning of EPMA - SX-100 at a total cost of Euro 9,44,445 on FCA[18] basis. DPS was to pay 90 *per cent* of the total value on receipt of the shipping documents and the balance 10 *per cent* on satisfactory installation. The equipment was guaranteed for 12 months from the date of installation or 18 months from the date of supply, whichever was earlier. All risk transit insurance for the shipment was arranged through Oriental Insurance Company.

Audit scrutiny revealed that the equipment was received (September 2011) in four wooden boxes and DPS paid an amount of ₹5.56 crore being 90 *per cent* of the total value to the firm (October 2011). On receipt of the equipment at AMDER, it was found that one of the four wooden boxes containing the packed equipment was damaged. Accordingly AMDER lodged (September 2011) a provisional claim with the insurance company. The consignment was inspected (October 2011) by the surveyor appointed by the insurance company who reported that there was no physical damage to the consignment. Subsequently, a representative of the vendor's Indian agent

[17] Gannon Dunkerly & Co. Ltd., Mumbai

[18] According to International Trade Rules Incoterms, FCA or free carrier means that the seller delivers the goods to the carrier or another person nominated by the buyer at the seller's premises or another named place at which point the risk passes to the buyer.

inspected (December 2011) the contents of the box and found that an electronic cabinet had been severely damaged. The supplier requested (January 2012) DPS to ship back the entire system (all four boxes) for repair and re-tuning of the physical and electronic components of the equipment.

DPS, however, asked (March 2012) the vendor to furnish bank guarantee for the cost of the equipment and to bear all expenses for transportation since the equipment was damaged within the warranty period. Another survey was conducted (April 2012) by the Insurance company in which physical damages found in the concerned box were reported.

The vendor (May 2012) refused to furnish the bank guarantee or bear any expenses relating to the damages stating that as per FCA Incoterms, it could not be held responsible for damages suffered during transit handling of the equipment, which had been duly expressed in the insurance survey report. The vendor also stated that warranty period started only after successful installation and acceptance test and hence was not applicable. To resolve this issue, DPS and AMDER held (October 2012) a meeting with the vendor's Indian agent wherein it was decided that an expert from the vendor would visit India to assess the extent of damage suffered and evaluate necessity to re-export the entire consignment.

The vendor's expert evaluated (January 2013) the entire consignment and offered three alternatives viz. returning the entire consignment for testing and repair, returning only the box containing damaged components for repair or providing replacement of the damaged components. AMDER decided (March 2013) to return the entire equipment to the vendor for repairs. However, DPS again asked (April 2013) the supplier to furnish bank guarantee for the cost of equipment and to bear all expenses towards its re-export. While the vendor agreed (April 2013) to furnish the bank guarantee, it refused to bear the expenses of re-export. As of June 2014, the matter remained unresolved and the equipment remained in AMDER premises in damaged condition.

Audit observed that DPS continued to hold the vendor responsible for carrying out repairs to the damaged equipment even though it was established that the damage had occurred during transit. This was incorrect, as the procurement was made on FCA basis, in which the responsibility for transportation of the equipment and associated risks lay with DPS. Further, the warranty coverage of the equipment extended to faulty workmanship and manufacturing defects only. Audit also observed that DPS did not take any further action to pursue the insurance claim for damaged equipment, its re-export and repair with the insurance company, even though transit insurance was taken from vendor's warehouse to the ultimate destination i.e

AMDER. As a result, the option for claiming insurance, which was valid for upto six months from the date of filing the provisional claim, also lapsed.

Thus, lack of effective action for repair of the damaged equipment resulted in blocking of fund of ₹5.56 crore on procurement of equipment. The equipment remained in a damaged condition for more than two years and could not be utilised for the purpose for which it was procured.

DPS stated (September 2013) that since the firm declined to give bank guarantee for equivalent value of equipment/components to be sent to for repair, the same could not be shipped back to the firm and was still lying with the Directorate/AMDER. The reply is not acceptable as DPS needlessly held the vendor responsible for damages suffered in transit and failed to take effective action to carry out the repairs or to lodge the final insurance claim. This resulted in blocking of funds of ₹5.56 crore besides loss of opportunity to mitigate the damages through insurance.

The matter was referred to DAE in April 2014, its reply was not received as of June 2014.

CHAPTER – III

Department of Science and Technology

3.1 Fraudulent payment of legal fees

Indian Association for the Cultivation of Science and Bose Institute paid legal fees of ₹83.55 lakh to an advocate without verifying actual attendance in court. Out of this, payment of ₹54.93 lakh was found to be fraudulent.

Indian Association for the Cultivation of Science, Kolkata (IACS) and Bose Institute, Kolkata (BI), autonomous organisations under Department of Science and Technology (DST) were taking services of a Kolkata based advocate for dealing with their legal cases. IACS paid ₹57.33 lakh in respect of 17 claims between July 2007 and November 2012 and BI paid ₹26.22 lakh in respect of 20 claims between September 2008 and August 2012.

Audit observed that both organisations did not follow any procedure to select the advocate who was working for the last 15-20 years. Neither any agreement was signed with the advocate nor any *Vakalatnama* to plead the organisations' cases, was found on record. It was informed by both organisations that long back the present advocate's father used to plead their cases.

Audit further observed that both IACS and BI made payments to the advocate against bills raised by him relating to appearances claimed to be made by him and/or other advocates whose services were claimed to be used by him for the institutes' cases before the High Court at Calcutta and subordinate courts. The institutes were also not verifying progress of their cases while processing the bills for payment. Payments were also being made for cases not related to the organisation. Audit scrutiny of certified documents obtained from High Court at Calcutta in respect of 13 bills raised on IACS and 12 bills raised on BI amounting to ₹54.93 lakh revealed that bills were passed for payment without verifying proof of actual appearances in court. Detailed scrutiny revealed:

- In 144 dates of appearances claimed by the advocate, there were no hearings on the said dates in the High Court;

- Of these 144 dates of appearances, 49 dates were after the date on which the concerned case was disposed of by the court;
- 54 dates of appearances claimed by the advocate, for which payments were made by BI were in respect of a case that did not pertain to the Institute.
- In 10 dates of appearances, orders of the High Court did not indicate appearance of advocates for whom the bills were claimed; and
- In one case, payment was made twice against appearance on the same date claimed by the advocate in two separate bills.

The details of above claims are given in the ***Appendix VIII***.

On being pointed out by Audit to IACS and BI (July 2013), IACS admitted (August 2013) that legal expense bills were released erroneously for payment without pre-audit. IACS further informed (February 2014) that two separate panels of the advocates, one for High court and other for the Lower Courts has been made. BI stated (March 2014) that single copy of *Vakalatnama* was made and given to the advocate for filing before the court. With regard to formal agreement with the advocate, whereas IACS accepted (June 2014) that formal agreement with the advocate was not available, BI stated (June 2014) that the advocate was engaged around 15 to 20 years ago.

Thus, IACS and BI had not only been availing services of an advocate without exercising due diligence but also were paying legal fees against false claims of appearances resulting in fraudulent payment of ₹54.93 lakh. DST stated (August 2014) that the said advocate was removed from the panels of both IACS and BI after the audit observation. DST further stated that both institutes had been directed to take legal and administrative steps to recover the excess payments and carry out internal enquiries and fix responsibilities for the lapses.

The fact, however, remained that although the issue was initially reported by Audit in July 2013, neither any preliminary inquiry nor filing of criminal case was reported (August 2014).

3.2 Non-installation of equipment

Indian Association for the Cultivation of Science, Kolkata failed to identify site in time for installation of equipment, delayed preparation of site and also failed to ensure proper storage of the equipment in the interim period. As a result, equipment procured at a cost of ₹3.40 crore remained uninstalled for more than five years and suffered damage due to improper storage which was repaired at an additional cost of ₹21.17 lakh.

The Indian Association for the Cultivation of Science, Kolkata (IACS) an autonomous Institute under Department of Science and Technology (DST) is engaged in fundamental research in Physics, Chemistry, Biology, Energy, Polymer and Materials. IACS undertook (August 2006) a project titled 'CRP[19]-Spintronics Materials - Preparation and Characterisation of Double Perovskite based Spintronic Materials', at a cost of ₹1.77 crore funded by Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy (DAE) for a period of three years. Of the total sanction, an amount of ₹1.60 crore was allotted for procurement of equipment.

IACS placed (March 2007) a supply order with a U.K based firm, for procurement of 'Basic 16 Tesla CFM[20] with Pulse tube cold head' along with accessories at a cost of GBP[21] 1,80,000 after global tender. The Project in charge reported (19.8.2007) that the ordered equipment would be useless in absence of measurement systems[22] and requested the Director, IACS to approve matching funds for additional equipment. As funds were insufficient under the project, it was proposed to procure the second equipment from institute funds. Resultantly, IACS placed (20.8.2007) another supply order on the same supplier for procurement of 'DC Resistivity and Hall effect system electronics, software, multi-scanning facility' at a cost of GBP 1,85,000, without any tendering process.

Both equipment were received by IACS in October 2008[23] and IACS had incurred expenditure of ₹3.40 crore for the procurement. They were proposed (February 2008) to be installed in an old building in the IACS premises after carrying out structural rehabilitation. The Project in charge, meanwhile, resigned (December 2008) from IACS. Though a new in-charge of

[19] Coordinated Research Programme

[20] Cryogen Free Measurement

[21] British Pound Sterling

[22] AC/DC resistivity with Hall measurement system, VSM + AC susceptibility set up, specific heat measurement as well as heaters for high temperature.

[23] IACS did not put any clause for schedule of delivery of the above equipment and the suppliers delivered both the equipment in October 2008 i.e. after lapse of 19 and 14 months.

the project was approved in November 2009, the equipment could not be installed due to non-readiness of site. In the meantime the project was formally declared (August 2009) as closed.

Pending availability of site, equipment were stored inside a temporary structure and covered with tarpaulin. The site was finally prepared in October 2010, but by then, improper storage and prolonged exposure to moisture for two years had caused corrosion and damage to the main equipment. After inspection of equipment the supplier requested (November 2011) IACS to return the damaged equipment for repair. The equipment was delivered to the supplier only in August 2012 and the repaired equipment was received back in May 2013. IACS incurred additional expenditure of ₹21.17 lakh on repair. The second equipment, comprising the measurement systems, however, remained in a packed condition since its receipt.

Audit observed that IACS did not plan installation of equipment in advance. The site for installation of equipment was identified in February 2008, nearly a year after placing the supply order. There was delay of more than two years in preparing the site. IACS also failed to store equipment properly in the interim period, which resulted in its damage. Consequently, the equipment remained uninstalled as of March 2014.

IACS accepted (April 2013) that initially it was unable to identify enough available laboratory space. IACS however remained silent on the issue of delay in preparation of site. IACS also accepted that the said equipment was required for a part of the project that could not be completed. IACS further stated that the objective of the project was largely completed by accessing similar facilities elsewhere through collaborative efforts.

Thus, failure to identify site on time, delay in preparation of site and negligence in ensuring proper storage of equipment resulted in idling of costly equipment worth ₹3.40 crore for more than five years, which could have been utilised for other research works. Damage due to improper storage resulted in additional expenditure of ₹21.17 lakh towards repair of equipment.

While DST accepted (July 2014) that there was failure to identify the site on time and delay in preparation of site, it stated that damage to the equipment was caused due to a cyclone which was unanticipated. DST also stated that IACS was unable to house the equipment inside the building due to severe space constraints. The reply corroborates audit observation that advance planning for site for installation of costly imported equipment was of utmost importance in view of the space constraints faced by the institute.

CHAPTER – IV

Department of Space

4.1 Inordinate delay in realisation of SRE-2 mission

The launch of Space Capsule Recovery Experiment - 2 mission of Department of Space, originally scheduled for August 2008 was delayed by more than five years. This resulted in wasteful expenditure of ₹52 lakh due to expiry of parachutes and floats procured for the mission and non-achievement of objectives of the mission as of March 2014 in spite of incurring expenditure of ₹30.66 crore on the mission.

Space Capsule Recovery Experiment (SRE) is a project of the Department of Space (DOS) to demonstrate certain key technologies for re-entry and recovery of the space capsules as well as to provide a platform for microgravity experiments. The experimental satellite SRE-1 was launched in January 2007. This was to be followed by the SRE-2 mission, which was approved earlier (November 2005) by the Space Commission at a cost of ₹30 crore. The planned duration of the project was 18 months i.e. up to August 2008. The main objective of SRE-2 mission was to carry out microgravity experiments in the area of material and life science and use of indigenously developed advanced Carbon-Carbon thermal protection system in the nose cap region of the capsule.

SRE capsule

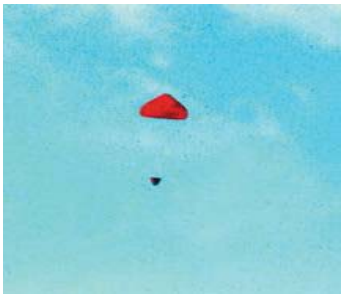
The SRE-2 capsule was to be launched by Vikram Sarabhai Space Centre, Thiruvananthapuram (VSSC), a unit of DOS responsible for realisation of satellite launch vehicles and associated technologies. Due to technical issues in the development of thermal protection system for the capsule, VSSC proposed (September 2010) to procure the items from abroad. Based on the proposal of VSSC, the project cost was revised (October 2010) to ₹42 crore and the launch schedule was extended to mid 2011. As of March 2013, expenditure of ₹30.66 crore was incurred on the project. An amount of ₹11.34 crore was further required to meet expenditure towards balance payment on bioreactor payload, launch recovery operation charges and miscellaneous balance payment on purchase orders and contingencies.

Audit observed that although a launch vehicle was available in 2011, SRE-2 mission was not realised as the SRE-2 capsule was not ready due to non-availability of carbon-carbon nose cap. The launch vehicle was used to launch (2011) other Indian and foreign satellites. Launch schedule of SRE-2 mission was deferred to June 2014.

Deferring the launch schedule of the project resulted in delay of more than five years in realisation of the mission after incurring expenditure of ₹30.66 crore. The delay also led to wasteful expenditure due to expiry of mission consumables, as discussed below:

Wasteful expenditure in procurement of parachutes and floats

The space capsule was to be in space for a maximum period of 30 days during which the microgravity experiments were to be conducted. Thereafter, it was to be brought back to the earth and eventually recovered from the sea. Upon its return to the earth's atmosphere, a parachute and floatation system was to be used for touchdown in the sea.



Re-entry of space capsule

VSSC entered (March 2008) a Memorandum of Understanding (MOU) with Aerial Delivery Research and Development Establishment, Agra (ADRDE) towards supply of parachutes and floats for SRE-2 mission at a total cost of ₹52 lakh. According to the terms of the MOU, 50 *per cent* of the total value was to be paid as advance on signing the MOU and balance after Flight Readiness Review (FRR). The advance payment of ₹26 lakh was released (March 2008) on signing the MOU. VSSC received (2009) six sets of floats and four sets of parachutes and released (March 2010) balance payment of ₹26 lakh after conducting FRR.

Space capsule recovery from sea

In the meantime, the shelf life of the floats and parachutes expired in October 2012 and November 2013 respectively. As a result, expenditure of ₹ 52 lakh incurred by VSSC on parachutes and floats was rendered wasteful. DOS admitted (April 2014) that the materials would not be used in the mission.

Thus, deferring the launch schedule of SRE-2 mission resulted in delay of more than five years in realising the mission even after incurring expenditure

of ₹30.66 crore. Parachutes and floats procured at a cost of ₹52 lakh exceeded their shelf life and were ultimately not used, resulting in wasteful expenditure.

VSSC stated (April 2013) that the schedule given for financial sanction of projects was an indicative schedule and the operational schedule was prepared considering the national priorities and agreements with other end users. DOS further added that in the year 2011, though PSLV vehicle was identified and available for the launch of SRE-2 mission, the capsule was not ready for launch due to non-availability of the indigenous carbon-carbon thermal protection system.

The reply indicates a mismatch between financial and operational planning for launch of satellites, which is significant in the overall context of shelf life of the mission payloads. The reply of VSSC/DOS may also be viewed in the light of the fact that decision to procure the carbon-carbon nose cap from abroad due to inability to develop it indigenously was taken as far back as September 2010. However, as of April 2014, VSSC had been unable to realise the nose cap. Further, as of March 2014, flight units for SRE-2, though realised, were not assembled. Testing of integrated electronics packages, proposed to be done one year before the scheduled flight, had also not commenced.

The SRE-2 mission was, thus, inordinately delayed and the launch schedule had still not been firmed up as of March 2014 leading to non-realisation of objectives of the mission for more than five years in spite of incurring expenditure of ₹30.66 crore, besides wasteful expenditure of ₹52 lakh due to expiry of mission consumables.

4.2 Loss in allocation of satellite capacity

Indian Space Research Organisation, Department of Space provided communication satellite capacity free of cost to the Government of Andhra Pradesh in violation of the decision of the Government of India to charge all users of satellite services, resulting in loss of revenue to the tune of ₹19.16 crore.

Indian Space Research Organisation (ISRO), Department of Space (DOS) has the primary objective of promoting the development and application of space science and technology. One of the major satellite systems operationalised by ISRO is Indian National Satellites (INSAT), which is used for various communication services. Initially, satellite capacity to Government users on INSAT system was being provided free of cost. Based on the direction of Ministry of Finance and Planning Commission, INSAT Coordination

Committee[24] (ICC), recommended (January 2002) that all users of INSAT system, including Government users, should be charged for allocation of satellite capacity. The Standing Committee constituted for the purpose fixed (July 2002), a minimum floor rate of ₹2.50 crore per transponder[25] per annum.

ISRO entered (July 2000) into a Memorandum of Understanding (MoU) with the Government of Andhra Pradesh (GOAP) to explore the possibilities of establishment of a satellite based communications network within the State of Andhra Pradesh by using the Ku band satellite capacity of INSAT system for promoting usage of satellite based communications in the areas of distance education, telemedicine, agricultural extension, e-governance, self help groups, marketing and human resource development, community internet centres, etc. ISRO and GOAP were to identify the areas of cooperation together and arrive at a definitive agreement for working together. The MoU was valid for a period of three years, with a provision for renewal for such periods as mutually agreed. The MoU was renewed further on two occasions (July 2003 and August 2006) for three years each i.e. upto August 2009.

As per MoU, ISRO was responsible for providing the required Ku band capacity in the INSAT system for a period of three years, sharing of expertise and experience and extending technical guidance and support. Accordingly, ISRO allocated (2000) satellite capacity of 29 MHz to GOAP from its satellite INSAT-3B and the services, named SAPNET-Mana TV[26] became operational. Audit observed that though the MoU with GOAP expired in August 2009, ISRO continued to provide INSAT capacity for SAPNET services. Further, at the end of the orbital life of INSAT-3B, ISRO hired (June 2010) 13 MHz of satellite capacity from the foreign satellite NSS-12[27] from July 2010 to March 2012 for providing to GOAP and incurred expenditure of ₹4.02 crore as transponder hiring charges. After the launch of its own satellite G-SAT-8 (May 2011), ISRO subsequently vacated the foreign satellite capacity and allocated (April 2012) 17 MHz capacity on G-SAT 8.

[24] INSAT Coordination Committee (ICC) is an interdepartmental coordination mechanism constituted by the Cabinet Secretariat for planning and allocation of communication satellite capacity from INSAT system.

[25] One transponder is equivalent to 36 MHz bandwidth.

[26] Society for Andhra Pradesh Network, which was registered (March 2003) as a non-profit society funded by GOAP, for operating Mana TV services.

[27] New Skies Satellites, renamed as SES World Skies, having its headquarters in Netherlands/ USA.

Chronology of events in the allocation of satellite capacity for SAPNET-Mana TV	
Date	**Event**
July 2000	Memorandum of Understanding (MoU) entered between Indian Space Research Organisation (ISRO) and Government of Andhra Pradesh (GOAP) for establishment of a satellite based communications network within the state of Andhra Pradesh using the Ku band satellite capacity of INSAT system in the areas of distance education, telemedicine, agricultural extension, e-governance, self help groups, marketing and human resource development, community internet centres, etc.
2000	ISRO allocated satellite capacity of 29 MHz to GOAP from its satellite INSAT-3B and the services, named SAPNET-Mana TV became operational
January 2002	Based on the direction of Ministry of Finance and Planning Commission, INSAT Coordination Committee (ICC), recommended that all users of INSAT system, including Government users, should be charged for allocation of satellite capacity by ISRO/DOS.
July 2002	The Standing Committee constituted for the purpose fixed a minimum floor rate of ₹2.50 crore per transponder per annum.
July 2003	MoU was extended for a further period of three years.
August 2006	MoU was extended for a further period of three years.
August 2009	MoU between ISRO and GOAP expired.
June 2010	ISRO hired satellite capacity from the foreign satellite NSS-12 from July 2010 to March 2012 for GOAP.
May 2011	GSAT-8 satellite launched.
April 2012	ISRO vacated capacity in NSS-12 and allocated 17 MHz capacity on GSAT- 8 to SAPNET.

Audit further observed that after expiry (July 2003) of the first MoU, though ISRO renewed the MoU with GOAP twice for three years each, i.e upto August 2009, it did not charge from GOAP for the satellite capacity allocated. Even beyond August 2009, despite the expiry of MoU, ISRO continued to provide satellite capacity to GOAP free of cost, even by hiring capacity from abroad and incurring charges thereby. Audit also noted that ISRO did not enter into a definite agreement with GOAP as envisaged in the initial MoU.

Allocation of satellite capacity free of cost to GOAP in violation of DOS policy resulted in loss of ₹19.16 crore[28] including ₹4.02 crore paid to the foreign satellite owner, for the period from July 2003 to March 2013.

[28] Calculated for the period from 25 July 2003 to 30 June 2010 (29MHz on INSAT-3B) and from 01 April 2012 to 31 March 2013 (17 MHz on G-SAT 8) at the rate of ₹2.5 crore per transponder per annum added with ₹4.02 crore paid to foreign satellite owner for the period from 1 July 2010 to 31 March 2012 (12 MHz on NSS-12).

ISRO replied (August 2013) that satellite capacity was allocated for societal programmes such as tele-education, tele-health and developmental communication networks in association with State Governments and its agencies and added that the decision of ICC was to charge from revenue earning departments such as BSNL[29], Doordarshan, etc. While reiterating this position, DOS further stated (May 2014) that usage of APNET for educational purpose by GOAP was in line with approach of DOS/ISRO for supporting societal programmes by transferring bandwidth free, as was being followed in other States.

The reply of ISRO/DOS is not acceptable, as the decision of the Government of India was to charge for satellite capacity from all users including Government departments/societal programmes. Audit also noted that ISRO had collected satellite capacity charges from other Central and State Government non-commercial departments such as Ministry of Defence at the rate of ₹3.39 crore per transponder per year for lease of 4 MHz of C Band capacity on INSAT 3E satellite during 2008-11 and from the Government of Chattisgarh at the rate of ₹5.44 crore per transponder per year for lease of 4 MHz of Ku Band capacity on INSAT 4CR satellite during 2009-2011. Further, SAPNET was also earning revenue by rendering some of its services on payment basis.

