



सत्यमेव जयते

Report of the Comptroller and Auditor General of India for the year ended March 2014



**Union Government
Scientific and Environmental
Ministries/Departments**

**Report No. 30 of 2015
(Compliance Audit)**

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Preface

This Report for the year ended March 2014 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 2013-14.

The instances mentioned in this report are those, which came to notice in the course of test audit for the period 2013-14 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 2013-14 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 seven 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 VII 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;**
- **Irregular financial benefits extended to employees; and**
- **Deficient internal controls**

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

Inefficient project management

Implementation of Drugs and Pharmaceutical Research Programme

Deficiencies in selection, financial management and monitoring of projects sanctioned by Department of Science and Technology under Drugs and Pharmaceutical Research Programme led to non-realisation of outstanding loans and interest of ₹ 73.68 crore, non-receipt of final project completion reports and consequent lack of information on outcome generated from the projects. The objectives of enhancing capabilities of Indian pharmaceutical industry and promoting them to develop new drugs at lower costs were not achieved.

(Paragraph 3.1)

New Millennium Indian Technology Leadership Initiative Scheme

New Millennium Indian Technology Leadership Initiative Scheme, implemented by Council of Scientific and Industrial Research with the objective of building, capturing and retaining a global leadership position for India in selected areas through scientific and technological developments, did not yield expected results. Out of 30 projects seen in audit, technologies were commercialised in only four projects. Nine industrial partners defaulted in repayment of loans of ₹ 64.92 crore. There were instances of insufficient monitoring, non-compliance with scheme guidelines and time and cost overruns.

(Paragraph 4.1)

Unfruitful expenditure due to non-functional website

Content managed website developed by the Ministry of Earth Sciences at a cost of ₹ 2.27 crore remained non-functional since February 2012, resulting in unfruitful expenditure.

(Paragraph 6.1)

Installation and upkeep of meteorological observatories by Regional Meteorological Centre, Kolkata

Maintenance of observatories set up by Regional Meteorological Centre, Kolkata for collection of various types of meteorological data was inadequate. This, together with shortage of manpower, resulted in observatories lying defunct, shortfalls in carrying out prescribed inspections of observatories, non-rectification of defective instruments, inadequate geographical coverage of areas under the centre and gaps in collection of meteorological data.

(Paragraph 6.2)

Implementation of E-waste (Management and Handling) Rules, 2011 by Central Pollution Control Board

Central Pollution Control Board did not conduct assessment of quantity of e-waste being generated/processed in the country and effectively coordinate with State agencies for collection and compilation of such data. The Board also failed to implement framework for reduction of use of hazardous substances in Electrical and Electronic Equipment manufactured and imported in the country.

(Paragraph 7.1)

Inordinate delay in completion of pilot projects for sewage treatment

Central Pollution Control Board took up a scheme for setting up demonstration projects for treatment of sewage at four locations. After more than four years of sanction and in spite of incurring expenditure of ₹ 8.22 crore, sewage treatment could not commence at any of the four locations due to lack of planning, coordination and monitoring.

(Paragraph 7.2)

Weaknesses in procurement and contract management

Avoidable expenditure due to poor management of land and delayed construction of office complex

Department of Science and Technology delayed executing lease deed in respect of land acquired from New Okhla Industrial Development Authority (NOIDA) for 21 years and failed to complete construction of office complex within permissible time period. Consequently, it incurred avoidable expenditure of ₹ 1.81 crore besides recurring liabilities towards penalties till completion of the construction.

(Paragraph 3.2)

Irregular financial benefits extended to employees

Implementation of Performance Related Group Incentive Scheme

Department of Atomic Energy introduced group incentives under Performance Related Incentive Scheme in May 2009. Review of implementation of the scheme in three units of Department of Atomic Energy, in which payment of group incentives of ₹ 32.19 crore was made during 2010-14, revealed instances of relaxation of targets, inflation of achievements and improper assessment of performances that not only defeated the purpose of awarding incentives for higher performances but also resulted in irregular payment of incentives.

(Paragraph 2.1)

Irregular grant of promotions with retrospective effect

Contrary to Government of India instructions, Council of Scientific and Industrial Research Scientist Recruitment and Assessment Promotion Rules, 2001 contained provisions for retrospective promotions. Resultantly, its four test checked laboratories promoted 256 scientists under Flexible Complementing Scheme with retrospective effect, which resulted in irregular benefits of ₹ 4.81 crore.

(Paragraph 4.2)

Implementation of incentive schemes

The policy framework of Indian space programme has provision for grant of various rewards and incentives to employees of Department of Space (DOS)/Indian Space Research Organisation and its centres. Government of India approved Performance Related Incentive Scheme (PRIS) for individual/ group performance based on the recommendation of Sixth Central Pay Commission. DOS implemented PRIS for all employees and continued to grant additionally, other special allowances resulting in multiple benefits to its employees. A structured monitoring and evaluation mechanism for PRIS was not instituted. There were instances of violation of DOS guidelines on grant of PRIS.

(Paragraph 5.1)

Deficient internal controls

Irregular payment of Service Tax

Master Control Facility, Hassan paid ₹ 1.33 crore during the period July 2012 to June 2014 towards Service Tax on the cost of security services provided by Central Industrial Security Force, which was not required under rules. Of this, refund of ₹ 44.68 lakh was secured after the matter was raised by Audit. The remaining amount of ₹ 88.05 lakh stood forfeited as it became time barred.

(Paragraph 5.2)

Avoidable payment of electricity charges

Regional Remote Sensing Centre-East, Kolkata incurred avoidable expenditure of ₹ 55.37 lakh towards payment of electricity charges.

(Paragraph 5.3)

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 2013-14.

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 VII 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 Profile of audited entities

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

- Department of Atomic Energy (DAE)
- Department of Space (DOS)
- Ministry of Earth Sciences (MoES)
- Ministry of Environment and Forests (MoEF)¹
- 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)²

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

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 2013-14 and preceding two years is given in Table 1.

Table 1 - Details of expenditure incurred by Scientific and Environmental Ministries/ Departments
(₹ in crore)

Sl. No.	Ministry/Department	2011-12	2012-13	2013-14
1.	DAE	17,516.60	11,981.76	13,437.26
2.	DBT	1,208.43	1,282.84	1,291.32
3.	DST	2,521.47	2,524.22	2,610.22
4.	DSIR	3,214.70	2,945.66	3,159.54
5.	DOS	3,790.79	4,856.28	5,168.95
6.	MoES	1,174.60	1,177.14	1,248.15
7.	MoEF	2,270.00	1,996.69	2,158.80
8.	MNRE	1,365.22	1,243.72	1,633.52
9.	MoWR	1,066.03	1,055.59	1,094.71
Total		34,127.84	29,063.90	31,802.47
Percentage increase(+)/decrease(-)		(+)28.10³	(-)14.84	(+)9.42

Source : Appropriation Accounts of the respective years

¹ The Ministry has been renamed (2014-15) as Ministry of Environment, Forest and Climate Change.

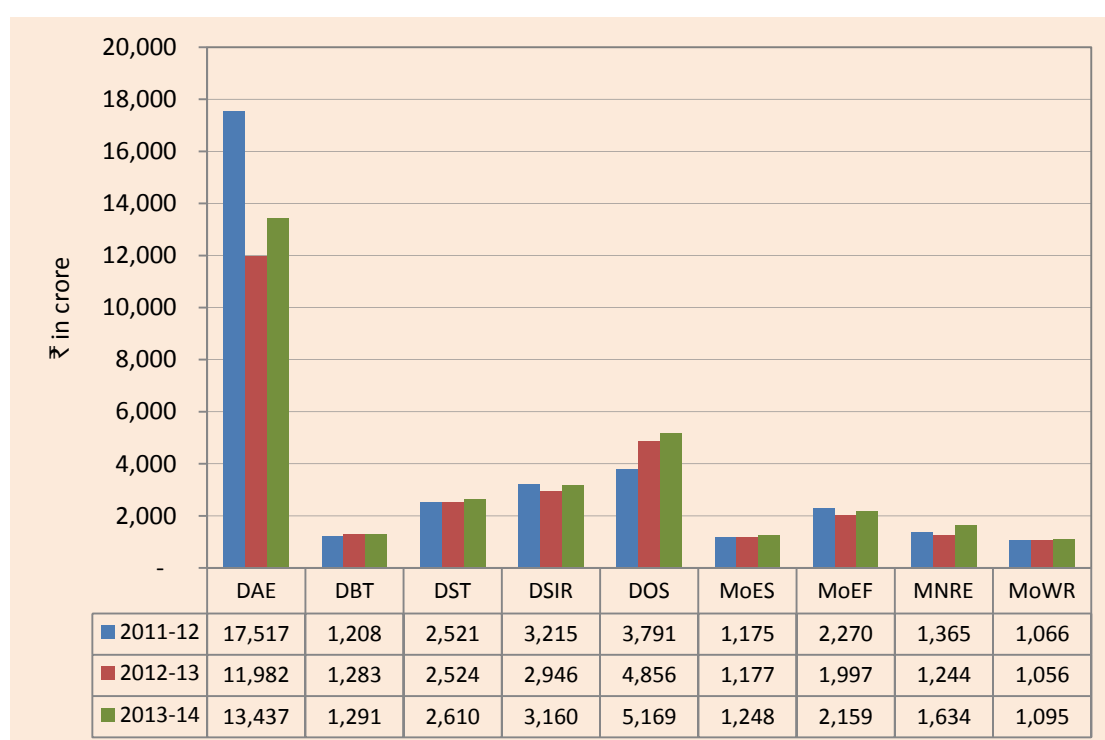
² The Ministry has been renamed (2014-15) as Ministry of Water Resources, River Development and Ganga Rejuvenation.

³ Calculated on the basis of expenditure of ₹ 26,642.37 crore incurred in 2010-11.

The total expenditure on above listed Ministries/Departments of the Government of India during 2013-14 was ₹ 31,802.47 crore. Of this, 42 *per cent* of the total expenditure was incurred by DAE, followed by DOS (16 *per cent*) and DSIR (10 *per cent*).

While there was a significant increase of 28 *per cent* in the overall expenditure of the Scientific and Environmental Ministries/Departments during 2011-12 over 2010-11, there was a decrease in total expenditure by 15 *per cent* during 2012-13 over 2011-12. During 2013-14, however, there was an increase in total expenditure by around nine *per cent*.

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



1.3 Authority for Audit

The authority for audit by the C&AG is derived from Articles 149 and 151 of the Constitution of India and the 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 13⁴ of the C&AG's (DPC)⁵ Act. C&AG is the sole auditor in respect of autonomous bodies under the Scientific and Environmental

⁴ 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.

⁵ Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971.

Ministries/Departments which are audited under sections 19(2)⁶ and 20(1)⁷ of the C&AG's (DPC) Act. In addition, C&AG also conducts supplementary/superimposed audit of those autonomous bodies under Sections 14⁸ and 15⁹ 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 for compliance audit are prescribed in the Regulations on Audit and Accounts, 2007 issued by the C&AG.

1.4 Planning and conduct of Audit

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 2013-14, compliance audit of 194 out of 402 units of Scientific and Environmental Ministries/Departments was conducted. Our audit plan covered those units/entities which were vulnerable to significant risk, as per our assessment.

⁶ 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.

⁷ 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.

⁸ 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.

⁹ 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.

1.5 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 are 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;**
- **Irregular financial benefits extended to employees; and**
- **Deficient internal controls**

1.5.1 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. 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 five long paragraphs containing audit observations on-

- (i) Deficiencies in selection, financial management and monitoring of projects sanctioned by DST under Drugs and Pharmaceutical Research Programme. (Para 3.1 of the Report);
- (ii) New Millennium Indian Technology Leadership Initiative Scheme, implemented by Council of Scientific and Industrial Research. (Para 4.1 of the Report);
- (iii) Installation and upkeep of observatories by Regional Meteorological Centre, Kolkata. (Para 6.2 of the Report);
- (iv) Implementation of E-waste (Management and Handling) Rules, 2011 by Central Pollution Control Board (Para 7.1 of the Report); and

- (v) Inordinate delay in commencement of four demonstration projects for treatment of sewage taken up by Central Pollution Control Board (Para 7.2 of the Report).

The report also includes a paragraph on a website of MoES remaining non-functional since February 2012. (Para 6.1 of the Report)

1.5.2 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 Audit Report brings out observation on delay of 21 years in execution of lease deed in respect of land acquired by DST and failure to complete construction within permissible time period, resulting in avoidable expenditure. (Para 3.2 of the Report)

1.5.3 Irregular financial benefits given to employees

Most of the autonomous bodies under the Scientific and Environmental Ministries/Departments are significantly 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. There have also been instances of Government departments extending various benefits to their employees without requisite approvals or proper assessment.

The current report includes two long paragraphs on grant of incentives to staff by DAE (Para 2.1 of the Report) and DOS (Para 5.1 of the Report) as well as paragraph on irregular grant of promotions (Para 4.2 of the Report) by CSIR.

1.5.4 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.

This Audit Report brings out instances of weak internal controls in DOS due to which two organisations under DOS viz. Master Control Facility, Hassan and Regional Remote Sensing Centre-East, Kolkata incurred irregular/avoidable expenditure on payment of Service Tax (Para 5.2 of the Report) and electricity charges (Para 5.3 of the Report) respectively.

1.6 Budget and expenditure controls

A summary of Appropriation Accounts for 2013-14 in respect of Scientific and Environmental Ministries/Departments is given in Table 2.

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

(₹ in crore)

Sl. No.	Ministry/ Department	Grant/ Appropriation (including Supplementary Grant)	Expenditure	(-) Savings/ (+) Excess	Percent- age of unspent grant
1.	DAE	15,124.70	13,437.26	(-)1,687.44	11
2.	DBT	1,502.07	1,291.32	(-)210.75	14
3.	DST	3,395.39	2,610.22	(-)785.17	23
4.	DSIR	3,571.01	3,159.54	(-)411.47	12
5.	DOS	6,792.07	5,168.95	(-)1,623.12	24
6.	MoES	1,693.77	1,248.15	(-)445.62	26
7.	MoEF	2,884.74	2,158.80	(-)725.94	25
8.	MNRE	2,847.71	1,633.52	(-)1,214.19	43
9.	MoWR	2,102.68	1,094.71	(-)1,007.97	48
Total		39,914.14	31,802.47	(-)8,111.67	20

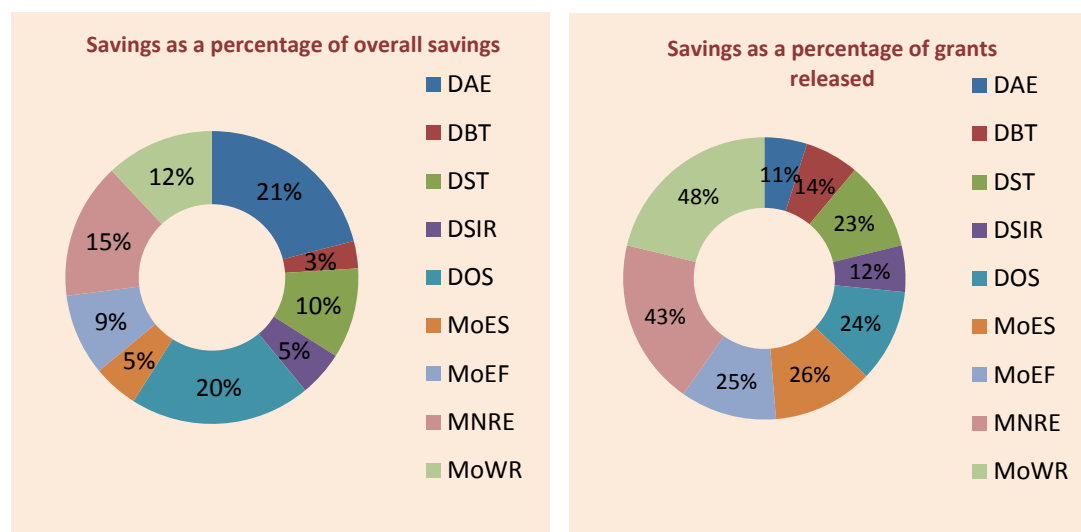
Source: Appropriation Accounts for 2013-14

It can be seen from the above table that with reference to total budget allotment of ₹ 39,914.14 crore, the Scientific and Environmental Ministries/ Departments had an overall savings of ₹ 8,111.67 crore which constitutes 20 per cent of the total grant/appropriation. DAE, DOS, MNRE 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 (48 per cent), followed by MNRE (43 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.

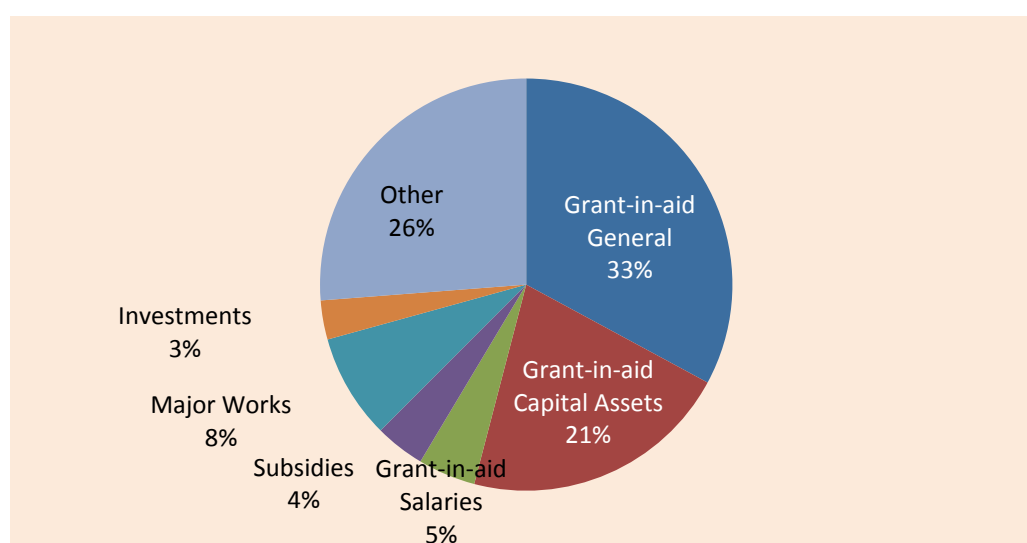
Chart 2 - Ministry/ Department wise percentage of savings



Major components of Plan expenditure

Of the total expenditure of ₹ 31,802.47 crore incurred by the Scientific and Environmental Ministries/Departments, ₹ 16,749.72 crore i.e. nearly 53 *per cent* was incurred on meeting Plan expenditure as extracted from e-lekha database portal as on 24 November 2014. A major part of the Plan expenditure comprising 33 *per cent* was spent on releasing Grants-in-aid General, followed by 21 *per cent* as Grants for creation of Capital Assets. The remaining comprised expenditure on components such as Grants-in-aid salaries, subsidies, major works, investments, etc.

Chart 3 - Distribution of Plan expenditure among major components



1.7 Audit of accounts of Autonomous Bodies

Principal Director of Audit, Scientific Departments is the sole auditor of 14 autonomous bodies for which Separate Audit Reports (SARs) are prepared on their annual accounts under sections 19(2) and 20(1) of the C&AG's (DPC) Act, 1971. The total grants released to these 14 autonomous bodies during 2013-14, including unspent balances of the previous year, were ₹ 4,246.75 crore, as detailed in Table 3.

Table 3- Details of grants released to Central Autonomous Bodies

(₹ in crore)

Sl.No.	Name of the Autonomous Body	Ministry/ Department	Amount of Grant released during 2013-14
1.	Science and Engineering Research Board, New Delhi	DST	530.00
2.	Sree Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram	DST	91.07
3.	Technology Development Board, New Delhi	DST	13.50
4.	Council of Scientific and Industrial Research, New Delhi	DSIR	3,126.97
5.	Animal Welfare Board of India, Chennai	MoEF	15.48
6.	Central Zoo Authority, New Delhi	MoEF	26.47
7.	National Biodiversity Authority, Chennai	MoEF	46.83
8.	National Mission for Clean Ganga, New Delhi	MoEF	166.53
9.	National Tiger Conservation Authority, New Delhi	MoEF	16.76
10.	Wildlife Institute of India, Dehradun	MoEF	21.31
11.	Betwa River Board, Jhansi	MoWR	38.32
12.	Brahmaputra Board, Guwahati	MoWR	85.00
13.	Narmada Control Authority, Indore	MoWR	14.74
14.	National Water Development Agency, New Delhi	MoWR	53.77
Total			4,246.75

Source: Separate Audit Reports of the Autonomous Bodies for the year 2013-14

In addition, supplementary/superimposed audit of 68 other autonomous bodies are conducted under Sections 14 or 15 of the C&AG's (DPC) Act, 1971. The total grants released to 64¹⁰ autonomous bodies during 2013-14 were ₹ 4,163.27 crore, details of which are indicated in **Appendix III**.

1.7.1 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.

¹⁰ Information in respect of four autonomous bodies was not furnished by the Ministries/ Departments.

The position of submission of accounts for the year 2013-14 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	07.08.2014	1
2.	Sree Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram	DST	11.06.2014	-
3.	Technology Development Board, New Delhi	DST	29.12.2014	5
4.	Council of Scientific and Industrial Research, New Delhi	DSIR	09.07.2014	-
5.	Animal Welfare Board of India, Chennai	MoEF	26.06.2014	-
6.	Central Zoo Authority, New Delhi	MoEF	12.08.2014	1
7.	National Biodiversity Authority, Chennai	MoEF	17.06.2014	-
8.	National Mission for Clean Ganga, New Delhi	MoEF	14.08.2014	1
9.	National Tiger Conservation Authority, New Delhi	MoEF	04.08.2014	1
10.	Wildlife Institute of India, Dehradun	MoEF	30.06.2014	-
11.	Betwa River Board, Jhansi	MoWR	22.07.2014	0.5
12.	Brahmaputra Board, Guwahati	MoWR	10.07.2014	-
13.	Narmada Control Authority, Indore	MoWR	07.08.2014	1
14.	National Water Development Agency, New Delhi	MoWR	01.07.2014	-

It can be seen from the above table that seven autonomous bodies submitted their accounts after delay ranging from about 15 days to five months.

1.7.2 Significant deficiencies in accounts

Some of the important issues highlighted in SARs on the accounts for the year 2013-14 are listed below:

1.7.2.1 Provisions of Gratuity and other retirement benefits

- Betwa River Board, Jhansi did not include provision for retirement benefits such as pension, gratuity and leave encashment, etc. on actuarial basis, which was in contravention of accounting policies.
- The significant accounting policy number 7 of Animal Welfare Board of India, Chennai regarding non-provision of retirement benefits was in contravention of

the accounting standards 12 issued by ICAI¹¹ and uniform format of accounts approved by Government of India for central autonomous bodies.

1.7.2.2 Depreciation provided on fixed assets

- Incorrect booking of part-payments/ advances amounting to ₹ 133.65 crore as final expenditure led National Institute of Oceanography, Goa (CSIR) to charge depreciation of ₹ 34.75 crore on the Research vessel, which was not in its possession as of 31 March 2013. As a result, Capital Fund and Fixed Assets each were understated by ₹ 34.75 crore.

1.7.2.3 Other comments

- Science and Engineering Research Board, New Delhi diverted grants of ₹ 207.66 crore received under 'Grants in aid-General' for creation of capital assets without obtaining proper authorisation.
- Technology Development Board, New Delhi did not report the value of its investments i.e. Equity/Venture Capital Funds at fair market price.
- The third party confirmation received from the bankers of CSIR Headquarters and its sampled laboratories revealed a difference of ₹ 103.53 crore in the figure of 'TDRs against margin money' reported by them in their annual accounts and by their bankers. Hence, under the circumstances and facts, Audit was unable to assure that amount of ₹ 134.93 crore shown by them as Deposits in margin money for opening of Letters of Credits under Current Assets, Loans and Advances were correctly reported and that the corresponding adjustments made in others heads of accounts by them were also correct.
- CSIR Headquarters and its sampled laboratories booked unspent part of Grants-in-aid and interest earned/ accrued on the Grants-in-aid as their 'Income' and consequently overstated their income and understated current liabilities towards 'Unspent grant refunded to Govt.' each by ₹ 45.71 crore.
- Payment of advances amounting to ₹ 52.85 crore made by CSIR and its laboratories, out of externally funded projects was booked as final expenditure. Further, interest amounting to ₹ 13.10 crore accrued by them on Term Deposits¹² made out of funds of externally funded projects was not accounted for in the books of accounts. Thus, sampled laboratories of CSIR understated their current liabilities towards deposits for externally funded projects as well as current assets (Advances) each by ₹ 65.95 crore.

¹¹ Institute of Chartered Accountants of India

¹² Including deposits in margin money for opening of Letters of Credits

- Despite knowing the fact that there was uncertainty regarding collectability of outstanding amount of interest from defaulting industries, CSIR continuously recognised the interest accrued from defaulted industries, against whom cases were pending with the courts/ arbitrations. Further, figure of 'Interest due but not received under NMITLI¹³' was incorrectly reported in Financial Statement of CSIR (Hqrs.). As a result, current assets (accrued interest on loans to industry) as well as current liabilities (Interest due but not received under NMITLI) were overstated by ₹ 5.71 crore each.
- Funds of ₹ 24.90 crore lying in FDRs/Saving Accounts for Provident Fund payments was not shown in the Annual Accounts of Betwa River Board, Jhansi.
- Wildlife Institute of India, Dehradun booked an amount of ₹ 34.38 lakh and ₹ 24.33 lakh under Fixed Assets towards 'Avenue Plantations' and 'Trees' respectively, both of which were located outside the campus and therefore were not under the ownership of the institute. This resulted in overstatement of fixed assets and Capital Fund in the Balance Sheet by ₹ 58.71 lakh.
- National Tiger Conservation Authority, New Delhi released ₹ 3.21 crore from Capital Grant to Bandipur Tiger Conservation Foundation for providing accommodation facility to the staff of the Special Tiger Protection Force deployed in Maddur, Handpost and Thithimathi. This amount was shown as expenditure in Schedule No. 22- Grants, instead of Schedule-11 B 'Loans Advances and Other Assets' as Grants-in-aid to Bandipur Tiger Conservation Foundation, resulting in overstatement of Expenditure and understatement of Assets to the extent of ₹ 3.21 crore.
- An amount of ₹ 26.47 crore was shown in the accounts of Central Zoo Authority, New Delhi (CZA) under Schedule 13- Grants/Subsidies as received and taken into Income and Expenditure Account as income during the year. However, this amount included ₹ 97.12 lakh which was unspent balance of Grants-in-aid refunded by Zoos during 2009-10 to 2013-14 pertaining to previous years. Out of ₹ 97.12 lakh, an amount of ₹ 56.19 lakh was revalidated by the Ministry for utilisation during 2013-14, but the remaining amount of ₹ 40.93 lakh was not revalidated and remained with CZA. This resulted in overstatement of Income by ₹ 97.12 lakh besides understatement of liabilities by ₹ 40.93 lakh and prior period income by ₹ 56.19 lakh.
- Utilisation Certificates pertaining to funds released by Animal Welfare Board of India, Chennai for ₹ 7.05 crore were not received from 687 organizations though they were due to be received by March 2014. Of this, nine utilisation certificates

¹³ New Millennium Indian Technology Leadership Initiative

amounting to ₹ 3.05 lakh were outstanding for more than 15 years, 105 utilisation certificates amounting to ₹ 20.77 lakh were outstanding for more than 10 years and 139 utilisation certificates amounting to ₹ 84.92 lakh were outstanding for more than five years.

1.8 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 seven¹⁴ Ministries/Departments, 9,117 Utilisation Certificates (UCs) due by March 2014, for grants aggregating ₹ 1,421.64 crore were outstanding as given in **Appendix IV**. DST and DSIR did not furnish information about pending UCs.

Out of the 9,117 UCs awaited in respect of the seven Ministries/Departments, 7,390 certificates amounting to ₹ 422.64 crore were pending for more than two years. A total of 6,194 UCs amounting to ₹ 289.20 crore were outstanding for more than five years.

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

Table 5 - Position of outstanding Utilisation Certificates

(₹ in crore)

Sl. No.	Ministry/Department	UCs pending for more than two years		UCs pending for more than five years	
		No.	Amount	No.	Amount
1.	DAE	242	16.47	139	5.50
2.	DBT	Nil			
3.	DST	Not available			
4.	DSIR	Not available			
5.	DOS	199	12.17	126	8.54
6.	MoES	622	44.96	488	27.95
7.	MoEF	5,977	293.84	5,398	244.92
8.	MNRE	156	36.40	10	0.33
9.	MoWR	194	18.80	33	1.96
TOTAL		7,390	422.64	6,194	289.20

¹⁴ DAE, DBT, DOS, MoES, MoEF, MNRE and MoWR

1.9 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.

There were two departmentally managed Government Undertakings of commercial or quasi-commercial nature as of 31 March 2014 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. The position of proforma accounts of Heavy Water Board for the period 2013-14 is given in **Appendix V** of this report. Proforma accounts of Nuclear Fuel Complex were not received for audit even after delay of more than one year.

1.10 Losses and irrecoverable dues written off/waived

Statement of losses and irrecoverable dues written off/waived during 2013-14 furnished by nine Ministries/Departments is given in **Appendix VI** to this Report. It can be seen from the Appendix that in 63 cases involving ₹ 13.21 lakh, the amounts were written off for 'other reasons' and in 20 cases amount of ₹ 4.65 crore pertaining to waiver of recoveries were written off during 2013-14.

1.11 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 Ministries/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.

Draft Paragraphs proposed for inclusion in this report were forwarded to the Secretaries concerned between January 2015 and May 2015 through letters addressed to them personally.

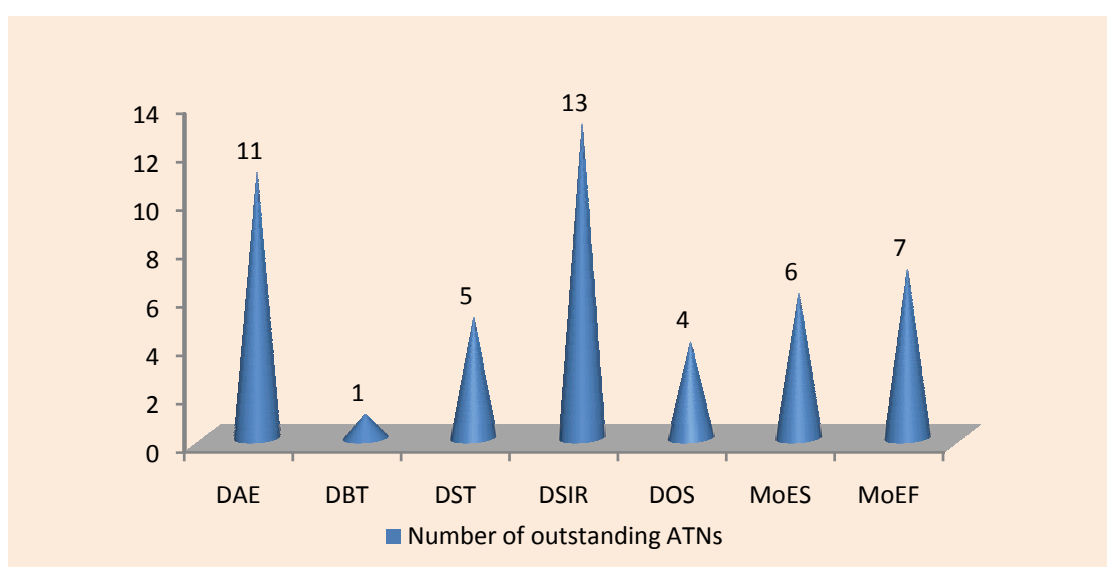
Concerned Ministries/Departments did not send replies to three out of the 12 Paragraphs featured in Chapters II to VII. The responses of concerned Ministries/Departments received in respect of nine paragraphs have been suitably incorporated in the Report.

1.12 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 2015 (details in **Appendix VII**) revealed that a total of 14 ATNs pending from six Ministries/ Departments were not received even for the first time, indicating delay in submission of ATNs ranging between one to 28 months. Also revised ATNs in respect of 33 paras were pending from seven Ministries/ Departments ranging from one to 136 months (**Appendix VIII**).

Chart 4- Number of outstanding ATNs of Audit Reports



CHAPTER - II

Department of Atomic Energy

2.1 Implementation of Performance Related Group Incentive Scheme

Department of Atomic Energy introduced group incentives under Performance Related Incentive Scheme in May 2009. Review of implementation of the scheme in three units of DAE, in which payment of group incentives of ₹ 32.19 crore was made during 2010-14, revealed instances of relaxation of targets, inflation of achievements and improper assessment of performances that not only defeated the purpose of awarding incentives for higher performances but also resulted in irregular payment of incentives.

2.1.1 Introduction

The Department of Atomic Energy (DAE) was set up on August 3, 1954 under the charge of the Prime Minister through a Presidential Order. It is a broad based multi-disciplinary organisation engaged in the development of nuclear power technology and application of radiation technology in the fields of agriculture, medicine, industry and basic research. DAE comprises five research centres, three industrial organisations, five Public Sector Undertakings (PSUs) and three service organisations. It also supports eight autonomous institutes engaged in research in basic sciences, astronomy, astrophysics, cancer research and education.

Performance Related Incentive Scheme

The Sixth Central Pay Commission (SCPC) recommended introduction of a new performance based pecuniary benefit, over and above the regular salary, for government employees, known as Performance Related Incentive Scheme (PRIS). PRIS was payable taking into account performance of the employee during the period under consideration and was based on the principle of different reward for differential performance. After acceptance of the SCPC recommendations by the Government, with the approval of Atomic Energy Commission (AEC) and Prime Minister's Office, DAE issued (May 2009) an order to implement PRIS in DAE and its aided institutions and Public Sector Undertakings. Under PRIS, DAE introduced three types of incentives, namely-

- (i) **Organisational Incentive (PRIS-O)** - Organisational Incentive was to be awarded to all personnel of DAE, payable on monthly basis from September 2008, based on achievement of set mission goals and review of overall performance of the organisation once in five years by the AEC.
- (ii) **Group Incentive (PRIS-G)** - Group Incentive of 10 *per cent* of pay plus grade pay was to be awarded to specific groups on annual basis, based on their achieving set targets in high end research and development areas/innovative technologies/programmatic goals in a particular year. Achievement of not less than 75 *per cent* of target would qualify for incentive, which was payable on proportionate basis as follows:
- achievement of not less than 75 *per cent* of target : 60 *per cent* of incentive (six *per cent* of pay plus grade pay);
 - achievement of 85 *per cent* and above : 80 *per cent* of incentive (eight *per cent* of pay plus grade pay); and
 - achievement of 95 *per cent* and above : 100 *per cent* Group Incentive (10 *per cent* of pay plus grade pay).
- (iii) **Individual Incentive (PRIS-I)** - Grant of incentives with effect from January 2009 in the form of variable additional increments to deserving Scientific and Technical personnel at the time of promotion in recognition of individual meritorious performance.

2.1.2 Audit findings

Three units of DAE viz. Directorate of Purchase and Stores¹⁵ (DPS), Heavy Water Board¹⁶ (HWB) and Directorate of Construction, services and Estate Management¹⁷ (DCSEM) were selected to review implementation of Group Incentive (PRIS-G). DAE incurred expenditure of ₹ 32.19 crore in payment of PRIS-G to employees of the three organisations as given in Table 6.

¹⁵ Directorate of Purchase and Stores, Mumbai is the centralised agency responsible for materials management functions of various units of DAE.

¹⁶ Heavy Water Board Mumbai is a constituent unit of DAE engaged in the production of heavy water.

¹⁷ Directorate of Construction, Services and Estate Management, Mumbai is a constituent unit under DAE responsible for construction works, services and estate management for various establishments of DAE.

Table 6: Expenditure incurred by DPS, HWB and DCSEM in payment of PRIS-G

Name of entity	Expenditure incurred in payment of PRIS-G (₹ in crore)			
	2010-11	2011-12	2012-13	2013-14
DPS	0.50	0.83	1.54	1.51
HWB	3.98	3.51	6.89	6.94
DCSEM	1.37	1.79	1.45	1.88
TOTAL	5.85	6.13	9.88	10.33

On a test check basis, Audit evaluated the assessment of various parameters for the payment of PRIS-G to the employees of above three organisations during 2010-11 and 2011-12 (for performance of 2009-10 and 2010-11). DAE carried out assessment on the basis of similar parameters during 2012-13 and 2013-14.

Detailed audit findings are discussed in the succeeding paragraphs.

2.1.2.1 Fixing of targets for performance evaluation at the end of the year

According to the order issued (May 2009) by DAE for implementation of PRIS, each group was to be assigned targets/goals at the beginning of each year with the approval of an Expert Committee. DAE constituted (November 2009) the Expert Committee for identification and firming up of goals/targets and evaluating achievements/performance there against after a gap of six months. Subsequently, DPS, HWB and DCSEM submitted their proposals for parameters/targets identified and points to be allotted to each for awarding group incentive for consideration of the Committee. The Expert Committee approved the proposals of these units only in March 2010, which was the fag end of the year. Setting of targets at the end of the year and evaluation of performance against those targets defeated the purpose of PRIS, as it in effect, became retrospective.

2.1.2.2 Irregularities in award of PRIS-G in DPS

DPS is the centralised agency of DAE responsible for materials management functions of various units of DAE. DPS has its headquarters at Mumbai and has regional purchase units at Chennai, Hyderabad and Indore. DPS is entrusted with tendering, contracting and other affiliated purchase functions. DPS also performs stores management function such as receipt of material, accounting, issue to the users, storage and stock verification, etc. and handles disposal of items which have become surplus, obsolete or unserviceable.

During 2009-10, the entire DPS was considered as a single group for the purpose of grant of PRIS-G. Based on performance assessment of DPS in 2009-10, PRIS-G of 60 *per cent* was sanctioned to all employees of DPS. During 2010-11, 14 groups were created in DPS for the purpose of PRIS-G. The groups were awarded points ranging between 77.58 and 100 *per cent*, translating to 60 to 100 *per cent* of incentive

payable. Audit observed the following irregularities in setting of targets, assessment of achievements and grant of PRIS-G:

(i) Relaxation of targets after completion of target period

DPS did not achieve target set under productivity parameter namely 'total value of purchase orders released'. In the final assessment for grant of PRIS, DPS removed this parameter from the total, stating that productivity parameters were defined after assuming that amount of work load related to the productivity parameter. Thus, DPS inflated the achievement of 72 *per cent* to 80¹⁸ *per cent* by reducing the total score from 100 to 90 with the result that all staff members of DPS, who otherwise would not have been eligible, qualified for payment of PRIS-G.

DPS stated (June 2013) that in the middle of Eleventh five year plan the volume of work grew many fold without any change in manpower. This sudden surge of workload compelled DPS to revisit its defined target.

Reply is not acceptable as targets were anyway set at the fag end of year when DPS would be aware of change of workload.

(ii) Inaccurate data considered for performance evaluation

During 2009-10, DPS processed a total of 14,914 purchase cases, but for the purpose of evaluating performance of the group, it considered data of 4,150 cases only, which was inaccurate. Further, test check of record of three zonal stores namely Mod lab zonal stores, RE zonal stores and Receipt zonal stores revealed that during 2010-11, 40 cases of procurements which consumed high lead time for fulfilment were not considered while preparing achievement reports of these groups, which was irregular. The lead time taken in these 40 cases was between 40 to 1,918 days. Details of such cases are given in **Appendix IX**.

Similarly, during 2010-11, Accounts Group (Group XIV) of DPS indicated an achievement of 2.45 days for processing payments, by considering issue of 27,537 cheques in 67,621 days. However, Audit observed that the Group had actually issued only 7,329 cheques. Thus, the reported achievement of 2.45 days was incorrect. The data considered for judging performance/achievement was, therefore, inaccurate and 10 points awarded for the same was irregular. Consequently, the Group became qualified to receive 100 *per cent* incentive against a total score of 100 points, whereas it was otherwise eligible to receive 80 *per cent* only based on 90 points actually earned.

¹⁸ $72/90 \times 100 = 80 \text{ per cent}$

DPS stated (June 2013) that achievement was worked out on the basis of indents received during the year and all indents do not result in issuing tender during the same financial year. Hence average of 4,150 cases was extended to the rest of the indents. DPS further stated that high lead time cases were exceptional cases and pending for variety of reasons and stores units have no control over them. Hence these cases were not considered for calculation.

Reply is not acceptable as the performance should be judged on actual data and not on hypothetical data.

(iii) Inflation of achievements for claiming PRIS

Audit observed that DPS inflated achievements under some parameters during 2010-11 to claim the benefit of PRIS, as shown in Table 7.

Table 7: Details of achievements inflated by DPS during 2010-11

Sl. No.	Parameter	Group No.	Target		Achievement shown in final assessment	Points awarded	Actual achievement as per basic records
			Mode of tender	Number of days	Number of days		Number of days
Purchase group							
1.	Time taken for issuing enquiry after receiving indent	I	LT*	17.65	17.53	7	17.81
			PT**	25.50	24.18	7	25.98
			TPT***	33.93	30.88	7	47.24
		II	LT	27.39	25.00	10	25.13
			PT	34.40	28.36	10	37.69
			TPT	25.95	24.98	10	36.25
		III	PT	31.75	28.20	10	31.42
			TPT	34.27	33.06	10	49.12
2.	Time taken for preparing Note/Comparative Statement and forwarding file to Indenting Officer after the date of opening of tender	I	LT	8.70	6.71	8	6.92
			PT	15.75	9.37	8	11.37
			TPT	15.39	10.62	8	57.38
		II	PT	15.67	11.68	10	13.65
			TPT	16.29	10.34	10	10.76
Stores group							
3.	Time lag for regularising receipt against purchase order (in days)	VII	20.76		20.11	10	28.01
		VIII	17.89		11.07	10	17.49
		IX	17.26		17.16	10	18.40
		X	16.50		15.65	10	18.07
4.	Time lag for regularising receipt against Local Purchase System (LPS) orders (in days)	VII	16.21		16.20	10	24.09
		VIII	14.67		9.62	10	14.33
		IX	13.42		11.01	10	13.80
		X	11.27		8.56	10	12.14
5.	Time taken to regularise medicine and medical items received against LPS	VII	18.68		17.71	10	19.41
6.	Time between receipt of material and clearance of Receipt Voucher to accounts in respect of purchase order	X	26.46		26.34	10	27.74

*Limited Tender; **Public Tender; ***Two Part Tender

According to DAE procedure, goods were first received in Central Stores and then transferred to Zonal Stores for inspection and acceptance. The receipt vouchers cleared by Zonal Stores were returned to Central Stores for final clearance and forwarding to Accounts section for release of payment. Audit observed that 'time lag for regularising receipt material' was taken from the date of receipt of goods in Zonal Stores for setting of targets and evaluating achievement. As a result, lead time between transfer of stores from Central Stores to Zonal Stores was not reckoned in assessing achievements. The above practices led to inflation of achievements for the purpose of assessing eligibility for PRIS-G, which was irregular.

Thus, DPS reported a higher achievement by recording lower processing time than actual. This inflation of achievements by various groups during 2010-11 enabled the groups to qualify for benefit of PRIS which they were otherwise ineligible to receive, as shown in Table 8.

Table 8: Effect of award of points after inflating achievements on total incentive payable

Group	Total points awarded	Percentage of incentive sanctioned	Points given on account of delayed projects to be reduced from total	Net points to be received	Percentage of incentive payable
I	88.94	80	29	59.94	Nil
II	88	80	30	58	Nil
III	77.58	60	10	67.58	Nil
VII	80	60	30	50	Nil
VIII	100	100	0	100	100
IX	100	100	20	80	60
X	100	100	30	70	Nil

DPS stated (June 2013) that when large volume of files are handled and processed, the physical verification of each file for processing the correctness of data is not practically possible leading to some error in data. In respect of stores activities DPS stated that the period between receipts of material by Central Stores and transporting the same to Zonal Stores and back was not considered for calculation as the Zonal Store had no control over these two functions.

Reply corroborates audit observation that incorrect data was provided to the Expert Committee.

(iv) Targets set below established norms

General Financial Rules¹⁹ stipulate that physical verification of all items should be undertaken at least once in a year and discrepancies including shortages, surplus, slow moving, obsolete, unserviceable items should be brought to the notice of

¹⁹ Rule 192(1) and (2)

competent authority for taking appropriate action including disposal of surplus, obsolete, unserviceable stores etc. However, during 2010-11, DPS set targets for physical verification of stores on the efficiency parameter of number of items verified internally (as percentage to total inventory) ranging between 10.86 *per cent* and 68.10 *per cent* for various groups. This was irregular, as according to Government Rules, 100 *per cent* physical verification of stores is required to be done every year. Setting of targets below established Government norms is tantamount to relaxation of Government Rules.

DPS stated (June 2013) that DPS stores function is governed by departmental store procedures and targets were set according to departmental store procedures.

Reply is not acceptable as DPS is required to follow Government Rules and targets set were contradictory to the provisions of Government Rules.

2.1.2.3 Irregularities in award of PRIS-G in HWB

HWB is a constituent unit of Industries and Minerals Sector under DAE responsible for production of heavy water which is used as a moderator and coolant in the nuclear power and research reactors. HWB has set up production facilities at seven locations viz. Hazira, Thal, Talcher, Kota, Baroda, Manuguru and Tuticorin. Heavy Water Plant (HWP) at Talcher produces various organo-phosphorous solvents for meeting the requirements of DAE.

During 2009-10, the entire HWB was considered as a single group for the purpose of grant of PRIS-G. Based on assessment of performance, 100 *per cent* incentive was sanctioned to all employees as PRIS-G. Based on the recommendation of Expert Committee, six groups were created in HWB during 2010-11 for the purpose of PRIS-G. The groups were awarded points ranging between 87.94 and 98.86 *per cent*, translating to 80 to 100 *per cent* of incentive payable. Audit observed the following irregularities in setting of targets, assessment of achievements and grant of PRIS-G:

(i) Targets set on non-relevant parameters

(a) During 2009-10, one of the parameters set by HWB for assessing performance under PRIS was on production of heavy water by Heavy Water Plants (HWPs) at Manuguru, Kota, Hazira, Thal and Baroda. Similarly, during 2010-11, targets were assigned for heavy water production, specific energy consumption and safety performance of HWP Thal and Hazira.

Audit noticed that the HWPs at Thal and Hazira were being operated by the management and staff of respective fertiliser companies and not by the staff of

HWB. Therefore, production of heavy water at these plants should not have been considered as an achievement for staff of HWB/HWPs.

HWB stated (June 2013) that though the HWP, Thal and Hazira were operated through staff of respective fertilizer plants, management and production control remained with HWB and were taken care by the officers posted at these plants.

Reply is not acceptable as the targets were to be set according to the nature of duty i.e. management control whereas target was assigned on production of material.

(b) As per DAE orders on implementation of PRIS, performance incentive was to be awarded after the performance of group was measured against goals set for given period of assessment. Performance incentive was not an automatic default pay given for the nature of duties and responsibilities for a certain rank/post.

Audit observed that during 2010-11, 18.943 points were awarded to HWB based on performance of HWPs working under it. As functions of HWPs were different from the functions of HWB, measurement of performance of HWB on the same parameters as that of HWPs was incorrect.

HWB justified the position stating (February 2013) that HWB provided overall technical guidance, support to operating plants and overall supervision of plants, hence 10 *per cent* contribution was considered for HWB.

The contention of HWB is not acceptable as being a controlling office, parameters should have been set according to duties of the board and not of the plants functioning under it. Setting of targets in respect of activities to be performed by other entities was unrealistic.

(ii) Points awarded for delayed projects

Scrutiny of assessment report of HWB for 2009-10 revealed that HWB awarded 24 points under five projects that were badly delayed for six months to more than three years. Similarly, during 2010-11, five of the six groups of HWB were given 73 points in respect of projects delayed by periods ranging from eight months to more than four years. Irregular award of points for delayed projects served to make some of the groups qualify for higher rates of PRIS-G, which would otherwise not be payable to them, as shown in Table 9.

Table 9: Effect of award of points for delayed projects on total incentive payable

Year	Group	Total points awarded	Percentage of incentive sanctioned	Points given on account of delayed projects to be reduced from total	Net points to be received	Percentage of incentive payable
2009-10	HWB Mumbai	97.00	100	24	73.00	Nil
2010-11	HWP Baroda	92.92	80	34	58.92	Nil
	HWP Talcher	93.62	80	17	76.62	60
	HWB Mumbai	87.94	80	16	71.94	Nil

The details of the projects are given in **Appendix X**.

HWB stated (June 2013) that all above projects/plants were unique in nature and were first of its kind in the country. The progress of these projects/plants was continuously monitored and reviewed at various stages to assess the constraints and identify the remedial measures. Based on these reviews, appropriate schedule was worked out.

Reply is not acceptable as the Groups failed to complete these projects within the schedule prescribed by them.

2.1.2.4 Irregularities in award of PRIS-G in DCSEM

DCSEM is responsible for planning, designing, engineering, execution, testing and commissioning of civil, public health, electrical, mechanical, air-conditioning and ventilation works for housing, hostels, schools, hospitals, laboratories and various public buildings for units of DAE. DCSEM is also responsible for operation and maintenance of various services, estate management and security for various installations of DAE at Mumbai.

During 2009-10, DCSEM was divided into two groups for the purpose of assessment for PRIS-G. Based on assessment of performance, 91.50 points and 92.30 points were awarded to construction and estate management groups respectively and 80 *per cent* incentive was sanctioned to the two groups. During 2010-11, four groups were constituted for the purpose of performance evaluation under PRIS. The groups were awarded points ranging between 95.25 and 96.75 *per cent*, translating to 100 *per cent* of incentive payable. Audit observed the following irregularities in setting of targets, assessment of achievements and grant of PRIS-G:

(i) Points awarded for delayed works and dilution of targets

During 2009-10, 13 projects/works were identified by construction group and considered for setting of targets under PRIS-G. Of the 13 projects, four projects that were to be completed before/during 2009-10 were not completed on time. Audit observed that for the purpose of setting targets for 2009-10, scope of work under these delayed projects was further reduced and points awarded for achievement reported there against. This was irregular, as targets were set in contradiction to the scheduled dates of completion of works and points were awarded for delayed projects. The details are given in Table 10.

Table 10: Details of works in which targets were reduced

Sl. No.	Name of work	Scheduled date of completion	Target set	Achievement	Points awarded
1.	Aquatic and Athletic facilities at Anushaktinagar				
	Construction of main field and building	February 2009	90%	100%	8.0
	Filtration plant			Ongoing as of March 2010	
	Development work			Ongoing as of March 2010	
2.	Integrated Facility for Radiation Technology Project at Board of Radiation and Isotope Technology, Vashi				
	Civil works	April 2009	90%	92%	6.0
	E&M works		90%	50%	
3.	Atomic Mineral Directorate for Exploration and Research				
	Jaipur (Housing etc.)	March 2008	100 %	75 %	3.5
	Hyderabad (Auditorium, Fire fighting etc.)	November 2007	95 %	Ongoing as of March 2010	
4.	National Centre for Cell Science, Pune				
	Civil Works	October 2009	40 %	45%	6.0
	E&M Works		60 %	60%	
TOTAL					23.5

It can be seen from the above table that 23.5 points were awarded by reducing the targets and thereby inflating the achievements. Consequently, the group scored 91.50 points and qualified for payment of incentive, which it was otherwise ineligible to receive, based on 68 points actually earned.

(ii) Inaccurate performance evaluation

During 2009-10, construction group DCSEM executed 26 works orders but only 13 works (ten departmental works and three deposit works) were considered for setting of targets under PRIS-G. Similarly, Engineering Service Division (ESD) undertook 296 number of maintenance works, but only 59 works were considered for setting targets. Further, though targets were assigned for ESD under 'arresting leakages' in 24 cases, performance was evaluated only in 16 cases.

Audit also noticed that no targets were allotted to Accounts Section of DCSEM during the year 2009-10 but 100 *per cent* incentive was paid to the staff of Accounts Section, which was irregular.

DCSEM stated (February 2014) that Accounts Section was fully involved from initial stage of the project to release of financial payment and considered as part of construction group and paid the incentive.

Reply is not acceptable as no specific targets were assigned to the section for evaluation of performance.

(iii) Incorrect performance assessment

During 2010-11, targets were fixed for each of the four groups and points out of 100 were awarded to each group based on the achievement reported. In three of the four groups viz. Planning and Design Group, Execution Group and Engineering Services Group, Audit observed irregularities such as unspecific targets, fixing of targets for work that was already completed, points awarded when targets were not achieved, etc. The abstract of points awarded to these groups is given in Table 11.

Table 11: Irregular award of points during 2010-11

Name of group	Points awarded	Gist of audit observations
Planning and Design Group	27.25	<ul style="list-style-type: none"> • Targets were actually achieved after the end of the target period. • Targets were actually partially achieved but reported as fully achieved. • Targets were set for work that was actually completed in the previous year.
Execution Group	58.25	<ul style="list-style-type: none"> • Targets were not achieved. • Small targets were set for works that were already delayed. • Target was set for activity that did not pertain to the group.
Engineering Services Division	66.00	<ul style="list-style-type: none"> • Targets were not achieved.

The details of the cases are given in **Appendix XI**. Incorrect assessment of performance rendered the three groups eligible for receipt of incentive, as shown in Table 12.

Table 12: Effect of irregular award of points on total incentive payable

Group	Total points awarded	Percentage of incentive sanctioned	Points irregularly awarded to be reduced from total	Net points to be received	Percentage of incentive payable
Planning and Design Group	96.75	100	27.25	69.50	Nil
Execution Group	95.25	100	58.25	37.00	Nil
Engineering Services Division	95.50	100	66.00	29.50	Nil

Thus, incorrect performance assessment rendered the above groups eligible for payment of 100 *per cent* incentive, which they were otherwise not qualified to receive.

2.1.3 Conclusion

The main purpose of Performance Related Incentive Scheme was to improve deliverable services to society and increase productivity of Government Departments. Hence targets needed to be assigned in such manner as to provide scope for improvement in those services. However, in the framework for Group Incentive implemented in three units of Department of Atomic Energy, under which payment of ₹ 32.19 crore was made during 2010-14, Audit observed several instances in which targets were understated and achievements overstated. The instances of relaxation of targets, setting of targets below established Government norms and setting of targets for irrelevant parameters defeated the purpose of providing incentives for higher performances. Audit also observed several irregularities in the assessment of achievements, such as presentation of inaccurate data for assessment, inflation of achievements, points awarded for projects that were already badly delayed, etc. that not only defeated the intention of differential rewards for different purposes, but also resulted in irregular payment of incentives.

The matter was referred to DAE in May 2015; its reply was awaited as of June 2015.

CHAPTER – III

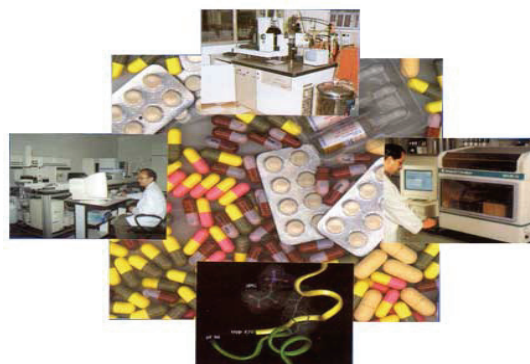
Department of Science and Technology

3.1 Implementation of Drugs and Pharmaceutical Research Programme

Deficiencies in selection, financial management and monitoring of projects sanctioned by Department of Science and Technology under Drugs and Pharmaceutical Research Programme led to non-realisation of outstanding loans and interest of ₹ 73.68 crore, non-receipt of final project completion reports and consequent lack of information on outcome generated from the projects. The objectives of enhancing capabilities of Indian pharmaceutical industry and promoting them to develop new drugs at lower costs were not achieved.

3.1.1 Introduction

Department of Science and Technology (DST) started a Drugs and Pharmaceutical Research Programme (DPRP) during 1994-95 as a plan programme to promote collaborative Research and Development (R&D) in the drugs and pharmaceutical sector. The programme aimed at synergising the strengths of publicly funded research institutions and Indian pharmaceutical industry to enable infrastructure and mechanisms for new drug development to enhance the



Drugs and Pharmaceutical Research Programme

country's self-reliance in drugs and pharmaceuticals. The central focus of research was to develop drugs mainly to fight common diseases like tuberculosis, leprosy, kala-azar, malaria, diarrhoea, dysentery, stress related disorders, thoracic disorders, cholera, etc. particularly prevalent among poorer sections of society with the objective of providing drugs at low cost.

During January 2004, Government of India established Drug Development Promotion Board (DDPB) under the administrative control of DST for supporting R&D projects

jointly proposed by industry and academic institutions/ laboratories as well as to extend soft loan for R&D projects initiated by the drug industry.

Project proposals received for funding were scrutinised by DST and outside experts. The proposals along with comments of the experts were placed before an Expert Committee. Based on the recommendation of the Expert Committee, projects were approved for funding. Funding to pharma industries was in the form of a soft loan to the extent of 70 *per cent* of total project cost. The sanctioned loan was to be released in maximum three instalments depending upon the progress of individual projects. Interest of three *per cent* per annum was to be charged on the outstanding amount of loan and became due from the date of release of funds to industrial partner.

During the period from 2004-05 to 2013-14, DST sanctioned 73 projects and disbursed a total amount of ₹ 347.34 crore to 73 firms.

3.1.2 Audit findings

Audit selected 19 projects involving a loan amount of ₹ 95.27 crore, on the basis of their cost and scheduled date of completion, for scrutiny. Out of 19 sampled projects, four projects were terminated/ foreclosed mid-way. In the remaining 15 projects, Audit observed deficiencies in selection of industrial partners, monitoring of project during implementation and after completion, etc. As of 31 March 2014, an amount of ₹ 63.34 crore pertaining to principal amount of loans (₹ 56.42 crore) and interest (₹ 6.92 crore) was due under nine projects. In addition, penal interest amounting to ₹ 10.34 crore was due under 12 projects. Audit observations are discussed in the succeeding paragraphs. The details of all 19 projects are given in **Appendix XII**.

3.1.2.1 No tangible outcome from projects

DST entered into agreements with industry partners for all 19 projects, spelling out roles and responsibilities of each stakeholder, objectives of the project, duration, deliverables, financial arrangement, monitoring arrangement, etc. As per the agreement, a project would be deemed as completed on acceptance of such recommendation from the Project Monitoring Committee by Secretary, DST. Industrial partner was required to submit six monthly progress reports to DST and provide the Project Monitoring Committee with periodic inputs and information as sought. The industrial partner would have the first right to utilise intellectual property generated from the project and would pay royalty at the rate of 0.5 *per cent* of the net sale value for a period of 10 years. Such royalty due and payable would also be factored in the event of licensing of technologies generated under the

project to third parties and any further development of technology by industry partner. Publications in journals in respect of the project would be done only after the Project Monitoring Committee cleared such publications.