Thus, providing satellite capacity to GOAP free of cost was not only in violation of the decision of the Government but was also against the principles of fairness, equitable treatment and objectivity in the allocation of satellite capacity. Non-conformity with Government decision also resulted in loss of revenue to the tune of ₹19.16 crore to ISRO.

4.3 Avoidable expenditure due to improper contract management

ISRO Satellite Centre, Bengaluru included price escalation clauses in two fabrication contracts entered with Hindustan Aeronautics Limited, without specifying definite time periods for completing the fabrication works. Further, after three years from the date of signing the contracts, it amended the contracts by increasing the fixed ceiling of man hours without changing the scope of work. The improper contract management resulted in avoidable expenditure of ₹4.35 crore.

ISRO Satellite Centre (ISAC), Bengaluru under Indian Space Research Organisation (ISRO), is responsible for conceptualisation, design, fabrication, testing, integration and in-orbit commissioning of satellite systems.

[29] Bharat Sanchar Nigam Ltd.

As a part of the co-operative efforts for the ISRO Programmes, ISRO established (May 1983) a dedicated facility named Aerospace Division (ASD) at Hindustan Aeronautics Limited (HAL) for fabrication of structural assemblies required for GEOSAT[30]/IRS[31] space programmes with the help of the technical manpower of HAL.

Fabrication of INSAT 4C

ISAC awarded (March 2004) two contracts to HAL for fabrication of three types of 10 structural final assemblies for GEOSAT spacecraft programme and five types of 16 structural assemblies for IRS spacecraft programme, along with brackets and miscellaneous components. The two fabrication contracts prescribed a ceiling of 60,000 man hours each, covering the entire scope of fabrication work. The man hour rate was fixed at ₹700, which would remain constant till 2005-06 and thereafter subject to escalation by seven *per cent* of the rate applicable for the previous year. The validity of both contracts was for four years i.e upto March 2008 or till completion of structures, whichever was later.

Audit observed that ISAC did not specify the yearly deliverables for the structural assemblies in the contracts but left the delivery period open-ended. Although as per the contracts, a mutually agreed delivery schedule was to be worked out from time to time, however, no work orders specifying the scope of work and delivery schedules were issued to HAL.

Audit further observed that after completing three years from the date of signing of the contracts, ISAC amended (March 2007) both the contracts by raising the ceiling for contracted man hours in the GEOSAT and IRS contracts to 95,000 hours and 75,000 hours, respectively without any corresponding increase in the scope of work under the firm and fixed contracts.

HAL delivered the final assemblies under the GEOSAT contract between May 2004 and February 2010, after clocking 94,941.31 man hours and completed the deliveries under IRS contract between October 2004 and December 2011 after clocking 74,145.39 man hours. A total payment of ₹12.58 crore was made to HAL under both contracts, of which ₹4.13 crore was on account of increase in the contracted man hours. Further, in spite of the delay of nearly

[30] Geostationary Satellite (GEOSAT)

[31] Indian Remote Sensing (IRS)

two years and three years in completing the GEOSAT and IRS contracts respectively, HAL was benefitted to the extent of ₹21.58 lakh due to the man hour escalation clause. The details of man hours, rates including escalated rates for both contracts are given in the ***Appendix IX***.

Thus, by leaving the delivery period open ended while simultaneously inserting an escalation clause in the contracts for increasing the man hour rate beyond 2005-06, ISAC extended an advantage to HAL by committing to pay at the escalated man hour rate even in the event of delay in completion of the works. This was also in violation of the General Financial Rules[32].

ISAC accepted (July 2009) that there was no change in the scope of the work and stated that the addition of man hours were included to increase the share of work at HAL and facilitate better management of the contracts. DOS added (June 2014) that bonding of some of the components were given to HAL as additional work, however, it was not included in the revised agreement as the increase in the work was reflected through modified drawings supplied to HAL. DOS further stated (June 2014) that there was no advantage to the contractor as the man hours booked for fabrication of each component and the delivery schedules of structures were certified by ISAC. With regard to escalation of man hour rates, ISAC agreed (July 2014) that the differential amount would be recovered from HAL.

The reply of DOS regarding addition of man hours is not tenable, as the ceiling on man hours initially fixed in the contracts was for the complete fabrication work under the contracts and any further increase in the share of work of HAL should have been duly incorporated in the amendment to the contract, which was not done. Incorporating provisions for escalation in contracts having no definite delivery period and review of charges without specifying the period of review reflects poor contract management and is also in violation of General Financial Rules.

Thus, deficient contract management by ISAC resulted in avoidable expenditure of ₹4.35 crore under the two fabrication contracts.

[32] Rule 204 of the General Financial Rules stipulates that the terms of a contract should be precise, definite and without ambiguity. It also prescribes that where a price variation clause is provided, the price agreed upon should specify the base level viz., the month and year to which the price is linked, to enable variations being calculated with reference to the price levels prevailing in that month and year.

4.4 Infructuous expenditure on procurement of components

ISRO Satellite Centre failed to properly assess requirement of solid state switches for use in a project. The switches were eventually not used in the project, thereby resulting in infructuous expenditure of ₹1.47 crore incurred on their procurement.

ISRO Satellite Centre (ISAC), a unit of Department of Space (DOS), raised (November 2007) a purchase indent for procurement of Si2-124 Solid State Switches from Si2 Microsystems Limited, Bengaluru on proprietary basis with the purpose of developing alternate vendor to meet increasing demand of the switches in Indian Regional Navigational Satellite System (IRNSS) project. The purchase order was placed (October 2008) on the firm for design and development of 50 solid state switches including 30 numbers of 42 Voltage and 20 numbers of 70 Voltage devices at a total cost of ₹1.60 crore. The firm was required to supply prototypes of the switches within four to five months for clearance by ISAC followed by production units within six to eight months from the purchase order date i.e by April/June 2009.

The supplier sought extension of time citing technical reasons and supplied (January 2010) two prototypes each of 42 Voltage and 70 Voltage device for production approval along with test-jig and test results of prototype. ISAC cleared (February 2010) the prototype for batch production with some recommendations for improvement in the test jig. However, the supplier requested for further extension of time up to June 2010 for delivering the assembled switches and subsequently supplied 23 switches of 42 Voltage and 19 switches of 70 Voltage in June and July 2010 respectively. This extension was provided without imposition of liquidated damages.

In July 2010, the supplier again requested for extension of time for supply of packages due to lead time required to build the remaining devices or else to short close the order. ISAC recommended (August 2010) short closure of the order and paid amount of ₹1.47 crore to the supplier. ISAC justified (February 2013) the short closure of the order by stating that the solid state switches procured for IRNSS project were decided not to be used and instead, conventional packages were used.

Audit observed that ISAC did not follow the due diligence process for identification and selection of the vendor. Although ISAC was aware of the existence of four hybrid circuit manufacturers in India supplying these products, it selected Si2 Microsystems Ltd. on proprietary basis without following tender route and without recording internal discussions based on which the decision to procure the switches from the firm was taken. Further, short closure of the order on the ground of non-usage of switches for the

project was contrary to the justification given in the indent which was raised to meet the increasing demand of the same. Audit further observed that though ISAC decided to use conventional packages as early as January 2010, it cleared the prototype for batch production in February 2010 and took receipt of 42 switches at a cost of ₹1.47 crore.

The selection of vendor without following due process and injudicious clearance of prototype after deciding not to use the switches in the IRNSS project resulted in non-utilisation of the switches for the intended purpose and infructuous expenditure of ₹1.47 crore. Further, alternate indigenous vendor as envisaged could also not be developed.

ISAC stated (June 2013) that it had used some of these devices in engineering model development for heater drivers and performance was satisfactory. It further stated that ISAC had gained expertise and technological challenges in this field and developed alternate indigenous vendor. While accepting that the order was short closed due to technical problems encountered by the vendor, DOS added (May 2014) that the 42 Voltage switches were planned to be used in on board simulation models for ground testing and 70 Voltage devices were planned to be used for future simulation requirements of RISAT[33] follow-ons. The reply of ISAC/DOS needs to be viewed in light of the fact that ISAC had developed the indigenous vendor for manufacture of solid state switches and cleared the batch production for IRNSS project in spite of deciding not to use the same in the project. Moreover, the 70 Voltage switches are yet to be put to any use.

Thus, failure of ISAC to properly assess requirement of solid state switches resulted in infructuous expenditure of ₹1.47 crore incurred on procurement of the switches.

[33] Radar Imaging Satellite

CHAPTER – V

Ministry of Earth Sciences

5.1 National Data Buoy Project

National Institute of Ocean Technology achieved limited success in achieving the objective of indigenising technology for production and deployment of buoys in the ocean even after 12 years of implementation. Low cost meteorological buoys developed indigenously to supplement the buoy project were not being used for intended purpose. Attempts to establish communication through Indian satellite remained at the trial stage as of July 2014. A dedicated vessel procured for deployment of data buoys was barely used for intended purpose.

5.1.1 Introduction

National Institute of Ocean Technology, Chennai (NIOT) is an autonomous institute under Ministry of Earth Sciences (formerly known as Department of Ocean Development), which was established in November 1993 with the objective of developing technologies and their applications for sustainable utilisation of ocean resources.

Department of Ocean Development (DOD) proposed (July 1996) to establish a National Data Buoy System for carrying out basic research and developmental activities in ocean. NIOT was entrusted with the responsibility for implementation of the programme.

The project envisaged deployment of 12 data buoys[34] in ocean over three years for collection of time-series data on various meteorological and oceanographic parameters in the EEZ[35] waters of India. Buoys were to be equipped with sensors for measurement of parameters viz. wind, wave, current, atmospheric pressure and temperature, sea surface temperature,

Data buoy in sea

[34] Data Buoys are floating platforms fitted with meteorological and oceanographic sensors which are moored at specific locations in the ocean to observe ocean data at regular intervals.

[35] Exclusive Economic Zone

etc. Data from the buoys was to be transmitted to shore stations through satellite and subsequently used as reliable data for developmental works in coastal and ocean areas and also to improve the predictive capability of ocean weather and climate. A Norwegian company, Oceanor was identified to supply and deploy the data buoys.

Expenditure Finance Committee of DOD approved (December 1996) the project at a cost of ₹37 crore with partial financial assistance of ₹14 crore from Norwegian Agency for Development Cooperation (NORAD) for six years. A Steering Committee under chairmanship of Secretary, DOD was constituted for proper monitoring and implementation of the project.

Initially, it was proposed to import a set of 15[36] buoys, with a view to subsequently develop an indigenous capability for design and development of data buoys.

5.1.2 Audit findings

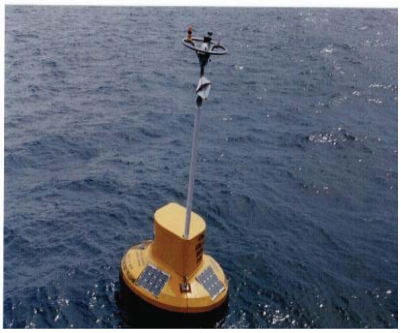
Audit observed that the objective of indigenisation of data buoys was partially achieved even after 12 years of commencement of the indigenisation process. Audit findings are discussed in the succeeding paragraphs.

5.1.2.1 Partial achievement of indigenisation of data buoys

DOD entered (December 1996) into an agreement with Norwegian firm Oceanor for supply, installation, operation and maintenance of the National Data Buoy system at a cost of NOK 34,807,000 (₹18.55 crore) for two years. At the end of two years period, Oceanor was required to operate and maintain the buoy system for one more year.

Oceanor deployed 12 data buoys in Indian waters between December 1996 and February 1998. On completion of the collaboration, Oceanor exited from the project (October 2000).

Subsequently, NIOT began the process of development of indigenous buoy technology as a separate project, based on experience gained during the implementation of collaborative project. NIOT proposed to indigenise all mechanical, electronic and mooring



First indigenised buoy

[36] 12 buoys for deployment in the ocean and three as spare.

system of buoy including satellite communication using Indian satellite (INSAT), except sensors which were planned to be imported. The scheme aimed at fabrication of 12 buoys and their deployment at various locations. Standing Finance Committee of DOD approved (December 2000) the project at a cost of ₹8.81 crore with duration of two years, against which expenditure of ₹84 lakh was incurred. However, the indigenisation activities were subsequently continued in the Tenth and Eleventh Plan periods, during which it was also decided to augment the buoy network in the ocean to 40 data buoys. NIOT incurred expenditure of ₹100.28 crore towards continuation of the project on maintenance of data buoy network upto 2012.

During 2000 to 2006, NIOT indigenised mechanical systems and assembled, integrated and deployed buoys in the Indian Ocean. In order to combat the problem of vandalism of buoys, NIOT also developed tamper proof design with components such as protective hood, covered solar panels and hard fasteners in the lids. However, due to technical problems and malfunction of some components, many buoys failed to transmit data. During Tenth plan period, out of 26 buoys deployed, only 19 were operational (March 2007) at any point of time. Similarly, during Eleventh Plan period also, the Institute could deploy only 34 buoys, of which the number of functional buoys did not exceed 19 at any point of time.

A failure analysis conducted (2008) on indigenously developed buoys showed that data gaps ranged from 65 to 91 *per cent* for buoys deployed in the Bay of Bengal and 28 to 73 *per cent* for buoys deployed in the Arabian Sea. The reasons for failure were attributed to drainage of battery, buoy damage due to vandalism, problem in Central Processing Unit (CPU) and lacuna in the communication system developed under indigenisation. The failure analysis also clearly brought out that performance of buoys supplied by Oceanor was better when compared with indigenously integrated buoys. NIOT arrived at the conclusion that all problems were due to indigenisation process adopted by the Institute.

Due to logistical and other constraints experienced by NIOT, an expert committee was set up to address the problems of data gaps and look into the optimum buoy requirement. The committee recommended (March 2009) that optimum number of 12 buoys were required. The committee further recommended that a totally new buoy system equipped with more number of sensors and different mooring line be procured as one unit.

Accordingly, NIOT placed (June 2010/March 2012) purchase order with Oceanor for import of 16 OMNI buoys[37]. Between June 2010 and March 2013, NIOT received 16 buoys after incurring expenditure of ₹27.21 crore. In addition, NIOT also imported various mechanical and electrical buoy components and mooring worth ₹1.96 crore.

Thus after more than 12 years of indigenisation efforts of the data buoys project, buoy technology could not be fully stabilised. However, NIOT's adaptation of buoy design to counter vandalism and efforts to generate awareness to prevent vandalism were creditable.

MoES stated (May 2014) that NIOT had successfully developed five variants of CPU for different buoy applications and six buoys (four coastal buoys[38], one meteorological ocean buoy[39] and one tsunami buoy[40]) were working with the indigenised technology. MoES however, accepted that indigenisation of entire data buoy system will require specific time period for development. MoES further stated (May 2014) that new system was imported as a complete package since scientific requirement demanded newer buoy design with subsurface sensors, induction mooring, etc., capable of generating various meteorological and oceanographic parameters. MoES added (July 2014) that the next phase of indigenisation of buoys for sub-surface parameters had been commenced and tested.

The reply indicates that indigenisation of technology for buoy system as a whole was yet to be fully developed. Further the reply was silent on the timeline required for completing the indigenisation process. Thus, though NIOT made efforts to indigenise buoy technology for over 12 years and incurred expenditure of ₹100.28 crore on the project, it had achieved partial success in deployment and utilisation of indigenously developed buoys.

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[37] OMNI buoys are moored buoys similar to data buoys but are more advanced buoys having the capability to measure ocean current, conductivity and temperature up to 500m depth. In addition, these buoys are also equipped with radiation sensors and rain gauges.

[38] These buoys are equipped with meteorological and oceanographic sensors along with water quality sensors and are deployed in coastal waters.

[39] These buoys carry sensors to measure wind speed and direction, atmospheric pressure, air temperature, humidity, conductivity, sea surface temperature, current speed and direction and wave parameters.

[40] The Tsunami buoy system consists of two units, a surface buoy and a Bottom Pressure Recorder. BPR measures the pressure every 15 seconds and communicates it to the surface buoy every hour.

5.1.2.2 Establishing communication link using INSAT

As an important component of the National Data Buoy project, DOD proposed (July 1996) to establish a communication link between buoys in sea and shore station using Indian satellite INSAT-2B. This was primarily to avoid expenditure in foreign exchange due to usage of foreign satellite and for reasons of security. However, as per agreement entered (December 1996) with Oceanor, it was agreed to use foreign satellite 'INMARSAT' initially as it was considered to fit with the time schedule of the project.

NIOT prepared (2001) technical feasibility report in association with Space Application Centre[41], Ahmedabad (SAC) and subsequently developed (December 2002) two prototype systems with indigenous technology for buoy communication. Although one prototype system was deployed (December 2002) and INSAT communication was established, there were issues in continuity of transmission due to problems in interfacing of transceivers with Data Acquisition System. Considering the need and importance of utilisation of domestic satellite, Monitoring Committee in its meeting (January 2008), fixed a deadline of May 2008 for switching over to INSAT communication system. The problem of continuous transmission, however, was not resolved and NIOT continued to utilise foreign satellite. Further, the transmitters developed by NIOT could not be utilised for the imported OMNI buoys, which handled larger quantity of data sets to be transmitted.

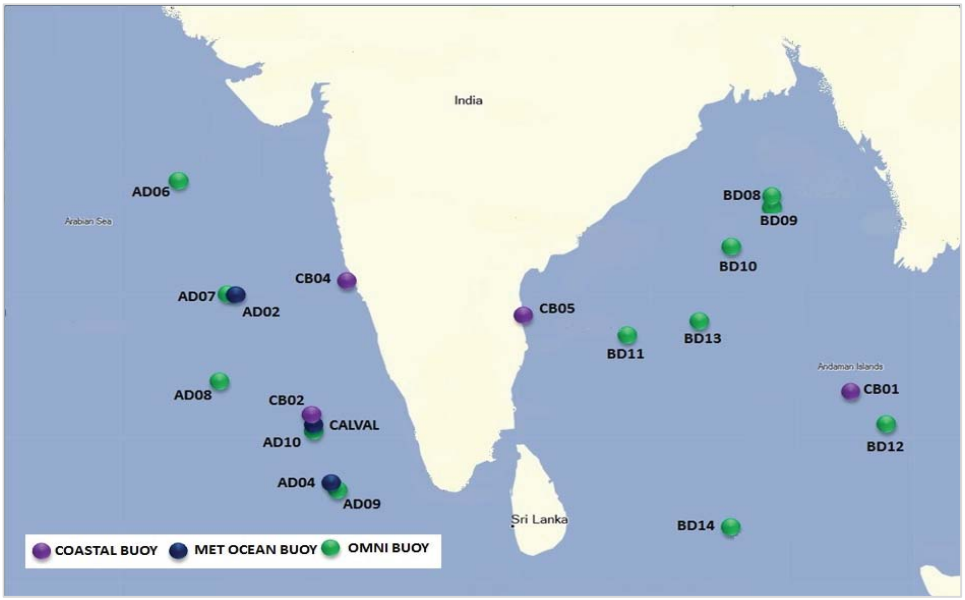
As of July 2014, NIOT was able to install four indigenously developed coastal buoys with INSAT communication system. However, development of communication technology in deep sea buoys was still under process.

MoES stated (July 2014) that certain technological limitations such as lack of two way communications were being taken up with ISRO[42].

The fact remained that as of July 2014 efforts of NIOT to establish communication through Indian satellite were still in the development and testing stage.

[41] A unit of Department of Space

[42] Indian Space Research Organisation



Network of buoys in Indian seas

5.1.2.3 Unfruitful expenditure in development of low cost meteorological buoys

To supplement the existing data buoy network and to support IMD's requirement of larger buoy network, NIOT proposed to undertake a project for development and production of low cost meteorological buoys. The project aimed at design, development and production of 50 low cost data buoys and their deployment at selected locations in seas around India to acquire basic meteorological data from atleast 50 locations in the sea, to support the existing data buoys in case of failure. MoES sanctioned (October 2006) the project at a total cost of ₹4.80 crore for a duration of one year.

Spar type low cost buoy

NIOT made two attempts till December 2007 to design and fabricate the buoys but failed as one buoy was damaged during deployment and another buoy worked only for a week. NIOT decided (January 2008) to make another attempt with a new design and to deploy 25 such buoys by June 2008. However, NIOT developed only two buoys with the new design and upon deployment (March 2008) these buoys transmitted data only for a month.

NIOT found that material used in preparation of buoys was not able to sustain in the harsh sea condition and therefore, decided (February 2009) to

use High Density Poly Ethylene (HDPE) instead. Project duration was extended till March 2010 to facilitate designing of buoys and conducting field trials. However, new buoys were also found to be unsuccessful during field trials (July 2010) and it was decided not to use these buoys in ocean observation. Expenditure of ₹4.08 crore was incurred on the project.

Audit observed that components for the buoy, including sensors were purchased for all 50 buoys even before fabrication of prototype buoy and conduct of sea trials to ascertain their stability and successful integration, which was imprudent.

NIOT stated (February 2011) that in view of difficulties in sustaining the system in sea, it was decided to install them on coastal ships. NIOT further stated (September 2013) that considering original project duration of one year and that items were required to be imported with long delivery time, components were purchased together. MoES added (May 2014) that 17 buoys were developed of which five were installed in ships, seven would be installed in locations identified in South India and the remaining buoys would be used as spares.

The fact remained that utilisation of buoys in ships was a sub-optimal solution and the buoys were not utilised for the intended purpose of obtaining uninterrupted ocean data which resulted in unfruitful expenditure of ₹4.08 crore and non-achievement of intended objective.

5.1.2.4 Utilisation of buoy tender vessel Sagar Manjusha

In the second Steering Committee meeting (May 1999) NIOT stressed the need for acquiring a dedicated vessel exclusively for deployment of buoys. NIOT reiterated this in the meeting held in May 2002 and acknowledged that programme suffered for want of suitable vessel to carry out planned maintenance of buoys. It was assessed that total demand for vessel for various ocean observation related programmes would be 310 days in a year, of which requirement for data buoy project alone was estimated at 180 days. The remaining 130 days were planned to be utilised for other ocean observation related programmes. The committee agreed to have a dedicated vessel for deployment of buoys.

DOD sanctioned (October 2003) acquisition of the vessel at a total cost of ₹23 crore. Accordingly NIOT gave (April 2004) the contract for building the ship to Hindustan Shipyard Ltd. The ship named Sagar Manjusha was built at an actual cost of ₹22.50 crore and inducted (June 2006) into NIOT service.