Audit observed that DST had no information on the outcome of any of the 19 projects. Project completion reports were not obtained from the industrial partners. As a result there was no record of the extent of achievement of objectives under the projects and development of technologies or intellectual property. There was no follow up action by DST on utilisation of technologies generated under the projects, if any, by the industrial partner.

DST accepted (June 2015) that some of the industries had not forwarded the final project completion report. DST further added that the programme had given several products to the country, a few patents had been granted and several leads were in different stages of clinical trials. However, details of such achievements were not provided. Further, DST did not maintain any database regarding technology developed, patented, transferred and commercialised under DPRP. Hence, in the absence of this, any output generated under these projects could not be ascertained in audit.

Thus, even after investing ₹ 95.27 crore (as soft loan) in 19 projects, DST did not record any tangible outcome from the projects. The achievement of objective of the programme to build capabilities, develop drugs and provide the same at low cost was not visible.

3.1.2.2 Sanction of projects to ineligible industry partners

Rule 220 (3) of General Financial Rules stipulates that before considering a loan application from parties other than State Governments and Local Administrations of Union Territories, it should be seen that there is adequate budget provision and grant of the loan would be in accordance with approved Government policy and accepted patterns of assistance. Before approving the loan, the applicant should be asked to furnish (i) the copies of profit and loss (or income and expenditure) accounts and balance sheets for the last three years; (ii) the main sources of income and how the loan was proposed to be repaid within the stipulated period; (iii) details of loan or loans taken from the Central Government or a State Government in the past, indicating amount, purpose, rate of interest, stipulated period of repayment, date of original loan and amount outstanding against the loan(s) on the date of the application and the assets, if any, given as security; (iv) a complete list of all other loans, outstanding on the date of application and the assets given as security against them; (v) the purpose for which the loan is proposed to be utilised and the economics of the scheme.

Rule 220 of General Financial Rules further stipulates that confidential enquiries should be made from the other Departments of the Central Government or State Governments from which the party has taken loans, to judge the performance in regard to the previous loans and Collateral/ security should be obtained from the beneficiary firm against the loan amount to be offered and valuation of the same be got done from the independent authority.

Further, terms and conditions appended to agreement also required that industry partner must have an R&D centre with valid recognition²⁰ and if not registered, the firm was to get the R&D Centre recognised within 12 months, failing which the firm might be asked to return the loan amount, unless and otherwise the period was extended.

Audit observed that DST sanctioned projects and released loans of ₹ 46.38 crore to eight industry partners, who did not fulfil mandatory requirements as discussed below:

(i) Four firms that were not financially sound, had a small share capital, substantial loan liability, limited fixed assets, large accumulated losses besides minimal working capital, were sanctioned loans as shown in Table 13.

Table 13: Details of financially unsound firms who were sanctioned loans

Sl. No.	Name of firm	Project title	Financial Position of Industrial Partners	Amount of loan (₹ in crore)
				Sanctioned (Released)
1.	Thirteen Herbs and Cure, New Delhi	Development of an indigenous immuno–restorative herbal formulation P– <i>Jyoti Amritam</i> for HIV/AIDS	Share Capital : ₹ one lakh Unsecured Loan : ₹ 14 lakh Fixed Assets : ₹ two lakh	1.70 (1.11)
2.	Cellmax Pharma Pvt. Ltd., Aligarh	Development of commercially viable recombinant products and diagnostics kits	<ul style="list-style-type: none"> The Industrial Partner was a start-up company, so financial statement of previous year was not available with it at the time of sanctioning of project proposal. Authorised Share Capital of Industrial Partner was ₹ one lakh only. No source of revenue generation/ income was available with the company for fulfilment of its commitments under the project. 	4.34 (2.00)
3.	Bigtech	Development of a	<ul style="list-style-type: none"> Debt of Industry Partner had sharply 	1.92

²⁰ Registered with Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India.

Sl. No.	Name of firm	Project title	Financial Position of Industrial Partners	Amount of loan (₹ in crore)
				Sanctioned (Released)
	Private Limited, Bengaluru	high yielding recombinant Human Insulin strain and process leading to successful commercialisation	increased from ₹ 63.84 lakh in 2003-04 to ₹ 1.37 crore in 2004-05 and ₹ 3.03 crore in 2005-06, whereas Share Capital had not increased to that extent. As a result, the Debt Equity Ratio of the Industrial Partner, which was 0.88 <i>per cent</i> in 2003-04, increased to 1.18 <i>per cent</i> and 2.40 <i>per cent</i> in the year 2004-05 and 2005-06 respectively, indicating its deteriorating financial position. Further, after taking into account unadjusted miscellaneous expenditure of ₹ 52.16 lakh (2003-04), ₹ 42.48 lakh (2004-05) and ₹ 37.02 lakh (2006-07) this ratio might increase further.	(1.92)
4.	Mediclone Biotech Pvt. Ltd., Chennai	Development and manufacturing of Anti-Rabies Monoclonal Antibody (MAb) cocktail and Immunodiagnostic MAb for Rabies Virus Detection	<ul style="list-style-type: none"> • Industry Partner had a cumulative loss of ₹ 44.76 lakh as on 31 March 2007. • It had a small Share Capital of ₹ 42.50 lakh²¹, besides secured/ unsecured loans of ₹ 14.15 lakh and loan amounting to ₹ 5.91 crore was also raised by Industry Partner from the Government of India during 2006-07. • It had a meagre amount of ₹ 7.56 lakh in hand as working capital. 	11.27 (10.22)

(ii) In six cases mentioned in Table 14, industry partners did not have R&D centres or valid recognition from DSIR. Further, these firms failed to set up R&D centres and obtain recognition of the same within 12 months of approval of the project.

²¹ Excluding share application money of ₹ 5.06 crore. However, nothing was reported in the Auditor Reports (provided to Audit) about the allotment of share and adjustment of this application money.

Table 14: Details of firms that did not set up R&D centres

Sl.No.	Name of firm	Project title	Date of sanction	Amount of loan (₹ in crore)
				Sanctioned (Released)
1.	Promed Exports Pvt. Ltd, New Delhi	Formulation development, stability studies, pre-clinical and clinical studies of anti-cataract eye drops for applying the technology and innovation in effective prevention and treatment of cataract by bringing the drug to commercialisation stage	March 2005	5.00 (4.00)
2.	Microtest Innovations Pvt. Ltd., Bengaluru	Development of a cost effective viral load assay and its commercial application in monitoring drug efficacy in HIV/AIDS	December 2005	1.18 (1.18)
3.	Chembiotek Research International Private Limited	Discovery and Development of novel inhibitors of Undercaprenyl Pyrophosphate Synthase	May 2007	11.00 (11.00)
4.	Indigene Pharmaceuticals Pvt. Ltd, Hyderabad	Clinical development of prioritised drug candidates through Phase-C to develop and deliver innovative, safe and effective plant derived Natural Molecular Combinations (NMC) based drugs to address the unmet medical and market needs	October 2007	14.95 (14.95)
5.	Cell Max Pharma Pvt. Ltd., Aligarh	Development of commercially viable recombinant product and diagnostics kits	January 2008	4.34 (2.00)
6.	Thirteen Herbs and Cure, New Delhi	Development of an indigenous immuno-restorative herbal formulation <i>P-Jyoti Amritam</i> for HIV/AIDS	March 2008	1.70 (1.11)

(iii) Prior to sanctioning loans, DST also did not enquire from other Departments of the Central Government or State Governments to judge performance of the firms with regard to repayment of the previous loans. Thus, DST did not take adequate steps for safeguarding interest of the Government.

Audit observed that these industry partners failed in timely repayment of loan/interest to DST, which is discussed in detail in para 3.1.2.4 (iii).

DST (June 2015) accepted the facts and stated that there was no mechanism in existence in the programme for securing the loan through collateral mortgage, bank guarantee and other related issues. It further assured that in future, priority to only those projects would be given which would have R&D centres recognised by DSIR and be on good financial strength/ turnover.

3.1.2.3 Loan instalment released prior to signing of agreement

As per terms and conditions of the sanction issued for the projects, loan instalment for the first year was to be released only after signing of the agreement. Audit observed that DST violated the provision in nine cases mentioned in Table 15, in which it signed the agreements 28 days to three months after the date of release of first instalment.

Table 15: Cases in which DST signed agreement after release of first instalment of loan

Sl. No.	Name of the Industry partner	Name of the Project	Date of release of first instalment	Date of signing of agreement	Amount of first instalment released (₹ in crore)	Delay in signing agreement after release of first instalment
1.	Bharat Serum and Vaccines Ltd.	Development of a clinically proven and process development of a commercially viable manufacturing process of monoclonal tetanus immunoglobulin (mTIG) expressed in recombinant Chinese Hamster Ovary (CHO) cell line	20 March 2006	08 June 2006	7.07	Two months
2.	Biological E, Hyderabad	Development of a tetravalent dengue vaccine by using a combination of 30 deletion mutant and chimeric constructs of DEN-1, DEN-2, DEN-3 and DEN-4 viruses against dengue virus infection	31 March 2005	05 May 2005	2.75	One month
3.	Cadila Pharmaceuticals Ltd., Ahmedabad	Development of new generation therapeutic and prophylactic Hepatitis B vaccines	20 March 2006	16 May 2006	1.00	One month
4.	Institute of Molecular Medicine, Kolkata	RNAi approach for Gene Silencing of HIV-1 (The SyneRgy project)	31 March 2006	13 June 2006	3.50	Two months
5.	Promed Exports Private Ltd., New Delhi	Formulation development, stability studies, pre-clinical and clinical studies of anti-glaucoma herbal	29 March 2007	26 April 2007	0.80	Twenty eight days

Sl. No.	Name of the Industry partner	Name of the Project	Date of release of first instalment	Date of signing of agreement	Amount of first instalment released (₹ in crore)	Delay in signing agreement after release of first instalment
		eye drops				
6.	Ranbaxy Laboratories Ltd., Gurgaon	A novel muscarinic receptor antagonist for chronic obstructive pulmonary disease	29 August 2006	30 November 2006	1.95	Three months
7.	Strides Arcolab Limited, (SAL), Bengaluru (Medegene Pharmaceuticals Pvt. Ltd.)	Development of Novel Recombinant Staphylokinase for the treatment of cardiovascular disease' - Strides Arcolab Limited, (SAL), Bengaluru	06 December 2006	March 2007	0.89	Three months
8.	Sudershan Biotech Ltd.(SBL), Hyderabad	Production of para-hydroxyphenyl glycine (PHPG) using Hydantoinase and carbamoylase enzymes cloned E.coli	20 March 2006	12 June 2006	1.18	Two months
9.	ABL Biotechnologies Ltd., Chennai	C-Phycocyanin in COX-2 inhibition and diagnostics	14 February 2006	27 May 2006	2.00	Three months

While accepting (June 2015) the observation, DST stated that a condition was inserted in the sanction/release order that amount released could not be spent till signing of bipartite agreement.

The reply of DST is to be viewed in light of the fact that DST did not have any mechanism to ensure whether this provision was followed by the beneficiary industries and the haste in release of instalment remained unexplained and unfruitful.

3.1.2.4 Improper financial management

(i) Non-maintenance of separate project account

As per the scheme guidelines, industry partners were required to maintain a separate account for the expenditure met from loan granted under the project. Any interest earned by them on the loan amount was to be shown as such and credited into the project account for adjustment against release of subsequent instalments.

Audit observed that while signing the agreements with the industry partners, DST did not include the clause of crediting the interest earned on the loan to the project account for adjustment against release of subsequent instalments. As a result, separate accounts were not maintained in any of the 19 projects scrutinised in audit, due to which interest earned, if any, on release of ₹ 95.27 crore as loans to these firms was left unadjusted.

DST surmised (June 2015) that the industry must be forwarding Utilisation Certificate alongwith Statement of Expenditure based on the separate account maintained for each project.

The reply of DST corroborates audit observation that it did not ensure whether separate accounts had actually been maintained by the industry partners.

(ii) Non-submission of utilisation certificates

In terms of Rule 226²² of General Financial Rules, DST was required to obtain Utilisation Certificate (UC) in respect of loans utilised by industry partners every year. Audit scrutiny of 19 projects revealed that in six projects, UCs for loans of ₹ 11.09 crore were outstanding since April 2006 for periods from three to nine years. The details are given in **Appendix XIII**.

DST accepted (June 2015) the audit observation.

(iii) Default in repayment of loans and interest

In terms of clause of 3.2 of the loan agreements, repayment of loans was to be made in 10 annual equal instalments and industry partners were to ensure timely repayment of the loans along with interest as per the schedule notified. Any delay in repayment entailed payment of penal interest at the rate of 12 *per cent* per annum compounded monthly for the period of delay. Further, two successive defaults in repayment of outstanding loans amount would result in recall of total outstanding loan amount immediately. The agreements also stipulated that any dispute could be referred for arbitration by an Arbitral Tribunal.

As of 31 March 2014, an amount of ₹ 63.34 crore pertaining to principal amount of loans and interest was due from nine firms from the period November 2008 to March 2014. Further, the loans were in default for more than two successive times, yet DST did not take action to recall the outstanding loans. In addition, penal interest amounting to ₹ 10.34 crore was due from 12 firms, as detailed in Table 16.

²² A certificate of utilisation of the loan should be furnished in every case of loan released for specific purposes.

Table 16: Default in re-payment of loans

(₹ in crore)

Sl. No.	Name of the Industry Partner	Name of the project	Amount outstanding		
			Loan	Interest	Penal interest
1.	ABL Biotechnologies Limited, Chennai	C-Phycocyanin in COX-2 inhibition and diagnostic	4.00	0.63	0.93
2.	Cellmax Pharma Pvt. Ltd., Aligarh	Development of commercially viable recombinant product and diagnostics kits	2.00	0.29	0.22
3.	Chembiotek Research International Private Limited	Discovery and Development of novel inhibitors of Unde-rcaprenyl Pyrophosphate Synthase (UPPs)	11.00	1.33	1.68
4.	Indigene Pharmaceuticals Pvt. Ltd, Hyderabad	Clinical development of prioritized drug candidates through Phase-C. To develop and deliver innovative, safe and effective plant derived Natural Molecular Combinations (NMC) based drugs to address the unmet medical and market needs	14.95	1.94	3.80
5.	Institute of Molecular Medicine, Kolkata	RNAi approach for the Gene silencing of HIV-1 (The SyneRgy Project)	10.00	1.27	1.55
6.	Mediclone Biotech Private limited, Chennai	Development and manufacturing of Anti-Rabies Monoclonal Antibody (MAb) cocktail and Immunodiagnostic MAb for Rabies Virus Detection	10.22	0.87	0.92
7.	Microtest Innovations Pvt. Ltd., Bengaluru	Development of a cost effective viral load assay and its commercial application in monitoring drug efficacy in HIV/AIDS	1.18	0.21	0.30
8.	Sudershan Biotech Ltd., Hyderabad	Production of para-hydroxyphenyl glycine (PHPG) using Hydantoinase and carbamoylase enzymes cloned E.coli	1.96	0.25	0.30
9.	Thirteen Herbs and Cure, New Delhi	Development of an indigenous immuno-restorative herbal formulation P-JyotiAmritam for HIV/AIDS	1.11	0.13	0.17
10.	Bharat Serums and Vaccines Limited, Mumbai	Development of a commercially viable manufacturing process of monoclonal tetanus immunoglobulin (mTIG) expressed in recombinant Chinese Hamster Ovary (CHO) cell line	-	-	0.18
11.	Bigtech Pvt. Ltd., Bengaluru	Development of a high yielding Recombinant Human Insulin strain & Process lead to commercialization	-	-	0.21
12.	Cadila Pharmaceuticals Ltd., Ahmedabad	Development of Therapeutic Vaccine for Pancreatic Cancer	-	-	0.08
TOTAL			56.42	6.92	10.34

Audit observed that DST neither computed the amount of penal interest due from these industry partners nor made efforts to recover the outstanding loans from the defaulters, even though the repayments were due for more than five years.

While accepting the facts, DST stated (June 2015) that the process for recovery of outstanding dues had been initiated.

3.1.2.5 Inadequate project monitoring

In terms of Clause 4 of agreements entered with industry partners, a Project Monitoring Committee (PMC) comprising of eminent experts in the area was to be appointed by DST to review and examine the progress of projects in conformance with milestones, targets and objectives as contained in the agreement; and based on the same, to assess and recommend foreclosing or dropping or modification in the components of the project, including additional institutional/ industry partners and revising funding support to the implementing agency. Projects were to be declared as completed only on the recommendation of PMC.

Scrutiny of records revealed that none of the 19 projects were monitored by PMC throughout the project duration as per prescribed frequency. Further, no PMC meetings were held after release of final/ last instalment of loan, in spite of the fact that activities of the projects were still ongoing. Consequently, these projects were not formally declared as closed. DST also failed to assess whether industry partners took any follow up action on the recommendations of PMC and whether activities and objectives undertaken by it during this period were as envisaged. In the absence of such information, it could not be ascertained whether post-project monitoring was done. There was also no record to support that PMC constituted for each project had the approval of competent authority. In three projects, composition of PMC was changed in different meetings of the same project, however, the approval of competent authority to such changes were not on record. The details of these projects are given in **Appendix XIV**.

DST stated (June 2015) that each project was monitored by a monitoring committee and next instalment of loan was released based on the recommendations of monitoring committee and production of UC. It further stated that some of the projects were monitored after their completion and added that composition of monitoring committee was changed due to various reasons such as non availability of experts.

The reply of DST is not acceptable, as projects were not monitored throughout the project duration as per prescribed frequency and no PMC meetings were held after release of final/ last instalment of loan. Reports of monitoring committee meetings if any held after completion of projects were not found on record. Further, changes in

composition of monitoring committees were not ratified by the competent authority viz. Secretary, DST.

3.1.2.6 Irregular revision of repayment schedule of loan

As per terms of reference of PMC constituted for monitoring of projects funded under DPRP, modifications in components of the projects, including revisions in funding and project schedule were to be done on the basis of the recommendations of PMC and with the approval of Secretary, DST. However, Audit observed that in three cases²³ mentioned in Table 17, DST extended the project duration and revised repayment schedule for loan assistance of ₹ 14.01 lakh arbitrarily without the recommendations of Monitoring Committee and concurrence of Secretary, DST which was irregular.

Table 17: Modification of project components without recommendation of PMC

Sl. No.	Name of industry partner	Name of project	Audit comment
1.	Institute of Molecular Medicine, Kolkata	Development of rational and selective synthetic RNA inhibitors for human therapy by gene regulation exploiting the vast potential of RNA interference (RNAi)	Due to under-utilisation of funds by industry partner, Integrated Finance Division of DST recommended that interest accrued on unspent balance of funds be adjusted in the amount of interest/ amortised interest due in various instalments and repayment schedule revised accordingly. Instead of this, DST arbitrarily extended the duration of project by one year thereby giving relaxation of one year to industry partner, due to which first instalment of loan due on 01 April 2009 was extended to 01 April 2010.
2.	Sudershan Biotech Ltd., Hyderabad	Production of para-hydroxyphenyl glycine (PHPG) using Hydantoinase and carbamoylase enzymes cloned E.coli.	Expert Committee in its meeting held in July 2009, while reviewing the progress of project recommended extension of project duration by one year i.e. upto March 2010 on no cost escalation basis. However, the project was arbitrarily foreclosed in March 2009 without complying with the recommendation of Expert Committee.

²³ (i) Development of rational and selective synthetic RNA inhibitors for human therapy by gene regulation exploiting the vast potential of RNA interference (RNAi) to Institute of Molecular Medicine, Kolkata; (ii) Production of para-hydroxyphenyl glycine (PHPG) using Hydantoinase and carbamoylase enzymes cloned E.coli to Sudershan Biotech Ltd., Hyderabad; and (iii) Formulation development, stability studies, pre-clinical and clinical studies of anti-glaucoma herbal eye drops to Promed Exports Private Ltd., New Delhi.

Sl. No.	Name of industry partner	Name of project	Audit comment
3.	Promed Exports Private Ltd., New Delhi	Formulation development, stability studies, pre-clinical and clinical studies of anti-glaucoma herbal eye drops	While reviewing the project in September 2009, PMC found project progress to be satisfactory did not recommend extension beyond project duration of March 2010. However, DST revised the repayment schedule and repayment of loan/ interest was started from 31 March 2011.

DST stated (June 2015) that duration of project sanctioned to Institute of Molecular Medicine, Kolkata was extended as per the suggestions of its Finance Division. The same is not acceptable as no such extension was recommended by PMC.

3.1.3 Conclusion

Drugs and Pharmaceutical Research Programme was implemented with an objective to develop capabilities in the Pharma R&D sector by synergising the strengths of Indian pharma industry and research institutions, so as to develop new drugs at lower costs for poorer sections of society lacking purchasing power. In 19 projects seen in audit, Department of Science and Technology (DST) released soft loan of ₹ 95.27 crore to private firms.

Audit observed that in none of the 19 projects, the outcomes were known to DST, as project completion reports had not been submitted by industry partners. Due financial diligence in selection of projects was not done by DST and loans were released to financially unsound companies which later defaulted in repayment of loans. An amount of ₹ 63.34 crore pertaining to principal amount of loans and interest was due from industrial partners of nine projects as of 31 March 2014. In addition, penal interest amounting to ₹ 10.34 crore was due from industrial partners of 12 projects. In spite of project monitoring mechanism prescribed under the programme, monitoring of projects during implementation and after completion of project duration was lax. As a result, final completion reports were not received in any of the 19 projects, due to which DST had no information on the outcome generated from the projects.

Thus, after investing ₹ 95.27 crore in 19 projects, the purpose of the programme to build capabilities, develop drugs and provide the same at low cost was not noticed.

3.2 Avoidable expenditure due to poor management of land and delayed construction of office complex

Department of Science and Technology delayed executing lease deed in respect of land acquired from NOIDA for 21 years and failed to complete construction of office complex within permissible time period. Consequently, it incurred avoidable expenditure of ₹ 1.81 crore besides recurring liabilities towards penalties till completion of the construction.

Department of Science and Technology (DST) acquired (March 1992) 40 acres²⁴ of land on lease from New Okhla Industrial Development Authority (NOIDA) against payment of ₹ 13.05 crore for construction of its various offices/Institutes. The work was to be done in three phases viz. construction of National Centre for Medium Range Weather Forecasting (NCMRWF)²⁵ on 10 acres under Phase-I, construction of Vigyan Prasar²⁶ on 10 acres under Phase-II and construction of institutes/offices of DST on the remaining 20 acres of land under Phase-III. According to the terms of allotment of land by NOIDA, DST was to commence construction work within six months from the date of possession and complete the same within a period of four years. As of March 2014, DST had completed construction of Phase I only. DST was also required to execute lease deed in respect of the land. However, lease deed for the land was registered in October 2013, after a delay of 21 years.

Audit observed poor management of land and deficient planning of work by DST, which resulted in avoidable expenditure of ₹ 1.81 crore due to delay in registration of lease deed and failure to fulfill construction obligations, as discussed in the succeeding paragraphs.

Delay in registration of lease deed

Although DST acquired the land in March 1992, it entered into a lease agreement with NOIDA only in September 2001 after a delay of nine years. As per the lease agreement, DST and NOIDA were required to sign a final lease deed in terms of the lease agreement and take all steps necessary to register the same within a period of 30 days from receipt of no objection certificate from Income Tax Department. Failure to execute lease deed on time would attract penalty at the rate of 2.5 *per cent* of the cost of land per annum.

Audit observed that after repeated reminders from NOIDA, DST/NCMRWF forwarded (November 2002) the requisite documents to NOIDA for execution of lease deed. However, the deed was not executed due to disagreement between DST and NOIDA regarding amount of outstanding lease rent, which remained under

²⁴ Ten acres on Plot A-50 and 30 acres on Plot A-33, Sector 62, NOIDA.

²⁵ A unit which was formerly under DST and is presently under the Ministry of Earth Sciences.

²⁶ An autonomous body under DST.

correspondence. Subsequently, DST intimated (March 2005) NOIDA of its decision to deposit one time payment of lease rent upto the period March 2005 and based on the demand given by NOIDA, DST deposited (March 2005) one time payment of lease rent of ₹ 6.04 crore.

Audit further observed that even after making one time payment of lease rent, DST did not execute the lease deed as NOIDA still demanded penalty at the rate of ₹ 32.63 lakh²⁷ per annum for non-execution of lease deed. In addition, DST had delayed in payment of one time lease rent by seven days, for which NOIDA also demanded penalty of approximately ₹ 90 lakh. DST continued to correspond with NOIDA for waiver of the penalty and it was finally able to obtain (September 2013) waiver of payment of penalty from NOIDA for the period 1992 upto 2010. However, NOIDA levied (September 2013) penalty of ₹ 1.03 crore for delay in execution of lease deed for the period from August 2010 to October 2013. Accordingly, DST deposited the same and executed (October 2013) the lease deed with NOIDA.

Since the land was leased to DST under known terms and conditions, the onus of registration of lease deed rested solely on DST. However, failure to do so in time resulted in avoidable expenditure of ₹ 1.03 crore.

Delay in construction of office complex

According to the terms and conditions of allotment of land, DST was required to obtain prior sanction of NOIDA to the building plan, commence the construction work within six months from the date of possession of the plot, put the same in operation within four years from the date of possession i.e. by March 1996 and obtain the completion certificate from NOIDA, failing which it was liable to pay a penalty of four *per cent* of the cost of the land per annum for delay in construction of the building. NOIDA granted time extension upto 2001 to DST for completing the construction work.

Construction of NCMRWF was entrusted (1998) to National Industrial Development Corporation (NIDC) a public sector undertaking under the Ministry of Heavy Industry (MOHI). However, when construction of the building was in progress, NIDC was wound up (May 2002) by MOHI due to administrative and financial reasons as a result of which it abandoned the work. Subsequently, the residual work was awarded to MECON Limited, a public sector undertaking under the Ministry of Steel, which completed the same in March 2004.

Audit observed that while constructing the building of NCMRWF, DST failed to submit drawing and floor plans for the approval of NOIDA, due to which it made payment of ₹ 25.80 lakh (July 2008) as regularisation charges. Audit further

²⁷ 2.5 *per cent* of ₹ 13.05 crore

observed that out of 40 acres of land acquired, DST had completed construction of only Phase I on 10 acres of land. Construction on the remaining 30 acres of land had not commenced, thereby rendering DST liable to penalty of ₹ 52.20 lakh²⁸ per annum after March 2001.

DST continued to request NOIDA periodically for granting extension of time and waiving penalty for delay in construction. Though DST had earlier submitted (2007-2008) drawings and plan for construction of Phase II to NOIDA, it was unable to obtain approval of the same, pending resolution of the matter of waiver of penalty for delay in executing the lease deed. Subsequently, NOIDA granted extension upto December 2013; however, DST was unable to commence construction work as it entrusted the work of implementing Phase II of the construction to Vigyan Prasar only in April 2014. Thereafter DST requested (April 2014) NOIDA for further extension of time up to December 2014 but NOIDA insisted (June 2014) on payment of extension fees of ₹ 52.20 lakh from December 2013 to December 2014 before taking a decision on the matter. DST deposited (July 2014) extension fees of ₹ 52.20 lakh with NOIDA.

Thus, poor management of land, deficient planning and non-fulfillment of construction obligations resulted in avoidable expenditure of ₹ 1.81 crore. Besides, recurring liabilities on account of payment of penalty, if demanded by NOIDA, will have to be discharged by DST till completion of the construction.

DST stated (February 2015) that due to concerted efforts of the Department lease rent to the tune of ₹ 12.30 crore was waived and Department was liable to pay only ₹ 1.03 crore, which resulted in savings of ₹ 11 crore. As regards delay in construction, DST stated that NBCC²⁹ had been considered for submission of preliminary estimates for construction of office complex.

The reply of DST may be viewed in the light of the fact that the Department had obtained waiver of penalties levied on it from time to time upto 2010 for its failure to execute lease deed and complete construction on time. The fact remained that DST had to pay penalty of ₹ 1.81 crore towards non-execution of lease deed on time, extension of time for construction and regularisation of the building constructed without approved plans. Further, as work was yet to be awarded as of February 2015, concerns of Audit on recurring liabilities which may have to be incurred on account of non-adherence to time schedules remain pertinent.

²⁸ Four per cent of ₹ 13.05 crore

²⁹ National Buildings Construction Corporation Ltd., a public sector undertaking under the Ministry of Urban Development

CHAPTER – IV

Department of Scientific and Industrial Research

4.1 New Millennium Indian Technology Leadership Initiative Scheme

New Millennium Indian Technology Leadership Initiative Scheme, implemented by Council of Scientific and Industrial Research with the objective of building, capturing and retaining a global leadership position for India in selected areas through scientific and technological developments, did not yield expected results. Out of 30 projects seen in audit, technologies were commercialised in only four projects. Nine industrial partners defaulted in repayment of loans of ₹ 64.92 crore. There were instances of insufficient monitoring, non-compliance with scheme guidelines and time and cost overruns.