Sagar Manjusha

On being put into use, the vessel was found to have excessive rolling[43]. The instability of Sagar Manjusha limited its utilisation for ocean observation work. During the period 2006 to 2010, of the planned 1,240[44] days for ocean observation related programmes, the vessel was used for 114 days. Of these 114 days, only 74 days were spent in buoy deployment and retrieval work. During 2010, NIOT introduced imported OMNI buoys, which had a special induction mooring system that required vessel having dynamic positioning system, due to which it was not possible to use Sagar Manjusha. Thus, utilisation of the dedicated vessel, procured exclusively for national data buoy project at cost of ₹22.50 crore, for intended purpose was minimal.

Though an expert committee was constituted to assess the problem of excessive rolling and to conduct performance evaluation of the vessel for various programmes of the institute, the committee did not extend their time to carry out studies on the issue. Subsequently, NIOT approached (August 2009) Indian Maritime University (IMU) seeking their advice for design modification and alteration for improving sea keeping qualities of the vessel and placed (August 2010) a work order on IMU at a cost of ₹9.50 lakh for carrying out analysis, suggesting modifications and preparation of drawings. The suggestions of IMU received in February 2012, were subsequently implemented by NIOT.

MoES stated (May 2014) that in view of spurt in scientific requirements, the vessel was equipped with various laboratories and survey equipment in last few years to make it multi-purpose vessel and utilised for various research purposes.

The reply is to be viewed in the context that Sagar Manjusha, since its deployment, could barely be used for the intended purpose between 2006 and 2010. With the changes in design of the data buoys in 2010, its utilisation for the primary purpose was further limited. In addition, total utilisation of Sagar Manjusha during 2006 to 2013 on ocean observation programmes as well as for other purposes was only to the extent of 53[45] *per cent* of the assessed requirement.

[43] Rocking of a floating vessel caused by waves or other external forces.

[44] 310 days per year for four years from 2006-07 to 2009-10.

[45] 1,151 days out of 2,170 days, being assessed requirement for ocean observation programmes at the rate of 310 days per year for seven years from 2006-07 to 2012-13.

5.1.3 Conclusion

Though NIOT made efforts to indigenise buoy technology for over 12 years and incurred expenditure of ₹100.28 crore on the project, it had achieved partial success in deployment and utilisation of indigenously developed buoys with INSAT communication. Another related project undertaken by NIOT for development of 50 low cost buoys in a year to generate meteorological data was also not successful as it failed to deploy required number of buoys for the intended purpose resulting into unfruitful expenditure of ₹4.08 crore. The vessel procured exclusively for deployment of buoys at a cost of ₹22.50 crore was also not utilised optimally for intended purpose.

5.2 Irregular payment of gratuity

Ministry of Earth Sciences irregularly permitted its autonomous bodies to change the service conditions of their regular employees from those envisaged under the provisions of CCS Pension Rules, 1972 to The Payment of Gratuity Act, 1972. Based on this permission, National Institute of Ocean Technology, Chennai paid gratuity of ₹68.88 lakh to 54 regular employees who had resigned from service, with retrospective effect.

As per Rule 50 of the CCS Pension Rules, 1972, government employees after completing five years of qualifying service become eligible for receiving retirement gratuity. However, resignation from service entails forfeiture of past service.

The Payment of Gratuity Act, 1972 provides for a scheme for payment of gratuity to employees engaged in factories, mines, oilfields, plantations, ports, railway companies, shops or other establishments. As per Section 4 of the Act, gratuity is payable to an employee on termination of employment after rendering continuous service for not less than five years on superannuation, retirement, resignation or death.

However, Government of India's Decision (6) (2) under Rule 50 of CCS Pension Rules, 1972 stipulates that employees who opt for Contributory Provident Fund (CPF) scheme are entitled to retirement gratuity and death gratuity as admissible to government servants borne on pensionable establishment. Therefore, under CCS Pension Rules, 1972, those employees who resign from service would not be eligible to receive gratuity, whereas under The Payment of Gratuity Act, 1972, employees who resign after rendering continuous service for not less than five years were eligible for payment of gratuity.

National Institute of Ocean Technology, Chennai (NIOT) is an autonomous body under administrative control of Ministry of Earth Sciences (MoES). The Staff Service Rules of NIOT stipulated that regular staff would be governed by CCS Pension Rules, 1972 for the purpose of payment of gratuity and contract staff would be covered under The Payment of Gratuity Act, 1972.

As above provisions placed regular staff of NIOT in a disadvantageous position as compared to contract staff, NIOT placed (August 2008) a proposal before its Governing Council (GC) to amend the Staff Service Rules so as to bring staff appointed on regular basis also under the ambit of The Payment of Gratuity Act, 1972 retrospectively from September 2000. GC approved (January 2010) the proposal for making provisions of the Payment of Gratuity Act, 1972 applicable to all regular employees of NIOT. Accordingly, NIOT paid an amount of ₹68.88 lakh to 54 regular staff who had resigned from service between 2001 and 2013 and who were otherwise not eligible for gratuity under CCS Pension Rules, 1972.

Audit scrutiny revealed that MoES permitted (June 2009) its autonomous bodies to follow guidelines for payment of gratuity to their regular employees as per The Payment of Gratuity Act, 1972 and also issued (June 2009) an order stating that autonomous institutes under the Ministry were being governed by provisions of Gratuity Act, 1972 in respect of regular employees of the institutes. This was in contravention to the provisions of CCS Pension Rules, 1972, as regular employees under CPF scheme were covered under CCS Pension Rules, 1972 for the purpose of payment of gratuity. It was also against the standards of financial propriety[46] and Rule 209 (6) (iv) (a)[47] of General Financial Rules.

Audit further observed that MoES did not obtain approval of Ministry of Finance for changing the service conditions of regular employees of its autonomous bodies from provisions of CCS Pension Rules, 1972 to The

[46] Rule 21 of General Financial Rules on standards of financial propriety states that expenditure from public moneys should not be incurred for the benefit of a particular person or a section of the people, unless a claim for the amount could be enforced in a Court of Law or the expenditure is in pursuance of a recognised policy or custom.

[47] Rule 209 (6) (iv) (a) states that all grantee institutions or organisations which receive more than fifty *per cent* of their recurring expenditure in the form of grants-in-aid, should ordinarily formulate terms and conditions of service of their employees which are, by and large, not higher than those applicable to similar categories of employees in Central Government. In exceptional cases, relaxation may be made in consultation with Ministry of Finance.

Payment of Gratuity Act, 1972. This was in violation of the instructions[48] of Ministry of Finance and provisions of General Financial Rules.

Changing the service conditions of employees of autonomous bodies of MoES with retrospective effect without obtaining approval of Ministry of Finance resulted in irregular payment of ₹68.88 lakh towards gratuity to regular staff of NIOT who had resigned from service.

NIOT stated (April 2013) that based on approval of the GC and office memorandum issued in June 2009 by MoES, the Act was adopted by the Institute and made applicable to eligible employees. Accepting the audit observation, NIOT further stated (June 2014) that action taken by NIOT was a one time measure and that relevant provisions of CCS Pension Rules, 1972 would be observed in future for the purpose of gratuity in case of those employees who were covered under CPF scheme.

The reply may be viewed in the light of the fact that payment of gratuity to regular employees who resigned from service was against the governing provisions of CCS Pension Rules, 1972. Further, any proposal pertaining to employment structure involving financial implications required prior approval of Ministry of Finance, which was not obtained.

The matter was referred to Ministry in March 2014, its reply was awaited as of July 2014.

[48] With a view to ensure that provisions relating to powers of Governing Bodies of autonomous bodies in such matters having financial implications are properly exercised, Government of India, Ministry of Finance, Department of Expenditure instructed (October 1984) all Ministries of autonomous bodies to incorporate in relevant Rules/Bye-laws/Regulations that proposals relating to employment structure would need prior approval of the Government of India (i.e. Department of Personnel and Training) in consultation with Ministry of Finance, Department of Expenditure.

CHAPTER – VI

Ministry of Environment and Forests

6.1 Activities of Zoological Survey of India in exploration, identification and monitoring of faunal diversity

Ministry of Environment and Forests redefined the mandate of Zoological Survey of India (ZSI) to align it with the objectives of the international Convention of Biological Diversity (CBD) to which India is a signatory; and also prepared a comprehensive strategic plan covering the period from 1993 to 2020 for exploration, survey, inventorisation and monitoring of the faunal diversity of the country. As of March 2014, ZSI was lagging behind its targets for fulfilling the country's commitments under CBD in all the planned activities.

Exploration, survey and inventorisation of faunal diversity in the selected states, ecosystems and protected areas were not completed on schedule. There was no standard methodology for carrying out surveys and no system for oversight and assessment of the survey work carried out. Area and species wise monitoring of the faunal species had not commenced and no action plan in this regard had been prepared.

The working strength of Taxonomists was far below its sanctioned number. Scarcity of Taxonomists affected the taxonomic studies as only 34 *per cent* of the species collected were taxonomically identified. Even though Taxonomy was recognised as a highly specialised discipline, ZSI failed to depute its newly recruited scientists for training.

The review of threatened and endemic species was very limited. Of the 10 species targeted for review, status surveys were not initiated for seven species.

6.1.1 Introduction

Bio diversity comprises the variety of all life on earth. India is one of the 12 mega diverse countries of the world. About 1.7 million living species have been described worldwide of which nearly 90,000 species have been described in India. Global concern about loss of species and ecosystems led

to the International Convention on Biological Diversity[49] (CBD) which came into force with effect from 29th December 1993. The CBD had three main goals, viz. conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of genetic resources. India is a signatory to the Convention and is committed to fulfilling the objectives of the CBD.

Zoological Survey of India (ZSI) was established in 1916 as a National Research Institute for Zoology to survey and explore the diverse faunal resources leading to the advancement of knowledge of various aspects of animal life of India. ZSI is a subordinate office of the MoEF. ZSI also advises Government of India on all matters relating to wildlife and animal diversity in India. With a view to address the objectives of CBD, a Programme Advisory Committee (PAC) of MoEF prepared (2001) the Strategic Plan of ZSI for the next 20 years and accordingly redefined its earlier mandate of 1987. Under the revised mandate the main objectives of ZSI were:

- Exploration, survey, inventorying and monitoring of faunal diversity in various states, selected ecosystems and protected areas of India;
- Taxonomic studies of all faunal components collected;
- Periodic review of the status of threatened and endemic species; and
- Preparation of Red Data Book (RDB) fauna of India and states.

ZSI is headed by a Director, assisted by scientists and administrative staff. The headquarter of ZSI is located at Kolkata. In addition there are 16 regional centres located in different States/Union Territories of the country, headed by the respective Regional Directors, who report to ZSI headquarters.

Budget and expenditure

The budget allocation and actual expenditure incurred by ZSI during the period from 2005-06 to 2012-13 is detailed in Table 6.

[49] The Convention on Biological Diversity was signed by 150 government leaders at the 1992 Rio Earth Summit and is dedicated to promoting sustainable development. The Convention recognises that biological diversity, in addition to being concerned with plants, animals and micro organisms and their ecosystems, is also about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment.

(₹ in crore)

Table 6: Budget allocation and actual expenditure of ZSI

Year	Funds sought by ZSI			Funds released by MoEF			Actual expenditure			Percentage of savings on total expenditure
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2005-06	6.81	10.67	17.48	6.81	9.79	16.60	6.59	9.82	16.41	1.14
2006-07	8.39	11.61	20.00	8.39	10.95	19.34	7.82	10.56	18.38	4.96
2007-08	9.15	12.25	21.40	9.00	11.61	20.61	8.80	11.00	19.80	3.93
2008-09	12.07	14.30	26.37	12.07	16.52	28.59	11.74	15.82	27.56	3.60
2009-10	16.49	14.30	30.79	16.49	16.28	32.77	16.30	16.27	32.57	0.61
2010-11	26.67	14.47	41.14	24.46	14.52	38.98	23.81	14.60	38.41	1.46
2011-12	24.26	17.70	41.96	17.99	16.85	34.84	17.21	16.50	33.71	3.24
2012-13	34.71	17.53	52.24	17.41	18.11	35.52	17.27	17.87	35.14	0.38

From the above table it can be seen that funds released by MoEF were lesser as compared to the funds sought by ZSI, except for the years 2008-09 and 2009-10. The actual expenditure incurred by ZSI was however lower than the funds received by ZSI and there were savings in all the years ranging from 0.61 to 4.96 *per cent*.

ZSI/MoEF agreed (March 2014) that funds released by MoEF were lesser than funds sought by ZSI and stated that although survey, research and scientific publication were the major activities and output of the department, major part of budget was allocated on salaries and routine office expenses. On account of this factor, ZSI was lagging behind in achieving its proposed targets.

6.1.2 Audit Findings

Audit reviewed the activities of ZSI in exploration, identification, monitoring and review of status of threatened and endemic species for the period 2005-14 as per the target fixed by PAC on the revised mandate. The audit findings are discussed in the succeeding paragraphs.

6.1.2.1 Exploration, survey, inventorisation and monitoring of faunal diversity in various States, selected Ecosystems and Protected Areas of India

Exploration, survey, inventorising and monitoring of faunal diversity in various states, selected ecosystems and protected areas of the country was identified as one of the primary objectives of ZSI. Although all the mammals and birds and nearly 95 *per cent* of the reptiles, amphibians and freshwater fishes had been completely surveyed and documented during the last 90

years, it was recognised that assessment of the degree and value of biodiversity and monitoring of health of the ecosystems required more knowledge of the species involved and their ecological processes. With a view to address these concerns and to delineate the action plan perspective for realisation of objectives, the PAC drew up an extensive and time bound plan covering the period from 1993 to 2020 for exploration, studies and preparation of faunal accounts.

(i) Non-achievement of targets of survey and publication of faunal accounts

According to the exploration plan prepared by the PAC, survey of faunal resources of 13 states/UT, 25 ecosystems and 46 protected areas were to be completed by 2012. The status of surveys conducted by ZSI and faunal accounts published as of October 2012 is as given in Table 7. The detailed status of each state, ecosystem and protected area is given in the ***Appendix X***.

Table 7: Status of surveys and studies conducted and faunal accounts published by ZSI as of March 2014

Particulars of geographical area	Completion of Survey				Completion of taxonomic studies					Publication of faunal accounts	
	Target	Actual	Survey not taken up	Details not available	Target	Actual	Study not taken up	Study ongoing	Details not available	Target	Actual
State/UT	13	10	1	2	13	1	1	2	9	12	8

Of the target of 13 States, survey was conducted in 10 States. In respect of one State, survey was not taken up. Details of period of survey in two States were not available with ZSI.

Studies were completed in only one State and ongoing in two States as of March 2014. In respect of one State, study was not taken up. Details of period of studies in nine States were not available with ZSI.

Of the target of 12 publications, ZSI showed publication of State Fauna Series in respect of eight States during 2005-12. However in respect of these eight publications, details of period of survey and studies were not available in two cases. In the absence of period during which the surveys and studies were undertaken, Audit could not rule out the possibility that these publications were results of surveys/studies conducted in earlier periods.

Audit further observed that as per Action Plan**,** in the State of Kerala, the planned duration of survey was from 2000 to 2010. ZSI conducted the survey from 1999 to 2002, thereby curtailing the duration from 10 years to three years. However, no faunal account was published as of March 2014.

Particulars of geographical area	Completion of Survey				Completion of taxonomic studies					Publication of faunal accounts	
	Target	Actual	Survey not taken up	Details not available	Target	Actual	Study not taken up	Study ongoing	Details not available	Target	Actual
Ecosystem	25	10	2	13	25	0	2	5	18	25	4

Of the target of 25 ecosystems, survey was conducted in 10 ecosystems. Of these 10, survey in respect of one ecosystem was completed even before the recommended date of start of the survey. The details are brought out in Table 8. In respect of two ecosystems, the surveys were not initiated. Details of period of survey in 13 ecosystems were not available with ZSI.

As of March 2014, studies were not completed in respect of any ecosystem. In five ecosystems, studies were taken up but not completed as of March 2014. In respect of two ecosystems, studies were not initiated. Details of completion of studies in 18 ecosystems were not available with ZSI.

Of the target of 25 publications, four publications were brought out. In two publications, details of period of survey and studies were not available. In the absence of period during which the surveys and studies were undertaken, audit could not rule out the possibility that the publications were results of survey/studies conducted in earlier periods.

In respect of 16 ecosystems, though MoEF stated (March 2014) that ZSI had published faunal accounts, audit observed from the 'Catalogue 2014[50]' published by ZSI in 2014 that these publications did not pertain to the selected ecosystems.

Particulars of geographical area	Completion of Survey				Completion of taxonomic studies					Publication of faunal accounts	
	Target	Actual	Survey not taken up	Details not available	Target	Actual	Study not taken up	Study ongoing	Details not available	Target	Actual
Protected Area (PA)	46	25	15	6	46	2	16	5	23	41	14

It was observed that of the 46 Protected Areas, survey of 25 Protected Areas was carried out. Survey in respect of 15 Protected Areas was not initiated. Of the 25 surveys conducted, surveys in respect of four Protected Areas were completed even before the recommended date of start of the survey. These cases are brought out in the Table 8. Details of survey of six protected areas were not available with ZSI.

Of the 46 Protected Areas for which studies were targeted, the studies were completed in only two cases. In respect of one Protected Area, though survey was completed, studies were not taken up due to lack of expertise. In five cases studies were ongoing as of March 2014. In respect of 23 protected areas, the details were not available with ZSI.

Of the 41 publications targeted, 14 publications were brought out. However, details of period of survey and studies were not available in two

[50] List of priced publications of ZSI

	publications. In the absence of period during which the surveys and studies were undertaken for the stated publications, audit could not rule out the possibility that these publications were results of surveys/studies conducted in earlier periods. In respect of four other Protected Areas, though publication of faunal account was indicated, Audit observed that the survey was completed even before the recommended date of start of the survey. As such, it is evident that the publications cited also belonged to the earlier period of survey and were not in accordance with the planned objectives of PAC. While accepting (March 2014) that survey was not taken up in one protected area, MoEF stated that survey could not be initiated in respect of 13 Protected Areas due to lack of expertise and survey of one Protected Area was dropped. In respect of nine protected areas, it was stated that the faunal accounts were ongoing.

Source: Data provided by ZSI/ MoEF in March 2014.

It could be seen from the table that out of 12 states for which faunal accounts were to be published after completing survey and studies, publications were brought out for eight states, indicating an achievement of 67 *per cent*. However, in respect of 25 ecosystems, publications were brought out for only four ecosystems, which was an achievement of 16 *per cent*. The achievement in respect of Protected Areas was 34 *per cent,* as 14 publications on Protected Areas were brought out against target of 41 Protected Areas.

MoEF stated (March 2014) that ZSI could not achieve its targets mainly due to delays in getting permissions to enter various protected areas for exploration/surveys and dwindling of taxonomic expertise.

As mentioned in Table 7, in one ecosystem and four Protected Areas, surveys were completed even before the recommended date of start of survey. These cases are brought out in Table 8.

Table 8: Ecosystems/Protected areas where ZSI completed survey before the period recommended by PAC

Name of Ecosystem/Reserved area	Period of survey conducted	Duration of survey planned by PAC
Freshwater ecosystem, Bhoj, Madhya Pradesh	2005-2006	2006-2009
Simlipal, Odisha	2001-2003	2006-2008
Mahatma Gandhi Marine National Park, Andaman and Nicobar Islands	2005-2008	2008-2010
Sariska Tiger Reserve, Rajasthan	2003-2006	2008-2010
Point Calimore Wild Life Sanctuary, Tamil Nadu	2003-2006	2008-2010

Prior to revision of the mandate (1987) the focus of ZSI was on exploration and survey of faunal resources. After promulgation of CBD, the mandate of ZSI was redefined as exploration, survey, inventorisation and monitoring of faunal diversity in various states, selected ecosystems and Protected Areas of India. Keeping in view the additional activities in the revised mandate, PAC planned survey/re-survey of selected areas. In this context, surveys conducted in the above five areas prior to this period were dated.

Thus, though there was a comprehensive time bound plan for carrying out survey, inventorisation and monitoring work in accordance with the revised mandate, ZSI did not keep up with the targeted schedule of work. This impacted the implementation of the objectives of CBD in the area of conservation of faunal species.

(ii) Absence of standard methodologies for conducting survey

MoEF constituted (July 2009) a Task Force to make recommendations for strengthening the institutional mechanisms of ZSI activities. One of the terms of reference of the Task Force was to review the existing mandate, objectives, organisational structure, manpower and infrastructure of ZSI in order to strengthen its scientific and technical capabilities.

In its report (2009-10), the Task Force recommended updating and standardising the survey manuals of ZSI dealing with different taxa[51] and ecosystems incorporating current quantitative survey techniques through broad-based expert consultations, in the light of modern scientific and technical advances. Audit however, observed that no such manual was prepared by ZSI.

During the period 2005-06 to 2011-12, ZSI undertook a total of 248 tours comprising of 97 and 151 tours relating to Ecosystems and Reserved Areas, respectively. Audit observed that in most cases, the surveys undertaken covered areas other than the areas planned for survey in the PAC's action plan.

Of the 248 tours, survey reports on 20 tours pertaining to the selected states, ecosystems and protected areas were furnished to Audit. Audit observed that:

- There was no standard format of the tour reports.
- There was no standard mechanism for processing the tour reports submitted by the scientists.

[51] Scientific classification of groups of species

- Though the tour reports were submitted to the Director, ZSI, formal approval of the competent authority was not recorded.
- The basic qualitative and quantitative methodologies adopted in the surveys such as total area to be covered by using toposheets and maps, faunal diversity assessment in the area, importance /risk of the species surveyed, pooling up of survey with previous survey work, techniques used for sample selection, field identification, surveying and preservation etc. were not listed in 18 out of 20 survey reports.

In the absence of approved criteria and a survey manual at ZSI, a comparison of whether the surveys were conducted considering the current quantitative survey techniques, as envisaged by the Task Force constituted by MoEF, was not possible. The absence of a standardised manual or approved methodology for surveying therefore left the actual survey work at the discretion of the scientists concerned, leaving neither scope nor criteria for oversight or assessment of the survey work in quantitative and qualitative terms.

MoEF accepted (March 2014) the audit observation and stated that it had taken various corrective actions such as standardisation of tour report formats and process for submission and checking, incorporating standard methodology for surveying animal groups and other recommendations of Task Force in the survey manual, etc. which would be implemented by ZSI from 2013-14 onwards.

(iii) Monitoring of faunal diversity

Monitoring is regarded as scrutiny of trend of changes, if any, in the faunal assemblage and behaviour of the place under consideration over the years. According to Article 7 of CBD, the objective of monitoring of faunal diversity was to monitor, through sampling and other techniques, the components of biological diversity identified, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use as well as to 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 to monitor their effects.

Audit observed that species-wise monitoring was not conducted by ZSI since inception. Further ZSI did not conduct monitoring activities area wise, as it had planned for the survey and exploration activities.