4.1.1 Introduction

The New Millennium Indian Technology Leadership Initiative (NMITLI) Scheme was approved by Cabinet Committee on Economic Affairs (CCEA) in March 2003 for Tenth Plan³⁰ Programme. The scheme was to be implemented by Department of Scientific and Industrial Research (DSIR) through the Council of Scientific and Industrial Research³¹ (CSIR). The scheme envisaged participation of both academic/research institutions and industry. Objective of the scheme was development of sustainable and eco-friendly new technologies/concepts for Indian industries.

Under the scheme, projects were to be evolved after national consultation exercise involving persons from academic/research institutions and industry. Conceptualisation of projects followed two routes viz. (i) Nationally Evolved Projects (NEP); and (ii) Industry Originated Projects (IOP). The process of selection of nationally evolved projects began with short-listing of ideas by a Screening Committee followed by selection of the areas by field expert groups. Project development in the selected areas was carried out by 'domain champions'³² after brainstorming. Identified agencies (research institutions/ industries) were then invited to participate in the projects. In the case of projects originated by industry (IOP), the process began with soliciting of proposals through press advertisements and personal letters from Director General (DG), CSIR. The screening of proposals

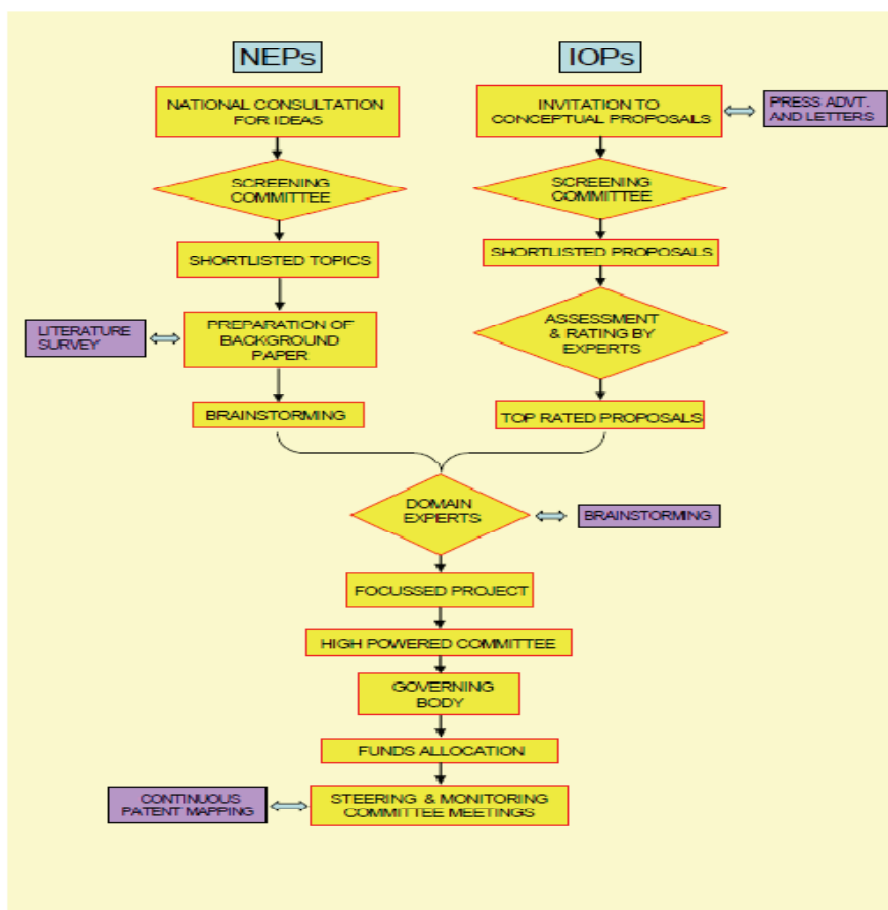
³⁰ Period from 2002 to 2007

³¹ An autonomous research and development organisation under DSIR

³² Field Experts

thus received was carried out by a committee followed by assessment and rating of shortlisted ideas by field experts. Two top rated ideas in each field were developed into projects with the assistance of NMITLI designated experts. After finalisation, projects were reviewed by a High Powered Committee³³ (HPC). Based on recommendation of HPC, projects were approved by Governing Body of CSIR for funding. The process of project formulation and monitoring is given at **Chart 5**.

Chart 5 - PROJECT FORMULATION



NEP: Nationally Evolved Projects or Projects of national interest;
IOP: Industry Originated Projects or Projects originated by industry

Financial support to projects under the scheme was in the form of (a) grant-in aid to institutional partners and (b) soft loan with simple interest at the rate of three *per cent* to industrial partners. Projects were to be implemented within two to five years. Technologies developed under these projects were to be commercialised through industry.

³³ A committee constituted by Director General, CSIR, comprising of experts from diverse fields to assess and evaluate NMITLI projects.

CSIR formulated guidelines for implementation of projects under NMITLI scheme. The scheme was further continued during the Eleventh Five Year Plan³⁴ period.

4.1.2 Budget and expenditure

CSIR formulated a total of 75 projects under NMITLI from 2000-01 to 2012-13, out of which 73 projects were taken up for implementation. Against the project outlay of ₹ 733.44 crore since inception of the scheme, funds of ₹ 630.50 crore had been released till March 2014. This included grants of ₹ 369.72 crore to various institutions and loans of ₹ 260.78 crore to industrial partners. The details of year wise releases are given in **Appendix XV**.

4.1.3 Audit Findings

Of 73 projects supported by CSIR under NMITLI scheme, Audit scrutinised 30 (19 NEP; 11 IOP) randomly selected projects. While a brief profile of the 30 selected projects and a gist of audit findings for each of these 30 projects are given in the **box**, issue-wise audit comments are given in subsequent paras.

4.1.3.1 Achievement of objectives

NMITLI scheme was expected to yield globally competitive, sustainable and eco-friendly new technologies for industry. The projects had well-defined objectives for development of technologies/processes. Audit observed instances of non-achievement/partial achievement of objectives of projects.

(i) Non-achievement/partial achievement of objectives

(a) Out of 30 projects test-checked in audit, none of the envisaged objectives in terms of technologies and processes were achieved/developed under six projects after incurring an expenditure of ₹ 22.73 crore. These six projects in which envisaged objectives were not achieved at all are given in Table 18.

³⁴ Period from 2007 to 2012

Brief profile of 30 selected projects

Name of Project: 1		Development of next-generation Plasma Display Panel (PDP) Technology and 50" High Definition (HD) TV Prototype				
Objectives in brief: Development of a 50" prototype with luminous efficacy of 5 lm/watt.						
Original cost	₹ 24.31 crore	Expenditure	₹ 27.72 crore	Cost overrun		₹ 3.41 crore
Project started	March 2007	Project closed	March 2010	Original duration	30 months	
				Time overrun	6 months	
Patents	19	Technology developed	Yes	Premia		N/A ³⁵
		Commercialised	No	Royalty		N/A
Audit Comments: The project was able to develop a prototype of 50" with HD compatible design, but luminous efficacy of 5 lm/watt, cost reduction and reduction of power consumption could not be achieved. Therefore, technology was neither transferred nor commercialised.						

Name of Project: 2		Design and Development of cushion bonded/rigid bonded organic cerametallic cookie and single/duel sintered buttons (copper/iron based), ceramic cookies and annular ring clutch discs and matching cover assemblies									
Objectives in brief: Design and development of clutch discs and matching cover assemblies for automobiles.											
Original cost		₹ 21.64 crore		Expenditure		₹ 20.40 crore	Cost overrun		Nil		
Project started		March 2008		Project closed		September 2011		Original duration		36 months	
								Time overrun		6 months	
Patents		0		Technology developed		Yes		Premia		N/A	
				Commercialised		No		Royalty		N/A	
Audit Comments: Though the products were developed and identified for further development and commercialisation, no agreement was signed for transfer of technology. Further, company defaulted in repayment of the loan provided under the project.											

Name of Project: 3		Development of versatile, portable PC based software for bio-informatics and Development of Linux cluster version of Bio-suite.			
Objectives in brief: Development of a set of software tools that would assist the Indian academic, R&D institutions and Industry in the field of bio-informatics					
Original cost	₹ 17.02 crore	Expenditure	₹ 16. 20 crore	Cost overrun	Nil
Project started	March 2002	Project closed	March 2005	Original duration	24 months
				Time overrun	12 months
Patents	0	Technology developed	Yes	Premia	Nil
		Commercialised	Yes	Royalty	₹ 1.21 lakh
Audit Comments: One component ‘Metabolic Pathway Engineering’ did not lead to any software and other softwares ‘BioSuite’ and ‘Genocluster’ developed under the project could generate a meagre royalty.					

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³⁵ Not applicable

Table 18: Projects in which envisaged objectives were not achieved

Sl. No.	Name of the project	Remarks
1.	Lactic acid and lactic acid based polymers- Establishment of a 300TPA plant for lactic acid production	The process developed did not meet the envisaged criteria. The project was eventually closed terming it as commercially unviable due to price escalation of cane juice and certain key chemicals.
2.	Oral delivery of insulin	The industrial partner withdrew from the project as formulation developed did not work.
3.	Wireless Sensor Network chip-set based Ultra Wide Band Technology.	During implementation of the project, the industrial partner expressed lack of expertise in executing some of the deliverables of the project, such as development of RF chips. Further, the technology was surpassed by other cost competitive technologies.
4.	Process of Tamiflu-a blockbuster drug to combat the menace of avian flu.	Process of development of Tami flu was already patented. The project partners failed to develop the non-infringing process of Tamiflu due to scientific hurdles and work was stalled at different stages. Further, no Government agency had ever requested CSIR to develop the drug.
5.	Microbiological conversion of Erythromycin to Clarithromycin and other novel biologically active molecules	The project could not achieve the envisaged objective as no positive leads could be obtained.
6.	Nano-material catalysts and associated process technology for alkylation / acylation reactions, pre-reforming of hydro-carbons, sulphur removal from petroleum fuels and natural gas combustion	The Acylation and Nitration components were foreclosed as they were not likely to lead to technology development/ commercial application and viability issues. Under the De-sulphurization of diesel component the catalyst developed could not meet the requirement of a commercial DHDS processes.

CSIR accepted (May 2015) the audit observation regarding non-achievement of objectives.

(b) In remaining 24 projects, objectives of the projects could not be fully achieved. Major reasons for partial achievement of objectives were scientific and technical hurdles/lack of technical expertise which could not be resolved (five³⁶ projects), disinterested industry partners (10³⁷ projects), technical/ commercial

³⁶ (i) Versatile, portable PC based software for bio-informatics and development of Linux cluster version of bio-suite; (ii) Improved granular processing towards energy efficiency and resource conservation in cement manufacture; (iii) Two orders of magnitude improved liquid crystals for flat panel display devices; (iv) Development of Novel Fungicides; and (v) Development of a 500 kW low cost horizontal-axis wind turbine.

³⁷ (i) Recombinant approach to produce α -linolenic acid and docosahexanoic acid (DHA) in sunflower and yeast; (ii) Development of Next Generation Plasma Display Technology and a 50" High Definition (HD) TV prototype; (iii) Biodegradable plastics from agricultural wastes—Cellulose esters based on bagasse; (iv) Novel Expression System; (v) Environmentally secure rare earth based colorants for surface coatings (Phase-II); (vi) Biotechnological Approaches for improvement of Plant Species with special reference to Pulp and Paper; (vii) Functionalization of Alkanes; (viii) Development of selected Medical Implants; (ix) Design and development of cushion bonded organic ceramic clutch discs; and (x) A prospective study to correlate gene signatures with clinical outcome of astrocytomas and identification of potential therapeutic target(s)

Brief profile of 30 selected projects (continued)

Name of Project: 4		Biotechnology for leather towards cleaner processing – Phase II			
Objectives in brief: Development of integrated technology packages for bio-processing of leather; technologies to obtain high value products from process waste and exploring/ developing eco-compatible and biodegradable leather.					
Original cost	₹ 14.21 crore	Expenditure	₹ 9.87 crore	Cost overrun	Nil
Project started	January 2006	Project closed	January 2012	Original duration	36 months
				Time overrun	36 months
Patents	1	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: The processes for enzymatic de-hairing, de-fleshing/degreasing and fibre opening were developed but could not be commercialized due to inaction by CSIR-CLRI and technology being economically unviable. Integrated technology packages could not be developed under the project as envisaged.					

Name of Project: 5		Development of globally competitive 'Triple-play' broadband technology			
Objectives in brief: Manufacture of a proven commercialisable technology with basic TV and PC-Centric services demonstrated in a network of 5,000 active customers in A-Class city like Pune.					
Original cost	₹ 11.89 crore	Expenditure	₹ 11.78 crore	Cost overrun	Nil
Project started	March 2005	Project closed	September 2007	Original duration	18 months
				Time overrun	12 months
Patents	0	Technology developed	Yes	Premia	Nil
		Commercialised	Yes	Royalty	₹ 1.38 lakh
Audit Comments: Though the technology was developed, the company could demonstrate it for only 330 connections in Pune city against the targeted 5,000 active connections.					

Name of Project: 6		Lactic acid and lactic acid based polymers – Establishment of a 300 TPA pilot plant for lactic acid production					
Objectives in brief: Establishment of a 300 tons per annum pilot plant at a suitable commercial location for production of lactic acid, based on laboratory scales data.							
Original cost		₹ 9.45 crore	Expenditure		₹ 9.27 crore	Cost overrun	Nil
Project started	March 2007	Project closed	August 2012	Original duration		36 months	
				Time overrun		29 months	
Patents	1	Technology developed		No	Premia		N/A
		Commercialised		N/A	Royalty		N/A
Audit Comments: Project faced engineering problems in the area of lactic acid purification and process operation. It was stated that further investment of ₹ six to eight crore was required for resolving these problems, which was not agreed to. Further, there was price escalation of cane juice and certain key chemicals. The project was closed as it became unviable.							

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un-viability (seven³⁸ projects), emergence of new technology in the market and violation of agreement (two³⁹ projects).

Thus, out of 30 projects scrutinised in audit, in six projects, objectives were not achieved at all and in 24 projects objectives were partially achieved. No project could achieve its objectives fully.

4.1.3.2 Management of Intellectual Property Rights/technologies generated under the scheme

According to NMITLI guidelines, CSIR was to facilitate the procedure for securing Intellectual Property Rights (IPR) for the technologies and processes generated from the projects, as well as to ensure commercial exploitation of the same. Out of 30 projects, a total of 86 patents (including one on design) were filed under 17 projects, of which 43 patents were granted.

4.1.3.3 Transfer of Technology

NMITLI guidelines provided that lead industrial partner should be offered the first right to utilise the IPRs/technologies by CSIR. The other industrial partner(s) also have option to get the license of technology/IPR out of the project from leading industrial partner(s). However, CSIR was free to offer the IPR to other firms in the event that the industrial partner did not take effective steps to commercially exploit the IPRs/technology within six months of exercising the option.

(i) Commercialisation of technology

Though technologies and processes⁴⁰ were developed in 24 out of 30 selected projects, they were transferred in only eight projects. Of eight

³⁸ (i) Development of globally competitive 'Triple Play' Broadband Technology; (ii) 5 & 25 kW decentralized power packs; (iii) Defunctionalization of carbohydrates as a feed stock to manufacture well identified industrial chemicals; (iv) Novel molecular diagnostics for Eye Diseases and Low Vision Enhancement Devices; (v) A cost effective Simple Office Computing (SofComp) platform to replace PC; (vi) Market seeding of SofComp and Mobilis to develop wide ranging applications as well as increase awareness; and (vii) Biotechnology for replacing chemical process in leather sector (Phase-II).

³⁹ (i) Nano material coatings and advanced composites for tribological applications in automotive industry; and (ii) A PC based high end 3D visualization platform for computational biology – 'Darshee'.

⁴⁰ Bio-process for leather processing, technology package for conversion of sugarcane bagasse into biodegradable material, identification of chemical/genetic leads and compounds, diagnostic kits for eye infection, bio-informatics software, technology for production of DHA and low cost embedded computing platforms, GUI based software for cement kilns, rare earth based colorants, technology for display devices, IP TV with PC-centric services, medical implants, design of wind turbine, LPG based power packs, surface coatings for automotive applications.

Brief profile of 30 selected projects (continued)

Name of Project: 7 & 8		A cost effective Simple Office Computing (Sofcomp) platform to replace PC; Market seeding of SofComp & Mobilis to develop wide-ranging applications as well as increase awareness			
Objectives in brief: Development of low cost (around ₹ 10,000 for base model and below ₹ 26,000 for advanced), embedded computer platform to replace conventional PCs alongwith advanced model having latest features; production of at-least 3000 units of 3 variants of SofComp, Mobilis STN and Mobilis TFT for market seeding to customize and increasing awareness of the product(s) towards catalyzing market(s).					
Original cost		₹ 3.30 crore ₹ 5.37 crore	Expenditure	₹ 3.20 crore ₹ 6.71 crore	Cost overrun Nil ₹ 1.34 crore
Project started	April 2003 December 2005	Project closed	May 2005 December 2007	Original duration	21 months
				Time overrun	29 months
Patents	0	Technology developed	Yes	Premia	Nil
		Commercialised	Yes	Royalty	Nil
Audit Comments: Post-NMITLI activities, such as market seeding, were not approved during 10 th plan and were subsequently incorporated in to the scheme from 11 th plan only. Therefore, approval of this activity was in violation of the CCEA approved guidelines. Further, the developed product did not find any buyer. The company failed to repay loans provided for both development and market seeding of the platforms.					

Name of Project: 9		Nano-material coatings and advanced composites for tribological applications in automotive industry				
Objectives in brief: Development of antifriction surface coatings (cast iron/AL/AL Alloys/hybrid) with reduced friction and improved wear resistance for automotive and engineering components.						
Original cost		₹ 7.54 crore	Expenditure	₹ 4.78 crore	Cost overrun	Nil
Project started	April 2003	Project closed	March 2007	Original duration	36 months	
				Time overrun	12 months	
Patents	1	Technology developed	Yes	Premia	N/A	
		Commercialised	No	Royalty	N/A	
Audit Comments: Technology developed was not commercialisable due to high capital cost besides change in sub-system design of the components manufactured/used by the industrial partner. CSIR did not make efforts to commercialise/transfer the technology to any other industry.						

Name of Project: 10		Functionalization of Alkanes			
Objectives in brief: To develop economical process for production of various acids and novel processes for Indian Petrochemical Industry.					
Original cost	₹ 6.75 crore	Expenditure:	₹ 5.00 crore	Cost overrun	Nil
Project started	April 2003	Project closed	November 2006	Original duration	24 months
				Time overrun	20 months
Patents	8	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: Out of four components taken up under the project, three were found to be economically unviable, and in one case, the productivity was not as per the international level.					

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projects in which technologies were transferred, the same could be commercialised in only four⁴¹ projects. Technologies from remaining four projects were not commercialised even after six to nine years of their transfer as shown in Table 19.

Table 19: Technologies not commercialised in spite of transfer

Sl. No.	Name of the project	Expenditure (₹ in crore)	Date of completion/closure	Date of transfer of technology	Time lapse as of March 2014
1.	Recombinant approach to produce a-linolenic acid docosahexanoic acid (DHA) in sunflower and yeast	3.72	July 2007	July 2007	7 years
2.	A cost effective simple office computing (SofComp) platform to replace PC	3.20	May 2005	May 2005	9 years
3.	Market seeding of SofComp & Mobilis to develop wide-ranging applications as well as increase awareness	6.71	December 2007		
4.	Biodegradable polymers from agricultural wastes: cellulose esters based on Bagasse derived cellulose	2.87	December 2004/March 2008	July 2008	6 years

In the above projects, industrial partner was unable to commercialise the technology/ products. CSIR accepted the observations. CSIR did not explore the possibility of commercialisation of these technologies by finding other capable companies.

In remaining 16 projects, technologies/processes/ know-how developed could not be transferred to industries for commercialisation for reasons such as disinterest/discontinuance of industrial partners (eight⁴² projects), commercial unviability (three⁴³ projects), lack of expertise (two⁴⁴ projects) and technical hurdles, emergence of new technology (three⁴⁵ projects).

⁴¹ (i) Development of globally competitive 'Triple Play' Broadband Technology; (ii) Versatile, portable PC based software for bioinformatics and development of Linux cluster version of Bio-Suite; (iii) Novel Molecular Diagnostics for eye diseases and Low vision enhancement devices; and (iv) A PC based high-end 3D visualization platform for computational biology – 'Darshee'

⁴² (i) Development of Next Generation Plasma Display Technology and a 50" High Definition (HD) TV prototype; (ii) Novel Expression System; (iii) Environmentally secure rare earth based colorants for surface coatings (Phase-II); (iv) Biotechnological approaches for improvement of plant species with special reference to pulp and paper; (v) Functionalization of Alkanes; (vi) Development of selected medical implants; (vii) Design and development of cushion bonded organic ceramic clutch discs; and (viii) A prospective study to correlate gene signatures with clinical outcome of astrocytomas and identification of potential therapeutic target(s)

⁴³ (i) 5 and 25 KW decentralized power packs; (ii) Defunctionalization of carbohydrates as a feed stock to manufacture well identified industrial chemicals; and (iii) Biotechnology for replacing chemical process in leather sector-Phase II

Brief profile of 30 selected projects (continued)

Name of Project: 11		Development of selected Medical Implants			
Objectives in brief: Development of normal and drug eluting cardiovascular stents, spinal/hip/dental implants with specific characteristics.					
Original cost	₹ 6.60 crore	Expenditure	₹ 7.71 crore	Cost overrun	₹ 1.11 crore
Project started	April 2005	Project closed	May 2012	Original duration	36 months
				Time overrun	48 months
Patents	0	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: The Monitoring committee (May 2010) felt that development of implants takes 8-10 years, therefore no product could be developed to the level of commercialisation. The project was therefore, poorly formulated in terms of its duration. Objectives could not be achieved due to reasons such as disinterest shown by clinical partner in case of spinal implants and inadequate monitoring of progress of the project by both the committees of CSIR. However, trials were ongoing in respect of dental implants only.					

Name of Project: 12		5 & 25 KW decentralized power packs			
Objectives in brief: Development of 5 kW fuel cell power packs delivering 200 volts by using methanol, LPG and ethanol from sugar factories; development of Proton Exchange Membrane (PEM) fuel cell at ₹ 50,000 per kW and development of 25 kW systems for commercial application.					
Original cost	₹ 6.10 crore	Expenditure	₹ 6.21 crore	Cost overrun	₹ 0.11 crore
Project started	March 2001	Project closed	June 2004	Original duration	24 months
				Time overrun	15 months
Patents	0	Technology developed	No	Premia	N/A
		Commercialised	N/A	Royalty	N/A
Audit Comments: Prototype demonstrated under the project was based only on LPG, as work on methanol and ethanol based technology was not taken up. Further, development of 25 kW systems was not taken up due to non-achievement of cost economy in production of PEM fuel cell.					

Name of Project: 13		Development of Novel Fungicides				
Objectives in brief: To develop commercially viable and environmentally safe novel fungicides.						
Original cost		₹ 5.54 crore	Expenditure	₹ 4.59 crore	Cost overrun	Nil
Project started	October 2004	Project closed		March 2008	Original duration	36 months
					Time overrun	6 months
Patents	0	Technology developed		Yes	Premia	N/A
		Commercialised		No	Royalty	N/A
Audit Comments: Leads identified under the project could not be developed as commercialisable products due to lack of expertise available in the country. Audit also noted that doubts were raised during techno-economic and financial viability evaluation of the project in view of poor track record in the earlier projects of the industrial partner.						

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⁴⁴ (i) Two orders of magnitude improved liquid crystals for flat panel display devices; and (ii) Development of Novel Fungicides

⁴⁵ (i) Improved granular processing towards energy efficiency and resource conservation in cement manufacture; (ii) Nano-material coatings and advanced composites for tribological applications in Automotive Industry; and (iii) Development of a 500 Kw low cost horizontal-axis Wind Turbine

Thus, of 30 projects seen in audit, technologies developed were translated into commercial activity/end use in only four projects.

4.1.3.4 Non-compliance to NMITLI Guidelines

With a view to execute the projects in an efficient and effective manner to achieve their envisaged objectives/deliverables, CSIR formulated (January 2003) NMITLI guidelines outlining the procedures to be followed for sanction, funding and implementation of the projects within stipulated time. Audit observed violation of NMITLI guidelines in 12 projects on issues such as projects awarded to ineligible industrial participants, financial violations such as incorrect re-appropriations, non-accounting of interest earned, revision of project cost without obtaining requisite approvals, etc.

(i) Violation of Project Formulation Guidelines

The violation of project formulation guidelines was found in six projects. In five⁴⁶ projects, it was observed that there was violation of project formulation guidelines such as, the project proposal was neither taken in screening committee nor discussed in Expert Group/High Power Committee, inadequate presence of only one field expert in Champions Group against the mandated three-four experts, sanction of project for market seeding for post NMITLI activities and approval of project even after negative view on Techno-economic and financial viability evaluation report. In one⁴⁷ project, the industrial partner did not fulfil the condition of having DSIR recognition as R&D lab within the prescribed period of 12 months.

(ii) Violation of Operational Guidelines

There was violation of operational guidelines of scheme in six⁴⁸ projects which included unapproved re-appropriation of funds in two projects,

⁴⁶ (i) Process for Tamiflu—a blockbuster drug to combat the menace of avian flu; (ii) Two orders of magnitude improved Liquid Crystals for flat panel display devices; (iii) Market seeding of SofComp and Mobilis to develop wide ranging applications as well as increase awareness; (iv) Development of Novel Fungicides; and (v) Development of a 500 KW low cost horizontal-axis wind turbine

⁴⁷ Recombinant Approach to produce α-linolenic acid docosahexanoic acid (DHA) in sunflower & yeast

⁴⁸ (i) Development of next generation Plasma Display Panel technology and 50" High Definition (HD) TV Prototype; (ii) 5 and 25 KW Decentralized power packs; (iii) Wireless Sensor Network chipset based Ultra Wide Band (UWB) technology; (iv) Design & Development of Environmentally secure earth based colorants for surface coating applications (Phase-II); (v) Biotechnical approaches for improvement of plant species with special reference to pulp and paper; and (vi) Novel molecular diagnostics for eye diseases and low vision enhancement devices.

Brief profile of 30 selected projects (continued)

Name of Project: 14		Nano-material catalysts and associated process technology for alkylation/acylation reactions, pre-reforming of hydro-carbons, sulphur removal from petroleum fuels and natural gas combustion			
Objectives in brief: Development of commercially viable nano-particle catalyst systems and processes related to various applications in fine chemical industry.					
Original cost	₹ 5.52 crore	Expenditure	₹ 5.61 crore	Cost overrun	₹ 0.09 crore
Project started	March 2001	Project closed	June 2006	Original duration	24 months
				Time overrun	39 months
Patents	0	Technology developed	No	Premia	N/A
		Commercialised	N/A	Royalty	N/A
Audit Comments: The project failed to provide any technology for commercial applications due to various technical reasons, despite incurring expenditure in excess of estimated cost of the project.					

Name of Project: 15		Development of a 500 kW low cost horizontal-axis Wind Turbine			
Objectives in brief:					
Design and development of a 500 kW low cost, indigenous, horizontal-axis wind turbine specially suited for the Indian climatic conditions.					
Original cost	₹ 5.27 crore	Expenditure	₹ 8.99 crore	Cost overrun	₹ 3.72 crore
Project started	March 2004	Project closed	December 2010	Original duration	24 months
				Time overrun	57 months
Patents	0	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: Wind turbine controls and safety system were assembled and installed around an imported Danish 'Orbital' Controller for which the industrial partner was sole Indian Agent. The output generated during field trials was limited from 16 to 376 kW only. There was cost overrun of more than 70 <i>per cent</i> as well as time overrun.					

Name of Project: 16		Biotechnical approaches for improvement of plant species with special reference to pulp and paper			
Objectives in brief: Development of pulpwood species with low or altered lignin content and high cellulose content by exploiting the genetic diversity of the target plants.					
Original cost	₹ 4.97 crore	Expenditure	₹ 7.17 crore	Cost overrun	₹ 2.20 crore
Project started	October 2004	Project closed	March 2008	Original duration	24 months
				Time overrun	18 months
Patents	0	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: Despite identification of three germ plasms, no new pulp wood species could be developed as industry involved did not pursue them further.					

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interest earned by institutional partner not accounted for under one project, incurring of expenditure after closure of the projects, improper rescheduling of repayment of loan and non-signing of fresh agreement for loan repayment after expiry of the earlier agreement in one project each.

Thus, the project formulation and operational guidelines, prepared to accomplish the objectives and attainment of overall objectives of the scheme in a time bound and systematic manner, were violated due to weak internal control mechanism at CSIR level.

4.1.3.5 Monitoring of projects

(i) Meetings of the internal Steering Committee and Monitoring Committee not held regularly

The NMITLI Scheme provided for two tier monitoring system to ensure realisation of objectives and deliverables. At the first level was an internal Steering Committee (SC) comprising Project Investigators (PIs) who were required to meet once in three months. At the second level there was an external independent Monitoring Committee (MC) comprising three eminent experts who were to meet at least once in six months. MC was responsible for recommending

- (i) foreclosure or modification of the projects or sub-components;
- (ii) inclusion of additional institutional/industrial partners wherever necessary; and
- (iii) revising the funding support to implementing partners.

Audit scrutiny revealed that meetings of the SCs/MCs were not held regularly as per the prescribed duration, which not only resulted in inadequate monitoring but also affected the progress of project activities. The position of shortfall in meetings of SC and MC is given in Table 20.

Table 20: Number of meetings of Monitoring Committee and Steering Committee held

Percentage of shortfall	Number of projects	
	Monitoring Committee	Steering Committee
No shortfall	12	2
1 to 25 per cent	10	7
26 to 50 per cent	7	13
51 to 75 per cent	Nil	4
76 to 99 per cent	Nil	Nil
100 per cent	1	4
Total Number of Projects	30	30

It can be seen from the above table that there was shortfall in conducting regular meetings of Monitoring Committee for assessment of project activities. The shortfall

Brief profile of 30 selected projects (continued)

Name of Project: 17		Improved granular processing towards energy efficiency and resource conservation in cement manufacture			
Objectives in brief: Development of new technologies to improve the energy efficiency of the cement manufacturing process.					
Original cost	₹ 4.87 crore	Expenditure	₹ 3.22 crore	Cost overrun	Nil
Project started	March 2002	Project completed/ closed	March 2006	Original duration	36 months
				Time overrun	12 months
Patents	3	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: The project was left incomplete midway due to inadequate duration, simulation work not taken up with Information Technology and cement industry and institutional partner's work not taken to pilot level with industry. The project could develop easy to use graphical user interface based software called ROCKS (Rotary Cement Kiln Simulator) and individual mathematical models for kiln, calciner, pre-heaters and clinker. However, no new technology as envisaged for benefit of cement industry could be developed.					

Name of Project: 18		A prospective study to correlate gene signatures with clinical outcome of astrocytomas and identification of potential therapeutic target(s)					
<u>Objectives in brief:</u> Validation and characterisation of selected genes for glioma ⁴⁹ progression besides development of diagnostic microchip and potential therapeutic markers.							
Original Cost		₹ 4.77 crore	Expenditure		₹ 5.46 crore	Cost overrun	₹0.69 crore
Project started	January 2006	Project closed	March 2011	Original duration		48 months	
				Time overrun		15 months	
Patents	0	Technology developed		Yes		Premia	N/A
		Commercialised		No		Royalty	N/A
<u>Audit Comments:</u> The products were not commercialised despite development of technologies due to discontinuation of the Industrial partner.							

Name of Project: 19		Wireless Sensor Network Chipset based Ultra Wide Band (UWB) technology.			
Objectives in brief: Development of a Wireless ultra-wide band RF-sensor chipset to provide strategic advancement in wireless communication for capturing the market in home security and retail market sector.					
Original cost	₹ 4.60 crore	Expenditure	₹ 4.02 crore	Cost overrun	Nil
Project started	March 2007	Project closed	June 2013	Original duration	36 months
				Time overrun	39 months
Patents	0	Technology developed	No	Premia	N/A
		Commercialised	N/A	Royalty	N/A
Audit Comments: Although the company demonstrated a prototype, commercial viability of the project/product could not be established, as there were no standards for ultra-wide technology products. Due to this, product developed under the project could not be tested.					

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⁴⁹ Several brain tumor types grouped together under the name glioma

ranged from one to 50 *per cent* in 17 projects. Similarly, in respect of meetings of SC, there was shortfall in conducting the meetings in 28 projects. The shortfall ranged from one to 75 *per cent* in 24 projects. In one project viz. 'Process for Tamiflu—a blockbuster drug to combat the menace of avian flu', MC as well as SC was not constituted. In three other projects, no meeting of SC was conducted. The project wise details of number of meetings held are given in **Appendix XVI**.

CSIR stated (January 2014/May 2015) that sometimes the monitoring schedule could not be adhered to due to several reasons including non-achievement of scheduled milestones within prescribed time-frame besides non-availability of experts.

The reply is to be seen in the context that necessity of closer monitoring of projects in the event of non-achievement of scheduled milestones was more important.

(ii) Time Overruns

Out of 30 projects sampled in audit, Audit observed delays in implementation of projects in 28 projects, with time overrun ranging from six months to nearly five years as detailed in **Appendix XVII**.

CSIR accepted audit observations and stated (January 2014) that GB/DG, CSIR was empowered to approve the time overrun. Audit however observed that there was time over-run in more than 93 *per cent* of sampled projects which shows inadequate allotment of time at project approval stage.

(iii) Non-compliance with directives given by Committees

Audit observed that in three projects, specific recommendations given by the committees during review of progress of the projects were not complied with by the project partners. Details are given in Table 21.

Brief profile of 30 selected projects (continued)

Name of Project: 20		Design and development of environmentally secure rare earth based colorants for surface coating applications (Phase-II)			
Objectives in brief: Development and standardisation of the technologies/process for range of colours based on rare earth compounds viz. brown, green and blue.					
Original cost	₹ 3.96 crore	Expenditure	₹ 2.12 crore	Cost overrun	Nil
Project started	March 2005	Project closed	December 2008	Original duration	36 months
				Time overrun	9 months
Patents	0	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: The project could develop only two colour pigments i.e. brown and yellow, against the targeted range of colours. However only brown colour was taken up for up-scaling by the industrial partner.					

Name of Project: 21		Biodegradable plastics from agricultural wastes: Cellulose esters based on bagasse derived cellulose					
Objectives in brief: Development of biodegradable materials from renewable agricultural byproducts viz. sugarcane bagasse, straws and stalks of food crops, etc., along with validation at pilot scale level (in continuous process mode of 100 Kg) with industry.							
Original cost		₹ 2.00 crore + ₹ 1.50 crore	Expenditure		₹ 2.87 crore + ₹ 1.34 crore	Cost overrun	₹ 0.87 crore
Project started	March 2002 March 2005	Project closed	December 2004 March 2008	Original duration		48 months	
				Time overrun		21 months	
Patents	1	Technology developed		Yes	Premia		₹ 1.50 crore
		Commercialised		No	Royalty		Nil
Audit Comments: The pilot plant was made operational on batch processing of 20 Kg each instead of envisaged continuous process mode of 100 Kg and no biodegradable material/product was developed and validated in the market after transfer of technology in July 2008.							

Name of Project: 22		Novel molecular diagnostics for eye diseases and low vision enhancement devices (Phase-I & II)			
Objectives in brief: Development of molecular diagnostic devices for eye diseases and vision enhancing devices.					
Original cost	₹ 3.39 crore	Expenditure	₹ 4.96 crore	Cost overrun	₹ 1.57 crore
Project started	April 2003	Project closed	April 2007	Original duration	24 months
				Time overrun	25 months
Patents	1	Technology developed	Yes	Premia	Nil
		Commercialised	Yes	Royalty	₹ 6.84 lakh
Audit Comments: The work on cataract and glaucoma could not be taken up due to insufficient data generation. Besides this, the products developed under the project were found to be costly which affected commercial viability.					

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Table 21: Non-compliance with recommendations of Monitoring/Steering Committees

Sl. No.	Name of the project (Expenditure in ₹ crore)	Recommendations of the committee not followed
1.	Wireless Sensor Network chipset based Ultra Wide Band (UWB) technology (₹ 4.22 crore)	The industrial partner presented marketing strategy to enter a niche market viz. video surveillance with high data rates which was not included in the original project work. Consequently, MC recommended (February 2008) that the industry partner collaborate with another industry (Mindtree). However, the opportunity was not utilised by the industrial partner. Besides this, the company did not participate in CES 2009 for showcasing its prototype, as recommended by the Committee (April 2009), as the preparations were not complete.
2.	Improved Granular Processing towards energy efficiency and resource conservation in Cement Manufacture (₹ 3.22 crore)	MC while closing the project recommended (April 2006) NML ⁵⁰ to initiate scale up studies at Pilot Plant level in association with cement industry involving TIFAC-fly ash mission and other stakeholder(s). However, no action was taken by NML in this regard.
3.	Design and Development of Environmentally secure rare earth based colorants for surface coating applications (Phase-II) (₹ 2.12 crore)	The Steering Committee recommended (December 2008) that CSIR may explore the possibilities in consultation with IIT-Chennai to up-scale the process of band gap engineering developed for gamma cerium sulfide. Similarly CLRI was also advised to up-scale the mixed rare earth pigments through IREL. However, only brown pigment could be taken up for up-scaling by IREL and other products were yet to be up-scaled.

(iv) Default in repayment of loan by industrial partners

NMITLI scheme envisaged provision of soft-loans to industrial partner in IOP projects, at the rate of three *per cent* per annum for development of technologies repayable along with interest in 10 equal annual instalments. Terms and conditions of grant of loan to industrial partners provided for imposition of penal interest at the rate 12 *per cent* compounded monthly for the period of delay, in case of delay in repayment of loan by the industrial partner. Initially, NMITLI guidelines had a provision for techno-economic viability assessment of project partners during selection of the NMITLI projects. The process involved referring project proposals of industry originated projects to technology funding agencies/VCF/Banks for assessing the financial profile of the industry partner and techno-economic viability of the project. This clause was, however, removed (July 2004) from guidelines by the Governing Body of CSIR.

In respect of 30 projects selected in audit, loan of ₹ 83.02 crore was released to 18 companies, of which principal amount of ₹ 64.92 crore in nine projects was under default, as shown in Table 22. In addition, interest of ₹ 67.97 crore was also due towards loans released under these projects.

⁵⁰ National Metallurgical Laboratory, Jamshedpur (a constituent laboratory of CSIR)

Brief profile of 30 selected projects (continued)

Name of Project: 23		Recombinant approach to produce a-lenolenic acid docosahexanoic acid (DHA) in sunflower and yeast				
<u>Objectives in brief:</u> Production of DHA by various processes of fermentation.						
Original cost	₹ 3.26 crore	Expenditure	₹ 3.72 crore		Cost overrun	₹ 0.46 crore
Project started	April 2003	Project closed	July 2007		Original duration	36 months
					Time overrun	16 months
Patents	1	Technology developed	Yes		Premia	₹ 50 lakh
		Commercialised	No		Royalty	Nil
<u>Audit Comments:</u> Though the objective for production of DHA from fermentation was achieved, the industrial partner did not commercialise the technology. Besides, industrial partner also defaulted in repayment of loan.						

Name of Project: 24		Oral Delivery of Insulin				
<u>Objectives in brief:</u> Development of oral insulin capsule for treatment of diabetic patients.						
Original cost		₹ 2.87 crore	Expenditure	₹ 2.39 crore	Cost overrun	Nil
Project started	June 2004	Project closed	April 2012	Original duration	36 months	
				Time overrun	57 months	
Patents	1	Technology developed	No	Premia	N/A	
		Commercialised	N/A	Royalty	N/A	
<u>Audit Comments:</u> Project could not develop desired formulations due to various technical issues viz. lack of product standardisation, drug loading problems, lack of positive clinical response, etc., even after a long time over-run of 57 months. Subsequently, industrial partner lost interest in the project.						

Name of Project: 25		Defunctionalization of carbohydrates as feed stock to manufacture industrial chemicals			
<u>Objectives in brief:</u> Development of economically feasible methods and processes towards industrially important commodity chemicals and specialty chemicals for textile, automobile and other such industries.					
Original cost	₹ 2.50 crore	Expenditure	₹ 2.52 crore	Cost overrun	₹ 0.02 crore
Project started	March 2001	Project closed	April 2004	Original duration	24 months
				Time overrun	13 months
Patents	2	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
<u>Audit Comments:</u> Various components under the project were closed midway due to technical reasons, without achieving envisaged objectives. The accomplishment was limited to only one component, which also could not be commercialised as one of the chemicals was found to have mutagenic properties and had to be withdrawn.					

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Table 22: List of projects under which loans released to private partner were under default as of 31 March 2014**(₹ in crore)**

Sl. No.	Project Name	Name of Industrial partner	Amount of loan released	Date of repayment due	Outstanding Principal amount	Outstanding interest
1	Versatile, portable PC based software for bioinformatics; and Development of Linux cluster version of Bio-suite	Jalaja Technology, Bengaluru	0.24	October 2005	0.10	0.58
		Frontier Information Technologies Ltd., Secunderabad	0.40	April 2008	0.14	0.73
2	Value added polymeric materials from renewable resources: Lactic acid and lactic acid based polymers	Godavari Sugar Mills, Mumbai	4.85	April 2012	4.85	1.36
3	Recombinant approach to produce a-linolenic acid and docosahexanoic acid (DHA) in sunflower and yeast	Avestha Gengraine Technology Pvt. Ltd., Bengaluru	3.04	January 2008	2.73	0.92
4	A cost effective Simple Office Computing (Sofcomp) platform to replace PC	Encore Software Limited, Bengaluru	3.20	November 2005	2.56	3.28
5	Development of Globally competitive 'Triple-Play' Broadband Technology	DiviNet Access Technologies Ltd., Pune	9.39	March 2008	9.39	10.19
6	Market seeding of SofComp and Mobilis to develop wide-ranging applications as well as increase awareness	Encore Software Limited, Bengaluru	5.37	March 2007	5.37	3.29
7	Development of Next Generation Plasma Display Technology a 50" High Definition (HD) TV Prototype	Samtel Color, Ghaziabad	20.63	October 2010	20.63	23.18
8	Development of sensor networks chipset based on ultra-wide band technology	Virtual Wire Technology, New Delhi	4.22	August 2010	4.22	1.13
9	Design and development of cushion bonded/rigid bonded organic, cerametallic cookie & single/fuel sintered buttons (copper/Iron based), ceramic cookies and annular ring clutch discs and matching cover assemblies	Clutch Auto Ltd., Faridabad	14.93	April 2012	14.93	23.31
TOTAL			66.27		64.92	67.97

Brief profile of 30 selected projects (continued)

Name of Project: 26		Development of Novel Expression System			
<u>Objectives in brief:</u> Development of an indigenous expression system for Indian Bio-pharmaceutical sector for expression of proteins for diverse applications.					
Original cost	₹ 2.16 crore	Expenditure	₹ 2.55 crore	Cost overrun	₹ 0.39 crore
Project started	March 2005	Project closed	September 2008	Original duration	36 months
				Time overrun	6 months
Patents	0	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
<u>Audit Comments:</u> Expression systems could not be developed. Further, two industrial partners abandoned the project due to change of ownership and mandate of intellectual property proposed to be utilised for development of the system.					

Name of Project: 27		A PC based high-end 3D visualization platform for computational biology – ‘Darshee’						
Objectives in brief: Development of a software tool for extending capability and functionality of existing software packages in the market (<i>viz. BioSuite, BioSPICE of TCS developed under NMITLI</i>) to facilitate and aid bio-informatics and bio-simulation for research in the pharmaceutical and biotechnology sector.								
Original cost		₹ 1.93 crore	Expenditure		₹ 1.97 crore	Cost overrun	₹ 0.04 crore	
Project started	April 2003		Project closed		May 2004		Original duration	13 months
							Time overrun	--
Patents	0		Technology Developed		Yes	Premia	Nil	
			Commercialised		Yes	Royalty	Nil	
Audit Comments: The developed software was bundled and co-branded by the Industrial partner with a foreign product marketed by Strategene, California without obtaining the approval of CSIR, which did not exercise its first right of refusal as per terms and conditions of the project agreement. Thus, the project failed in its objective of technological advancement in India.								

Name of Project: 28		Two orders of magnitude improved Liquid Crystals for flat panel display devices			
Objectives in brief Development of new technology to fabricate Liquid Crystal Displays (LCD) and introduction of new prototype devices based on the new technology.					
Original cost	₹ 1.40 crore	Expenditure	₹ 1.36 crore	Cost overrun	Nil
Project started	May 2001	Project closed	June 2005	Original duration	24 months
				Time overrun	24 months
Patents	4	Technology developed	Yes	Premia	N/A
		Commercialised	No	Royalty	N/A
Audit Comments: The project was closed with the view that neither the industry partner under the project nor invited industry representatives had necessary expertise to commercialise/develop it further.					

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CSIR, while accepting the facts, stated (August 2014) that legal action had been initiated against all the defaulters.

4.1.4 Observations on specific projects

Scrutiny of projects implemented under NMITLI scheme revealed instances of incomplete assessment of projects at proposal stage, which affected achievement of desired results under the projects after implementation. Some significant cases are discussed in the succeeding paragraphs.

4.1.4.1 Sanction of project without standards for testing specifications

CSIR sanctioned (March 2007) a project titled 'Development of chipset for wireless sensor networks based on ultra-wide band technology' to Virtual-Wire Technologies Ltd., New Delhi (VWT) at an estimated cost of ₹ 4.60 crore for duration of three years. Objective of the project was to develop a wireless chipset using ultra-wide band technology, for low-power and low data rate wireless communication applications. The technology was proposed as a cost effective solution to overcome problems of interference and high power consumption being faced by existing wireless chipsets that used conventional narrow band technology.

The project was to be implemented in three phases viz. design, development and commercialisation. It was envisaged that chipset would be made available for commercial use at end of the project. The chipset was expected to capture significant market in home security and retail sector, with expected returns of more than ₹ 300 crore. Under commercialisation phase, the industry partner also proposed to be involved in the process for standardisation of the developed product, to ensure that the technology was incorporated within global standards.

CSIR entered (March 2007) into an agreement with the firm for implementation of the project. According to the terms and conditions of the agreement, financial support of ₹ 4.60 crore was to be disbursed in the form of soft loan, to be re-paid in 10 annual instalments commencing from August 2010. Between March 2007 and July 2009, CSIR released ₹ 4.22 crore to the firm.

During course of the project (May 2008) , the firm proposed to upgrade project objectives from development of low data rate chipset to high data rate chipset on the justification that conventional wireless communication companies had overcome their problems, therefore proposed new technology was no longer cost competitive. Accordingly, Monitoring Committee (MC) of the project revised (August 2008)

Brief profile of 30 selected projects (continued)

Name of Project: 29		Microbiological conversion of Erythromycin to Clarithromycin and other novel biologically active molecules			
Objectives in brief:					
To find an alternative process that increases the yield with reduced number of steps and lesser cost for discovery of new generation antibiotics.					
Original cost	₹ 1.21 crore	Expenditure	₹ 1.04 crore	Cost overrun	Nil
Project started	September 2002	Project closed	April 2004	Original duration	20 months
				Time overrun	--
Patents	0	Technology Developed	No	Premia	N/A
		Commercialised	N/A	Royalty	N/A
Audit Comments:					
The project was closed after the envisaged duration of 20 months and incurring more than 85 <i>per cent</i> of the estimated cost as it was not leading to any new strain from the desired conversion.					

Name of Project: 30		Process of Tamiflu – a blockbuster drug to combat the menace of avian flu			
<u>Objectives in brief:</u>					
Indigenous process for development of drug ‘Oseltamivir’ commercially known as ‘Tamiflu’.					
Original cost	₹ 50 lakh	Expenditure	₹ 39.53 ⁵¹ lakh	Cost overrun	Nil
Project started	October 2005	Project closed	October 2007	Original duration	10 months
				Time overrun	15 months
Patents	0	Technology developed	No	Premia	N/A
		Commercialised	N/A	Royalty	N/A
<u>Audit Comments:</u>					
Project was sanctioned in violation of the NMITLI guidelines for project formulation as the proposal was neither taken into Screening Committee nor discussed in Expert Group and High Power Committee. The process for development of Tamiflu was already patented and CSIR was unable to develop a non-infringing process. After the bird flu menace abated, CSIR closed the project.					

⁵¹ Of this amount, ₹ 37.50 lakh was released under NMITLI.

project objective without cost overrun as development and demonstration of working prototype with one Gbps data transfer rate to be delivered before July 2009. VWT was able to develop and demonstrate the working prototype only by July 2010. However, it was unable to establish its commercial viability, as standards for ultra wide-band technology products were yet to be adopted, due to which it was difficult to test whether prototype developed was as per specific standards or not.

Subsequently, during MC meeting (July 2010) the firm proposed to shift away from ultra-wide band technology standards to other existing standards. However, to achieve specifications under these standards, further work was required to be done, for which VWT did not possess necessary expertise. In view of this and the fact that the firm was unable to gather financial resources for commercialisation, the project was closed in March 2012 after incurring an expenditure of ₹ 4.02 crore. It was however, suggested (April 2012) to pursue securing intellectual property rights for the technology developed.

As of May 2015, standards for the technology were yet to be evolved and product was not exploited commercially. Although four patents were filed none were granted. Further, the firm failed to repay the entire loan amount of ₹ 4.22 crore. As of March 2014, interest of ₹ 1.13 crore was outstanding against the firm.

Audit observed that CSIR was aware at the time of evaluating the project proposal that standards for the proposed technology were not available.

Thus, CSIR took up a project in an area where no standards for product testing were available. Consequently, product developed could not be tested for its successful development and hence could not be exploited commercially. CSIR also delayed in taking action towards non-repayment of loan and thereby extended undue benefit to the firm.

CSIR stated (May 2015) that developments in the field could not be anticipated at the time of launch of the project. The reply of CSIR needs to be viewed in the background that projects sanctioned under NMITLI were expected to achieve technological leadership, which could not be affirmed in this case, as CSIR extended support to a project in which there were no standards available to test success of the same.

4.1.4.2 Hasty sanction of project

CSIR sanctioned (October 2005) a project on “Process for Tamiflu—a Blockbuster drug to combat the menace of avian flu” to be implemented by National Chemical Laboratory, Pune (NCL) with budget allocation of ₹ 25.00 lakh for duration of six months. The project was taken up in the background of the threat of bird flu pandemic in the country. CSIR aimed to develop the process for indigenous

production of Tamiflu drug used in treatment of bird flu, so as to become self reliant in drug production and stockpile sufficient quantity. As there was already a patented process for production of Tamiflu, CSIR took up the project to develop non-infringing process for development of the drug. The project was proposed with five components as follows:

- Development of process for Tamiflu using certain identified starting materials⁵²;
- Development of non-infringing process for Tamiflu;
- Development of raw materials from Indian plant sources;
- Development of bio-process for raw materials; and
- Development of new drugs.

It was decided to constitute Monitoring Committee for the project at the time of launch of the second component. Subsequently, Indian Institute of Chemical Technology, Hyderabad (IICT) another CSIR laboratory was also included (January 2006) as partner with additional allocation of ₹ 25.00 lakh.

NCL and IICT were however, unable to develop a non-infringing process for development of Tamiflu. The project was closed (October 2007) after incurring expenditure of ₹ 39.53⁵³ lakh. Though it was stated (October 2007) that some of the schemes had potential for commercial exploitation, no further work was done in this area.

Audit observed that the project was sanctioned in violation of project formulation guidelines of NMITLI, as project proposal was neither evaluated by screening committee nor discussed in Expert Group and HPC. There was no monitoring of the project, as MC was also not constituted. Further, though the objective was to become self sufficient in production of the drug in the event of a pandemic, the project was not carried further as of May 2015.

CSIR stated (July 2010) that the project was not continued as by that time, bird flu menace had passed. CSIR further stated (February 2013/May 2015) that due to looming emergency in respect of bird flu menace, NMITLI processes were bypassed for sanctioning the project. It was also stated that a process of Tamiflu production was developed under the project but Indian companies permitted by the government to produce generic version of the drug had got the process from abroad as a package from original manufacturer and the developed process could not be utilised.

⁵² Shikimic acid and Quinic acid

⁵³ Of this amount, ₹ 37.50 lakh was released under NMITLI.

Reply of CSIR is viewed in context of the justification given at the time of taking up the project that India needed to develop self-sufficiency in production of the drug to combat pandemic situations. The decision to discontinue work as the bird flu menace had passed by then trivialises this rationale. Further, CSIR was already aware at the project proposal stage that Indian companies had been permitted to produce generic version of the drug. Also, the process stated as developed by CSIR could not have been commercialised, as it had not been able to develop a non-fringing process.

Thus, CSIR took a hasty decision to implement the project without requisite preliminary screening of project proposal for technical feasibility, economic viability and monitoring mechanism, etc. Ultimately, project was closed down after the bird flu pandemic abated and no further work was done in the area, resulting in unfruitful expenditure of ₹ 39.53 lakh. The purpose to become self-sufficient in the event of threat of the disease was also defeated.

4.1.4.3 Unfruitful expenditure due to non-availability of users for technologies developed

Guidelines for preparation and approval of Project Proposals under NMITLI provided for constitution of a Specialist Expert Group (Champions Group) which would comprise of three to four experts in the relevant area with at least one of them being from industry to provide an industrial perspective to the project.

CSIR sanctioned (May 2001) a project titled 'Two orders of magnitude improved liquid crystals for flat panel display devices' at a total cost of ₹ 1.40 crore for duration of two years under NMITLI.

Objectives of the project were as follows:

- Development of new technology to fabricate Liquid Crystal Displays (LCD) with improved display characteristics;
- Optimisation of manufacturing process to make it cost effective;
- Synthesis of new materials to suit the requirement of developed concept; and
- Introduction of new prototype devices based on the new technology.

The project proposal envisaged that new technology developed would enable Indian industry to position itself critically in the area of LCD devices.

The project was to be implemented by Centre for Liquid Crystal Research Bengaluru (CLCR)⁵⁴ and Bharat Electronics Ltd., Bengaluru (BEL). Accordingly, CSIR entered (May

⁵⁴ An autonomous research institution under Department of Science and Technology

2001) into MoU with CLSR and BEL. Financial support by CSIR was in the form of grant-in-aid to the two implementing agencies.

The project was extended for one year upto March 2004. Though the project objectives were achieved and a prototype was developed, BEL expressed inability to commercially exploit the new product. Therefore, MC recommended (August 2004) that a new industrial/institutional partner be involved in the project for further development of prototypes and identification of industrial partners for its commercial exploitation. MC recommended extension of the project till June 2005.

CSIR organised (February 2005) a meeting with Indian industry, in which two new technologies developed under the project were introduced to representatives of three companies and their inputs sought on commercial exploitation of the same.

It however, emerged that none of the invited industries were ready to take the technology, as they lacked competence to build such prototypes. Finally, it was concluded (June 2005) that the project may be closed and foreign parties be identified which could convert the technology into products. Accordingly, the project was closed in June 2005 after incurring expenditure of ₹ 1.36 crore. The project was able to generate two each of Indian and foreign patents. However, CSIR was unable to attract foreign participation in commercialisation of the project.

Audit observed that Champions Group constituted for the project had only one member who was the project investigator from CLCR (participating institution). No expert from industry was included in the Champions Group. This was not only in violation of NMITLI guidelines but also indicated that assessment of project proposal was inadequate in terms of its commercial viability. Consequently, industry association was explored only after implementation of the project and efforts proved to be neither non-productive, as neither Indian nor foreign industry showed interest in commercial production of developed prototype.

Thus, failure of CSIR to assess commercial viability of the project led to a situation where there were no users of the developed technology, thereby rendering expenditure of ₹ 1.36 crore incurred on the project as unfruitful.

While accepting that no industry was forthcoming for commercial exploitation of the product, CSIR stated (May 2015) that commercialisation of developed products does not fall under CSIR-NMITLI ambit.

The reply is viewed in light of the fact that objective of NMITLI was to develop global leadership, which could not be achieved, as there were no users for the developed technology.

4.1.5 Conclusion

Even after investment of ₹ 630.50 crore under New Millennium Indian Technology Leadership Initiative (NMITLI) scheme in a span of 14 years (2000-01 to 2013-14), Council of Scientific and Industrial Research failed to achieve global leadership in any niche area, as envisaged in the scheme. Out of 30 projects test-checked in audit, envisaged objectives were not achieved in six projects. Although some technologies/processes were developed in 24 projects the same were transferred in only eight projects and further commercialised in only four projects i.e 13 *per cent* of the sample. The reasons for non-commercialisation of technologies were discontinuance of industrial partners, commercial un-viability, change in market conditions and development of incomplete technology.

Audit observed poor monitoring in recovery of soft loans which resulted in accumulation of heavy outstanding dues to the tune of ₹ 64.92 crore. Audit also observed shortfalls in monitoring of projects, non-compliance with guidelines of NMITLI scheme and delays in completing projects. The scheme failed to provide any national and/or international leadership to the Indian industry, as envisaged through development of new technologies under NMITLI that were globally competitive.

4.2 Irregular grant of promotions with retrospective effect

Contrary to Government of India instructions, Council of Scientific and Industrial Research Scientist Recruitment and Assessment Promotion Rules, 2001 contained provisions for retrospective promotions. Resultantly, its four test checked laboratories promoted 256 scientists under Flexible Complementing Scheme with retrospective effect, which resulted in irregular benefits of ₹ 4.81 crore.

Department of Personnel and Training (DoPT) issued (November 1998) instructions on modification of the existing Flexible Complementing Scheme (FCS)⁵⁵ for in-situ promotion of scientists working in various scientific departments of Government of India. These instructions, issued consequent to Fifth Pay Commission recommendations, prescribed minimum residency period and assessment procedure for in-situ promotion of scientists and technical staffs. The FCS was applicable to all Scientific and Technological departments.

Ministry of Science and Technology (MST), while issuing (January 1999) Guidelines for Enhancement of Functional Autonomy of R&D Autonomous Institutions under S&T Department emphasised that exercise of enhanced financial powers would be

⁵⁵ An in-situ promotion scheme for Scientists and Technologists holding Group-A scientific posts in Science and Technology Departments and who are engaged in scientific and technical activities and services

subject to provisions of GFRs and other instructions issued by the Central Government from time to time. DoPT, in response to references seeking clarification on the date from which such promotions were to be given, communicated (July 2002) that in-situ promotions under FCS, in accordance with general principles followed in promotions, should be effective from a prospective date after the competent authority has approved the same. Subsequently, based on recommendations of Sixth Pay Commission, DoPT further modified (September 2010) FCS and introduced revised pay scales and assessment procedures. However, DoPT reiterated (September 2012) its earlier position regarding date of grant of promotion under FCS, clarifying that promotion cannot be made with retrospective effect.