ZSI accepted (October 2012) that species wise resurvey of any particular area of the country was yet to be drawn up. It stated that exploration and

documentation of faunal assemblage of most of the ecosystems and biologically rich areas had only been initiated by early eighties and it was not possible to monitor all the wild fauna since monitoring requires visiting the same area repeatedly. ZSI also stated that to cover the entire country, no target time could be set up. MoEF added (March 2014) that monitoring of faunal diversity or documenting the changes in spatial and temporal distribution of species was a long term exercise that required sufficient manpower and support from forest/wildlife authorities and institutional collaborations. ZSI could not conduct many programmes of Protected Area Surveys as per the proposed schedules due to the non-receipt of permission from the Protected Area managers.

The reply of ZSI/MoEF indicated that ZSI had not prepared any action plan for monitoring of the faunal diversity of the country. This needs to be viewed in the light of the fact that ZSI is the sole subordinate of MoEF and national organisation to ensure compliance with the commitments of CBD in the area of zoological survey and was therefore required to plan and undertake this activity. Further, targets for survey were recommended keeping in view with the available expertise of ZSI. The reply of MoEF also needs to be viewed in the light of the fact that for many of the areas ZSI did not even initiate the survey.

Apart from its activities under regular plan budget, during 2005-12, ZSI undertook three projects funded by MoEF on monitoring of some selected species. Audit observed that none of the three projects were completed, as discussed below:

- ZSI took up a project titled 'Survey and monitoring of health of Coral Reefs in India' sanctioned by MoEF (February 2002) at a cost of ₹1.27 crore for a period of five years to be implemented by Andaman and Nicobar Research Centre, Port Blair (ANRC). The objectives of the project were to survey and monitor the coral reefs of India, investigate the diversity and distribution of coral, carry out studies on the coral reef ecosystem and to prepare a database/publish compendium on the corals of India. Although ZSI procured equipment during 2001-02 at a cost of ₹52.65 lakh, the work could not be continued further due to non-release of funds to ANRC by ZSI. The project was resumed in April 2009 after a gap of seven years and completed in May 2011 after incurring total expenditure of ₹70.99 lakh. Audit observed that though surveys were undertaken in various coral islands, the database/compendium was not published.

  ANRC stated (October 2012) that a compendium was submitted (August 2010) to ZSI headquarters for publication followed by

submission of corrected proof in February 2011. MoEF added (March 2014) that six publications on different faunal groups were published between 2010 and 2012. Audit observed that only two of the six publications were relating to corals. The reply is silent on the status of studies and publication of the compendium relating to corals of India.

- ZSI took up (March 2008) a project titled 'Diversity and distribution of coral and their associated fauna of Rani Jhansi Marine National Park' sanctioned by MoEF at a cost of ₹15.05 lakh for period of three years to be implemented by ANRC. The objectives of the project were to carry out studies and continuous monitoring of coral reefs, prepare field guides and to carry out mapping of coral reefs using Geographic Information System. The project was commenced in April 2009 and closed one year before the scheduled year of completion after incurring expenditure of ₹7.51 lakh. The project completion report was not prepared as of October 2012.

  Although MoEF stated (March 2014) that the project completion report was submitted by ZSI during the year 2012, the same was not found on records at ZSI. The reply is also silent on the status of preparation of field guides and mapping of coral reefs.

- In respect of another project titled 'GIS based mapping and analysis of ecological variable of reefs around the Little Andaman Island' sanctioned (March 2008) by MoEF for a period of two years at a cost of ₹21.92 lakh, ZSI stated (October 2012) that the project could not be initiated due to some technical problem. However, audit observed that ZSI has already incurred an expenditure of ₹14.96 lakh (March 2011) under the project.

  MoEF accepted (March 2014) that the programme was dropped.

Thus, ZSI not only failed to prepare an action plan for monitoring of faunal diversity as per its revised mandate, it also could not complete specific projects undertaken in this regard.

6.1.2.2 Taxonomic studies

One of the primary objectives of ZSI was to conduct taxonomic[52] studies of all faunal components collected. The activity was important as the name is the key to everything that is known about species, being the only link between the organisms and the various sets of data on their attributes and properties. Also, the health of ecosystems could not be monitored without recognising

[52] *Taxonomy* is the science of naming, describing and classifying organisms.

the presence of individual organisms that are crucial for indication of ecological processes.

Audit observed that huge number of specimens which were collected during exploration/survey were awaiting identification, as discussed below.

Shortfall in taxonomic description of animal specimens due to shortfall in capacity building of taxonomists

In the year 2005-06, ZSI had an opening balance of 1,11,750 specimens of which 18,033 were vertebrates and 93,717 were invertebrates. During 2005-11[53], ZSI collected another pool of 8,951 vertebrates and 41,872 invertebrates. However, ZSI was able to taxonomically identify 54,904 specimens only, which was 34 *per cent* of the total specimens collected.

ZSI stated (August 2010) that the low rate of identification of the specimens was because taxonomists were never abundant in relation to the availability/abundance of animal species of varied groups.

Audit observed that the number of taxonomists working in ZSI was far below the sanctioned strength as detailed in Table 9.

Table 9: Sanctioned and working strength of Taxonomists

Year	Sanctioned Strength of Taxonomists	Number of Taxonomists available
31-03-2006	146	84
31-03-2007	136	83
31-03-2008	136	78
31-03-2009	136	80
31-03-2010	136	69
31-03-2011	136	75
31.03.2012	136	83

The basic desirable qualification for a taxonomist is a post graduate degree in zoology. However, an aspiring taxonomist has to be trained under an expert over a period of years, gaining experience in field surveys, studying museum specimens, literature and publication in scientific journals. Therefore, building capacity of specialised manpower to conduct taxonomic studies requires considerable investment in terms of time and training.

In view of the scarcity of taxonomists in relation to the availability/abundance of animal species of varied groups, audit examined

[53] Information for the year 2011-12 was not available.

the extent of action taken by ZSI to build its pool of taxonomists and found that:

- While reviewing the functioning of ZSI in 2001, a strategy was proposed for dealing with huge backlog on taxonomical studies which included deployment of scientists from headquarters and regional offices, identification of experts from Universities, engagement of retired scientists of ZSI and training of ZSI scientists abroad. Audit observed that ZSI did not take action on any of the above measures.

  ZSI agreed (October 2012) that action on engagement of experts from Universities/Scientific institutions for taxonomic studies was yet to be initiated. ZSI also confirmed that none of the selected scientists were trained abroad.

  It was seen that ZSI recruited 27 taxonomists during the last five years. Of the 27 taxonomists, 25 were recruited at the entry level for scientists i.e Scientist C. The number of taxonomists recruited was still insufficient to complete the work. The outlook was even more grim given the fact that ZSI did not depute any taxonomist for training.

- An analysis of the number of taxonomists available with ZSI with the number of specimens identified during the period 2005-11 revealed that on an average, one taxonomist cleared 117 samples during a year. The details are given in Table 10.

Table 10: Number of specimens cleared by the taxonomists yearly from 2005-06 to 2010-11

Year	Number of specimens identified	Number of Taxonomists available	Number of samples	Clearance during the year
2005-06	10,347	84	10,347	123
2006-07	10,089	83	10,089	122
2007-08	8,983	78	8,983	115
2008-09	8,482	80	8,482	106
2009-10	7,818	69	7,818	113
2010-11	9,185	75	9,185	122
Average number of specimens identified per Taxonomist per year			117	
Number of years required to complete the backlog of 1,07,669 specimens by available taxonomists working at the same rate			12	

With the accumulated backlog of 1,07,669 specimens remaining to be identified as of March 2011, there is clearly a mismatch between the number of taxonomists available even for completing the taxonomical studies on the material already collected by ZSI.

MoEF accepted (March 2014) that shortage of taxonomists in ZSI hampered the progress of the taxonomic work. MoEF added that the scientists of ZSI, apart from looking after their scientific work, were also doing the administrative work at different levels. MoEF further stated that the Ministry was governed by the decisions adopted by the Conference of the Parties in the CBD held in October 2012 and India's stand and commitment was within the boundary of the decision adopted. Scrutiny of the said document on 'Capacity-building Strategy for the Global Taxonomy Initiative' revealed that among the several year-wise actions envisaged, one course of action to be completed by MoEF by the end of 2013 was to carry out review of taxonomic needs and capacities at national, sub-regional and regional levels, set priorities to implement the Convention and prepare the Strategic Plan for Biodiversity 2011-2020.

MoEF however, remained silent about the status of action taken by MoEF/ZSI.

Thus, though ZSI was aware of the constraints of insufficient trained taxonomists to carry out the identification and description of faunal specimens, the action taken by it to address the issue was not commensurate.

Recommendation 1:

ZSI may review its taxonomic needs and capacities at national, sub-regional and regional levels as envisaged in the Conference of the Parties in the CBD and make efforts to create sufficient capacities to overcome constraints and clear the backlog in taxonomic identification of species.

6.1.2.3 Review of status of threatened and endemic species

A primary objective of ZSI was to conduct periodical status surveys on species which have been identified as endangered. The status survey is undertaken in order to ascertain the status of a particular animal in terms of whether it is extinct, endangered, threatened or stable. After completion of status survey, the results are published in Red Data Book (RDB). RDB gives details of species that are considered to be at risk of extinction. They provide information on the population of the species concerned with an indication of the level of threat (e.g. threatened, critically endangered, etc.). Besides describing the details of the species, the account also includes a section on conservation

measures suggested, which comprises recommendations on the action[54] required to be taken in order to improve the animal's prospects of survival. The proposals are primarily concerned with the protection of the animal and its habitat and elimination of threats to its survival.

The RDB of ZSI was last updated during 1994. Audit observed that periodicity for carrying out the said status survey has not been specified by ZSI. The position of threatened species during the last two years is as shown in Table 11.

Table 11: Details of number of threatened species

Category	Number of species identified as threatened as on 31.03.11	Number of species identified as threatened as on 31.03.12	Increase (in *per cent*)
Mammals	96	123	28
Birds	57	136	139
Reptiles	25	35	40
Amphibians	66	74	12
Fish	40	65	63
Total			
Vertebrates	284	433	52
Invertebrates	111	Not available	

Source: Data provided by ZSI

It can be seen from the above table that total number of threatened species (vertebrates) in India increased from 284 to 433 during 2011-12. Against this, audit observed that RDB carried accounts of 153 species (35 *per cent*). As such the activities of ZSI in conducting status surveys of endangered species were insignificant.

After redefining its objectives in 2001, ZSI fixed a target of status survey of 10 species to be completed by 2012. The status was as given in Table 12.

[54] (1) Legal action: (a) to promote new legislation or make better use of powers under existing legislation, (b) to promote a special international convention, (c) to improve law enforcement in regard to conservation areas; (2) to declare new conservation areas; (3) to establish a continuing scientific action plan; (4) to undertake educational/public awareness programmes; (5) to encourage existing conservation efforts; (6) to re-establish a species by translocation/release of captive bred stock or by increasing the food supply or living space by habitat management; and (7) to control feral/hybrid animals.

Table 12: Status of survey of targeted species

Sl. No	Name of the endangered species	Scheduled date for duration of survey	Scheduled date for comp-letion of Study	Scheduled date for publi-cation	Status	Audit observation
1.	Birgus Latro (Crab)	1999-03	2005	2007	Not available	Survey undertaken during 1999-05. A publication was brought out in 2005.
2.	Snow Leopard	2003-06	2008	2010	Endangered	Survey not initiated.
3.	Black necked Crane	2003-06	2008	2010	Critical	Survey not initiated.
4.	Coral Reef (Nicobar Island)	2003-06	2008	2010	Not available	Survey undertaken during 2006-09. Publication not brought out.
5.	King Crab	2003-06	2008	2010	Not available	Survey not initiated.
6.	Indian Wild Ass	2004-06	2008	2010	Endangered	Survey not initiated.
7.	Swamp Deer	2006-10	2012	2014	Vulnerable	Survey undertaken during 2006-07. Publication not brought out.
8.	Hangul Kashmir Stag	2010-12	2014	2016	Endangered	Survey not initiated.
9.	Hoolock Gibbon	2004-06	2008	2010	Endangered	Survey not initiated.
10.	Nicobar Megapode, A&N Island	2010-12	2014	2016	Vulnerable	Survey not initiated.

It can be seen from the table that:

- Status survey was not initiated on seven of 10 species.
- In respect of remaining three species, though survey was undertaken, publication was brought out in respect of only one species as of March 2014.

Thus, ZSI failed to achieve the targets set for status survey of endangered species. Instead, Audit observed that ZSI undertook status survey of eight[55] other species during 2001 to 2012 and brought out status reports during the same period. However species accounts of none of the species surveyed was incorporated in the RDB.

ZSI stated (July 2011) that status survey of fauna needed to be undertaken only when a necessity for it emanated and was not a routine job that could be undertaken for all the animal groups every year, since the primary job of ZSI was to survey and document the faunal resources of the areas surveyed. MoEF added (March 2014) that the programmes could not be initiated due to lack of expertise and logistics. With regard to updating of RDB, MoEF stated that ZSI was contributing to the international collaborative effort of global threat assessment of species and provided data for threat assessment of species from India.

The reply of ZSI needs to be viewed in the context that periodical review of the status of threatened and endemic species was a mandate of ZSI. As the reply of MoEF was silent on the status of updating of RDB of ZSI, the fact remained that RDB was last updated in 1994, i.e. 20 years ago. This, coupled with the increasing numbers of threatened species in the country made the review of these species more significant.

Recommendation 2:

ZSI may conduct periodic status survey of threatened and endemic species according to the targets fixed. The status of the threatened species in the Red Data Book may be updated urgently so that conservation efforts can be made more effective.

6.1.3 Conclusion

With the promulgation of the Biological Diversity Act, 2002, MoEF redefined the objectives of ZSI and prepared a comprehensive strategic plan covering the period from 1993 to 2020, for exploration, survey, inventorisation and monitoring of faunal diversity and their documentation. Audit observed that the activities of ZSI in fulfilling the revised mandate were poorly executed. ZSI did not take adequate action to inventorise/identify faunal resources as envisaged and was lagging behind in the targets set for survey and publication of the faunal accounts in the selected States, ecosystems and

[55] (i) Western Tragopan (ii) Wroughton's Free Tailed Bat (iii) Himalayan Marmot (iv) Edible Nest Swiftlet (v) Himalayan Salamander (vi) Blackbuck (vii) Trochus Niloticus and(viii) Kiang

protected areas. The recommendations of the Programme Advisory Committee for conducting extensive surveys were not adhered to in eight States/UTs. There was no standard methodology either for carrying out surveys or for assessment of the survey reports. As such survey work was practically left at the discretion of the scientists concerned, without any oversight. Audit further observed that ZSI had not commenced work as per revised mandate in the area of monitoring of faunal diversity. Species wise and area wise monitoring of faunal diversity was not done and no action plan had been prepared in this regard.

ZSI was unable to build capacity in terms of trained manpower for carrying out Taxonomic studies. As of March 2012, only 61 *per cent* of the total sanctioned strength of Taxonomists was available. As a result, ZSI was unable to discharge completely its mandate of carrying out taxonomic studies. Of the total number of species collected during the period, only 34 per cent was taxonomically identified.

Training and experience were recognised as important factors in the development of scientists specialising in taxonomy studies. Of the 83 Taxonomists employed in ZSI, 27 were recruited during the last five years. However, none of the scientists were sent on training.

It was also noticed that very limited work was done on the review of status of threatened and endemic species. Status surveys had not been initiated in seven out of 10 targeted species.

Thus ZSI was lagging behind in meeting its targets oriented towards fulfilling the country's commitments under the Convention of Biological Diversity. The pace of work was slow and not commensurate with the volume of the back log involved.

6.2 Inordinate delay in setting up of National Botanic Garden

Ministry of Environment and Forests failed to enter into a Memorandum of Understanding with NOIDA authority for development of National Botanic Garden on land allotted to it by the latter. Consequently, after incurring expenditure of ₹11.54 crore on development of the National Botanic Garden, status of ownership of the land remained unresolved even after 17 years and the envisaged objective of setting up of National Botanic Garden remained unachieved as of March 2014.

Ministry of Environment and Forests (MoEF) initiated a proposal to establish a National Botanic Garden (NBG) in the Delhi region during the Seventh Five

Year Plan Period[56]. The objective of the project was to establish a botanic garden of international standards for conservation and propagation of important economic and endangered/threatened plants of the country and serve as a centre of excellence for research and training. The project was however, not implemented due to non-availability of land. Subsequently, NOIDA[57] authority, Government of Uttar Pradesh offered (March 1997) land measuring approximately 200 acres to MoEF for establishment of the garden subject to the understanding that if the NBG did not take shape within a period of five years from the date of possession, the land would automatically revert back to NOIDA authority with whatever construction thereon without any reimbursement of construction/maintenance works undertaken in the intervening period by MoEF.

The proposal was submitted to Expenditure Finance Committee (EFC) which approved (July 2000) the project at an outlay of ₹38.88 crore. Simultaneously, MoEF tried to obtain approval for setting up NBG as an autonomous institution. Although the project was approved by the Planning Commission, it was declined (July 2001) by Ministry of Finance (MoF) on the ground that this would lead to proliferation of autonomous bodies having financial connotations such as creation of posts, recurring costs, etc.

Consequently, MoEF submitted (January 2002) a modified proposal to the EFC to set up NBG by way of a project executed by Botanical Survey of India (BSI), a subordinate office under MoEF. EFC approved (January 2002) the modified proposal at a total outlay of ₹37.78 crore to be implemented during Ninth and Tenth Five Year Plan Period[58].

In the meantime, NOIDA Authority cancelled (June 2001) the allotment of land due to lack of response from MoEF. Subsequently, during a meeting (August 2001), NOIDA Authority indicated its interest in participating in the project so as to continue upkeep/recurring expenditure on the project with existing or new staff as mutually agreed. It was also agreed that a Memorandum of Understanding (MOU) would be drawn up and signed by both parties.

Audit observed that there was no significant progress in setting up of the botanic garden during 2002 to 2006 and none of the planned works[59] except construction of boundary wall, roads, sewers (at an expenditure of ₹55.56 lakh) were carried out. Subsequently, NOIDA authority again cancelled (July

[56] 1985 to 1990

[57] New Okhla Industrial Development Authority

[58] Ninth Five Year Plan Period: 1997 to 2002 and Tenth Five Year Plan Period: 2002 to 2007

[59] Construction of office-cum-laboratory building, conservatories, aquatic bodies and storm water drainage, water supply distribution, overhead tank, pump house, etc.

2006) allotment of land due to insufficient development of infrastructure even after more than nine years from allotment. MoEF constituted (September 2006) Multidisciplinary Expert Committee (MDEC) comprising of senior officers of MoEF and NOIDA authority to oversee the implementation of the activities relating to NBG. Audit observed that the MDEC did not meet even once since its constitution in September 2006.

Undeveloped site of National Botanic Garden

In view of urgency expressed by MoEF, NOIDA Authority (September 2007) allowed the Ministry to start the physical work for development of the botanic garden. Of the total outlay of ₹37.78 crore, expenditure of ₹11.54 crore was incurred on the project up to 2013 towards capital and recurring expenses.

Audit further observed that the draft MoU was finalised by MoEF only in September 2010. The draft MoU proposed development of Botanic Garden by way of an autonomous Institute jointly managed by MoEF and NOIDA authority. The MoU was, however, not finalised as of September 2013 and the title of the land remained unclear. Further, the proposal for functioning of NBG as an autonomous institution had already been rejected before by the Ministry of Finance.

Thus, failure to resolve the issue of ownership of land or finalise MoU with NOIDA authority even 12 years after the expression of interest by the latter resulted in a situation where title of the land allotted to MoEF remained unclear.

Entrance of National Botanic Garden

MoEF accepted (September 2013) that pending finalisation of MoU, there was no clarity on the status of land ownership. MoEF added (April 2014) that draft MoU was sent to NOIDA in 2011 but no affirmative response had since been received. MoEF further stated that since land allocation was cancelled by NOIDA, no major development could be initiated by MDEC.

The reply may be viewed in the context that regular meetings of MDEC, which was composed of senior officers of both parties, might have facilitated

resolution of the disputed title of the land and finalising of the MoU. Further, the fact remained that after incurring expenditure of ₹11.54 crore, title of the land remained uncertain and the objective of development of a National Botanic Garden of international standards, for promoting conservation of threatened plants of representative ecosystems in the country remained unachieved as of March 2014.

6.3 Wasteful expenditure on hiring of office accommodation

Ministry of Environment and Forests failed to utilise 13 out of 17 rooms in hired premises for nearly 29 months, thereby rendering expenditure of ₹91.12 lakh incurred on renovation and rent largely wasteful, besides incurring a liability of ₹4.43 crore towards outstanding dues of rent and interest.

The office of Ministry of Environment and Forests (MoEF) is located at Paryavaran Bhawan, CGO complex, New Delhi. MoEF proposed (April 2009) to hire additional office space on the grounds of inadequate space for officers and staff, increase in number of posts in the Ministry and extensive damage caused due to a fire accident. After obtaining a 'non-availability certificate' from the Directorate of Estates (June 2009), MoEF hired (July 2009) 9,755 sq. ft. of office space on 6th and 7th floors of Palika Bhawan, New Delhi from New Delhi Municipal Council (NDMC) at a monthly rent of ₹100 per sq. ft. plus five *per cent* sanitation charges. As per the terms and conditions of allotment, MoEF was to pay an amount of ₹98.52 lakh, being equivalent to two months of advance licence fee, two months of sanitation charges and eight months of licence fee as security deposit. Accordingly, MoEF issued (July 2009) sanction for incurring an expenditure of ₹98.52 lakh and released ₹50 lakh to NDMC.

MoEF also requested (August 2009) NDMC to undertake renovation of the office space allotted to MoEF at Palika Bhawan. Based on the estimate submitted (November 2009) by NDMC, MoEF issued (February 2010) administrative approval for the renovation at a cost of ₹1.31 crore and handed over (July 2010) the space to NDMC. Between June 2010 and October 2010, MoEF released an amount of ₹1.37 crore to NDMC towards renovation work as well as for installation of furniture and fixtures.

The renovation was completed by NDMC and MoEF took possession (April 2011) of the renovated office space comprising of 17 rooms. However, of the 17 rooms, only four rooms were occupied by two sections of MoEF and the remaining were kept vacant. Thereafter, MoEF directed (May 2011) National

Afforestation and Eco-Development Board (NAEB)[60] to relocate its office to the new premises, but this was not done.

Audit observed that MoEF did not prepare a specific plan for moving its divisions/sections to the new premises either at the time of submitting the proposal for hiring of space or while finalising the premises at Palika Bhawan. Though these premises were hired solely for the purpose of de-congesting its existing office, MoEF was unable to allot the 13 vacant rooms to any of its other divisions/sections.