Thus, no promotions could be granted with retrospective effect.

Council of Scientific and Industrial Research (CSIR), an autonomous body of Department of Scientific and Industrial Research and substantially financed from Govt grants, formulated its Assessments and Promotions Rules effective from January 2001 and made provision for promotion of its scientists on the basis of FCS.

Audit observed that Assessments and Promotions Rules of CSIR (clause 7.6.6) provided that scientists recommended as fit for promotion under FCS shall be promoted from the due date of eligibility for assessment. The provision was in contravention of instructions of DoPT, which clearly specified that promotion would be effective from a prospective date after due assessment of the concerned scientist and after the same had been approved by competent authority. This was also in contravention of Rule 209 (6) (iv) (a) of General Financial Rules, which states that all grantee institutions or organisations which receive more than 50 *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.

Audit test checked cases of in-situ promotions of scientists (Gr A) in four constituent Laboratories of CSIR and found that during the period July 2002 to December 2013, 256 scientists were granted promotions under these rules by ante-dating the effective date of promotion by two months to eight years from the date of issue of promotion orders and paid salaries and arrears accordingly, resulting in irregular grant of benefits to the extent of ₹ 4.81 crore as shown in Table 23.

Table 23: Irregular benefits given to scientists promoted with retrospective effect

Name of the institute	Number of scientists promoted with retrospective effect	Irregular benefits paid (₹ in crore)
Central Mechanical Engineering Research Institute, Durgapur	81	1.70
National Metallurgical Laboratory, Jamshedpur	51	1.24
Central Glass and Ceramic Research Institute, Kolkata	67	1.06
Institute of Minerals and Materials Technology, Bhubaneswar	57	0.81
Total	256	4.81

There is clear possibility of grant of similar promotions in other cadres of these institutes and for all cadres in remaining 34 Laboratories/Institutions of CSIR and CSIR Headquarters.

Central Glass and Ceramic Research Institute, Kolkata (CGCRI) stated (October 2014) that FCS was not applicable to CSIR and the affairs of the Society were regulated in terms of its Memorandum of Association, Rules and Regulations and Bye-Laws. The reply of CGCRI is not acceptable since provision for promotions under FCS was subject to instructions issued by Government of India.

The matter was referred to CSIR and DSIR in February 2015 and May 2015 respectively; their reply was awaited as of June 2015.

CHAPTER – V

Department of Space

5.1 Implementation of incentive schemes

The policy framework of Indian space programme has provision for grant of various rewards and incentives to employees of Department of Space (DOS)/Indian Space Research Organisation and its centres. Government of India approved Performance Related Incentive Scheme (PRIS) for individual/ group performance based on the recommendation of Sixth Central Pay Commission. DOS implemented PRIS for all employees and continued to grant additionally, other special allowances resulting in multiple benefits to its employees. A structured monitoring and evaluation mechanism for PRIS was not instituted. There were instances of violation of DOS guidelines on grant of PRIS.

5.1.1 Introduction

The main function of Department of Space (DOS) is to develop new technologies and space systems to enhance and expand space services for national development. The Indian space programme is executed through Indian Space Research Organisation (ISRO) which is the research and development wing of DOS, along with other centres/units of ISRO.

The policy framework of Indian space programme has provision for grant of various rewards and incentives to scientists/engineers, technicians and administrative personnel of DOS/ISRO and its centres. These are:

- **Performance Related Incentive Scheme**-Based on recommendations of Sixth Central Pay Commission (SCPC), Government of India approved (August 2008) introduction of a new performance based pecuniary benefit known as Performance Related Incentive Scheme (PRIS) over and above the regular salary for government employees. PRIS was based on the principle of differential reward for differential performance and was payable, taking into account the performance of the employee during the period under consideration. PRIS was also linked with the organisation's measurable contribution to responsive governance.

PRIS was to be rolled out initially in DOS and Department of Atomic Energy. Detailed guidelines were to be issued by the nodal Ministry i.e. Department

of Expenditure, Ministry of Finance. Subsequently, DOS formulated (December 2008) PRIS by introducing an organisational incentive retrospectively from September 2008 in the form of special allowance at the rate of 20 *per cent* of the pay in the pay band plus grade pay payable on monthly basis to all its employees for a period of five years based on accomplishments of various objectives of the Department so far. In addition, individual group incentive at the rate of 10 *per cent* of pay in pay band plus grade pay was payable on annual basis. During the period from September 2008 to March 2014, DOS paid amount of ₹ 560.74⁵⁶ crore towards PRIS to its employees.

- **Professional Update Allowance-** In order to encourage Scientists/Engineers to obtain latest information and keep themselves updated, Government approved grant of Professional Update Allowance (PUA) at the rate of ₹ 5,000 per annum from the year 1998-99 onwards to all Scientists/Engineers of DOS in the pre-revised scale of pay of ₹ 8,000-13,500 and above. From October 2007, the quantum of PUA was enhanced and paid in a graded manner at ₹ 10,000 for scientists in pay scale below ₹ 14,300; ₹ 20,000 for scientists in pay scale beginning with ₹ 14,300 or higher and ₹ 30,000 for those in scales beginning with ₹ 18,400. The quantum of PUA was further enhanced (February 2013) to ₹ 12,500 for scientists in pre-revised pay scale below ₹ 14,300; ₹ 25,000 for scientists in pay scale beginning with ₹ 14,300 or higher and ₹ 37,500 for those in scales beginning with ₹ 18,400 or higher, with effect from July 2011. During the period 2006-07 to March 2014, DOS incurred expenditure of ₹ 69.30 crore towards payment of PUA to its Scientists/Engineers.
- **Ad hoc Launch Campaign Allowance** - In order to provide an incentive to employees in administrative categories and scientific and technical employees (other than Scientists/Engineers), DOS, with the approval of Space Commission, introduced (October 2000) Adhoc Launch Campaign Allowance (ALCA) of ₹ 3,000 per annum to regular administrative employees and other Science and Technology (S&T) employees of DOS below the scale of pay of ₹ 8,000-13,500, which was increased to ₹ 5,000 in November 2007. ALCA was further enhanced (May 2013) to ₹ 6,250 per annum with effect from April 2012. The allowance was payable in the form of ex-gratia payment only once in a financial year on completion of a launch campaign from Indian soil.

⁵⁶ ₹ 446.62 crore as organisational incentive and ₹ 114.12 crore as individual group incentives.

During the period 2006-07 to March 2014, DOS incurred expenditure of ₹ 20.93⁵⁷ crore towards payment of ALCA to its employees.

- **Space Technology Allowance-** Space Technology allowance for S&T personnel for their contribution in various missions was recommended (September 2008) by SCPC. STA was paid at the rate of ₹ 5,000 per annum. After its introduction, ALCA payable to S&T employees was discontinued since 2008-09. In April 2013, STA was enhanced to ₹ 6,250 per annum with effect from April 2012. During the period from 2008-09 to March 2014, DOS incurred expenditure of ₹ 12.35 crore towards payment of STA to its employees.
- **Additional increments-** Government of India (October 1998) approved granting of two additional increments to Scientists and Engineers of DOS with effect from 1 January 1996 on promotion to the pre-revised pay scales of ₹ 10,000-325-15,200, ₹ 12,000-375-16,500, ₹ 14,300-400-18,300 and ₹ 16,400-450-20,000 in order to attract, retain, inspire and motivate them. SCPC recommended (September 2008) grant of variable increments upto a maximum of six increments to deserving Scientists/Engineers at the time of promotion, which was approved by Government of India (January 2009).
- **Annual Awards scheme-** Government of India (October 2007) approved annual award scheme in DOS to enhance career attraction to Scientist/Engineers⁵⁸. Expenditure for grant of awards was to be met from certain percentage of amounts earned through commercial activities⁵⁹ of DOS. During the period 2006-07 to March 2014, DOS incurred expenditure of ₹ 5.89 crore towards annual awards to its Scientists/Engineers.
- **Gold Coins and other Gifts-** With the approval (December 2008) of Space Commission, gift of value not exceeding ₹ 10,000 was paid to each employee of DOS/ISRO, including its Autonomous Bodies, who were in service between 1 January 2008 and 22 October 2008, as a token of appreciation of their contribution towards the success of Chandrayaan I mission (launched in October 2008). During the period 2006-07 to March 2014, DOS incurred expenditure of ₹ 18.57⁶⁰ crore towards procurement of gold coins and gifts.

⁵⁷ Comprising ₹ 20.66 crore towards payment of ALCA to administrative staff during 2006-07 to 2013-14 and ₹ 27.20 lakh to S&T staff from 2006-07 to 2007-08. With effect from 2008-09, ALCA for S&T staff was discontinued and payment of Space Technology Allowance was commenced.

⁵⁸ Comprising of Lifetime achievement award, Outstanding achievement award, Performance excellence award, Merit award, Young scientists merit award and Team excellence award.

⁵⁹ Revenue earned from delivery of space products and services.

⁶⁰ Comprising ₹ 18 crore towards distribution of gold coins for success of Chandrayaan mission and ₹ 57 lakh towards other gifts.

5.1.2 Audit findings

Audit reviewed the formulation, approval, implementation, monitoring and evaluation of the incentive schemes in DOS from April 2006 to March 2014. The audit findings are discussed in the succeeding paragraphs.

5.1.2.1 Implementation of multiple incentives in DOS

Prior to approval of Government for implementation of SCPC report, DOS had various incentives for different categories of staff such as scientists/ engineers, technical staff (other than scientists and engineers) and administrative staff. The SCPC, in its report, recommended a comprehensive incentive scheme combining individual, team and organisational achievements, while stating that payment of special allowances (organisational incentive) across the board would be counter-productive and de-motivating for consistent high performers.

While recommending PRIS, SCPC recommended that existing incentives such as bonus (ad hoc or productivity linked), honorarium, overtime allowance, etc. would end. The spirit of SCPC recommendation was to replace across the board incentives schemes with a uniform performance related incentive scheme. However, DOS, while introducing PRIS, continued to implement its earlier across the board incentive schemes such as ALCA and gifts.

Post-implementation of PRIS, DOS paid an amount of ₹ 446.62 crore as organisational incentive under PRIS. In addition, it paid ₹ 10.08 crore towards ALCA and ₹ 5.37 crore towards gift schemes during the period 2009-10 to 2013-14 i.e. after implementation of PRIS. Further, DOS also released overtime allowance of ₹ 5.08 crore during the period 2009-10 to 2013-14. Operation of the earlier schemes of DOS in addition to PRIS in effect amounted to payment of multiple incentives for the same achievements.

DOS justified (June 2015) payment of ALCA to administrative personnel by stating that the number of space missions had increased but the total manpower of DOS had not increased. DOS also stated (June 2015) that OTA was paid for extra effort rendered beyond office hours.

The reply is not acceptable, as the spirit of SCPC recommendation was to replace across the board incentives schemes with a uniform performance related incentive scheme. This is particularly significant in view of the fact that DOS paid three incentives viz. PRIS, gold coins and ALCA to its staff for achievement of the same target (Chandrayaan mission), which is discussed in detail in para 5.1.2.4 of the report. The justification of DOS for payment of ALCA is also to be viewed in the light

of the fact that DOS did not take requisite approval of Government while enhancing rates of ALCA post-implementation of PRIS, as discussed in detail in para 5.1.2.3 (i) of the report.

5.1.2.2 Irregularities in Performance Related Incentive Scheme

Audit found the following irregularities in the PRIS scheme formulated by DOS:

(i) Irregular formulation of organisational incentive

Prior to submission of the SCPC report, DOS submitted a proposal to Government of India for the grant of special allowance to Scientists/Engineers of DOS on similar lines of organisational incentive. Ministry of Finance (MOF) advised DOS to refer the proposal to SCPC to have an equitable and balanced approach in treating similarly placed personnel across the Department.

However, SCPC, in its report, which was approved by the Government (August 2008) was not in favour of the 'across the board' special allowance proposed by DOS since the same would be counter-productive and de-motivating for consistent high performers. SCPC, therefore, recommended PRIS based on the principle of differential reward for differential performance, which should not be in the nature of routine monetary incentive.

Aggrieved by the position taken by SCPC on the subject in its interaction prior to introduction of SCPC report, DOS submitted (May/June 2008) a draft cabinet note to the Government. Against this cabinet proposal, MoF opined (October 2008) that grant of additional incentives to Scientist/Engineers in DOS should be implemented through immediate introduction of PRIS as accepted by Government.

When the approval of the Union Cabinet for an organisational incentive was not forthcoming, DOS, formulated an organisational incentive under PRIS and implemented the same with the approval of Space Commission with effect from 1 September 2008. Under the scheme, Space Commission approved grant of organisational incentive at the rate of 20 *per cent* of total pay (Pay in the Pay Band + Grade Pay) per month payable on monthly basis to all personnel of DOS for a period of five years (2008-13) based on accomplishment of various objectives of DOS "so far".

Audit observed that DOS did not obtain concurrence of MoF before implementing PRIS and rolled out the scheme on its own with approval of Space Commission, which was irregular. When the matter came to the notice of MoF later⁶¹ (January

⁶¹ DOS sought enhancement of budget for the year 2009-10 for the purpose of payment of PRIS and referred the matter to MoF.

2010), it also observed that introduction of organisational PRIS in DOS emanated from specific recommendation of SCPC, therefore the guidelines were to be issued by DOS in consultation with the nodal department i.e. Department of Expenditure, MoF, which was not done. DOS subsequently modified the guidelines for PRIS at the behest of MoF and issued the same (July 2010) with the approval of MoF.

However, in the absence of prior approval, organisational incentive scheme pursued by DOS from September 2008 to 2009-2010 was irregular. During this period, DOS incurred expenditure of ₹ 109.12 crore towards implementation of PRIS.

DOS stated (June 2015) that introduction of PRIS with the approval of Space Commission fell within the powers of the Commission, which had administrative and financial powers for carrying out work of DOS within the budgetary provisions approved by the Parliament. The reply is not acceptable, as PRIS was a new scheme that required approval of the Government/ MoF before it could be rolled out.

(ii) Absence of mechanism for monitoring and evaluation of PRIS

According to SCPC report, PRIS was linked with respective organisations' measurable contribution to responsive governance. The PRIS system was to run with support of Performance Management System (PMS) and Management Information System (MIS). It was to be supported by extensive communication and training of employees. Clarity about objectives and deliverables at multiple levels, starting with Ministry/Department and cascading down the line up to individual level was to be developed through a structured process. Clarity about reporting and monitoring channels, work activities and deliverables (job-descriptions and performance indicators), delegation and accountability charts and work processes flow/government business processes also needed to be developed. The periodicity of payment of PRIS was to be linked to work processes and the frequency of performance measurement and assessment. Within the Ministry/Department/other offices, clear individual and/or group (organisational) targets needed to be set at the beginning of the PRIS cycle and communicated to all parties involved. PRIS was only to be awarded when targeted performance levels were exceeded by the individual or group at the end of cycle (generally one year). PMS and MIS would capture the extent of target achievement.

Audit scrutiny of the records relating to incentives paid by DOS under PRIS revealed that the structured monitoring and evaluation mechanism envisaged by SCPC for monitoring and evaluation of the performance linked incentive scheme was not put in place by DOS, as

- PMS and MIS as envisaged were not constituted.

- There was no structured process of determining and communicating objectives, activities and deliverables.
- Clear targets were not set at the beginning of the reference period.

In the absence of monitoring and evaluation structures to evaluate performance, adherence to principles of 'differential reward for differential performance' envisaged under PRIS could not be ascertained in audit.

DOS stated (June 2015) that there was a rigorous monitoring and evaluation mechanism for achievement of targets under its space missions. However, the reply was silent on the issue of a structured monitoring and evaluation mechanism for the purpose of PRIS.

(iii) Violation of DOS guidelines on PRIS

DOS issued (February 2009) guidelines for payment of organisational incentive schemes. At the instance of MoF (January 2010), DOS revised its guidelines and issued the same (July 2010) with the approval of MoF.

Audit observed instances of violations of these guidelines as discussed below:

(a) Payment of PRIS without assessment

Up to July 2010, PRIS was paid concurrently along with monthly salary. After July 2010, based on revised guidelines, it was to be paid on six monthly basis in the months of January and July every year based on the performance of the preceding six months. However, Audit observed that in respect of 451 cases in 10 DOS centres, payment of ₹ 1.39 crore was made towards PRIS to retiring officials who had retired/left DOS in the middle of the reporting period, at the time of final settlement without waiting for completion of six monthly periods and without assessing their performance through completed Annual Performance Appraisal Report (APAR). This was against the guidelines of PRIS.

DOS accepted the audit observation and stated (July 2015) that disbursement of organisational incentive under PRIS in respect of personnel who cease to be employee on account of superannuation/voluntary retirement/resignation, etc. will be made only at the time of disbursement of the same to the serving officers/employees subject to fulfilment of all the conditions.

(b) Non-recovery of Non- Productivity Linked Bonus

As per DOS guidelines of July 2010, employees of DOS/ISRO were not eligible for payment of Non- Productivity Linked Bonus (NPLB) from the year 2008-09 and NPLB

for 2008-09 already paid to the eligible employees of DOS/ ISRO during 2009 was to be recovered from the payment of organisational incentive due to be paid in July 2010. An amount of ₹ 71 lakh was paid by DOS towards NPLB for 2008-09, which was to be recovered. Although DOS stated (June 2015) that there were no cases of recovery of bonus, it was yet to obtain certification to that effect from its various units in confirmation of the same.

5.1.2.3 Irregularities in Adhoc Launch Campaign Allowance

Audit observed irregularities in payment of ALCA, which are discussed in the succeeding paragraphs.

(i) Enhancement of ALCA without Government approval

DOS enhanced (November 2007) the amount of ALCA from ₹ 3,000 to ₹ 5,000 and further to ₹ 6,250 (April 2012) and made payment of ₹ 20.93 crore to its employees during the period from 2006-07 to 2013-14. However, DOS did not obtain approval of Space Commission for enhancement in rates of ALCA. Therefore, expenditure of ₹ 20.66 crore incurred towards payment of ALCA to administrative staff during 2006-07 to 2013-14 and ₹ 27.20 lakh to S&T staff from 2006-07 to 2007-08⁶² was irregular.

DOS replied (June 2015) that ALCA was initially approved for ₹ 5,000 per annum in September 1999 but Department sanctioned only ₹ 3,000 per annum during the period 1999-2000 to 2005-06, which was enhanced to the originally approved amount of ₹ 5,000 per annum from 2006-07 onwards.

Reply of DOS is not acceptable, as the Space Commission in its 95th meeting (October 2000) had directed for payment of ALCA of ₹ 3,000 per annum only. Subsequently, DOS did not take approval of Space Commission for enhancing ALCA to ₹ 5,000 (November 2007) and further to ₹ 6,250 (April 2012).

(ii) Payment of ALCA to ineligible personnel

Security of DOS premises and that of its units were looked after by the Central Industrial Security Force (CISF) of the Ministry of Home Affairs of Central Government. Security personnel of CISF, therefore, were not direct employees of DOS. Audit observed that Satish Dhawan Space Centre, Sriharikota, a unit of DOS, paid an amount of ₹ 18.27 lakh towards ALCA to CISF employees working on its premises. As ALCA was approved for the employees of DOS and its units only, payment of ALCA to CISF staff was irregular.

⁶² After approval of SCPC recommendation to grant STA to S&T staff, ALCA was discontinued since 2008-09 and replaced with STA.

DOS accepted (June 2015) the audit observation.

5.1.2.4 Irregular award of gifts/gold coins to ISRO/ DOS employees

Space Commission (December 2008) approved a proposal for presenting a gift of value not exceeding ₹ 10,000 to each employee of DOS/ ISRO, including its Autonomous Bodies as a token of appreciation of their contribution towards the success of Chandrayaan I mission (launched in October 2008). DOS incurred an expenditure of ₹ 18.57 crore during the period 2006-07 to 2013-14 (₹ 5.37 crore after the implementation of PRIS up to March 2014) towards procurement and distribution of gold coins and other gifts.

Audit noticed that whereas DOS implemented its other incentive schemes such as PUA and annual award schemes with the approval of Government of India, the gift scheme was implemented only with the approval of Space Commission.

Further, one of the targets/objectives for grant of organisational incentive/ PRIS set by Department was realisation of Chandrayaan mission. Audit observed that three incentives viz. PRIS, gold coin and ALCA were granted/ distributed to employees for achievement/performance of the same target.

DOS stated (June 2015) that the Space Commission had approved the gift to all employees as the success of Chandrayaan mission was the biggest achievement in the history of DOS which was largely on account of the unstinted efforts of all the employees.

Reply of DOS should be considered in the context that three incentives viz. PRIS, gold coin and ALCA were granted/distributed to employees for achievement of the same target and without approval of the Government of India.

5.1.3 Conclusion

Prior to Government's approval to implementation of Sixth Central Pay Commission (SCPC) report, Department of Space (DOS) had various incentives for different categories of staff such as Ad-hoc Launch Campaign Allowance (ALCA), Professional Update Allowance, awards and gifts. The SCPC, in its report, recommended a comprehensive incentive scheme combining individual, team and organisational achievements, by discouraging across the board special incentives. When DOS introduced Performance Related Incentive Scheme (PRIS), it also continued to grant other special allowances in addition to PRIS, such as ALCA, gifts and Overtime Allowance by incurring expenditure of ₹ 22.41 crore (as of March 2014) towards these incentives, which resulted in grant of multiple incentives for similar achievements.

DOS implemented PRIS without submitting the proposals to Ministry of Finance for vetting and approval. A structured mechanism envisaged by SCPC for monitoring and evaluation of PRIS was not put in place by DOS. Audit observed instances of irregular payments of PRIS and other incentives such as ALCA, and additional increments.

5.2 Irregular payment of Service Tax

Master Control Facility, Hassan paid ₹ 1.33 crore during the period July 2012 to June 2014 towards Service Tax on the cost of security services provided by Central Industrial Security Force, which was not required under rules. Of this, refund of ₹ 44.68 lakh was secured after the matter was raised by Audit. The remaining amount of ₹ 88.05 lakh stood forfeited as it became time barred.

Under clause 44, Section 65 B of Service Tax Act⁶³ 'service' is defined as any activity for consideration carried out by a person for another and includes a declared service. As per Section 66 D (a) of the Service Tax Act, services by Government other than support services provided to business entities are included in the negative list of services i.e. services that do not attract Service Tax. The Para 2.4.11 of Taxation of Services-An Education guide published by Central Board of Excise and Customs, Department of Revenue, Ministry of Finance, effective from 1 July 2012, further explains that a service given by one Department of the Central Government to another Department of the Central Government would not be taxable as it would amount to self-service.

Master Control Facility, Hassan (MCF) is a unit under Department of Space (DOS) which monitors and controls all the geo-stationary satellites of Indian Space Research Organisation (ISRO⁶⁴). Security for premises of MCF is provided by Central Industrial Security Force (CISF), a unit under the Ministry of Home Affairs, Government of India, against payment of pay and allowances, leave salary contribution, pension contribution, etc. in respect of the staff deployed.

Audit observed that MCF paid Service Tax of ₹ 1.33 crore during the period from July 2012 to June 2014 on the cost of security services provided by CISF, which was not required as both CISF and MCF are central government organisations. Details of payments of Service Tax made by MCF are given in the **Appendix XVIII**.

Audit further verified that for similar services provided by CISF at other units of DOS namely, ISRO Headquarters and ISRO Satellite Centre (ISAC) at Bengaluru, no Service Tax was paid. In response to a reference made (September 2012) by ISAC, Service Tax Commissionerate, Bengaluru clarified (January 2013) that service

⁶³ Chapter V of the Finance Act, 1994

⁶⁴ ISRO is the research organisation of DOS.

activity taking place between same persons being self-service would not be taxable.

Payment of ₹ 1.33 crore by MCF towards Service Tax for the security services rendered by CISF for the period July 2012 to June, 2014 was, therefore, irregular.

The matter was first raised by Audit in September 2014. Subsequently, CISF unit, Hassan submitted (November 2014) a claim to Central Board of Excise and Customs, Hassan (CBEC) for refund of the amount of ₹ 1.33 crore. CBEC sanctioned (March 2015) refund of amount of ₹ 44.68 lakh and rejected the remaining amount of ₹ 88.05 lakh on the ground of limitation of time under Section 11 B of the Central Excise Act, 1944⁶⁵.

Thus, of the irregular amount of Service Tax of ₹ 1.33 crore paid, refund of ₹ 44.68 lakh was secured at the instance of Audit and the remaining amount of ₹ 88.05 lakh stood forfeited.

DOS replied (April 2015) that there were diametrically opposite views exercised by various Central Excise authorities in the matter, as demand for Service Tax was served on Satish Dhawan Space Centre, Sriharikota⁶⁶ in October 2014.

The reply is not acceptable, as a precedent was already available with the Department since ISAC had made a reference to Service Tax authorities as far back as September 2012 and received clarification in January 2013.

5.3 Avoidable payment of electricity charges

Regional Remote Sensing Centre-East, Kolkata incurred avoidable expenditure of ₹ 55.37 lakh towards payment of electricity charges.

According to Article 287 of the Constitution of India, Government of India is exempted from paying tax on electricity consumed and purchased from any State. Government of India, Department of Space (DOS), Indian Space Research Organisation, Bengaluru entered (April 2010) into an agreement with West Bengal State Electricity Distribution Company Limited (WBSEDCL) for supply of maximum of 550 KVA of electricity (contract demand) to the office complex of Regional Remote Sensing Centre-East⁶⁷, Kolkata (RRSC-E) for five years. As per tariff policy of WBSEDCL, for power consumption less than the contract demand, charges for actual demand or minimum demand of 85 *per cent* of contract demand i.e. 468 KVA,

⁶⁵ Section 11B of the Central Excise Act, 1944 read with Section 83 of the Finance Act, 1994 states that an application for refund of service tax may be made within a period of one year from the date of payment of tax.

⁶⁶ A unit of ISRO.

⁶⁷ A unit under National Remote Sensing Centre, ISRO, DOS, Government of India

whichever was higher, had to be paid. Electricity connection was commenced from March 2011 and RRSC-E took possession of the office building in April 2011.

Scrutiny of electricity bills of RRSC-E for the period from March 2011 to October 2014 revealed that RRSC-E paid an amount of ₹ 23.23 lakh towards electricity duty levied by WBSEDCL in the electricity bills, even though it was exempted from the same. This resulted in avoidable extra payment of ₹ 23.23 lakh.

Audit further observed that actual consumption of electricity by RRSC-E during the period March 2011 to October 2014 was in the range of 68 KVA to 366 KVA (12 to 67 *per cent*), which was far below the minimum billing demand of 468 KVA (85 *per cent*) per month. Consequently, RRSC-E paid demand charges for minimum billing demand of 468 KVA every month, which resulted in avoidable payment amounting to ₹ 25.59 lakh towards power not actually consumed by RRSC-E. This also indicated faulty assessment of power needs of RRSC-E.

Audit also observed that RRSC-E, being a public utility type of consumer, paid electricity charges at commercial tariff rates from the period April 2011 to September 2012, which resulted in excess payment of ₹ 6.55 lakh.

Thus, RRSC-E incurred avoidable excess expenditure of ₹ 55.37 lakh towards payment of electricity charges.

The matter was first brought to the notice of RRSC-E in March 2013 and referred to DOS in April 2015. RRSC-E accepted (November 2014) the audit observation and stated that it had taken sincere efforts to settle the amount through personal discussions and written communications with WBSEDCL. Adjustment of excess payment was however, yet to be effected as of January 2015. Reply of DOS was awaited as of June 2015.

CHAPTER – VI

Ministry of Earth Sciences

6.1 Unfruitful expenditure due to non-functional website

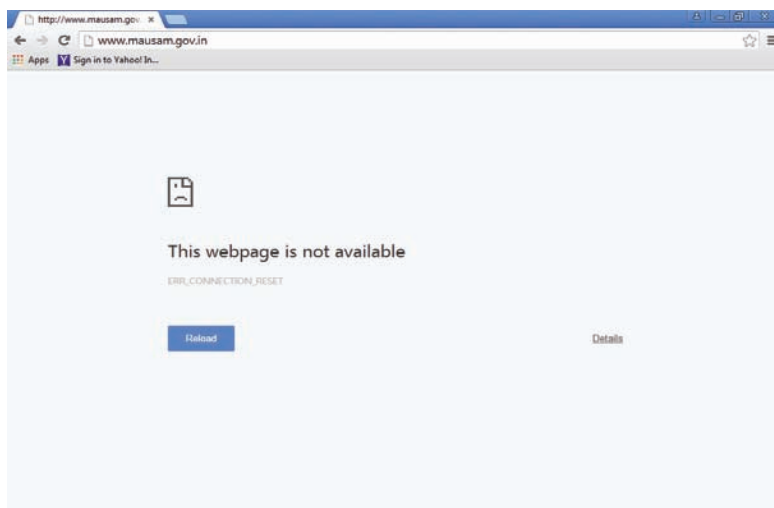
Content managed website developed by the Ministry of Earth Sciences at a cost of ₹ 2.27 crore remained non-functional since February 2012, resulting in unfruitful expenditure.