Unutilised rooms in Palika Bhavan

Subsequently, MoEF was allotted (November 2011) office space by the Directorate of Estates at CGO complex and decided (December 2012) to vacate the office space at Palika Bhawan. MoEF also proposed to leave the unused furniture and fixtures at Palika Bhawan and requested NDMC to adjust the cost of ₹1.37 crore against the dues payable by MoEF towards licence fee and other charges. However, NDMC did not accept the proposal of MoEF and requested (July 2013) MoEF to clear the outstanding dues of ₹4.43 crore (including ₹3.83 crore as arrears of licence fee and ₹60 lakh towards interest).

Unutilised furnished conference hall

In view of the refusal of NDMC to retain the furniture and fixtures, MoEF formally vacated (October 2013) the premises and moved the furniture, work stations etc. from Palika Bhawan to the additional office space allotted to it at CGO complex (after November 2012) and to a new building of MoEF in Jor Bagh, New Delhi (September 2013).

Thus, the rented office accommodation at Palika Bhawan was not fully utilised by MoEF and remained by and large unoccupied for 29 months (April 2011 to September 2013). Though the exact details of items shifted and their value was not furnished by MoEF, based on an assessment made by MoEF (December 2009) Audit observed that of the total work executed at the accommodation at Palika Bhawan, work done to the extent of ₹41.12 lakh would be non-recoverable. Therefore, failure to optimally utilise hired

[60] A unit under MoEF

accommodation rendered expenditure of ₹91.12[61] lakh incurred on renovation and rent as largely wasteful, as only four rooms were occupied out of 17 rooms. MoEF was also liable to pay the amount of ₹4.43 crore as outstanding dues to NDMC.

MoEF stated (April 2014) that NAEB could not be shifted to Palika Bhawan due to security concerns of female staff. MoEF added that non-shifting of NAEB resulted in savings towards cost of shifting from NDMC premises. The reply needs to be viewed in the context that several Government offices like Central Plan Scheme Monitoring System under Ministry of Finance, IRCON International Limited, a company under Ministry of Railways and NDMC's Office of the Sub-Registrar Birth and Death were already functioning from Palika Bhawan. The reply also corroborates audit observation that MoEF did not have a definite plan for occupying the premises at Palika Bhawan and all its actions towards shifting of its offices were circumstantial.

Thus, lack of advance planning in allotment of rented office accommodation and failure to optimally utilise the same resulted in wasteful expenditure of ₹91.12 lakh and additional liability of ₹4.43 crore on account of outstanding dues to NDMC.

6.4 Non-establishment of model facilities for management of Municipal Solid Wastes

Model facilities for disposal of solid wastes in 10 states selected under a scheme implemented by Central Pollution Control Board (CPCB) were not set up even after 10 years of initiation of the projects and after incurring expenditure of ₹24.80 crore. There was inadequate monitoring of projects by CPCB and State Pollution Control Boards leading to incomplete work, foreclosure of projects, wasteful expenditure, idling of facilities created and unspent balances remaining idle under the projects. As a result, primary objective of assisting the states and urban local bodies to follow provisions of Municipal Solid Wastes Rules of the Ministry of Environment and Forests remained unachieved.

6.4.1 Introduction

Ministry of Environment and Forests (MoEF) notified (September 2000) Municipal Solid Wastes (Management and Handling) Rules, 2000 (MSW Rules) which were made applicable to each and every town and to all municipal authorities. As per provisions of MSW Rules, local bodies are required to take following actions:

[61] ₹41.12 lakh plus ₹50 lakh paid towards rent.

- Improvement of procedure for the collection of waste and setting up of waste storage facilities to meet specified criteria;
- Transportation of waste in accordance with stipulated guidelines;
- Setting up of waste processing facilities (such as compost plants, energy recovery etc.); and
- Improvement of existing waste dumping sites and identification of new sites for waste disposal.

Central Pollution Control Board (CPCB)[62] a statutory organisation under MoEF, had been providing inputs to various State Pollution Control Boards (SPCB) for collaborating with local bodies for management of waste as per MSW Rules. However, it was felt that majority of local bodies were not prepared and needed assistance to follow provisions of the rules. Hence, it was proposed to prepare a scheme under which a model facility could be set up in any one city/ town in each State. Such model facility would serve as a demonstration plant for other local bodies which could further replicate the same. CPCB envisaged that the proposal for setting up these model facilities would facilitate implementation of MSW Rules.

6.4.1.1 Objectives and scope of the project

During March 2003 to February 2007, CPCB sanctioned projects for setting up of Model facilities for demonstration of management of Municipal Solid Wastes for implementation of MSW Rules in 10 States/Union Territories[63]. The objectives of the project were:

- To set up model facilities on demonstration basis for implementation of MSW Rules, 2000;
- To document the entire scheme from implementation to its commissioning and assessment of actual performance;
- To disseminate information to other local bodies in states and at national level; and

[62] The Central Pollution Control Board (CPCB) was constituted in September, 1974 under the Water (Prevention and Control of Pollution) Act, 1974 and entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981. It serves as a field formation and also provides technical services to MoEF under the provisions of the Environment (Protection) Act, 1986. The principal functions of the CPCB are (i) to promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution, and (ii) to improve the quality of air and to prevent, control or abate air pollution in the country.

[63] Andhra Pradesh, Arunachal Pradesh, Chandigarh UT, Himachal Pradesh, Maharashtra, Nagaland, Sikkim, Tamil Nadu, Tripura and West Bengal.

- To build up capabilities of local bodies, including management of internal resources, which were expected to improve with better service delivery.

The projects were to be completed within 36 months from date of release of first instalment of funds. The scope of each project was as follows:

Phase-I:

- Undertaking and completion of activities relating to collection, segregation, storage and transportation of MSW and intra city activity;
- Setting up of an effective surveillance squad for MSW management;

Phase-II:

- Setting up of waste processing plant i.e. composting/vermi-composting or any other appropriate technology, of appropriate capacity, including preparation of design, drawing and specification for waste processing plant and its operation and maintenance;
- Development of landfill site(s), including getting detailed engineering site investigation, design, drawing, specification for development of landfill for disposal of rejects from the processing plant and silt or for disposal of mixed wastes, till the time the processing plant becomes operational; and
- Public participation in MSW management through mass awareness.

6.4.1.2 Role of each Agency

For execution of these projects, CPCB entered into Memorandum of Understanding (MoU) with concerned SPCBs/ Pollution Control Committees (PCCs) and Urban Local Bodies/Municipalities (ULBs). The projects were to be executed by the concerned ULBs. CPCB was to share cost of the projects with States to the extent of 50 *per cent* and upto 90 *per cent* in the case of North Eastern States and Himachal Pradesh. Funds were to be released by CPCB to SPCBs/PCCs, which were responsible for supervision and further release of funds to respective ULBs. SPCBs/PCCs were to obtain quarterly progress reports on activities performed during the period and forward the same to CPCB. SPCBs/PCCs were also required to constitute a monitoring committee comprising of members of ULB, SPCBs/PCCs as well as CPCB for reviewing progress of work done under the projects.

6.4.2 Audit findings

CPCB released (between March 2003 to February 2006) an amount of ₹14.80 crore to the SPCBs and total expenditure of ₹24.80 crore (including share of States) was incurred under the scheme. Audit findings on achievement of objectives of the project, fund management and monitoring are discussed in the succeeding paragraphs.

6.4.2.1 Non-commissioning of model facilities

The objective of the projects was to demonstrate implementation of MSW Rules in an integrated manner by creation of model facilities which could be further replicated. It was however seen in audit that as of July 2014, model facilities were not commissioned in any of the 10 selected States and as a result the objectives of the project could not be achieved. The status of establishment of model facilities under each project is shown in Table 13.

Table 13: Status of establishment of model facilities as of July 2014

Sl. No.	City	Other stake-holders in MoU	Date of sanction of project	Targeted date of completion	Sanctioned cost (₹ crore)	Funds released by CPCB (₹ crore)	Expendi-ture incurred (₹ crore)
1.	**ANDHRA PRADESH**						
	Suryapet	APPCB[64]/ SM[65]	Sep 2005	Sep 2007	2.90	0.36	0.72
	Phase I was completed. Though Municipality had established a vermi-compost plant, work for development of landfill site was not initiated.						
2.	**ARUNACHAL PRADESH**						
	Itanagar and Naharlagun	APSPCB[66]/ APUDA[67]	January 2006	January 2009	2.23	0.60	0.66
	Phase I was partially completed. Works relating to setting up of waste processing plant and development of landfill site were not undertaken. The project was closed (January 2011).						

[64] Andhra Pradesh Pollution Control Board
[65] Suryapet Municipality
[66] Arunachal Pradesh State Pollution Control Board
[67] Arunachal Pradesh Urban Development Agency

3.	**CHANDIGARH**						
	Chandigarh	CPCC[68]/ MCC[69]	March 2003	April 2008	13.10	4.18	9.44
	Model facility was only partially created. Out of 80 Sahaj Safai Kendras to be constructed, only 35 were constructed. Although landfill site was developed, waste dumping was not commenced.						
4.	**HIMACHAL PRADESH**						
	Mandi	HPSPCB[70]/ MCM[71]	Sep 2005	Sep 2008	1.09	0.98	1.10
	Phase I of the project was completed; Phase II could not be taken up.						
5.	**MAHARASHTRA**						
	Jalna	MPCB[72]/ JMC[73]	Jan 2006	Jan 2008	3.00	0.50	0.59
	Waste processing plant was set up, but there was no provision for electricity and water supply. Work of landfill development was taken up under another scheme viz. Jawaharlal Nehru National Urban Mission (JNNURM), however status of completion of the same was not available.						
6.	**NAGALAND**						
	Kohima	NPCB[74]/ KMC[75]	Sep 2005	Sep 2008	1.35	0.75	1.37
	Phase I of the project was completed; however, development of landfill was not taken up. Work of Phase II was taken up under another scheme through Asian Development Bank (ADB) funding, however status of the same was not available.						
7.	**SIKKIM**						
	Cluster of towns in South and West Districts, Sikkim	SSPCB[76]/ UD&HD[77]	February 2006	February 2009	2.50	1.71	1.96
	Phase I was completed. Phase II was not taken up. It was suggested (February 2013) to stop the project, however, further action taken was not available.						

[68] Chandigarh Pollution Control Committee
[69] Municipal Corporation, Chandigarh
[70] Himachal Pradesh State Pollution Control Board
[71] Municipal Council, Mandi
[72] Maharashtra Pollution Control Board
[73] Jalna Municipal Council
[74] Nagaland Pollution Control Board
[75] Kohima Municipal Council
[76] Sikkim State Pollution Control Board
[77] Department of Urban Development and Housing, Government of Sikkim

8.	**TAMIL NADU**						
	Udumalpet	TNPCB[78]/ UM[79]	Dec 2004	Dec 2006	1.50	0.70	1.6
	Waste processing facility was installed. However, waste segregation is not being done. Landfill facility was not developed and surveillance squad for MSW management was also not constituted.						
9.	**TRIPURA**						
	Agartala	TSPCB[80]/ AMC[81]	February 2006	February 2009	3.0	2.70	3.05
	Phase-I of the project was taken up. However, items procured such as dumper placer dustbins and mechanical road sweeper were not utilised. Work relating to setting up of waste processing plant and development of landfill site were not taken up, as CPCB did not support Phase II of the project due to fund constraint.						
10.	**WEST BENGAL**						
	North Dum Dum and New Barrackpore	WBPCB[82]/ KMDA[83]	Mar 2003	Mar 2009	5.05	2.33	4.31
	Both Phase-I and Phase-II were completed and the model facility was inaugurated in February 2009. However, the project was discontinued soon after inauguration dur to agitation by the locals in which the entire facility was destroyed.						
	Total expenditure incurred						**24.80**

It would be seen from above table that model facility was created under only one project. However it could not be commissioned due to local disturbances. In nine projects, work was only partially completed. Of these, in seven projects, Phase I was completed, whereas in two projects, Phase I was partially completed. Though Phase II was taken up in only five projects, it could not be completed in any project.

6.4.2.2 Poor monitoring of projects

According to MoUs entered by CPCB, State PCBs were to obtain quarterly progress reports on activities performed during the period and forward the same to CPCB. State PCBs were also required to constitute a Monitoring Committee (MC) comprising of members of ULB, SPCB as well as CPCB for reviewing progress of work done under the projects. The periodicity of monitoring was however, not specified in the MoUs. Audit observed lapses in monitoring of implementation of projects which are discussed in the succeeding paragraphs.

[78] Tamil Nadu Pollution Control Board
[79] Udumalpet Municipality
[80] Tripura State Pollution Control Board
[81] Agartala Municipal Council
[82] West Bengal Pollution Control Board
[83] Kolkata Metropolitan Development Authority

(i) Andhra Pradesh

CPCB released (September 2005) funds of ₹36.20 lakh to Andhra Pradesh PCB. Though Suryapet Municipal Council (SMC) had established a vermi-compost plant, work for development of landfill site was not initiated as of July 2014. Audit observed that CPCB entered (February 2008) into an agreement with National Buildings Construction Corporation Limited (NBCC) for preparation of Detailed Project Report (DPR) for construction of landfill facility at Suryapet and Mandi, Himachal Pradesh and released (September 2008) an advance of ₹10 lakh to NBCC without obtaining concurrence of APPCB and SMC. NBCC was yet to submit the said DPR as of July 2014, even after lapse of nearly six years, resulting in blocking of funds of ₹10 lakh as well as holding up of work of development of landfill.

Audit further observed that MC for reviewing the progress of work was not constituted. Though sanctioned duration of the project expired in September 2007, it was continued without obtaining formal extension. Subsequently, APPCB informed (August 2012) CPCB that the project had stagnated from April 2008.

CPCB stated (July 2014) that APPCB had convened a meeting (September 2013) with SMC and CPCB, wherein it was decided that SMC would conclude the project after submitting a final status report. The final report was awaited as of July 2014. The reply is however, silent on the status of Phase II.

(ii) Arunachal Pradesh

CPCB released (January 2006) the first instalment of ₹60 lakh to APSPCB. Audit observed that even Phase I of the project was only partially completed. During a site inspection (April 2007) carried out by CPCB, it was observed that progress of the project was very disappointing and coordination and supervision work of APSPCB was found seriously lacking. Audit observed that CPCB did not carry out any further inspection of the project. MC constituted for reviewing the project also met for the first time only in November 2010, after more than four years of sanction of project. In the said meeting of MC, it was agreed that project should be closed considering all factors like cost escalation, time over run, etc. It was also revealed that a similar project on compost plant had already been established in Itanagar under JNNURM scheme. Consequently, CPCB cancelled (January 2011) the project.

CPCB stated (July 2014) that the project was reviewed with Arunachal Pradesh Board in June 2014 and it was decided that although CPCB had withdrawn the project, APSPCB shall ensure implementation of the MSW Rules in Itanagar and Naharlagun. The fact remained that CPCB failed to

effectively monitor the project and remain abreast of the developments under the project so as to make timely and meaningful interventions.

(iii) Chandigarh UT

CPCB released ₹1.58 crore (three equal instalments of ₹52.56 lakh in April 2003, April 2004 and April 2007) to CPCC under Phase I of the project and ₹2.60 crore (two equal instalments of ₹1.30 crore in April 2007 and September 2008) under Phase II. Though Phase I of the project was originally scheduled to be completed by October 2004, it was extended from time to time up to March 2007. Phase II of the project commenced in April 2007 with scheduled completion in April 2008. However it was not completed on time and was continued thereafter without formal extension.

Stagnant water in landfill site in Chandigarh

Audit observed that model facility was only partially created. Out of 80 Sahaj Safai Kendras to be constructed, only 35 were constructed. Audit further observed that progress of the project was last discussed by the MC in January 2008. Subsequently, CPCB conducted on site inspection of the facility (March 2012) in which it was found that though landfill site was developed, waste dumping was yet to be commenced. Unspent balance of ₹14.41 lakh was also not refunded by CPCC as of July 2014.

CPCB stated (July 2014) that it had reviewed the project in June 2013 and May 2014 and asked CPCC to prepare documentation on the project and submit the same within a month. CPCB also stated that CPCC had agreed to return the unspent amount after deducting the documentation charge of ₹65,000. The reply is however silent on the status of creation of the model facility and utilisation of landfill.

(iv) Himachal Pradesh

CPCB released ₹97.87 lakh in three instalments of ₹25 lakh (September 2005), ₹37 lakh (June 2007) and ₹35.87 lakh (August 2008) to HPSPCB under the project. The sanctioned duration of the project was upto September 2008 but project was extended upto June 2010. Audit observed that though Phase I of the project was completed (March 2011), Phase II could not be taken up due to non-finalisation of MoU with NBCC as discussed in (i) above.

CPCB stated (July 2014) that MoU for Phase-II had been signed and sanctioning of funds would be considered after receipt of the required environmental clearance and consent to establish the facility.

The fact remained that the project was not completed even after nearly nine years of sanction.

(v) Maharashtra

CPCB released (January 2006) the first instalment of ₹50 lakh to MPCB. The project was originally scheduled to be completed by January 2008, but was extended upto March 2009. However work was not completed even in the extended duration and continued further without formal extension. CPCB, MPCB and Jalna Municipal Council conducted (June 2011) joint inspection of the site and observed that waste processing plant was completed, but there was no provision for electricity and water supply. Although CPCB reviewed the project (June 2013 and May 2014), there was no further progress in the project.

CPCB stated (July 2014) that works of developing landfill was undertaken under JNNURM scheme. However, status of the same was not intimated. Thus, CPCB remained unaware of the progress of the project.

Waste processing facility in Jalna, Maharashtra

(vi) Nagaland

CPCB released ₹75 lakh in two instalments of ₹30 lakh (September 2005) and ₹45 lakh (July 2006). NPCB had to constitute MC headed by the Chairman of NPCB, immediately on receipt of first instalment from CPCB for reviewing the progress of work done on regular basis. Though NPCB constituted MC in October 2005, it was observed that the committee never met. Further, the

sanctioned duration of the project expired in September 2008 but the project was not completed and continued without any formal extension.

Audit observed that Phase I of the project was completed however, development of landfill was not taken up as the project was transferred to another MSW project being implemented through funding by Asian Development Bank (ADB). Audit further observed that CPCB was unaware of transfer of the project. Although CPCB was a member of MC, being one of the primary stakeholders in the project, it did not ensure that MC meetings were held. Consequently, CPCB failed to keep itself apprised of the developments under the project.

CPCB stated (July 2014) that the project was concluded in view of ADB funding. The reply was silent on the status of the ADB funded project.

(vii) Sikkim

CPCB released ₹1.71 crore in two instalments of ₹60 lakh (February 2006) and ₹1.11 crore (April 2010). Phase I of the project was completed. CPCB received UCs for the amounts released in January 2010 and May 2011 respectively.

The zonal office of CPCB at Shillong was to undertake field visit once in two months for monitoring the progress of work done. Audit observed that site inspection was carried out only five times between August 2007 and February 2013. During site inspection conducted (April 2012 and February 2013) it was found that both waste processing and landfill facilities were not developed. The Sikkim Government also did not have any plans to procure, install and operate a waste processing facility. Further, MC constituted for the project also met for the first time only in February 2013. In the meeting it was suggested that to avoid wastage of central funds, the project may be stopped immediately.

CPCB stated (July 2014) that review meeting was convened in May 2014 but Sikkim Board did not turn up for the same. Thus, while objectives of the project remained unfulfilled, inspite of receiving UCs, CPCB remained unaware of the actual utilisation of funds provided by it. The status of the project was also not available as of July 2014.

(viii) Tamil Nadu

CPCB released funds of ₹70 lakh to Udumalpet Municipality (UM) in two instalments between December 2004 and November 2007. Audit observed that Utilisation Certificate (UC) for the first instalment was received after

delay of 18 months. UC for the second instalment was not furnished by UM to CPCB. As a result, details of expenditure incurred and unspent balance, if any, were not available with CPCB.

Sanctioned duration of the project expired in December 2006. However, CPCB extended the project duration till September 2008. Audit observed that the project was not completed within the extended period and was continued thereafter without obtaining formal extension. Subsequently, TNPCB informed (June 2012) CPCB that though waste processing facility had been installed, waste segregation was not being done. Landfill facility was also not developed and surveillance squad for MSW management was also not constituted. Thus, the objectives of the project were not achieved.

TNPCB was to constitute MC headed by its Chairman immediately on receipt of first instalment from CPCB for reviewing the progress of work done on regular basis. Audit further observed that MC was not constituted.

CPCB stated (July 2014) that it had invited TNPCB in June 2013 and May 2014 for reviewing the project but response was not received. The reply indicated that CPCB was unaware of the status of the project for over two years. CPCB also did not, in the meantime, conduct a site inspection on its own to ascertain the status of activities under the project.

(ix) Tripura

CPCB released ₹2.70 crore in three instalments of ₹60 lakh (February 2006), ₹1.05 crore (August 2007) and ₹1.05 crore (November 2009) to TSPCB. The sanctioned duration of the project expired in February 2009. It was seen that Phase-I of the project was completed. Though CPCB approved (December 2008) Phase II of the project at a total cost of ₹9.13 crore, it eventually did not support Phase II due to funds constraint. As such works relating to setting up of waste processing plant and development of landfill site were not taken up.

As per MoU, Zonal office of CPCB at Shillong was to undertake field visit once in two months for monitoring the progress of work done. Audit observed that CPCB inspected the project only in March 2012. It was also observed that items procured by Agartala Municipal Council such as dumper placer dustbins and mechanical road sweeper were not utilised.

CPCB stated (July 2014) that the project was reviewed in May 2014 and it was decided that TSPCB would prepare the project completion report and forward to CPCB within a month. The reply was silent on the action being taken for utilisation of the items procured under Phase I of the project.

Dumper placer dustbins lying abandoned

Mechanical Road Sweeper

(x) West Bengal

CPCB released ₹95.65 lakh (₹47.83 lakh in April 2003, ₹23.91 lakh in June 2004 and ₹23.91 lakh in August 2005) to WBPCB under Phase I of the project and ₹1.37 crore (₹65 lakh in March 2007 and ₹72 lakh in July 2008) under Phase II. The model facility was completed in February 2009.

Apart from monitoring the progress of the project, performance of the created facility was also to be reviewed over a specified period of time by WBPCB and both the Municipalities. Audit observed that after completion of Phase I, progress of the project was reviewed (November 2006). However, the next meeting of MC was held only three years later (June 2009) to review progress of Phase II. In the said meeting, it was suggested that the stakeholders must meet more frequently to ensure sustainability of the project. It was however seen that no further meetings of MC were held. One of the objectives under Phase II was public participation in MSW management through mass awareness. However, the extent of work done in this regard was not found on record.

West Bengal PCB informed (June 2012) CPCB that though model facility was set up and inaugurated in February 2009, the project had been discontinued soon after inauguration due to agitation by the locals in which the entire facility was destroyed. As a result, the entire expenditure of ₹4.31 crore on the project was rendered wasteful.

CPCB stated (July 2014) that the State Level MC reviewed the project in April 2013 and decided to close the project and suggested the two municipalities to share common facilities under the technical backup of KMDA.

The reply may be viewed in the context that review of the project in April 2013, more than four years after it was reportedly destroyed, was redundant.

Thus, monitoring of the projects was weak, as:

- MC was not constituted in two projects (Tamil Nadu and Andhra Pradesh);
- in eight projects where MC was constituted, the meetings of MC were not held regularly;
- site inspections were not carried out by CPCB as stipulated in three projects (Arunachal Pradesh, Tripura and Sikkim); and
- after being pointed out in audit, CPCB convened review meetings with the concerned PCBs in June 2013 and May 2014.

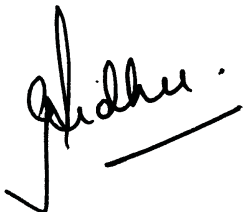
Although CPCB was responsible for overall implementation of the scheme and was to participate in monitoring of the projects, it failed to implement a sound monitoring mechanism to ensure proper implementation of projects. Laxity in monitoring resulted not only in gaps in availability of information on status of the projects, but eventually, model waste management facility could not be made functional in any of the 10 projects.

6.4.3 Conclusion

The MSW model facilities were not functional in any of the 10 states selected for setting up the facilities even after more than 10 years of initiation of projects and after incurring expenditure of ₹24.80 crore. Model facility was created under only one project in West Bengal, however it could not be commissioned due to local disturbances. In nine projects, work was only partially completed. Of these, in seven projects at Andhra Pradesh, Chandigarh, Himachal Pradesh, Nagaland, Sikkim, Tamil Nadu and Tripura, Phase I was completed, whereas in two projects at Arunachal Pradesh and Maharashtra, Phase I was partially completed. Phase II was taken up in only five projects at Andhra Pradesh, Chandigarh, Maharashtra, Nagaland and Tamil Nadu, however, it could not be completed in any project.

There were lapses in monitoring of implementation of projects and management of funds. Although CPCB was part of the monitoring mechanism established for reviewing progress of projects, it failed to ensure that monitoring committees were constituted and met regularly. Site inspection was not carried out regularly by CPCB in the states where there was provision

for the same. Failure to monitor projects resulted in incomplete work, foreclosure of projects, idling of facilities created and unspent balances remaining idle under the projects. As a result, the objective envisaged under the scheme to assist states and urban local bodies to follow provisions of the MSW Rules remained unachieved.



(GURVEEN SIDHU)
Principal Director of Audit,
Scientific Departments

New Delhi
Dated: 26 September 2014

Countersigned

(SHASHI KANT SHARMA)
Comptroller and Auditor General of India

New Delhi
Dated: 30 September 2014

APPENDICES

Appendix I (Refer to Paragraph 1.3)

Brief profile of the Scientific and Environmental Ministries/Departments

1. Department of Atomic Energy (DAE)

DAE is engaged in the development of nuclear power technology, applications of radiation technologies in the fields of agriculture, medicine, industry and basic research. The Department is involved in the design, construction and operation of nuclear power/research reactors and supporting nuclear fuel cycle technologies covering exploration, mining and processing of nuclear minerals, production of heavy water, nuclear fuel fabrication, fuel reprocessing and nuclear waste management. It also supports research in basic sciences, astronomy, astrophysics, cancer research and education through its institutes. The expenditure incurred by DAE during 2012-13 was ₹11,981.76 crore. The activities of DAE are executed through its agencies like Bhabha Atomic Research Centre, Indira Gandhi Centre for Atomic Research, Heavy Water Board, Nuclear Fuel Complex, Atomic Minerals Directorate for Exploration and Research, Tata Memorial Centre, Tata Institute of Fundamental Research, Institute for Plasma Research etc.

2. Department of Space (DOS)

DOS is responsible for the country's programmes for harnessing space technology for national development, while pursuing space science research and planetary exploration. DOS and its constituent units are responsible for planning and execution of national space activities. The main objectives of the space programme include development of satellites, launch vehicles, sounding rockets and associated ground systems. It operates the Indian National Satellite (INSAT) programme for meeting telecommunication, television broadcasting and developmental applications. DOS also deals with matters relating to space science, space technology and space applications. The expenditure incurred by DOS during 2012-13 was ₹4,856.28 crore. The activities of DOS are executed through its agencies like Vikram Sarabhai Space Centre, Satish Dhawan Space Centre, Liquid Propulsion Systems Centre, National Remote Sensing Agency, Physical Research Laboratory etc.

3. Ministry of Earth Sciences (MoES)

MoES is mandated to provide the nation with best possible services in forecasting of monsoons and other weather/climate parameters, ocean state, earthquakes, tsunamis and other phenomena related to earth systems through integrated programmes. MoES also deals with science and technology for exploration and exploitation of ocean resources (living and non-living) and plays a nodal role for Antarctic/Arctic and Southern Ocean research. The expenditure incurred by MoES during 2012-13 was ₹1,177.14 crore. The activities of MoES are carried through agencies like India Meteorological Department, Indian National Centre for Ocean Information Services, National Centre for Antarctic and Ocean Research, National Institute of Ocean Technology, National Centre for Medium Range Weather Forecasting, etc.

4. Ministry of Environment and Forests (MoEF)

MoEF is the nodal agency for planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programmes. The principal activities undertaken by MoEF consist of conservation and survey of flora, fauna, forests and wildlife; prevention and control of pollution; and afforestation and regeneration of degraded areas. MoEF is also engaged in the prevention and abatement of pollution. It is the nodal Ministry of the country in various international environment oriented programmes. The expenditure incurred by MoEF during 2012-13 was ₹1,996.69 crore. The activities of MoEF are carried out through agencies like Central Pollution Control Board, Botanical Survey of India, Zoological Survey of India, National Biodiversity Authority, Wildlife Institute of India, Indian Council of Forestry Research and Education, Central Zoo Authority, etc.

5. Ministry of New and Renewable Energy (MNRE)

The broad aim of MNRE is to develop and deploy new and renewable energy for supplementing the energy requirements of the country. MNRE seeks to increase the share of clean power through renewable energy (bio, wind, hydro, solar, geothermal and tidal) to supplement fossil fuel based electricity generation. The Ministry aims to develop technologies, processes, materials, components, sub-systems, products and services at par with international specifications by facilitating research, design, development, manufacture and deployment of these energy systems/devices for transportation, portable and stationary applications in rural, urban, industrial and commercial sectors. The expenditure incurred by MNRE during 2012-13 was ₹1,243.72 crore. The activities of MNRE are carried through agencies like Solar Energy Centre, Centre for Wind Energy Technology, etc.

6. Ministry of Science and Technology

The Ministry of Science and Technology has three Departments under its control.

6.1 Department of Biotechnology (DBT)

DBT is mandated to promote large scale use of biotechnology in the country through Research and Development (R&D) projects, demonstrations and creation of infrastructural facilities for the growth and application of biotechnology in the broad areas of agriculture, health care, animal sciences, environment and industry. The Department is also engaged in promoting University and Industry Interaction, international collaborations and in evolving Bio Safety Guidelines, manufacture and application of cell based vaccines. The expenditure incurred by DBT during 2012-13 was ₹1,282.84 crore. The activities of DBT are carried through agencies like National Institute of Immunology, National Centre for Cell Science, National Brain Research Centre, etc.

6.2 Department of Science and Technology (DST)

DST plays a pivotal role in promotion of Science and Technology (S&T) in the country. It is the nodal department for organising, coordinating and promoting S&T activities in the country, being responsible for formulation of policies relating to S&T, R&D through its research institutions or laboratories, undertaking or financially sponsoring scientific and technological surveys, research design and development and supporting Scientific Research Institutions, Scientific Associations and Bodies by providing Grants-in-aid. The expenditure incurred by DST during 2012-13 was ₹2,524.22 crore. The activities of DST are carried out through agencies like Technology Development Board, Raman Research Institute, Bose Institute, Indian Association for the Cultivation of Science, Indian Institute of Astrophysics, Survey of India, etc.

6.3 Department of Scientific and Industrial Research (DSIR)

The primary endeavor of DSIR is to promote R&D by the industries and support a large cross section of small/medium industrial units to develop state-of-the art globally competitive technologies of high commercial potential. The Department facilitates scientific and industrial research in the country through commercialisation of lab-scale R&D, enhancement of the share of technology intensive exports in overall exports and strengthening of industrial consultancy and technology management capabilities. It also provides a link between scientific laboratories and industrial establishments for transfer of technologies. The expenditure incurred by DSIR during 2012-13 was ₹2,945.66 crore. The Council of Scientific and Industrial Research, a major autonomous body being funded by DSIR comprises of 39 laboratories like National Aerospace Laboratories, National Chemical Laboratory, Central Drug Research Institute, Central Food Technological Research Institute, National Environmental Engineering Research Institute, National Institute of Oceanography, etc. These research laboratories carry out applied research in the areas of aerospace, bio-technology, drugs and pharmaceuticals, energy, food and food processing, leather, metals, minerals, etc.

7. Ministry of Water Resources (MoWR)

MoWR is responsible for laying down policy guidelines and programmes for the development and regulation of country's water resources. The Ministry carries out overall planning, policy formulation, coordination and guidance in the water resources sector including minor irrigation and development of ground water resources. Besides this, the Ministry is also involved in mediation and facilitation in disputes relating to distribution of inter-state river waters and negotiations with neighbouring countries on river waters. MoWR also provides guidance and support for irrigation, flood control and multi-purpose projects. The expenditure incurred by MoWR during 2012-13 was ₹1,055.59 crore. MoWR is responsible for operation of the central network for flood forecasting and warning on inter-state rivers and preparation of flood control master plans for the Ganga and the Brahmaputra. The Ministry carries out its activities through agencies like Central Water Commission, Central Ground Water Board, National Water Development Agency, etc.

Appendix II (Refer to Paragraph 1.6)

Audit findings from Compliance Audits conducted during the last five years

Report No. and year	Para no.	Subject	Ministry/ Department
17 of 2010-11	2.1	Failure of a scheme for increasing tree cover	MoEF
	2.2	Non achievement of objective of developing forest resources	
	3.1	Regulation of Biodiversity in India	
	3.2	Role of Botanical Survey of India in meeting India's commitments to the Convention on Biological Diversity	
	4.1	Non-achievement of objectives of Ecocity Programme	
	4.2	Non-achievement of objectives of control of pollution caused by leather tanneries	
	5.1	Activities of National Museum of Natural History, New Delhi	
16 of 2011-12	5.1	Wasteful expenditure on refurbishment of a vessel	MoES
	13.1	Infructuous expenditure due to non-utilisation of software	MNRE
	15.2	Deficient implementation of projects for generation of power through safe disposal of waste	DSIR
	15.3	Non-realisation of objectives of a project	
	19.1	Idle investment on development of a Linac tube	DOS
	19.2	Avoidable payment of electricity duty and cess	
4 of 2012-13	Stand alone	Report of the Comptroller and Auditor General of India on hybrid satellite digital multimedia broadcasting service agreement with Devas	DOS
13 of 2012-13	10.1	Avoidable expenditure of ₹3.32 crore	DAE
	11.1	Avoidable payment of demand charges	DOS
21 of 2013	Stand alone	Report of the Comptroller and Auditor General of India on Compensatory Afforestation in India	MoEF
22 of 2013	2.1	Avoidable expenditure on compensation due to breach of agreement	DAE

Report No. and year	Para no.	Subject	Ministry/ Department
	2.2	Hasty procurement of equipment without creating infrastructure facilities for installation	
	3.1	EDUSAT Utilisation Programme	DOS
	3.2	Parking of foreign satellite in Indian administration coordinated orbital slot	
	3.3	Loss due to unsafe transport and belated insurance of consignment	
	4.1	Public Private Partnership for setting up 'The Centre for Genomic Application' by Institute of Genomics and Integrative Biology	DSIR
	4.2	Unfruitful expenditure	
	5.1	Avoidable expenditure on hiring of office premises	DST
	5.2	Inadmissible payment of transport allowance	
	6.1	Repeated unauthorised creation and up-gradation of posts by Central Pollution Control Board	MoEF
	7.1	Maintenance of Farakka Barrage and its ancillaries	MoWR
	8.1	Irregular introduction of pension scheme and diversion of funds	MoES

Appendix III (Refer to paragraph 1.8)

Grants released to Autonomous Bodies auditable under Section 14 of Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971

(₹in crore)

Sl.No	Ministry/ Department Name of Autonomous Body	Amount of grants released in 2012-13
DEPARTMENT OF ATOMIC ENERGY		
1.	Harish Chandra Research Institute, Allahabad	2.37
2.	Institute of Mathematical Sciences, Chennai	30.48
3.	Atomic Energy Education Society, Mumbai	44.66
4.	Tata Institute of Fundamental Research, Mumbai	398.19
5.	Tata Memorial Centre, Mumbai	212.51
6.	Institute for Plasma Research, Gandhinagar	227.22
7.	Institute of Physics, Bhubaneswar	18.36
8.	National Institute of Science Education and Research, Bhubaneshwar	220.00
9.	Saha Institute of Nuclear Physics, Kolkata	93.62
DEPARTMENT OF BIOTECHNOLOGY		
10.	National Brain Research Institute, Gurgaon	**
11.	National Institute for Plant Genome Research, New Delhi	**
12.	National Centre for Cell Sciences, Pune	**
13.	National Institute of Immunology, New Delhi	**
14.	Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram	**
15.	Centre of DNA Finger Printing & Diagnostics, Hyderabad	**
16.	Institute of Bio-resources and Sustainable Development, Imphal	**
17.	Institute of Life Sciences, Bhubaneshwar	**
18.	Translational Health Science and Technology Institute, Faridabad	**
19.	UNESCO Regional Centre for Education and Training, Faridabad	**
20.	National Agri-Food Biotechnology Institute and Bio-processing Unit, Mohali	**
21.	Institute for Stem Cell Research and Regenerative Medicine Bengaluru	**
22.	National Institute of Biomedical Genomics, Kalyani	**
DEPARTMENT OF SCIENCE AND TECHNOLOGY		
23.	Aryabhatta Research Institute for Observational Sciences, Nainital	14.05
24.	Birbal Sahni Institute of Paleobotany, Lucknow	19.38
25.	Indian National Academy of Engineering, New Delhi	4.50
26.	Indian National Science Academy, New Delhi	17.98
27.	National Academy of Sciences, Allahabad	10.79
28.	National Accreditation Board for Testing and Calibration Laboratories, New Delhi	0.20
29.	Technology Information, Forecasting and Assessment Council, New Delhi	20.53
30.	Vigyan Prasar, New Delhi	14.17
31.	Wadia Institute of Himalayan Geology, Dehradun	19.46
32.	Agarkar Research Institute, Pune	14.05

Sl.No	Ministry/ Department Name of Autonomous Body	Amount of grants released in 2012-13
33.	Indian Institute of Geomagnetism, Mumbai	28.02
34.	Raman Research Institute, Bengaluru	34.80
35.	Centre for Soft Matter Research, Bengaluru	6.00
36.	International Advanced Research Centre for Powder Metallurgy, Hyderabad	49.01
37.	Indian Institute of Astrophysics, Bengaluru	50.35
38.	Indian Academy of Sciences, Bengaluru	6.67
39.	Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru	49.02
40.	Bose Institute, Kolkata	95.40
41.	Indian Association for the Cultivation of Science, Kolkata	54.86
42.	S N Bose National Centre for Basic Science, Kolkata	30.04
43.	Indian Science Congress Association, Kolkata	6.06
44.	Institute of Advanced Study in Science and Technology, Guwahati	15.67
45.	National Innovation Foundation, Ahmedabad	10.12
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH		
46.	Consultancy Development Centre, New Delhi	3.16
DEPARTMENT OF SPACE		
47.	North Eastern Space Application Centre, Shillong	2.10
48.	Indian Institute of Space Technology, Thiruvananthapuram	64.83
49.	National Atmospheric Research Laboratory, Tirupati	14.03
50.	Physical Research Laboratory, Ahmedabad	55.89
51.	Semi Conductor Laboratory, Chandigarh	61.20
MINISTRY OF EARTH SCIENCES		
52.	National Institute of Ocean Technology, Chennai	136.67
53.	Indian Institute of Tropical Meteorology, Pune	153.46
54.	Indian National Centre for Ocean Information Services, Hyderabad	72.17
55.	National Centre for Antarctic & Ocean Research, Goa	236.21
MINISTRY OF ENVIRONMENT AND FORESTS		
56.	Central Pollution Control Board, Delhi	25.50
57.	G.B. Pant Institute of Himalayan Environment and Development, Almora	11.40
58.	Indian Institute of Forest Management, Bhopal	10.50
59.	Indian Council of Forestry Research and Education, Dehradun	110.25
60.	Indian Plywood Industries Research and Training Institute, Bengaluru	7.35
MINISTRY OF NEW AND RENEWABLE ENERGY		
61.	Centre for Wind Energy Technology, Chennai*	20.00
62.	Sardar Swaran Singh National Institute of Renewable Energy, Kapurthala	15.00
	TOTAL	**2,818.26**

* Audit is conducted under Section 20 of the C&AG's DPC Act 1971, however the audit is of a superimposed nature.

** Information not available

Appendix IV (Refer to Paragraph 1.9)

Outstanding Utilisation Certificates

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2013	Amount (₹in lakh)
Department of Atomic Energy	1991-92	1	2.51
	1996-97	4	4.12
	1997-98	3	3.38
	1998-99	3	1.64
	99-2000	7	16.56
	2000-01	6	14.24
	2001-02	2	2.60
	2002-03	1	0.80
	2003-04	4	4.50
	2004-05	10	122.07
	2005-06	15	19.35
	2006-07	49	93.44
	2007-08	47	406.48
	2008-09	38	381.81
	2009-10	43	764.26
	2010-11	62	803.82
	2011-12	245	2,012.28
Total		**540**	**4,653.86**
Department of Biotechnology	Details not available		
Department of Science and Technology	Nil		
Department of Scientific and Industrial Research	Details not available		
Department of Space	1976-77	1	0.05
	1979-80	1	0.05
	1980-81	1	0.38
	1981-82	1	0.03
	1982-83	5	0.69
	1983-84	1	0.02
	1984-85	3	0.97
	1985-86	1	0.05

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2013	Amount (₹in lakh)
	1986-87	5	1.30
	1987-88	2	4.88
	1989-90	2	0.07
	1993-94	1	0.10
	1998-99	1	0.20
	99-2000	2	1.30
	2000-01	3	34.87
	2001-02	5	60.91
	2002-03	11	162.75
	2003-04	15	198.48
	2004-05	13	218.74
	2005-06	23	101.61
	2006-07	16	25.88
	2007-08	13	40.30
	2008-09	15	150.94
	2009-10	38	176.72
	2010-11	31	111.55
	2011-12	42	100.63
Total		**252**	**1,393.47**
Ministry of Earth Sciences	1983-84	9	0.72
	1984-85	25	44.47
	1985-86	19	5.51
	1986-87	15	7.95
	1987-88	37	39.80
	1988-89	43	140.90
	1989-90	69	84.41
	1990-91	39	251.23
	1991-92	6	83.82
	1992-93	20	205.27
	1993-94	19	104.60
	1994-95	14	53.88
	1995-96	45	212.35
	1996-97	38	55.24
	1997-98	53	229.19
	1998-99	45	583.04

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2013	Amount (₹in lakh)
	99-2000	41	694.22
	2000-01	35	187.09
	2001-02	20	131.16
	2002-03	11	17.37
	2003-04	51	104.83
	2004-05	39	711.00
	2005-06	57	442.64
	2006-07	50	786.49
	2007-08	94	1461.19
	2008-09	68	1,268.09
	2009-10	80	841.67
	2010-11	264	5,130.53
	2011-12	274	11,807.14
Total		**1,580**	**25,685.80**
Ministry of Environment & Forests	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	6,531.00
	1988-89	359	2,543.18
	1989-90	545	192.00
	1990-91	70	123.30
	1991-92	81	1,439.00
	1992-93	216	736.00
	1993-94	64	74.18
	1994-95	83	167.88
	1995-96	82	174.18
	1996-97	305	1,058.36
	1997-98	156	557.99
	1998-99	316	758.70
	99-2000	300	1,234.98
	2000-01	327	797.95
	2001-02	355	1,006.82

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2013	Amount (₹in lakh)
	2002-03	308	944.23
	2003-04	382	1,321.76
	2004-05	372	1,569.67
	2005-06	291	1,434.86
	2006-07	281	1,801.41
	2007-08	292	2,410.71
	2008-09	241	1,973.48
	2009-10	198	7,957.95
	2010-11	182	43,833.32
	2011-12	448	53,768.32
Total		**6,996**	**1,35,775.49**
Ministry of New and Renewable Energy	2005-2006	1	3.34
	2006-2007	1	2.00
	2007-2008	8	27.56
	2008-2009	13	263.14
	2009-2010	41	799.56
	2010-2011	92	2,544.69
	2011-2012	178	12,763.24
Total		**334**	**16,403.53**
Ministry of Water Resources	1986-87	3	12.50
	1987-88	1	4.04
	1988-89	2	4.23
	1989-90	1	0.50
	1990-91	3	7.17
	1991-92	3	6.56
	2000-01	1	3.34
	2001-02	2	40.00
	2006-07	5	36.53
	2007-08	13	81.98
	2008-09	50	780.17
	2009-10	48	374.52
	2010-11	91	1,683.34
	2011-12	56	763.95
Total		**279**	**3,798.83**
Grand Total		**9,981**	**1,87,710.98**

Appendix V (Refer to Paragraph 1.11)

Statement of losses and irrecoverable dues written off/waived during 2012-13

(Amount in ₹ lakh)

Name of Ministry/ Department	Write off of losses and irrecoverable dues due to									
	Failure of system		Neglect/fraud etc.		Other reasons		Waiver of recovery		Ex-gratia Payments	
	No. of cases	Amount	No. of cases	Amount	No. of cases	Amount	No. of cases	Amount	No. of cases	Amount
Department of Atomic Energy	-	-	-	-	24	10.50	-	-	-	-
Department of Bio-Technology	Nil									
Department of Science and Technology	-	-	1	0.003	1	0.003	-	-	-	-
Department of Scientific and Industrial Research	Nil									
Department of Space	-	-	-	-	4	0.80	2	11.14	-	-
Ministry of Earth Sciences	Nil									
Ministry of Environment and Forests	Not available									
Ministry of New and Renewable Energy	Nil									
Ministry of Water Resources	Not available									
Total	**-**	**-**	**1**	**0.003**	**29**	**11.303**	**2**	**11.14**	**-**	**-**

Appendix VI (Refer Paragraph 1.13)

Summarised position of the Action Taken Notes (ATNs) awaited from various Ministries/ Departments up to the year ended March 2013 as of March 2014- ATNs which have not been received from the Ministry/Department even for the first time