Subsequent to the re-organisation of the Ministry of Earth Sciences (MoES) after merging of India Meteorological Department (IMD) with the Department of Ocean Development and various other agencies, MoES planned (November 2006) to develop a content managed website for MoES and IMD with a view to provide real time data on atmosphere, weather conditions, weather forecast, agromet advisory, astronomical information, climate data, etc. in a user friendly manner so as to make IMD's website more useful and efficient. Tata Consultancy Services Ltd., Hyderabad (TCS) was selected (December 2007) for the project, as the firm had earlier (2002-03) developed a similar website for Indian National Centre for Ocean Information Services, Hyderabad (INCOIS), an autonomous body under MoES.

MoES instructed (November 2007) INCOIS to undertake development of the website of MoES/IMD. Accordingly, INCOIS signed an agreement (May 2008) with TCS for design, development, commissioning, hosting and maintenance of content on the website of MoES/IMD at a cost of ₹ 1.10 crore including taxes, to be paid in nine instalments. Hardware and software systems were to be provided by INCOIS. The project was to be completed within 33 weeks from the date of signing of agreement i.e. by January 2009. TCS was to provide warranty, operation and maintenance services for a period of three years from the date of completion of acceptance test.

Acceptance test of the website, named *www.mausam.gov.in*, was conducted (August 2010) by IMD and declared passed, subject to resolution of nine issues observed with reference to the agreed Systems Requirements Specifications (SRS). TCS resolved (September 2010) five of the nine issues and offered to take up the remaining issues as change request at additional cost. TCS also informed INCOIS that its support for the new website would be available till March 2011 and thereafter at extra cost. At the request of INCOIS, TCS extended the warranty support till April 2012.

However, though IMD/MoES received (July 2011) the source code, passwords, etc., problems in the website continued and it remained non-functional since February 2012. The matter regarding rectifying the pending issues in the website and warranty terms could not be resolved and remained under correspondence.



Status of website as of June 2015

MoES released a total amount (2007-08 to 2010-11) of ₹ 2.53 crore to INCOIS under the project, of which expenditure of ₹ 2.27 crore was incurred, including ₹ 1.17 crore towards procurement of systems and ₹ 1.10 crore as payment to TCS.

Audit observed lack of coordination between MoES and INCOIS on the matter of resolving the pending issues in the website as well as on agreed warranty terms. According to the terms of the agreement, TCS was to provide warranty support for the systems and software for a period of three years from date of acceptance of the website, i.e. upto August 2013. However, warranty was extended only till April 2012 and neither MoES nor INCIOS prevailed on TCS to enforce the actual terms of the agreement. In fact, INCOIS exited from the project after April 2012 in spite of issues remaining pending with regard to the project.

It was further noticed that hardware and software procured for the website development were also not maintained by IMD/MoES and were lying in disuse (August 2013) due to non-availability of air conditioned environment and lack of interest of IMD officials in maintaining the website and the hardware. As a result, TCS expressed its inability to re-deploy the website until the systems were made operational by IMD/MoES. The website remained non-functional as of May 2015, resulting in unfruitful expenditure of ₹ 2.27 crore incurred on procurement of systems and its development.

MoES accepted (May 2015) that the new website was non-functional and stated that efforts were being made to resolve the issue. MoES added that the final instalment due to TCS was still pending. However, as per terms of the contract entered between INCOIS and TCS, the contract amount of ₹ 1.10 crore has already been paid to TCS.

Thus, failure to coordinate effective delivery of the website and ensure proper maintenance of systems resulted in unfruitful expenditure of ₹ 2.27 crore as the website continues to remain inoperative for more than three years.

6.2 Installation and upkeep of meteorological observatories by Regional Meteorological Centre, Kolkata

Maintenance of observatories set up by Regional Meteorological Centre, Kolkata for collection of various types of meteorological data was inadequate. This, together with shortage of manpower, resulted in observatories lying defunct, shortfalls in carrying out prescribed inspections of observatories, non-rectification of defective instruments, inadequate geographical coverage of areas under the Centre and gaps in collection of meteorological data.

6.2.1 Introduction

India Meteorological Department (IMD) under the Ministry of Earth Sciences (MoES) is the national meteorological service of the country and the principal government agency in all matters relating to meteorology, seismology and allied subjects. The objectives of IMD are to make meteorological observations and provide current and forecast meteorological information for optimum operation of weather-sensitive activities like agriculture, irrigation, shipping, aviation, off-shore oil exploration etc.; and to warn against severe weather phenomena like tropical cyclones, norwesters, dust storms, heavy rains and snow, cold and heat waves etc. which cause destruction of life and property.

Various meteorological data⁶⁸ are collected through different observatories and processed at data processing and forecasting centres, which are then disseminated to end users.

Regional Meteorological Centre, Kolkata (RMC) is one among six⁶⁹ regional centres under IMD. It is the nodal office for meteorological information pertaining to the

⁶⁸ Surface and upper air data, satellite data, hydro-meteorology data, agri-meteorology data, radiation, Ozone, electrical potential gradient pollution, Antarctica surface and radiation data and seismology data.

⁶⁹ RMCs have been set up at Chennai, Guwahati, Kolkata, Mumbai, Nagpur and New Delhi.

States/UT of Bihar, Jharkhand, Odisha, Sikkim, West Bengal and Andaman and Nicobar Islands. It is headed by a Deputy Director General.

RMC has established 1,643 observatories for collection of surface, upper air, hydrometeorologic, agrimeteorologic, seismological and radiation data. The number of observatories is given in Table 25.

Table 25: Details of observatories set up by RMC

Nature of observatory	Type of data disseminated	Number
Surface observatories	Surface data	81
Indian Air Force Station	Surface data	11
Agricultural Meteorological Observatories*	Agrimet data	8
Hydro-meteorological Observatories	Hydromet data	1,119
Pilot Balloon Observatories	Upper Air data	11
Radio Sonde/ Radio Wind	Upper Air data	6
Radiation Observatories	Radiation data	6
Seismological Observatories	Seismological data	8
Automatic Weather Station	Surface data	113
Automatic Rain Gauge	Hydromet data	275
Wind Finding Radar	Surface data	1
Storm Detection Radar	Surface data	2
Doppler Weather Radar (S-band)	Surface data	2
TOTAL		1,643

*Though Agricultural Meteorological Observatories have been established under the jurisdiction of RMC, the same are being directly controlled by IMD, Pune.

Budget allocation and actual expenditure incurred by RMC during 2010-11 to 2013-14 is given in the Table 26.

Table 26: Budget and expenditure of RMC from 2010-11 to 2013-14

(₹ in crore)

Year	Budget estimate			Actual expenditure		
	Plan	Non Plan	Total	Plan	Non plan	Total
2010-11	3.06	31.50	34.56	3.05	31.09	34.14
2011-12	2.81	30.02	32.83	2.81	30.01	32.82
2012-13	3.50	31.30	34.80	3.54	31.26	34.80
2013-14	4.14	33.66	37.80	4.02	32.25	36.27

It can be seen from the above table that nearly 89 to 91 per cent of the total expenditure was incurred on meeting non-plan expenditure.

6.2.2 Audit findings

Audit was conducted with a view to examine the extent of installation and up-keep of meteorological observatories by RMC during the period 2010-11 to 2013-14 and its impact on IMD's meteorological functions. Audit findings are discussed in the following paragraphs.

6.2.2.1 Shortage of scientific staff

Sanctioned strength and men-in-position of RMC during the last four years (2010-14) is given in Table 27.

Table 27: Sanctioned strength and men-in-position in RMC

Year	Sanctioned strength			Men-in-position					
	Scientific	Technical	Administrative	Scientific	Percentage shortfall	Technical	Percentage shortfall	Administrative	Percentage shortfall
2010-11	657	237	197	447	32	186	22	122	38
2011-12	657	237	197	419	36	179	24	118	40
2012-13	531	221	180	372	30	156	29	103	43
2013-14	531	221	179	353	34	137	38	105	41

The reduction in sanctioned strength from the year 2012-13 was due to transfer of metrological observatories located in Agartala, which were formerly under RMC, to administrative control of Regional Meteorological Centre, Guwahati.

Scientific and technical manpower of RMC are entrusted with the work of taking observations, inspection and maintenance of instruments, ensuring data reliability, processing of scientific data and communicating the same to various user agencies. It can be seen from the Table 27 that there was considerable shortage of scientific/technical manpower to the extent of 22 to 38 *per cent* of the sanctioned strength in each of the four years. RMC recruited 19 Scientific Assistants (SA) during 2013-14. However, the additional recruitments did not serve to increase the manpower as vacancy increased to 34 *per cent* in 2013-14 from 30 *per cent* in 2012-13. RMC did not take action to recruit scientific staff in other scientific/technical cadres. Shortage of scientific and technical manpower adversely affected the discharge of functions of RMC, as brought out in the subsequent paragraphs.

RMC stated (August 2013) that existing scientific staff was also compelled to perform administrative work which further led to severe hampering of scientific work. MoES accepted (June 2015) the audit observation.

6.2.2.2 Surface observatories

Meteorological parameters are measured in surface observatories, which are manned observatories. Besides taking observations, work in these observatories also includes scrutiny of meteorological data, rainfall analysis, self recording instruments, chart data tabulation work, meteorological data exchange, verification of collected automatic weather station data, etc. Surface observatories can be both 'departmental' and 'part time' observatories, depending on the nature and frequency of measurements to be taken; and whether these are manned by departmental staff or by part time staff. Departmental observers not only take observations but also scrutinise meteorological data, rainfall analysis, chart data, conduct tabulation work, meteorological data exchange, verification of collected automatic weather station data etc. Part Time Observers are trained by departmental officials from time to time.

(i) Inadequate distribution of surface observatories

According to the standard brief document of IMD, surface observatories were, as far as possible, to be located in each district. Of 119 districts in five States and one UT under the jurisdiction of RMC, 81 manned surface observatories (including 'departmental' and 'part time' observatories) were set up in 63 districts. Area wise distribution of observatories as of December 2014 is shown in Table 28.

Table 28: Number of observatories operational as of December 2014

Sl. No	Name of the State/ Union Territory	No. of districts in State/UT	Area (sq.km)	No. of observatories established	Number of districts covered	Area covered (sq.km)	Percentage of the State's/UT area covered	No. of defunct observatories	No. of operational observatories	Area (sq.km)
1	Bihar	38	94,793	14	13	40,699	43	3	11	32,849
2	Jharkhand	24	95,617	8	7	44,254	46	3	5	29,843
3	Odisha	30	1.56 lakh	22	19	1.09 lakh	70	0	22	1.09 lakh
4	Sikkim	4	7,096	5	3	5,930	84	0	5	5,930
5	West Bengal	20	88,752	26	18	82,229	93	3	23	75,153
6	Andaman and Nicobar Islands	3	8,249	6	3	8,249	100	0	6	8,249
	Total	119	4.51 lakh	81	63	2.90 lakh	64.30	9	72	2.61 lakh

It can be seen from table 28 that:

- Out of total 119 districts in the five States and one UT under the control of RMC Kolkata, only 63 districts were covered by surface observatories, indicating coverage of only 53 *per cent*.
- Of the total geographic area of 4.51 lakh sq km., area of 2.90 lakh sq km. was covered. Therefore, area of 1.61 lakh sq. km. representing 36 *per cent* of the total area of the six States/UT, was not covered for measurement of meteorological parameters.
- Nine observatories were inoperative. Audit observed that these observatories were not operational for periods as long as two to 34 years (2015). The reason cited for non-operation of these observatories was non-availability of observers. Status of these defunct observatories is given in Table 29.

Table 29: Status of Defunct observatories

Sl. No	Name of the observatories	Defunct since
1	Darbhanga, Bihar	2008
2	Jamui, Bihar	1981
3	Arra, Bihar	1999
4	Hazaribagh, Jharkhand	Not available
5	Dumka, Jharkhand	Not available
6	Dhanbad, Jharkhand	1996
7	Sagar Island, West Bengal	2006
8	Bagati, West Bengal	2012
9	Krishnanagar, West Bengal	2013

- Except for Andaman and Nicobar Islands, no other State had 100 *per cent* coverage of working observatories. Jharkhand and Bihar had the lowest coverage of working surface observatories, at 31 and 35 *per cent* respectively. As a result meteorological observations over a vast area of 1.28 lakh sq.km. in the two States were not recorded.

Details of number of 'departmental' and 'part time' observatories set up in the States are given in **Appendix XIX**.

MoES stated (June 2015) that areas not covered by Automatic Weather Station (AWS) will be covered under ensuing scheme of AWS.

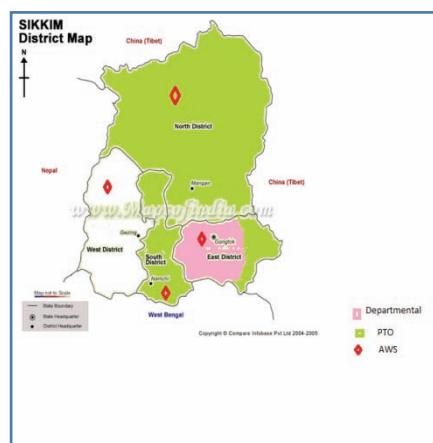
(ii) Distribution between 'departmental' and 'part time' observatories

Surface observatories mentioned in para 6.2.2.2 above have been classified under six classes as shown in Table 30.

Table 30: Classification and prescribed allotted work of observatories

Classification	Sub-classification	Prescribed allotted work	Number of observatories established
Class I	No sub-classification	Principal Climatological Station manned by departmental staff taking three to eight synoptic observations and communicating at least two sets of synoptic observations a day. In addition, such stations were equipped with a minimum of three autographic instruments for recording atleast three meteorological parameters viz pressure, temperature, wind and rainfall.	20
Class II	(a), (b), (c) & (d)	These are ordinary climatological stations at which observations are made at fixed times, including readings of extreme temperature and precipitation. II (a) & II (b) were to take and communicate at least two sets of observations daily. II (c) was to take atleast two sets of observations daily and communicate only one set of observations and II (d) was to take atleast two sets of observations daily and report them by monthly register. Class II (a) are manned by departmental staff and Class II (b) to II (d) are manned by part time staff.	II(a)- 9 II(b)- 43 II(c)- 1
Class III	(a) & (b)	III (a) was to take and communicate only one set of observations daily and III (b) was to take only one set of observations daily and report the same through monthly registers only.	0
Class IV	(a) & (b)	IV (a) was to take two sets of observations daily (excluding pressure) and report them through monthly registers and IV (b) was to take one set of observations daily (excluding pressure) and report them through monthly registers.	IV (a)- 3 IV (b)- 1
Class V	Precipitation Stations and are manned by part time observers.		
Class VI	(a), (b) & (c)	Climatological Stations for specific purposes which are not covered by Classes I to IV. These observatories are established for observations of a specific element or elements or for a particular requirement.	0
Classification not available			4 ⁷⁰
Total			81

Sikkim and Andaman and Nicobar Islands are natural hazard (earthquake, landslide, cyclone) prone areas. Audit observed that these States/UTs were covered mostly by 'part time' observatories. There were two departmental (Class I) observatories in one district and three 'part time' (Class IV (a)) observatories in three districts in the State of Sikkim. Thus, Principal climatological stations were set up in only one district in Sikkim, representing only 13 *per cent* of the area of the State. Data collected from the two districts having Class IV (a) observatories was required to be communicated through monthly registers only.



Distribution of observatories in Sikkim

⁷⁰ Classification of two departmental observatories established at Hirakud (Odisha), Asansol (West Bengal) and two 'part time' observatories established at Sonapur, Daringbari (Odisha) was not available.

Similarly, in Andaman and Nicobar Islands, though the coverage in terms of area was 100 *per cent*, there were six observatories in the UT, of which one was a departmental (Class I) observatory and five were 'part time' (Class II (b)) observatories. This indicated that meteorological data was collected only upto two times a day.



Distribution of observatories in Andaman and Nicobar Islands

MoES stated (June 2015) that AWS stations in Andaman and Nicobar Islands would be installed in future schemes.

(iii) Non-execution of MoU for 'part time' observatories

Considering the need for accurate and timely recording and reporting of synoptic observations⁷¹ for weather forecasting and climatological purposes, RMC was to establish part-time observatories in co-operation with Government/Semi-Government/ Autonomous

Agency/ Organisation/ Institution, defined as Co-operating Agency (CA). A Memorandum of Understanding (MoU) was to be executed between RMC/IMD and CA spelling out the activities to be performed and in token of having accepted the terms and conditions for each 'part time' observatory.

Audit observed that though 49 'part time' observatories were established under RMC, no MOU was found on record in respect of any of the observatories. In the absence of MoU, various activities as prescribed in the model MoU were not carried out. The details of these activities are given in Table 31.

Table 31: Status of execution of terms and conditions contained in MOU

Major terms and conditions to be included in MOU	Audit observations
CA was to arrange recording of two synoptic observations daily without fail at 08-30 hours and 17-30 hours through their staff.	There was no record at RMC regarding receipt of real time data, twice a day from the 'part time' observatories.
CA was to appoint, from amongst the technical staff/teachers, an observer, preferably a graduate of science.	Of the 40 running 'part time' observatories, observers in 34 observatories possessed qualifications below matriculate, below graduate in Arts/Commerce, graduate in Arts/Commerce and Masters in Arts etc. 87 <i>per cent</i> observers did not possess academic background in science.
The inspecting officer of RMC/IMD was to thoroughly train the observers in every item of work.	No formal training was imparted to the observers by inspecting officer of IMD/RMC.
CA was also required to arrange upkeep and maintenance of the instruments installed in the observatory enclosures.	There was no maintenance work including routine and preventive maintenance at any of the observatories. This was done only at the time of inspection.

⁷¹ A surface weather observation made at periodic times usually at three and six hourly intervals.

MoES accepted (June 2015) that copies of MoU were not available. Regarding qualification of observers and their training, MoES stated that it was difficult to get observers as per prescribed qualification but efforts were made to train the observers as per departmental requirements. However, in an earlier reply (August 2013) RMC had accepted that no formal training was imparted to the observers of 'part time' observatories. Regarding recording of meteorological observations, RMC added that met data was being received on real time over phone. In respect of maintenance of observatories, RMC stated that maintenance works were done during inspection tours⁷².

The reply of RMC indicates that no record of met data was being kept and maintenance works were carried out by RMC/IMD and not by the CA.

6.2.2.3 Automatic Weather Station

An Automatic Weather Station (AWS) is an unmanned meteorological station at which observations are made and transmitted through satellite automatically. As part of the overall meteorological application programme under the Indian National Satellite (INSAT), land based AWS were installed and commissioned throughout the country for collection of hourly meteorological data, which are vital for cyclone warning, flood warning and snow survey studies. As these are unmanned weather stations, security of these observatories is a critical aspect.

Poor maintenance of Automatic Weather Stations

RMC installed 113 AWS in the six States/UT under its jurisdiction during the period 2006-2015. For the purpose of maintenance and upkeep of AWS, IMD instructed (August 2010) RMC to establish a Regional Instrument Maintenance Centre (RIMC). Each RIMC was to supervise the work of respective State Instrument Maintenance Centres (SIMC) and Field Maintenance Units (FMU). The work of RIMC involved monitoring the station equipment, its operation and transmission of data, monitoring the data quality, liaison with SIMC and FMU for preventive maintenance/repair of equipment, overall maintenance and up-keep of all types of instrument etc.

Maintenance and upkeep work were classified broadly in two groups viz. preventive maintenance and corrective maintenance. While inspection on preventive maintenance was to be conducted once in four months irrespective of the fault at station, corrective maintenance was required to be undertaken by SIMCs in addition to preventive maintenance guidance for rectification of faults, replacement of faulty spares etc.

⁷² Inspection on preventive maintenance was to be done once in four months by Regional Instruments Maintenance Centre of IMD.

Though RMC stated that RIMC was established in November 2011, it did not provide details on the establishment of SIMC/FMU. As such, Audit could not verify existence of SIMC and FMU under RIMC/RMC.

The status of preventive maintenance of AWS by RIMC/RMC during 2013-15 is given in Table 32.

Table 32: Status of preventive maintenance of AWS

Name of the State/ Union Territory	Number of AWS installed	Number of inspection to be conducted	Number of inspection actually conducted	Shortfall	Shortfall (in per cent)
Bihar	28	224	27	197	88
West Bengal	27	216	71	145	67
Odisha	37	296	11	285	96
Sikkim	4	32	9	23	72
Andaman and Nicobar Islands	1	8	0	8	100
Jharkhand	16	128	0	128	100
Total	113	904	118	786	87

It can be seen from Table 32 that

- Overall there was shortfall of 87 *per cent* in preventive maintenance of AWS by RIMC/RMC.
- No preventive maintenance work was done in Jharkhand and Andaman and Nicobar Islands.

RMC stated (May 2013) that 92 AWS were under Annual Maintenance Contracts and therefore no inspections were conducted. The reply of RMC is not convincing as no records of upkeep and maintenance of AWS by other agencies through AMC were kept. Audit scrutinised 11 inspection reports pertaining to maintenance of AWS in Bihar and 13 inspection reports pertaining to West Bengal on test check basis and found that:

Bihar

- The reports did not indicate the kind of inspection (preventive/corrective) conducted. There was no format of inspection and approval of competent authority on the reports was not obtained.
- In all the 11 AWS, solar panel and battery of AWS were reported to be either stolen or missing. In three AWS, Global Positioning System (GPS) and

pressure sensors were also reported to be stolen/ missing. Date of procurement and cost of the missing equipment was not available with RMC. In six reports, the enclosures of AWS were reported to be covered with long grass, iron angles were rusting and fencing and cables of wind sensors were broken, which indicated that general maintenance was poor.

West Bengal

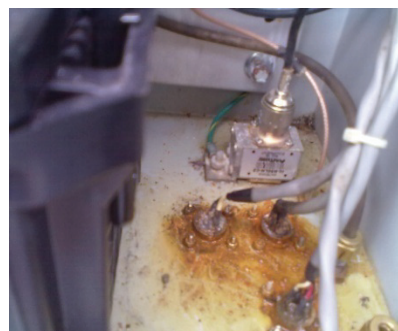
- In five reports, there was no mention of status of preventive/corrective inspection. None of the reports were approved by the competent authority.
- During inspection of the AWS conducted between February 2013 and February 2015, eight AWS which were established between August 2006 and July 2011 were found to be defunct due to defective instrument. No action was taken to repair the instrument and get the AWS functioning as of May 2015.



AWS Raidighi-defunct due to inoperative instruments



AWS Kakdwip- defunct due to non-functional instruments



Thus, in spite of a prescribed mechanism for regular maintenance of AWS, the same were poorly maintained by RMC.

While accepting that maintenance of AWS was not done, MoES stated (June 2015) that this was due to shortage of staff and non-availability of spare parts. MoES also stated that inspections were not feasible due to shortage of staff. However, it assured that proper maintenance of the AWS would be done.

6.2.2.4 Pilot Balloon Observatories

Pilot Balloon Observatories (PBO) record and report information about upper winds on real time basis. Information provided by PBO is of vital importance not only for forecasting purposes but also for pilots in flying aircraft.

Inadequate data collection due to absence of infrastructure

There are 11 PBOs under the control of RMC at 11 locations⁷³. Of these, Audit visited three observatories⁷⁴ in West Bengal and Odisha. It was observed that while there were no prescribed instructions issued by IMD for maintenance and upkeep of upper air instrument, World Meteorological Organisation (WMO)⁷⁵ had circulated (2008) a Guide to Meteorological Instrument and Methods of Observation. Audit compared the performances of the PBOs with some of the best practices given in the Guide. The findings are discussed in Table 33.

Table 33: Performance of Pilot Balloon Observatories

Criteria for best practices	PBO Dum Dum, WB	PBO Bankura, WB	PBO Balasore, Odisha
Regular ascent was required to be taken twice a day at 0600 hrs and 1800 hrs respectively for taking upper air climatologic data.	No pilot balloon ascent was held for 184 days during the period April 2009 to April 2012 due to absence of balloons, hydrogen gas, etc.	No pilot balloon ascent could be held for 533 days during 2009-14 due to non-supply of proper size balloon, lantern, gas and obstructions by trees.	No pilot balloon ascent could be held for 338 days during 2009-13 due to absence of balloons, hydrogen gas, etc.
IMD was to issue suitable instruction manuals to each upper-air station for the proper use of equipment and interpretation of data.	No instructions manual was issued.		
All balloons should be kept in their original packing until required for pre-flight preparations. Wherever possible, balloons were to be stored in a room at temperature between 15 and 25 degree Celsius.	Balloons were stored in a non-AC room at temperature of 25-30 degree Celsius.	Balloons were stored in a room at temperatures varying from 10 to 44 degree Celsius.	Balloons were kept in the store room of the office at temperatures of 10-46 degree Celsius.
Inspections were to be carried out yearly by RMC and reports sent to the concerned PBO for follow up action.	Four inspections were conducted during 2008-15. The reports were not sent to PBO for follow up action.	Six inspections were conducted during 2008-15. The reports were not sent to PBO for follow up action.	Inspections were conducted every year during 2008-15. The reports were not sent to PBO for follow up action.

Thus, no ascents were held in the three PBOs for prolonged periods, thereby indicating that upper air readings were not taken. Maintenance and storage of instruments at PBOs was also lax and the possibility of balloons not providing optimum results due to improper storage conditions could not be ruled out.

⁷³ Dum Dum and Bankura in West Bengal, Port Blair in Andaman and Nicobar Islands, Gangtok in Sikkim, Jharsuguda, Balasore, Bhubaneswar and Gopalpore in Odisha, Jamshedpur in Jharkhand and Bhagalpur and Gaya in Bihar.

⁷⁴ PBOs at Dum Dum, Bankura and Balasore.

⁷⁵ The World Meteorological Organisation (WMO) is a specialised agency of the United Nations, of which India is a member. One of the purposes of WMO is to coordinate the activities of its members in the generation of data and information on weather, climate and water according to internationally agreed standards. Technical Regulations adopted in each session of the World Meteorological Congress lay down the meteorological practices and procedures to be followed by WMO Members.

PBO, Bankura accepted (December 2014) that meteorological work was hampered due to irregular ascent during the period mentioned above. MoES stated (June 2015) that bad weather conditions and non-availability of hydrogen gas were main reasons for absence of ascents. Regarding storage of balloons, MoES stated that in India it was not possible to maintain the conditions suitable for their storage. It further stated that it could not carry out inspections as prescribed due to shortage of staff.

The reply of MoES did not describe constraints faced by it in procuring hydrogen gas. The reply regarding storage of balloons is to be viewed in light of the fact that requirements prescribed were basic storage conditions not requiring specialised infrastructure.

6.2.2.5 Hydro-Meteorological Observatories

For the collection of basic hydro-meteorological data viz. rainfall, temperature, humidity and wind for planning various river valley projects and flood control products, IMD/RMC set up hydro-meteorological observatories in the Himalayan catchments of northern rivers and other catchments where multipurpose river valley projects were being planned and executed. These observatories are manned by part-time staff and record mainly precipitation data and carry out flood forecasting, river basin studies and compilation of rainfall statistics for use in construction of dams, railways and road bridges, evaluation of snow-melt in Himalayan rivers and water balance and glaciological studies. The number of observatories depends upon the needs of the specific project. Expenditure on the observatories set up for projects undertaken on behalf of other organisations, is recovered from the sponsoring agency.

(i) Non-functional observatories

There were 1,119 hydro-meteorological observatories under RMC as of December 2014. Audit observed that 215 (19 *per cent*) observatories were not functional. Of these, 105 were non-functional due to unserviceable instruments and 41 observatories did not have required instruments. Cost of these unserviceable instruments was not found on record in RMC. Reasons in respect of the remaining 69 inoperative observatories were not on record.

MoES stated (June 2015) that the State authorities do not follow RMC's instructions to revive/reopen the defunct observatories timely and as per requirement. However, action taken, if any, by MoES in this regard was not informed.

(ii) Inadequate number of Flood Meteorological Offices

Under Hydromet observatories, RMC has established Flood Meteorological Office (FMO) in the catchments with the objective of collecting rainfall data, flood

forecasting and river basin studies, computing average annual precipitation, forecasting rainfall during monsoon, warnings against heavy rainfall, forecasting river catchment wise quantitative precipitation, etc. There are four FMOs under RMC located at Asansol and Jalpaiguri in West Bengal, Patna in Bihar, and Bhubaneswar in Odisha. The FMOs collect precipitation data from 155 'part time' observatories in West Bengal, Bihar, Jharkhand, Odisha and Sikkim to prepare their analysis.

Audit observed that though Andaman and Nicobar Islands have six perennial rivers⁷⁶, no FMO was established in these river catchments. As a result, catchment wise precipitation data from different islands of this UT was not collected. Further, only three observatories were set up in two districts in Sikkim, although the river Teesta and its major tributary, Rangeet almost flows right across the length of the State.

Audit further observed that considerable geographic areas were not covered in the States of West Bengal, Jharkhand and Odisha.

Absence of coverage of these areas indicated that the database on rainfall, annual precipitation, as well as forecasting rainfall during monsoon, warnings against heavy rainfall, etc. was incomplete.

MoES stated (June 2015) that the number of observatories for each FMO and river catchment was determined by experts. However, it did not provide basis for the absence of observatories in Andaman and Nicobar Islands and the number of observatories approved/established in Sikkim, Jharkhand, West Bengal and Odisha.