Sl. No	Report No. & Year	Paragraph No.	Para title	Delay in submission of ATNs (in months)
DEPARTMENT OF ATOMIC ENERGY				
1.	13 of 2012-13	10.1	Avoidable expenditure of ₹3.32 crore	15
2.	9 of 2012-13	Standalone	Performance Audit on activities of Atomic Energy Regulatory Board	15
3.	22 of 2013	2.1	Avoidable expenditure on compensation due to breach of agreement	2
4.	22 of 2013	2.2	Hasty procurement of equipment without creating infrastructure facilities for installation	2
DEPARTMENT OF SCIENCE AND TECHNOLOGY				
5.	13 of 2007 (PA)	3	Internal controls in DST	78
6.	22 of 2013	5.1	Avoidable expenditure on hiring of office premises	2
7.	22 of 2013	5.2	Inadmissible payment of Transport Allowance	2
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH				
8.	22 of 2013	4.1	Public Private Partnership for setting up 'The Centre for Genomic Application' by Institute of Genomics and Integrative Biology	2
MINISTRY OF EARTH SCIENCES				
9.	22 of 2013	8.1	Irregular introduction of pension scheme and diversion of funds	2
MINISTRY OF ENVIRONMENT AND FORESTS				
10.	21 of 2011-12	Standalone	Performance Audit of Water Pollution in India	22
11.	22 of 2013	6.1	Repeated unauthorized creation and up-gradation of posts by Central Pollution Control Board	2
12.	21 of 2013	Standalone	Compensatory Afforestation in India	2
MINISTRY OF WATER RESOURCES				
13.	22 of 2013	7.1	Maintenance of Farakka Barrage and its ancillaries	2

Appendix VII (Refer Paragraph 1.13)

Summarised position of the Action Taken Notes (ATNs) awaited from various Ministries/ Departments up to the year ended March 2013 as of March 2014 - ATNs on which Audit has given comments/observations but revised ATNs have not been received

Sl. No.	Report No. & Year	Paragraph No.	Title	Delay in submission of ATNs (in months)
DEPARTMENT OF ATOMIC ENERGY				
1.	5 of 1999	2.4	Idle equipment	4
2.	5 of 2001	5.4	Wasteful expenditure (Sl no. 5.19 to 5.22)	11
3.	5 of 2001	5.5	Recover at the instance of audit(Sl no. of para 5.23 to 5.25)	5
4.	5 of 2002	9.1	Avoidable expenditure due to negligence	5
5.	PA 19 of 2008	Standalone	Management of Fuel for Pressurised Heavy Water Reactor (Front end of Nuclear Fuel Cycle)	45
6.	CA 16 of 2008-09	2.5	Non-establishment of world class gamma-ray observatory	2
7.	PA 13 of 2010-11	Standalone	Procurement of Stores and Inventory Management	2
DEPARTMENT OF BIOTECHNOLOGY				
8.	5 of 2003	3.1	Review of DBT	124
DEPARTMENT OF SCIENCE AND TECHNOLOGY				
9.	5 of 2004	3.1	Review of Technology, Information, Forecasting and Assessment Council	8
10.	5 of 2005	5.1	Unfruitful expenditure during GTS-Bicentenary celebration	101
11.	1 of 2006	3	Functioning of Technology Development Board	52
12.	CA 3 of 2008	5.1	Unfruitful expenditure	38
13.	CA 16 of 2008-09	5.1	Non-recovery of dues despite development of technology	39
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH				
14.	6 of 1996	5.2	Review on Central Road Research Institute, New Delhi	2
15.	5 of 1998	2.1	Review of Manpower Audit of Council of Scientific and Industrial Research	156
16.	5 of 1998	2.3	Review of Industrial Toxicology	6

Sl. No.	Report No. & Year	Paragraph No.	Title	Delay in submission of ATNs (in months)
			Research Centre, Lucknow	
17.	5 of 2001	3.2	National Institute of Oceanography	14
18.	5 of 2005	6.1	Wasteful expenditure	84
19.	2 of 2007	13.1	Non-recovery of Service Tax	6
20.	CA 16 of 2008-09	4.1	Non-recovery of dues from private company on short closure of the project	45
21.	CA 16 of 2008-09	4.2	Recovery of dues at the instance of Audit	20
22.	CA 16 of 2008-09	4.4	Activities of Institute of Minerals and Materials Technology, Bhubaneswar	4
DEPARTMENT OF SPACE				
23.	CA 16 of 2011-12	19.2	Avoidable payment of electricity duty and cess	15
24.	21 of 2010-11	Standalone	Activities of National Remote Sensing Centre	4
25.	22 of 2013	3.3	Loss due to unsafe transport and belated insurance of consignment	2
MINISTRY OF EARTH SCIENCES				
26.	2 of 2007 (TA)	5.1	Wasteful expenditure	16
27.	CA 3 of 2008	7.1	Non-achievement of the objectives of modernizing the Accounting and Personnel Management functions	14
MINISTRY OF ENVIRONMENT AND FORESTS				
28.	5 of 1998	9.1	Review of Indian Council of Forestry Research and Education, Dehradun	27
29.	3B of 2001	1.0	Implementation of environment act relating to water pollution	7
30.	5 of 2002	3.1	Review of Zoological Survey of India	12
31.	5 of 2003	10.1	Avoidable payment of interest and non-receipt of refund of Income Tax	23
32.	18 of 2006 (PA)	Standalone	Conservation and Protection of Tigers in Tiger Reserves	38
33.	CA 3 of 2008	6.1	Injudicious decision of construction of Scholar Transit Hostel	16
34.	CA 16 of 2008-09	6.1	Failure of village tree plantation project	22
35.	CA 16 of 2008-09	6.2	Inadmissible payment of Transport Allowance	23

Sl. No.	Report No. & Year	Paragraph No.	Title	Delay in submission of ATNs (in months)
36.	17 of 2010-11	2.1	Failure of a scheme for increasing tree cover	9
37.	17 of 2010-11	2.2	Non-achievement of objective of developing forest resources	31
38.	17 of 2010-11	3.2	Role of Botanical Survey of India in meeting India's commitment to the Convention on Biological Diversity	13
39.	17 of 2010-11	4.2	Non-achievement of objectives of control of pollution caused by leather tanneries	21
40.	17 of 2010-11	5.1	Activities of National Museum of Natural History, New Delhi	4
MINISTRY OF WATER RESOURCES				
41.	4 of 2010-11	Standalone	Performance Audit of the Accelerated Irrigation Benefits Programme	16

Appendix VIII (Refer to Paragraph 3.1)

Details of fraudulent payment of legal fees made by Indian Association for the Cultivation of Science and Bose Institute

Sl. No.	Bill date	Date of appearance claimed in the bill	Amount paid (₹ in lakh)	No. of dates on which hearings were not held	No. of dates on which name of advocate was not mentioned in the orders of the court	No. of dates after the date on which case was disposed of by the court	No. of dates in respect of case that did not pertain to the institute	Remarks
INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE, KOLKATA								
Writ Petition No. 19720(W) of 2006 (Moly Biswas, Petitioner versus Union of India & others)								
1.	25.09.2008	18.05.06, 19.05.06, 12.07.06, 17.08.06, 19.09.06, 20.12.06, 22.12.06, 19.03.07, 29.03.07, 24.04.07, 15.05.07, 07.06.07, 17.07.07, 14.08.07, 11.12.07, 12.12.07, 14.12.07, 19.12.07	1.21	18	-	-	-	The case was filed on 25.08.2006. Therefore the dates mentioned in the bill prior to 25.08.2006 were incorrect. Further, there was only one order dated 06.11.2006 in respect of the case.
W.P No. 3917(W) of 2010. Dr. Pushan Majumdar – vs – Union of India and other 11 analogous cases.								
2.	10.03.2010	03.03. 10	6.06	1	-	-	-	There was no mention of the case in the Daily Supplementary List to the Combined Monthly List of cases on and from 1 March 2010 for hearing on 3 March 2010.
3.	13.03.2010	09.03. 10	6.42	-	1	-	-	Order of High Court at Calcutta dated 09.03.10 did not show appearance of advocate.
4.	27.03.2010	17.03.10, 18.03.10, 23.03.10	2.02	1	2	-	-	Orders of High Court at Calcutta dated 17.03.10 and 18.03.10 did not show

Sl. No.	Bill date	Date of appearance claimed in the bill	Amount paid (₹ in lakh)	No. of dates on which hearings were not held	No. of dates on which name of advocate was not mentioned in the orders of the court	No. of dates after the date on which case was disposed of by the court	No. of dates in respect of case that did not pertain to the institute	Remarks
								appearance of advocate. There was no order dated 23.03.10.
5.	10.07.2010	16.04.10, 28.04.10, 05.05.10, 18.05.10	5.12	4	-	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate.
MAT No. 1521 of 2010. (Renumbered as FMA 16) Dr. Pushan Majumdar – vs – Union of India and other 11 analogous cases.								
6.	13.04.2011	04.01.11, 25.01.11, 07.02.11	3.84	3	-	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate.
7.	20.08.2011	28.02.11, 07.03.11, 14.03. 11	3.84	3	-	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate.
8.	02.09.2011	28.03.11, 29.03.11	2.55	2	-	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate.
9.	01.02.2012	17.01.12, 01.02.12	2.56	2	-	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate.

Sl. No.	Bill date	Date of appearance claimed in the bill	Amount paid (₹ in lakh)	No. of dates on which hearings were not held	No. of dates on which name of advocate was not mentioned in the orders of the court	No. of dates after the date on which case was disposed of by the court	No. of dates in respect of case that did not pertain to the institute	Remarks
10.	03.03.2012	01.02.12, 02.02.12, 17.02.12, 18.02.12, 28.02.12	1.26	3	2	-	-	Appearance for 01.02.2012 was shown in bill at Sl. No. 9 also. **Therefore payment for the date was claimed twice.** There were no orders of High Court at Calcutta on 01.02.12, 18.02.12 and 28.02.12. From the orders dated 02.02.12 and 17.02.12 it was observed that appearance of the advocate was not mentioned in the order.
11.	28.04.2012	02.03.12, 07.03.12, 14.03.12, 16.03.12, 21.03.12, 23.03.12, 28.03.12, 30.03.12	2.02	7	1	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate except on 14.03.12. Even on the said date, appearance of the advocate was not mentioned in the order.
W.P No. 8619 of 2012. Ashok Kr. Roy – vs – IACS and others (Merged with 1521)								
12.	10.11.2012	02.05.12, 03.05.12, 10.05.12, 29.06.12, 03.07.12, 26.08.12, 28.08.12	1.18	4	3	-	-	There were no orders of High Court at Calcutta on 03.05.12, 29.06.12, 03.07.12 and 26.08.12. Further, from the orders dated 02.05.12, 10.05.12 and 28.08.12 it was observed that appearance of the advocate was not mentioned in the order.

Sl. No.	Bill date	Date of appearance claimed in the bill	Amount paid (₹ in lakh)	No. of dates on which hearings were not held	No. of dates on which name of advocate was not mentioned in the orders of the court	No. of dates after the date on which case was disposed of by the court	No. of dates in respect of case that did not pertain to the institute	Remarks
WP No. 8517(W) of 2005 Shri Golokbehari Chatterjee Vs The Collector of Land Acquisition and others.								
13.	21.05.2007	25.04.05, 27.04.05, 29.04.05, 02.05.05, 05.05.05	0.34	4	1	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate except on 05.05.05. Even on the said date, appearance of the advocate was not mentioned in the order.
BOSE INSTITUTE, KOLKATA								
W.P No. 20437(W) of 2006/CAN 274 of 2009. Kalipada Das – vs – Union of India and others.								
14.	17.08.2009	19.12.08, 12.01.09, 21.01.09, 17.03.09, 25.03.09, 31.03.09, 20.05. 09, 17.06.09, 15.07. 09, 22.07.09, 29.07. 09	1.23	11	-	-	-	Under the case, there were only two orders dated 19.12.2006 and 07.11.2006. Further, CAN 274 of 2009 did not pertain to the institute.
WP No. 10551(W) of 1997, Paschim Banga Security Karmi Union of India and others.								
15.	19.11.2011	04.01.11, 11.01.11, 18.01.11, 25.01.11, 07.02.11, 15.02.11, 22.02.11, 28.02.11, 08.03.11, 15.03.11, 22.03.11, 28.03.11, 29.03.11, 31.03.11	1.41	14	-	14	-	The case was disposed of on 15.1.10. Therefore, claims made for dates subsequent to 15.01.2010 were fraudulent.

Sl. No.	Bill date	Date of appearance claimed in the bill	Amount paid (₹ in lakh)	No. of dates on which hearings were not held	No. of dates on which name of advocate was not mentioned in the orders of the court	No. of dates after the date on which case was disposed of by the court	No. of dates in respect of case that did not pertain to the institute	Remarks
16.	11.11.2009	08.08.08, 10.09.08, 19.09.08, 19.11.08, 26.11.08, 10.12.08, 19.12.08, 23.12.08, 21.01.09, 28.01.09, 19.02.09, 16.03.09, 30.03.09	1.68	13	-	-	-	Under the case, there were orders dated 21.05.1999, 30.06.1999, 29.07.1999 and 04.12.2009 only. Therefore claims made for appearances on the dates mentioned in the bill were incorrect.
MAT No.1436 of 2008, Tarun Chakraborty vs. Bose Institute (Renumbered as FMA 300 of 2009)								
17.	5.8.2010	05.01.10, 06.01.10, 14.01.10, 19.02.10, 24.03.10, 31.03.10, 07.04.10, 21.04.10	0.89	8	-	8	-	The case was disposed of on 17.08.2009. Therefore, claims made for dates subsequent to 17.08.2009 were fraudulent.
18.	06.09.11	21.01.11, 27.01.11, 15.02.11, 23.02.11, 28.02.11, 09.03.11, 16.03.11, 30.03.11, 31.03.11, 05.04.11, 12.04.11, 19.04.11, 27.04.11	1.31	13	-	13	-	The case was disposed of on 17.08.2009. Therefore, claims made for dates subsequent to 17.08.2009 were fraudulent.
19.	24.05.12	12.05.11, 15.06.11, 21.07.11, 22.07.11, 28.07.11, 29.07.11, 17.08.11, 18.08.11, 25.08.11, 07.09.11, 15.09.11, 22.09.11, 29.09.11, 30.09.11	1.65	14	-	14	-	The case was disposed of on 17.08.2009. Therefore, claims made for dates subsequent to 17.08.2009 were fraudulent.

Sl. No.	Bill date	Date of appearance claimed in the bill	Amount paid (₹ in lakh)	No. of dates on which hearings were not held	No. of dates on which name of advocate was not mentioned in the orders of the court	No. of dates after the date on which case was disposed of by the court	No. of dates in respect of case that did not pertain to the institute	Remarks
WP No. 27359(W) of 2007, Shyamal Kr. Ghosh & Anr vs Union of India and others.								
20.	10.03.2009	15.04.08, 22.04.08, 29.04.08, 30.04.08, 06.05.08, 15.05.08, 16.07.08, 23.07.08, 24.07.08, 31.07.08, 20.08.08	1.23	11	-	-	-	There were no orders of High Court at Calcutta on any of the dates mentioned in the bill submitted by the advocate.
WP No.6415 (W) of 2003 Shanti Sarkar & Anr. Vs Union of India and others.								
21.	20.02.2010	19.02.08, 19.03.08, 25.06.08, 21.08.08, 19.12.08, 21.01.09, 19.02.09, 25.03.09	0.9	8	-	-	-	Under the case, only one order was passed on 17.06.2003. No order was passed thereafter.
CAN No. 274 of 2009 Radha Devi vs. Narendra Singh Anand and ANR								
22.	05.08.2010	11.01.10, 12.01.10, 13.01.10, 14.01.10, 15.02.10, 16.02.10, 22.02.10, 23.02.10, 23.03.10, 30.03.10, 05.04.10, 26.04.10	1.35	-	-	-	12	This case did not pertain to the institute.
23.	22.01.2011	07.06.10, 08.06.10, 14.06.10, 15.06.10, 28.06.10, 29.06.10, 12.07.10, 13.07.10, 23.07.10, 30.07.10, 12.08.10, 19.08.10, 24.08.10 , 31.08.10	1.57	-	-	-	14	This case did not pertain to the institute.

Sl. No.	Bill date	Date of appearance claimed in the bill	Amount paid (₹ in lakh)	No. of dates on which hearings were not held	No. of dates on which name of advocate was not mentioned in the orders of the court	No. of dates after the date on which case was disposed of by the court	No. of dates in respect of case that did not pertain to the institute	Remarks
24.	31.03.2012	19.05.11, 22.06.11, 29.06.11, 18.08.11, 30.08.01, 05.09.11, 07.09.11, 21.09.11, 22.09.11, 28.09.11, 29.09.11, 02.11.11, 03.11.11, 15.11.11, 16.11.11, 17.11.11	1.88	-	-	-	16	This case did not pertain to the institute.
25.	04.08.2012	04.01.12, 05.01.12, 10.01.12, 11.01.12, 18.01.12, 19.01.12, 24.01.12, 25.01.12, 01.02.12, 02.02.12, 07.02.12, 09.02.12	1.41	-	-	-	12	This case did not pertain to the institute.
	TOTAL		**54.93**	**144**	**10**	**49**	**54**	

Appendix IX (Refer to Paragraph 4.3)

Status of supply of deliverables in GEOSAT/ IRS contracts and additional expenditure

Table-1: GEOSAT Contract

Sl. No.	Name of Structure	Satellite	Drawing Number	Quantity	Delivery date	Year	Man Hours	Rate (in ₹)	Amount paid (in ₹ lakh)	Man hours in excess of 60,000	Amount (₹ lakh)
1		Brackets and Misc. components				03-04	12,474.34	700	87.32		
2	Final Assembly	INSAT 4A	INS3-SR-120-000	1	May 2004	04-05	10,119.07	700	70.83		
3	Final Assembly-INS2K	INSAT 4C	INS3-SR-150-000	1	Aug 2005	05-06	16,966.11	700	118.76		
4	Final Assembly-INS3K	INSAT 4B	INS3-SR-170-000	1	Aug 2005	05-06					
5	Final Assembly-INS3K	I-3K-STM	INS3-SR-170-000	1	Aug 2006	06-07	23,571.97	749	176.55	3,131.49	23.46
6	Final Assembly-INS2K	INSAT 4CR	INS3-SR-150-000	1	Dec 2006	06-07					
7	Final Assembly-INS2K	GSAT 4	INS3-SR-150-000	1	Feb 2007	06-07					
8	Final Assembly-	W2M	INS3-SR-170-0000	1	Sep 2007	07-08	20,259.52	801	162.28	20,259.52	162.28
Sub Total- 1 (Deliveries up to March 2008)				7			83,391.01	-	615.74		
9	Final Assembly-	HYLAS	INS2-SR-157-0000	1	Aug 2008	08-09	9,000.00	801	72.09	9,000.00	72.09
10	Final Assembly-	INSAT 3D	INS2-SR-150-0000	1	Dec 2008	08-09					
11	Final Assembly-	GSAT-5P	INS2-SR-154-0000	1	Feb 2010	09-10	2,550.30	950	24.23	2,550.30	24.23
Sub Total- 2 (Deliveries after March 2008)				3			11,550.30	-	96.32		
Total				**10**			**94,941.31**	**-**	**712.06**	**34,941.31**	**282.06**

Three GEOSAT structures were assembled beyond March 2008, thereby HAL was benefitted by an amount of ₹3.80 lakh being equal to ₹24.23 – (2,550.30 X 801) lakh on account of implementation of escalation clause.

Table-2: IRS Contract

Sl. No.	Name of Structure	Satellite	Drawing Number	Quantity	Delivery date	Year	Man Hours	Rate (in ₹)	Amount paid (₹ in lakh)	Man hours in excess of 60,000	Amount (₹ lakh)
1						2003-04	7,777.09	700	54.44		
2	Final Assembly-CARTOSAT	Carto-2	CARTO-SR-40-000	1	Oct 2004	2004-05	7,924.59	700	55.47		
3	Final Assembly-CARTOSAT	Carto-2	CARTO-SR-40-000	1	June 2005	2005-06	9,474.76	700	66.32		
4	Final Assembly-SRE	SRE	SRE-SR-30-000	1	July 2005	2005-06					
5	Final Assembly-SRE	SRE	SRE-SR-30-000	1	Dec 2005	2005-06					
6	Final Assembly-CARTOSAT	Carto-2A	CARTO-SR-40-000	1	June 2006	2006-07	14,356.74	749	107.53		
7	Final Assembly 1-1.5K	Ocean-2	IRS-SR-80-000	1	Aug 2006						
8	Final Assembly 1-1.5K	Chand-1	IRS-SR-80-000	1	Mar 2007						
9	Final Assembly	Anusat	ANU-SR-052-0000	1	Mar 2007						
10	Final Assembly	TWSAT-IMS	SMSAT-SR-060-000	1	Nov 2007	2007-08	17,206.97	801	137.83		
Sub Total- 1 (Deliveries up to March 2008)				9			56,740.15	-	421.59		
11	Final Assembly	RISAT	RISAT-SR-050-0000	1	Sep 2008	2008-09	8,731.24	801	69.94	5,471.39	43.83
12	Payload Assembly	Meghatrophiques	IRS-SR-60-0000	1	Apr 2009	2009-10	4,614.00	950	43.83	4,614.00	43.83
13	Final Assembly	Cartosat	CARTO-SR-40-0000	1	May 2009	2009-10					
14	Final Assembly	Youthsat-IMS	SMSAT-SR-060-0000	1	Feb 2010	2009-10					
15	Final Assembly	ASTROSAT	ASTRO-SR-095-0000	1	Mar 2010	2009-10					
16	Final Assembly	SARAL	SMSAT-SR-062-0000	1	May 2011	2010-11	1,030.00	1,016.50	10.47	1,030.00	10.47
17	Final Assembly	SARAL	IRS-SR-60-000	1	Dec 2011	2011-12	3,030.00	1,087.65	32.96	3,030.00	32.96
Sub Total- 2 (Deliveries after March 2008)				7			17,405.24	-	157.20		
Total				**16**			**74,145.39**	**-**	**578.79**		**131.09**

Seven IRS structures were assembled beyond March 2008, thereby HAL was benefitted by an amount of ₹17.78 lakh being equal to ₹43.83 – (4,614 X 801) + ₹10.47 – (1,030 X 801) + ₹32.96 – (3,030 X 801) lakh on account of implementation of escalation clause.

Appendix X (Refer to Paragraph 6.1.2.1(i))

Targets and achievements of Zoological Survey of India in surveys, studies conducted and publications brought out

1. States

Sl. No.	Name of state	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
1	Goa	1993-2006	1993-2002	2007	Not available	2008	2008	Though date of commencement and completion of studies was not indicated, faunal account was stated to be published under State Fauna Series 16:1-531.
2	Tamil Nadu	1995-2006	Not available	2008	Not available	2010	2009	Though date of commencement and completion of survey and studies was not indicated, two volumes of faunal account were stated to be published (2009 & 2011) under State Fauna Series 17 (Part-I):1-256 & State Fauna Series 17 (Part-2):1-418.
3	Kerala	2000-2010	1999-2002	2011	Not available	2012	Not published	Duration of survey was curtailed from 10 years to three years. MoEF stated (March 2014) that manuscripts of eight faunal groups were under review and would be published by 2015-16.
4	Andhra Pradesh	2001-2007	1998-2002	2009	Not available	2011	1993-2007	Though date of commencement and completion of studies was not indicated, seven volumes of faunal account were stated to be published in State Fauna Series-5 (Vol.1 to Vol.7): 1993-2007.
5	Uttar Pradesh	2001-2008	2005-2011	2010	Not available	2012	Not published	Though date of commencement and completion of studies was not indicated MoEF stated (March 2014) that manuscripts were under review and publication would be published during 2014-15.
6	Uttarakhand	2002-2008	2000-2003	2010	Not available	2012	2010	Though date of commencement and completion of studies was not indicated, three volumes of faunal account were stated to be published in 2010 in State Fauna Series-18 (Part-1):1-621, 18 (Part-2): 1-748 & 18 (Part-3): 1-307.

Sl. No.	Name of state	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
7	Himachal Pradesh	2004-2010	2009-2012	2012	Not completed	2014	Not published	MoEF stated (March 2014) that taxonomic Studies were being undertaken and Fauna of Himachal Pradesh would be compiled and published by 2016-17.
8	Chandigarh	2007-2010	Not taken up	2011	Not taken up	2012	Not published	MoEF stated (March 2014) that this programme was not proposed.
9	Maharashtra	2004-2010	2008-2012	2012	Not available	2014	2012	Though date of commencement and completion of studies was not indicated MoEF stated (March 2014) that two volumes of Fauna of Maharashtra published under State Fauna Series-20 (Part-1:1-480 & 2:1-673) in 2012. The reply needs to be viewed in the light of the fact that ZSI completed survey only in 2012.
10	Madhya Pradesh	2005-2010	1990-2003	2011	Not available	2012	2007-12	Though date of completion of studies was not indicated, three volumes of faunal account was stated to be published under state Fauna Series-15 (part-1: 1-564; 2: 1-152 & 3: 1-202) in 2007; 2008 & 2012.
11	Chattisgarh	2005-2007	Not available	2009	Not available	2011	2007-12	Though date of completion of studies was not indicated, three volumes of faunal account was stated to be published under state Fauna Series-15 (part-1: 1-564; 2: 1-152 & 3: 1-202) in 2007; 2008 & 2012.
12	Haryana	2007-2010	2006-2011	2012	Not completed	2014	Not published	MoEF stated (March 2014) that taxonomic studies were being undertaken and Fauna of Haryana under State Fauna Series would be compiled and published by 2016-17.
13	Karnataka	2006-2012	1998-2011	2014	2011	2016	Not due	MoEF stated (March 2014) that faunal account was published in 2013.

2. Ecosystems

Kind of Ecosystem	Sl. No.	Name of Ecosystem	Surveys conducted		Studies conducted		Publications brought out		Remarks
			Target	Actual	Target	Actual	Target	Actual	
Himalayan	1	Western Himalayas: Ladakh: J&K	2004-2008	Not available	2010	Not available	2011	2005	MoEF stated (March 2014) that faunal account of Western Himalaya (Part-1 : 1-227) 1995 and (Part-2 : 1-359) in 2005 were published.
	2	Western Himalayas: Pangi Valley, Himachal Pradesh	2004-2007	Not available	2009	Not available	2011	2013	Though date of completion of survey and studies was not indicated it was stated that faunal diversity of Pangi Valley, Chamba, Himachal Pradesh was published in 2013 under Himalayan ecosystem Series-3: 1-120.
Desert	3	Rajasthan	1999-2003	Not available	2005	Not available	2007	Not published	Though date of completion of survey and studies was not indicated it was stated that accounts of various faunal groups were published. Audit however observed from Catalogue of ZSI 2014 that no accounts on Desert Ecosystem were published.
	4	Gujarat	2004-2008	Not available	2010	Not available	2012	Not published	Though date of completion of survey and studies was not indicated it was stated that two volumes of Fauna of Gujarat were published under State Fauna Series-8 (Part-1:1-464 (2000) & Part-2: 1-427 (2004). Audit however observed from Catalogue of ZSI 2014 that no ecosystem series on Desert Ecosystem was published.
Marine and Island	5	Andaman and Nicobar	2001-2010	Not available	2012	Not available	2014	Not published	Though MoEF stated (March 2014) that fauna of Andaman and Nicobar Islands was published in 2010 under State Faunal Series-19(1): 1-300 however, Audit observed from Catalogue of ZSI 2014 that no ecosystem series on Marine Ecosystem was published.

Kind of Ecosystem	Sl. No.	Name of Ecosystem	Surveys conducted		Studies conducted		Publications brought out		Remarks
			Target	Actual	Target	Actual	Target	Actual	
	6	East Coast: Andhra Pradesh	2003-2008	Not available	2009	Not available	2010	Not published	Though date of survey and completion of studies was not indicated, MoEF stated (March 2014) that Fauna of Vamsadhara and Nagavali estuaries, Andhra Pradesh were published under Estuarine Ecosystem Series – 6:1-113 (2010); Fauna of Krishna estuary EES-5:1-298(2009). Audit however observed from Catalogue of ZSI 2014 that no ecosystem series on Marine Ecosystem was published.
	7	East Coast: Orissa	2007-2010	Not available	2012	Not available	2014	Not published	Though MoEF stated (March 2014) that fauna of Brahamani Baitarani Estuary Complex and Decopod Crustacean Fauna of Nuanai estuary, Odisha were published under Estuarine Ecosystem Series-8:1-64(2013), Audit however, observed from Catalogue of ZSI 2014 that no ecosystem series on Marine Ecosystem was published.
	8	West Coast: Kerala	2007-2010	Not available	2012	Not available	2014	Not published	Though the status of commencement of survey and studies were not indicated, MoEF stated (March 2014) that faunal diversity of Vembanad Lake, Kerala was published under Wetland Ecosystem Series-10 :1-192 (2009). Audit however observed from Catalogue of ZSI 2014 that no series on Marine Ecosystem was published.
Tropical Rain Forest	9	Western Ghats, Kerala	2007-2009	Not available	2010	Not available	2011	Not published	Though the status of commencement of survey and studies were not indicated, MoEF stated (March 2014) that Atlas of Endemic Amphibians of Western Ghats was published under Special Publication Series-34 :1-220 (2013). Audit however observed from Catalogue of ZSI 2014 that no ecosystem series on Tropical Rain Forest Ecosystem was published.

Kind of Ecosystem	Sl. No.	Name of Ecosystem	Surveys conducted		Studies conducted		Publications brought out		Remarks
			Target	Actual	Target	Actual	Target	Actual	
	10	Western Ghats, Tamil Nadu	2007-2009	Not available	2010	Not available	2011	Not published	Though the status of commencement of survey and studies were not indicated, MoEF stated (March 2014) that two volumes of Fauna of Tamil Nadu were published (2009 & 2011) under State Fauna Series 17 (part-I): 1-256; State Fauna Series 17 (Part-2):1-418; and Atlas of Endemic Amphibians of Western Ghats published under Special Publication Series -34:1-220(2013) which includes fauna recorded from Western Ghats of Tamil Nadu. Audit however observed from Catalogue of ZSI 2014 that no ecosystem series on Tropical Rain Forest Ecosystem was published.
	11	Western Ghats, Karnataka	2007-2009	Not available	2011	Not available	2013	Not published	Though the status of commencement of survey and studies were not indicated, MoEF stated (March 2014) that fauna of Karnataka was published (2013) under State Fauna Series 21:1-595 which includes fauna recorded from Western Ghats of Karnataka. Audit however observed from Catalogue of ZSI 2014 that no ecosystem series on Tropical Rain Forest Ecosystem was published.
Estuarine	12	Krishna Estuary, Andhra Pradesh	1996-2003	1996-2008	2005	Not available	2007	2009	Audit observed that the faunal account did not focus on Andhra Pradesh as planned.
	13	Vansdhara-Nagaveli Estuary Andhra Pradesh	2000-2003	2000-2008	2005	Not available	2007	2010	Audit observed that the faunal account did not focus on Andhra Pradesh as planned.

Kind of Ecosystem	Sl. No.	Name of Ecosystem	Surveys conducted		Studies conducted		Publications brought out		Remarks
			Target	Actual	Target	Actual	Target	Actual	
	14	Cauvery Estuary, Tamil Nadu	2004-2007	2008-2011	2011	Not completed	2011	Not published	MoEF stated (March 2014) that surveys were completed, taxonomic studies were ongoing and document were expected to be compiled and published by 2015-16.
	15	Pennar Estuary, Andhra Pradesh	2008-2010	2011-2014	2012	Not completed	2014	Not published	MoEF stated (March 2014) that surveys were completed, taxonomic studies were ongoing and document were expected to be compiled and published by 2015-16.
Freshwater	16	Nalsarover, Gujarat	1998-2003	1998-2007	2005	Not available	2007	Not published	MoEF stated (March 2014) that fauna of Nalsarover, Gujarat was published under Wetland Ecosystem Series-11:1-137 (2009). Audit however observed from Catalogue of ZSI 2014 that no ecosystem series on Fresh Water Ecosystem was published.
	17	Crater lake, Maharashtra	2000-2005	2000-2007	2007	Not available	2009	Not published	MoEF stated (March 2014) that fauna of Lunar Wildlife Sanctuary, Maharashtra under Conservation Area Series-37:1-208 (2008) were published along with research papers. Audit observed from Catalogue of ZSI 2014 that no ecosystem series on Fresh Water Ecosystem was published.
	18	Govind Sagar, Punjab	2001-2004	2002-2007	2006	Not completed	2008	Not published	MoEF stated (March 2014) that Taxonomic Studies were being completed and Fauna of Govind Sagar, Punjab would be compiled and published by 2015-16.
	19	Chandratal, Himachal Pradesh	2002-2004	Not taken up	2006	Not taken up	2008	Not published	MoEF stated (March 2014) that the programme was not initiated.

Kind of Ecosystem	Sl. No.	Name of Ecosystem	Surveys conducted		Studies conducted		Publications brought out		Remarks
			Target	Actual	Target	Actual	Target	Actual	
	20	East Kolkata Wetlands	2003-2006	Not available	2007	Not completed	2008	Not published	MoEF stated (March 2014) that Taxonomic Studies were being completed and Fauna of East Kolkata Wetland collected was being identified and document would be published by 2015-16.
	21	Tso Morai, Jammu and Kashmir	2004-2006	Not taken up	2008	Not taken up	2010	Not published	MoEF stated (March 2014) that due to non-availability of requisite expertise; the study could not be undertaken.
	22	Bhoj, Madhya Pradesh	2006-2009	2005-2006	2011	Not available	2013	Not published	From the details provided by ZSI, it was seen that survey was completed even before initiation of the planned period of survey. MoEF stated (March 2014) that the species identified were included in State fauna of Madhya Pradesh in Part-3. Audit observed from Catalogue of ZSI 2014 that no ecosystem series on Fresh Water Ecosystem was published.
	23	Keoladeo Ghana, Rajasthan	2006-2009	1998-2007	2011	Not available	2013	Not published	MoEF stated (March 2014) that part of the study was published as research paper: Sharma, G. (2011). Studies on diversity, status and conservation of damselflies and dragonflies in four protected habitats of Aravalli Range of Rajasthan and their role as biological control agents. *Journal of Insect Science*. 24 (spl. Issue): 45-50. Audit observed from Catalogue of ZSI 2014 that no ecosystem series on Fresh Water Ecosystem was published.
	24	Ropar, Punjab	2006-2008	2005-2007	2010	Not available	2012	Not published	MoEF stated (March 2014) that publications were brought out audit however observed from Catalogue of ZSI 2014 that no ecosystem series on Fresh Water Ecosystem was published.

Kind of Ecosystem	Sl. No.	Name of Ecosystem	Surveys conducted		Studies conducted		Publications brought out		Remarks
			Target	Actual	Target	Actual	Target	Actual	
	25	Narayan Sarovar	2007-2009	Not available	2011	Not completed	2013	Not published	MoEF stated (March 2014) Taxonomic Studies were being completed and Fauna of Narayan Sarovar would be compiled and published by 2015-16.

3. Protected Areas

Sl. No.	Name of Protected Area	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
1	Hemis National Park, Jammu and Kashmir	2000-2007	1997-2006	2008	Not available	2010	Not published	Though details of completion of studies were not indicated, MoEF stated that documents were published as 1. Paliwal, R. (2008). Earthworms of Hemis National Park, Jammu and Kashmir, India. Records ZSI. Vol 108 (3). 2. Tak, P.C.; Sharma, D.K; Thakur, M.L,; Saikai, Uttam (2009). Birds of Ladakh and Analysis of Their Status. Vol. 109. The reply was silent about publication of faunal account.
2	Thettekad Bird Sanctuary, Kerala	2006-2008	Not taken up	2009	Not taken up	2010	Not published	MoEF stated (March 2014) that due to non-grant of permission to enter into protected area, the programme was finally recommended be dropped by the PAC.
3	Pachmari, Madhya Pradesh	2004-2007	1999-2005	2008	Not available	2010	2009	Details of conduct of studies were not available with ZSI. Survey was taken up five years before the planned schedule.
4	Panna National Park, Madhya Pradesh	2004-2008	2000-2004	2009	Not available	2010	2005	Details of conduct of studies were not available with ZSI. Survey was taken up four years before the planned schedule.

Sl. No.	Name of Protected Area	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
5	Itanagar Wild Life Sanctuary	2004-2008	2000-2010	2009	Not completed	2010	Not published	MoEF stated (March 2014) that Taxonomic Studies were being completed.
6	Pin Valley National Park, Himachal Pradesh	2004-2008	2000-2005	2009	Not available	2010	2008	Details of conduct of studies were not available with ZSI. Survey was taken up four years before the planned schedule.
7	Hazaribagh National Park, Jharkhand	2004-2008	2000-2007	2009	2007	2010	Not published	MoEF stated (March 2014) that the document was under review and manuscript will be published by 2015.
8	Tale Valley Wild Life Sanctuary, Arunachal Pradesh	2002-2004	2002-2004	2006	Not taken up	2008	Not published	MoEF stated (March 2014) that Taxonomic studies were not conducted due to lack of expertise.
9	Bannerghatta National Park, Bengaluru	2002-2004	2002-2006	2006	Not available	2008	2007	Details of conduct of studies were not available with ZSI.
10	Corbett Tiger Reserve, Uttarakhand	2002-2004	2002-2006	2006	Not available	2008	2008	Details of conduct of studies were not available with ZSI.
11	Talchapper Wild Life Sanctuary, Rajasthan	2002-2004	2002-2006	2005	Not available	2007	2010	Details of conduct of studies were not available with ZSI.
12	Bandhavgarh National Park, Madhya Pradesh	2002-2005	2002-2007	2007	2007	2009	2010	-
13	Middle Button Island National Park, Andaman and Nicobar Islands	2002-2004	1996-2004	2006	Not available	2008	2007	Details of conduct of studies were not available with ZSI. Survey was taken up four years before the planned schedule.

Sl. No.	Name of Protected Area	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
14	North Button Island National Park, Andaman and Nicobar Islands	2002-2004	1996-2004	2006	Not available	2008	2007	Details of conduct of studies were not available with ZSI. Survey was taken up four years before the planned schedule.
15	South Button Island National Park, Andaman and Nicobar Islands	2002-2004	1996-2004	2006	Not available	2008	2007	Details of conduct of studies were not available with ZSI. Survey was taken up four years before the planned schedule.
16	Lawalang Wild Life Sanctuary, Jharkhand	2003-2005	Not taken up	2007	Not taken up	2009	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
17	Palamau National Park, Jharkhand	2004-2008	Not taken up	2008	Not taken up	2010	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
18	Mahuadaur Wild Life Sanctuary, Jharkhand	2004-2006	Not taken up	2008	Not taken up	2010	Not published	MoEF accepted (March 2014) that faunal survey of Mahaudaur Wild Life Sanctuary, Jharkhand was yet to be undertaken by ZSI.
19	Bhimashankar Wild Life Sanctuary, Maharashtra	2004-2007	2004-2006	2009	Not available	2011	2009	Details of conduct of studies were not available with ZSI.
20	Debang-Debang, Arunachal Pradesh	2005-2009	Not taken up	2011	Not taken up	2013	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
21	Mahao Forest Reserve, Arunachal Pradesh	2005-2007	Not taken up	2009	Not taken up	2011	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.

Sl. No.	Name of Protected Area	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
22	Saddle Peak National Park, Andaman and Nicobar Islands	2005-2007	2011-2014	2009	Not completed	2011	Not published	MoEF stated (March 2014) that Taxonomic Studies were being completed and Fauna of Saddle Peak National Park, Andaman and Nicobar Islands will be published by 2015-16.
23	Nongkhyliem Wild Life Sanctuary, Meghalaya	2005-2007	2012-2015	2009	Not completed	2011	Not published	MoEF stated (March 2014) that Taxonomic Studies were being completed and Fauna of Nongkhyliem Wild Life Sanctuary, Meghalaya will be published by 2015-16.
24	Siju Wild Life Sanctuary, Meghalaya	2005-2007	Not available	2009	Not completed	2011	Not published	MoEF stated (March 2014) that Taxonomic Studies were being completed and Fauna of Siju Wild life Sanctuary, Meghalaya will be compiled and published by 2015-16.
25	Valley of Flowers National Park, Uttarakhand	2005-2007	Not available	2009	Not available	2011	Not available	MoEF stated (March 2014) that detailed study was undertaken as part of MoEF Project on Protected Area of Fauna of Valley of Flower and report submitted to MoEF in 2006. Details of publications were not provided.
26	Indravati National Park, Chattisgarh	2006-2008	Not taken up	2010	Not taken up	2012	Not published	MoEF stated (March 2014) that Fauna of Indravati National Park, Chhattisgarh (those not covered in 2005) was proposed. However, due to disturbances in the study area, study could not be taken up.
27	Simlipal, Odisha	2006-2008	2001-2003	2010	Not available	2012	2006	From the details provided by ZSI, it was seen that survey completed prior to planned schedule. MoEF stated (March 2014) that faunal account was published as Faunal resources of Simlipal Biosphere Reserve under Conservation Area Series – 28:1-87 (2006). However, as the survey was conducted prior to the plan of PAC, it is evident that the publication also pertained to previous period.
28	Kalakad, Tamil Nadu	2006-2008	2012-2014	2010	Not available	2012	2009-11	Details of conduct of studies were not available with ZSI.

Sl. No.	Name of Protected Area	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
29	Nawegaon National Park, Maharashtra	2006-2009	Not available	2011	Not available	2013	2012	Details of conduct of survey and studies were not available with ZSI.
30	Gautam Buddha Wild Life Sanctuary, Bihar	2007-2009	Not taken up	2011	Not taken up	2013	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
31	Sonanadi Wild Life Sanctuary, Uttar Pradesh	2007-2010	Not taken up	2012	Not taken up	2014	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
32	Rani Jhansi Marine National Park, Andaman and Nicobar Islands	2008-2010	Not available	2012	Not available	2014	2012	Details of conduct of survey and studies were not available with ZSI.
33	East or Inglis Island National Park, Andaman and Nicobar Islands	2008-2010	2007-2011	2012	Not available	2014	Not published	MoEF stated (March 2014) that faunal account was being published in 2015-16
34	Mahatma Gandhi Marine National Park, Andaman and Nicobar Islands	2008-2010	2005-2008	2012	Not completed	2014	Not published	From the details provided by ZSI, it was seen that survey completed prior to planned schedule. MoEF stated (March 2014) that taxonomic studies were being completed and fauna of Mahatma Gandhi Marine National Park, Andaman and Nicobar Islands will be published in 2016-17.
35	Arial Island, Andaman and Nicobar Islands	2008-2010	Not taken up	2012	Not taken up	2014	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
36	Sariska Tiger Reserve, Rajasthan	2008-2010	2003-2006	2012	Not available	2014	2012	From the details provided by ZSI, it was seen that survey completed prior to planned schedule. MoEF stated (March 2014) that document was published, however, reply was silent about the publication of faunal account. Further, as

Sl. No.	Name of Protected Area	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
								the survey was conducted prior to the plan of PAC, it is evident that the publication also pertained to previous period.
37	Pakhuli Forest Reserve, Arunachal Pradesh	2008-2010	2002-2011	2012	Not available	2014	Not published	MoEF stated (March 2014) that manuscript was under preparation and would be published in 2016-17.
38	Manas National Park, Assam	2008-2010	Not available	2012	Not available	2014	1995	MoEF stated (March 2014) that some faunal groups were surveyed, studied and published 1995 under Fauna of Tiger Reserve (Sunderbans, Palamau, simlipal & Manas). Fauna of Conservation areas No. 8. 1-105. The date of publication indicates that it pertained to a previous survey.
39	Barnadi Wild Life Sanctuary, Assam	2008-2010	Not taken up	2012	Not taken up	2014	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
40	Point Calimore Wild Life Sanctuary, Tamil Nadu	2008-2010	2003-2006	2012	Not available	2014	2006	From the details provided by ZSI, it was seen that survey completed prior to planned schedule. MoEF stated (March 2014) that Avifaunal composition of Point Calimare Wildlife and bird Sanctuary, Tamil Nadu was published as conservation area series no 31:1-62 (2006). However, as the survey was conducted prior to the plan of PAC, it is evident that the publication also pertained to previous period.
41	Dudhwa National Park, Uttar Pradesh	2008-2010	Not taken up	2012	Not taken up	2014	Not published	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
42	Kanha National Park, Madhya Pradesh	2008-2011	Not available	2013	Not available	2015	Not due	MoEF stated (2014) that a research paper was published in 2006. However, as the survey was planned for 2008-11, it is evident that the publication pertained to a previous survey.

Sl. No.	Name of Protected Area	Surveys conducted		Studies conducted		Publications brought out		Remarks
		Target	Actual	Target	Actual	Target	Actual	
43	Jaisamand Wild Life Sanctuary, Rajasthan	2009-2011	Not taken up	2013	Not taken up	2015	Not due	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
44	Sandspur Wild Life Sanctuary, Uttar Pradesh	2009-2012	Not taken up	2014	Not taken up	2016	Not due	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.
45	Dalma Wild Life Sanctuary, Jharkhand	2010-2012	1999-2012	2014	Not available	2016	Not due	MoEF stated (March 2014) that taxonomic studies on Butterflies and Moths of Dalma WLS would be published in 2014-15.
46	Rajgir Wild Life Sanctuary, Bihar	2010-2012	Not taken up	2014	Not taken up	2016	Not due	MoEF stated (March 2014) that programme was not proposed due to lack of scientific expertise in the concerned regional centre.