6.2.2.6 Radiation Observatories

There are six radiation observatories under RMC located at Patna in Bihar, Ranchi in Jharkhand, Bhubaneswar in Odisha, Kolkata in West Bengal, Tadong in Sikkim and Port Blair in Andaman and Nicobar Islands.

Idle instrument at Radiation observatory at Kolkata airport

Audit test checked records maintained at Radiation Observatory, Kolkata Airport. Radiation Division situated at Kolkata Airport takes observations on five parameters⁷⁷ of radiation at 10 minutes interval through data logger and sends the data to Radiation Head Quarters at Pune.

According to instructions of IMD (June 1999), inspection of each observatory was to be conducted once in a year. Each observatory was required to submit an operational status report on regular basis. Audit observed that no inspection of the

⁷⁶ Kalpong, Alexandra, Amrit Kaur, Danes, Galathea and Dogmar.

⁷⁷ (i) Diffuse Solar Radiation; (ii) Global Solar Radiation; (iii) Terrestrial Solar Radiation; (iv) Direct Solar Radiation; and (v) UVA Solar Radiation.

observatory was conducted during the period 2008-14. Audit further observed that six instruments⁷⁸ were defective since November 2009/ June 2012 due to which these were not being utilised. During the period 2008-13, the radiation observatory submitted four operational status reports. However, no action was taken to repair the defective instruments.

Audit made a comparison of the maintenance of instruments at Radiation Observatory, Kolkata with international best practices circulated by Commission for Instruments and Methods of Observations⁷⁹ (CIMO). According to CIMO guidelines, calibration and testing are inherent elements of a quality assurance programme. To assure the validity and relevance of the measurements produced by a meteorological sensor or system, some combination of calibration, laboratory testing and functional testing is needed. However, the instrument of Radiation Observatory, Kolkata airport was calibrated four to 10 years ago.

MoES accepted (June 2015) the observations and stated that action had been initiated to comply with the audit observation.

6.2.2.7 Radiosonde/Radiowind Observatories

Besides radiation observatories, upper air measurements are made with balloon borne radiometersondes⁸⁰ to measure the vertical distribution of infrared radiation flux and radiation cooling from surface upto a height of 20 km or more in the free atmosphere. The data is supplied to aircraft pilots for smooth and safe flights.

Inadequate data collection and dissemination

Audit scrutinised records of the Radiosonde/ Radiowind (RS/RW) Observatory operated by RMC at Kolkata Airport. The RS/RW Observatory is required to take readings twice a day through two RS/RW ascents, to have an efficient data collection. However, during the period 2009-14, data on only one ascent was taken by the Observatory, thereby resulting in inadequate data collection. Audit observed from monthly progress reports of RS/RW Observatory that three instruments were unserviceable for more than three to five years. No action was taken to repair/replace the defective instruments.

⁷⁸ Pyrgeometer, Radiometer, Pyrheliometer, Differential Pyranometer, Datalogger and Sky Radiometer.

⁷⁹ Commission for Instruments and Methods of Observations (CIMO) is an organ under World Meteorological Organisation to promote and facilitate international standardisation and compatibility of instruments and methods of observations to improve quality of products and services.

⁸⁰ An instrument used to measure infra red radiation, which is attached to the balloon that is released into the sky.

Thus, frequency of observations by the observatory was compromised due to improper maintenance of instruments at RS/RW observatory.

MoES stated (June 2015) that action was being taken to provide sufficient RS/RW instruments for regular observations.

6.2.3 Conclusion

Regional Meteorological Centre, Kolkata (RMC) faced shortage of scientific and technical staff, which affected its scientific work. As of 2013-14, there was shortage of 34 *per cent* and 38 *per cent* in the scientific and technical cadres respectively. RMC was unable to set up new observatories due to shortage of manpower. As a result, large geographical areas were left out of coverage.

Out of 81 surface observatories established by RMC, nine were not operational due to non-availability of observers. There was inadequate care of instruments in the observatories. Inspections were not carried out as prescribed. In the observatories where inspections were carried out, no follow up action was taken on the position reported. There was poor preventive maintenance in respect of the unmanned Automatic Weather Stations. There were also reports of thefts and defective instruments, which were also not addressed by RMC. Pilot Balloon Observatories were not provided with sufficient infrastructure for ascent of balloons. As such, there were long gaps in periodicity of data on upper winds. States having major rivers, such as Sikkim, West Bengal, Odisha and Andaman and Nicobar islands did not have enough coverage of Flood Meteorological Observatories.



CHAPTER – VII

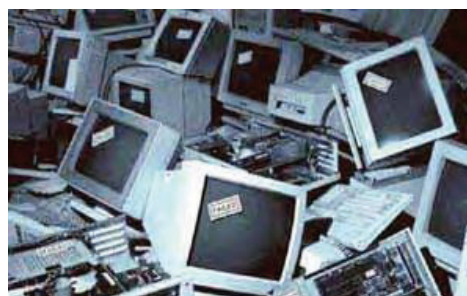
Ministry of Environment and Forests

7.1 Implementation of E-waste (Management and Handling) Rules, 2011 by Central Pollution Control Board

Central Pollution Control Board did not conduct assessment of quantity of e-waste being generated/processed in the country and effectively coordinate with State agencies for collection and compilation of such data. The Board also failed to implement framework for reduction of use of hazardous substances in Electrical and Electronic Equipment manufactured and imported in the country.

7.1.1 Introduction

E-waste is defined as waste Electrical and Electronic Equipment (EEE), whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded. E-waste contains useful material of economic benefit like plastics, iron, aluminium, copper, silver, gold and platinum, etc. It also contains heavy metals like lead, chromium, mercury, cadmium, etc. and other toxic substances that may cause health risks and damage to environment. Though there is no comprehensive inventory of e-waste in the country, it was estimated that the annual e-waste generation would be eight lakh tonnes as of 2012.



E-waste

High rates of obsolescence of EEE coupled with increase in demand of such products, necessitate recycling of e-waste for recovery of useful material from the waste. Therefore, collection and recycling/treatment of e-waste needs to be done in an environmentally safe manner to prevent pollution due to the hazardous substances present in the waste.



E-waste

Ministry of Environment and Forests (MoEF), Government of India framed (May 2011) the E-waste (Management and Handling) Rules, 2011 (the Rules) under the Environment (Protection) Act, 1986 with an objective to regulate and channelise e-waste in the country, which otherwise were recycled in unorganised sector using unscientific methods, causing risk to human health and environment. These Rules came into effect from 1 May 2012 and were applicable to every producer⁸¹, bulk consumer who was involved in the manufacture, sale, purchase and processing of EEE or components as specified in Schedule-I to the Rules, collection centre⁸², dismantler⁸³ and recycler⁸⁴ of E- waste.

Central Pollution Control Board, Delhi (CPCB), an autonomous body under MoEF, was responsible for evolving guidelines for implementation of the Rules and overseeing the progress made in reduction of use of hazardous substances in EEE. Duties of CPCB as mentioned in Schedule-III of the Rules are as follows:

- (i) Co-ordination with State Pollution Control Boards/Pollution Control Committees of Union Territories (SPCBs/PCCs)
- (ii) Preparation of Guidelines for Environmentally Sound Management of E-waste
- (iii) Conduct assessment of E-waste generation and processing
- (iv) Recommend standards and specifications for processing and recycling e-waste
- (v) Documentation, compilation of data on E-waste and uploading on websites of CPCB
- (vi) Conducting training and awareness programmes
- (vii) Submit Annual Report to the Ministry
- (viii) Any other function delegated by the Ministry under these rules
- (ix) Enforcement of provisions regarding reduction in use of hazardous substances in manufacture of EEE

⁸¹ Any person who manufactures and offers to sell EEE under his own brand, offers to sell assembled EEE produced by other manufacturers, or offers to sell imported EEE.

⁸² A centre established to collect e-waste.

⁸³ Any person/registered society/designated agency/company/association engaged in dismantling of used EEE into their components.

⁸⁴ Any person who is engaged in the recycling or reprocessing used EEE or assemblies or their component.

- (xi) Set targets for compliance to the reduction in use of hazardous substance in manufacture of EEE
- (xii) Incentives and certification for green design/products

State Pollution Control Boards (SPCB)/Pollution Control Committees (PCC)/Urban Local Bodies (ULBs) were given the responsibility as regulatory agencies for ensuring implementation of the E-waste (Management and Handling) Rules, 2011 in the respective States/Union Territories and Urban Local Bodies (Municipal Committee/Council/ Corporation).

Audit was conducted to examine extent of implementation of the Rules with respect to duties assigned to CPCB as enlisted in Schedule III to the Rules during 2011-12 to 2013-14. Audit findings are organised in accordance with duties of CPCB and discussed in the succeeding paragraphs.

7.1.2 Audit findings

7.1.2.1 Co-ordination with SPCBs/PCCs

Under Schedule-III to E-waste (Management and Handling) Rules, 2011, SPCBs/PCCs of States/UTs were required to perform duties such as inventorisation of e-waste, grant and renewal of authorisation⁸⁵, registration of recyclers of e-waste, monitoring compliance of authorisation and registration conditions, maintain information on the conditions imposed for authorisation, implementation of programmes to encourage environmentally sound recycling of e-waste, taking action against violation of the Rules and any other duty delegated by MoEF. CPCB was responsible for co-ordination with SPCBs/PCCs for implementation of the Rules.

Accordingly, CPCB called for (February 2013/July 2014/March 2015) list of producers of E-waste who applied for authorisation, number of authorisations issued to producers, number of authorisations issued to collection centres, list of dismantlers/recyclers along with their capacity and contact details, status of inventory of generation of e-waste and its completion schedule, main issues affecting the implementation of the Rules, suggestions for addressing these issues and brief note on the actions taken to address violation of the Rules, if any.

As of May 7, 2015, 128 producers in 11 States/UTs, 113 collection centres in 17 States/UTs and 143 dismantlers/recyclers in 12 States were granted authorisation by respective SPCBs/PCCs. Audit observed that CPCB initiated action for collection of above mentioned basic data only in February 2013, i.e. eight months after the Rules

⁸⁵ Permission for handling, collection, reception, storage, transportation, dismantling, recycling, treatment and disposal of e-Waste granted under E-Waste Rules.

were made effective. Thereafter, it pursued the matter with SPCBs/PCCs intermittently in July 2014 and March 2015, which indicated lack of sustained action by CPCB to collect basic data regarding e-waste in the country.

While accepting that response from SPCBs/PCCs was not satisfactory, MoEF stated (July 2015) that the remaining States reported that they did not have any authorised producers, collection centres and dismantlers/recyclers while replying to Parliamentary questions.

The reply indicated that CPCB's own coordination with SPCBs/PCCs remained ineffective.

7.1.2.2 Preparation of Guidelines for environmentally sound management of E-waste

Under the Rules, CPCB was to prepare Guidelines for Environmentally Sound Management of E-waste. CPCB formulated (June 2012) Guidelines for implementation of E-waste (Management and Handling) Rules, 2011 describing the scope of the Rules as applicable to various stakeholders.

7.1.2.3 Assessment of E-waste generation and processing

CPCB was required to "conduct assessment of E-waste generation and processing" as per duties under Schedule III of the Rules. Based on a survey conducted by CPCB in 2005, it was estimated that 1.47 lakh tonnes of e-waste was being generated in the country, which was extrapolated to eight lakh tonnes by 2012. However, according to a study published (2014) by United Nations University,⁸⁶ estimated quantity of e-waste generated in India in 2014 was 16.41 lakh tonnes. Further, 10 States (Maharashtra, Tamil Nadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab) generated 70 *per cent* of the total e-waste generated in India (as per CPCB's Guidelines for Environmentally Sound Management of E-Waste, 2008).

However, CPCB did not conduct any independent assessment of e-waste generation and processing in India after 2005. It has been seeking (February 2013/July 2014/March 2015) this information from SPCBs/PCCs. Out of 34 SPCBs/PCCs, only 18 bodies sent their annual reports in a disparate manner, which partially contained the information. However, CPCB did not, as mentioned in para 7.1.2.1, pursue with them regularly for furnishing the said information.

⁸⁶ The Global E-Waste Monitor 2014, by United Nations University – Institute for the Advanced Study of Sustainability

As of March 2015, CPCB had estimates on generation of e-waste in respect of eight⁸⁷ States/UTs and limited information on generation of e-waste in a few cities in three States⁸⁸, based on studies carried out by concerned SPCBs/PCCs (2005 to 2013). However, there was no updated information on e-waste generation in respect of the high e-waste generating States such as Tamil Nadu, Uttar Pradesh, Delhi, Karnataka and Gujarat.

Further, data contained in annual reports submitted by SPCBs/PCCs revealed that during 2012-13, 11 States/UTs collected 6,524 MT of e-waste and during 2013-14, 14 States/UTs collected 1.21 lakh MT of e-waste. In the absence of complete information on quantity of e-waste generated by these States, it was not possible for Audit to comment on the extent of e-waste being collected.

Thus, CPCB was unaware of the quantity of e-waste generated and collected in the country and consequently did not assess the scope and magnitude of e-waste management activities to be covered under the Rules.

MoEF stated (July 2015) that quantifying generation of e-waste was the responsibility of SPCBs/PCCs and CPCB was mandated to merely compile the information received from the SPCBs/PCCs.

The reply is not acceptable as SPCBs/PCCs were responsible for inventorisation of e-waste, whereas CPCB was required to conduct assessment of e-waste generation under the Rules. CPCB neither took sustained action to collect requisite information from SPCBs/PCCs nor considered conducting an independent assessment in absence of the same. The fact remained that even after three years since the E-waste (Management and Handling) Rules, 2011 became effective, CPCB had scarce information on the quantity of e-waste being generated and processed in the country.

7.1.2.4 Recommending standards and specifications for processing and recycling e-waste

As per duties listed in Schedule-III to the Rules, CPCB was required to recommend standards and specifications for processing and recycling e-waste. CPCB brought out (June 2012) Guidelines on implementation of E-waste (Management and Handling) Rules, 2011, in which regulatory and safety requirements for collection centre, dismantling and recycling facilities were described.

⁸⁷ Assam, Chandigarh, Goa, Himachal Pradesh, Jammu and Kashmir, Maharashtra, Puducherry and Punjab.

⁸⁸ Madhya Pradesh, Meghalaya and West Bengal.

7.1.2.5 Documentation, compilation of data on E-waste and uploading on website of CPCB

Under the list of duties of CPCB in Schedule III of the Rules, CPCB was to prepare documentation, compilation of data on e-waste and upload the same on website of CPCB. CPCB could only upload the list of recyclers and dismantlers as received from SPCBs/PCCs.

7.1.2.6 Conducting training and awareness programmes

CPCB was required to conduct training and awareness programmes under the Rules. Audit observed that during the three years since implementation of E-waste (Management and Handling) Rules, 2011, no training/awareness programmes were conducted by CPCB regarding implementation of the Rules. In fact, in a feedback (November 2014) to CPCB regarding issues affecting implementation of the Rules, Punjab Pollution Control Board (PPCB) had admitted that there was lack of awareness/coordination among various stakeholders regarding treatment of e-waste.

CPCB stated (May 2015) that it had conducted two national workshops in February 2012 and May 2012. MoEF added (July 2015) that CPCB organised one training for the officials of CPCB/SPCBs/PCCs on e-waste Management in May 2014. MoEF further stated that there was no mention in the Rules about the number of awareness programmes to be conducted each year.

The reply may be viewed in light of the fact that CPCB did not organise any awareness programme to educate various stakeholders about the provisions of the Rules. Workshops were held by CPCB to discuss the proposed Guidelines for implementation of the Rules prior to its issue by CPCB.

7.1.2.7 Submission of Annual Report to the Ministry

As per Rule 15 (1) of E-waste (Management and Handling) Rules, 2011, SPCBs/PCCs were required to prepare an annual report in the format prescribed under Form 5 of the Rules, regarding the implementation of the Rules and submit the same to CPCB by 30th September every year. Similarly, as per Rule 15 (2) of E-waste Rules, CPCB was to prepare the consolidated annual report on Management of e-waste and forward it to MoEF along with its recommendations before 30th December of every year.

Although the Rules were promulgated in May 2011, CPCB took up the matter with SPCBs/PCCs for the first time in July 2014 and sought annual reports for the year 2012 and 2013. It was observed that only 15 SPCBs and three PCCs submitted annual reports for the year 2012-13 and 2013-14 in a combined way. It was also seen that

the States were not making annual reports by 30th September of each year as prescribed in the Rules and had prepared annual reports for 2012-13 and 2013-14 only after being asked by CPCB.

CPCB also submitted consolidated annual report to the Ministry only in February 2015 by consolidating the contents of the reports sent by SPCBs/PCCs for 2012-13 and 2013-14. It was also observed that Annual Reports of CPCB was without any analysis or recommendation. No further action was initiated based on the data submitted in the annual reports either by CPCB or MoEF.

It was further noticed that format of the annual report required SPCBs/PCCs to report on the category wise details of e-waste collected. However, product wise quantity of e-waste collected was not furnished by Andhra Pradesh (2012-13), Assam, Bihar, Himachal Pradesh, Tamil Nadu, Uttar Pradesh, Punjab, Chandigarh and Delhi.

Thus, mechanism of collection of data relating to e-waste through Annual Reports by SPCBs/PCCs as well as by CPCB was ineffective.

Further, the Form 5⁸⁹ sent by respective SPCBs/PCCs for the Annual Report contained information pertaining to collection only and not about generation of e-waste.

7.1.2.8 Enforcement of provisions regarding reduction in use of hazardous substances in manufacture of EEE

Rule 13 of E-waste (Management and Handling) Rules, 2011 stipulates that every producer of EEE shall ensure that new EEE does not contain hazardous substances and also prescribes maximum concentration values⁹⁰ for these substances. The rule also stipulated that imports or placement of new EEE in the market would be permitted only for those who were compliant to these provisions. Reduction of use of Hazardous Substances (RoHS) in manufactured or imported EEE were to be achieved within a period of two years from the date of commencement of the Rules i.e. by 1st May 2014. CPCB was given the responsibility of enforcing provisions of RoHS.

CPCB included (June 2012) these provisions in its Guidelines for implementation of the Rules and initiated (March 2014) an implementation framework on RoHS

⁸⁹ Form of Annual Report to be submitted by SPCBs/PCCs to CPCB.

⁹⁰ 0.1 *per cent* by weight in homogenous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers and, 0.01 *per cent* by weight in homogenous materials for cadmium.

enforcement based on self regulation model⁹¹. As verification of compliance to RoHS required separate infrastructure for testing of hazardous substances and laboratory infrastructure available at CPCB was not sufficient for testing of EEE samples under RoHS compliance, CPCB proposed to enter into an MoU with Centre for Materials for Electronics Technology, Hyderabad (C-MET)⁹² for a period of three years. The framework including MoU with C-MET was approved by MoEF in November 2014.

Audit observed that CPCB initiated the process of devising an implementation framework only in March 2014, two months before the date by which the RoHS standards were to be achieved. As of May 2015, CPCB had not entered into MoU with CMET and was still in the process of developing infrastructure for testing of EEE to enforce RoHS regulation. Consequently, no random verification of hazardous substances could be done by CPCB. The proposed self regulation model was also yet to be enforced.

MoEF stated (July 2015) that implementation of RoHS was a continuous process and it would take time to create facilities for sampling and analysis. It added that the proposed framework including MoU with CMET was in active stage.

The fact remained that CPCB could not implement this framework and ensure achievement of RoHS, which was to be done by May 2014 under the Rules.

7.1.2.9 Initiatives for IT industry for reducing hazardous substances

Under list of duties in Schedule III to the E-waste (Management and Handling) Rules, 2011, CPCB was also required to develop initiatives for IT industry for reducing hazardous substances. However, CPCB did not develop any initiatives for IT industry for reducing hazardous substances as of May 2015.

7.1.2.10 Setting targets for compliance to the reduction in use of hazardous substance in manufacture of EEE

As per duties prescribed under the Rules, CPCB was to set targets for compliance to reduction in use of hazardous substance in manufacture of EEE. However, as mentioned in para 7.1.2.8 above, CPCB initiated action for development of a framework for enforcing the provisions of RoHS in March 2014. As of May 2015, CPCB had not set targets for compliance to RoHS.

⁹¹ Self regulation model had put primary responsibility of reduction of hazardous substances on producers and included provisions such as development of a Central Registry of Producers, mechanism for self-declaration by producers on RoHS compliance, data base on various EEEs being placed in the market by producers; only random verification on RoHS was to be done by CPCB.

⁹² An autonomous society under the Department of Electronics and Information Technology

MoEF stated (July 2015) that the duty of CPCB relating to hazardous substances was to fix permissible concentration levels of hazardous substances in EEE and give time frame to any defaulter producer for becoming RoHS compliant. It should not be equated to fixing targets for achieving compliance or for monitoring of compliance.

This reply is to be viewed in the light of the fact that CPCB is entrusted with the responsibility of setting such targets under the E-waste (Management and Handling) Rules, 2011.

7.1.2.11 Incentives and certification for green design/products

Under provision of E-waste (Management and Handling) Rules, 2011, CPCB was required to develop incentives and certification for green design/products. However, as of May 2015, no action was taken in this regard.

7.1.2.12 Non-implementation of Extended Producer Responsibility

Under Extended Producer Responsibility (EPR), the producer of EEE would have the responsibility of managing such equipment after its 'end of life'. Thus, as per E-waste (Management and Handling) Rules 2011, producers were responsible for their products even after the consumers discarded them and were required to collect e-waste, finance and organise a system to meet the costs involved in environmentally sound management of e-waste.

CPCB was required to set up a committee to examine the issue of fixing targets for the purpose of monitoring of EPR compliance based on the life and type of the product, usage and consumption patterns and other relevant factors and also taking into consideration the level of compliance achieved during the first two years, as per Guidelines for implementation of E-waste (Management and Handling) Rules, 2011.

Audit observed that the said committee was not constituted as of May 2015 i.e. after three years since the Rules became effective. As a result, a mechanism to monitor the compliance to EPR responsibilities of producers of EEE could not be evolved.

MoEF replied (July 2015) that due to poor compliance by producers, it was decided to amend the Rules, due to which committee was not constituted. Approval to amendments was awaited as of July 2015.

7.1.3 Amendment to E-waste (Management and Handling) Rules, 2011

MoEF held meetings (July 2013/December 2013) with various stakeholders⁹³ to review the status of implementation of the E-waste (Management and Handling) Rules, 2011. It was noticed that compliance to the Rules by producers and bulk consumers was not satisfactory, as there were problems in authorisation of producers from multiple SPCBs/PCCs, time taken in obtaining authorisation and registration for dismantlers and recyclers, inability of producers and bulk consumers in fulfilling their obligations under the Rules, etc. Taking cognisance of these issues, MoEF directed CPCB (December 2013) to prepare draft amendment to the Rules seeking changes such as including Micro and Small enterprises within the scope of the Rules, single authorisation for producers by CPCB in case more than one state was involved in the authorisation process, increased responsibility of producers for setting up collection centres, etc. CPCB submitted (March 2014) the draft amendment to Rules to the Ministry; its approval was awaited as of July 2015.

7.1.4 Conclusion

The E-waste (Management and Handling) Rules, 2011 were notified with the primary objective of channelising the e-waste generated in the country for environmentally sound recycling. Audit observed that even after three years since notification of the Rules, mechanism for enforcement of various provisions in the Rules was not in place. Central Pollution Control Board (CPCB), being the nodal agency responsible for overseeing the implementation of the Rules did not assess the quantity of e-waste generated in the country. It was unable to effectively coordinate with State Pollution Control Boards/Pollution Control Committees for collection and compilation of data regarding number of producers, collection centres, dismantlers and recyclers authorised in each State, which remained incomplete. Even with available data, CPCB failed to take further action or to provide recommendations as required under the Rules.

CPCB was unable to ensure compliance to reduction of hazardous substances in Electrical and Electronic Equipment (EEE) by producers, due to non-availability of requisite infrastructure for testing of such substances in EEE. Consequently, CPCB could neither develop initiatives for IT industry for achieving reduction of use of hazardous substances nor bring out incentives/certification for green design/products. CPCB also did not suggest any mechanism to monitor the compliance to Extended Producer Responsibility of producers of EEE. CPCB also failed to conduct adequate number of training and mass awareness programmes for various stakeholders for management and handling of e-waste.

⁹³ SPCBs, PCCs, concerned Departments/Ministries, industry associations, etc.

Thus, there is no assurance that generation and treatment of e-waste in the country has been controlled and environmental risks reduced despite introduction of E-waste (Management and Handling) Rules, 2011.

7.2 Inordinate delay in completion of pilot projects for sewage treatment

Central Pollution Control Board took up a scheme for setting up demonstration projects for treatment of sewage at four locations. After more than four years of sanction and in spite of incurring expenditure of ₹ 8.22 crore, sewage treatment could not commence at any of the four locations due to lack of planning, coordination and monitoring.

7.2.1 Background

Generation of sewage and its disposal is an important issue in urban areas. In India, Class I and Class II cities altogether generate 38,255 MLD⁹⁴ of sewage. However, treatment facility is available only for 11,787 MLD, leaving a gap of 26,468 MLD (69 *per cent*) for treatment. Domestic sewage carries pollution load in terms of Biochemical Oxygen Demand (BOD)⁹⁵, harmful bacteria, heavy metals and other toxic chemicals. Discharge of partially treated sewage in rivers causes water pollution and resultant health and environmental hazards. Untreated sewage disposal has been identified as the main reason for deteriorating water quality of rivers and accounts for 75-80 *per cent* of total water pollution in rivers. Although it is mandatory on the part of local bodies to treat wastewater before reusing or releasing it to the natural environment, most cities have inadequate sewage treatment facilities, which poses risk to health and environment.

Central Pollution Control Board (CPCB) monitors water quality of rivers. In view of prevailing situation and considering magnitude of sewage pollution, CPCB proposed to implement *in-situ* bio-remediation technology for treatment of sewage in open drains in different cities. The objective of *in-situ* sewage treatment was to treat sewage in open drains before its discharge into rivers/lakes. The process involved treatment of sewage in open drains by using a group of beneficial bacteria to break down waste without causing any release of foul odour. The technology was thought to be simple and cost effective, requiring no major modification of drain, no additional land, space for treatment facility, power or skilled manpower. The process was proposed as an intermediate solution till the requisite treatment facilities were provided.

⁹⁴ Million litres per day

⁹⁵ The amount of Oxygen consumed by micro organisms present in sewage in breaking down the waste. BOD is a measure of extent of water pollution.

Accordingly, CPCB invited (April 2010) 'Expression of Interest' for execution of a Research and Development (R&D) cum demonstration/ pilot project on 'in-situ treatment of wastewater (sewage) in drains' in Delhi or any other location. The interested firms were asked to indicate their preferred drain/location for the project. During a meeting (August 2010) in MoEF it was decided that 'in-situ sewage treatment' be demonstrated on drains joining river Ganga as NGRBA⁹⁶ project. Initially, seven firms responded and their proposals were sent (October 2010) to National River Conservation Directorate (NRCD), MoEF for consideration for funding under NGRBA scheme. MoEF constituted (December 2010) a committee to examine the technical, financial and implementation aspects of the proposals received from CPCB.

In the meantime, two of the seven firms were awarded (December 2010) similar projects⁹⁷ by MoEF and another firm withdrew its proposal on the ground that the drain proposed was no longer suitable due to an ongoing construction project for Kolkata Metro. The Committee constituted by MoEF recommended (January 2011) to place remaining four proposals⁹⁸ before NGRBA for consideration by its Research Advisory Committee (RAC). NGRBA recommended (February 2011) implementation of these four projects in collaboration with respective State Governments and decided that an integrated proposal be formulated by CPCB on research aspects of the bio-remediation technology. CPCB submitted (March 2011) the integrated proposal to NRCD for consideration of RAC, NGRBA.

Based on proposal received from CPCB and after review by the Committee, MoEF sanctioned (April 2011) four demonstration/pilot projects under NGRBA/ National River Conservation Plan (NRCP) at a cost of ₹ 19.84 crore for demonstration of in-situ treatment of sewage through bio-remediation by respective firms as detailed in Table 34.

⁹⁶ National Ganga River Basin Authority

⁹⁷ 'In-situ treatment of sewage (wastewater) with reference to odour control'

⁹⁸ In situ treatment of sewage through bio-remediation at Budha Nala, Ludhiana; Bakarganj Nala, Patna; Mori Gate Nala, Allahabad and City Drain, Farrukhabad.

Table 34: Demonstration projects sanctioned by MoEF for demonstration of in-situ treatment of sewage through bio-remediation

S. No	Location	Sanctioned cost (₹ in crore)	Project Implementing Agency	Brief description of technologies being demonstrated by the firms
1.	Budha Nala Ludhiana	15.28	Green Infrastructure, Pune	The Project was based on Green Bridge Technology ⁹⁹ which uses filtration power of biologically originated cellulosic/fibrous material in combination with sand and gravel and root systems of green plants.
2.	Bakarganj Nala, Patna	2.24	US Environ Pvt Ltd, Delhi	The project was based on Eco Bio Block (EBB). EBB is made of porous volcanic rock, cement and beneficial bacteria. The blocks are laid in the drain bed.
3.	Mori Gate Nala, Allahabad	1.38	Amrit Clean Water Technologies Pvt. Ltd. Gurgaon	The project was based on Emtech ¹⁰⁰ Technology which involves bio-augmentation of microbial groups.
4.	City Drain, Farrukhabad	0.94	Clover Organic Ltd. Dehradun	The project was based on bio-mimicry technology ¹⁰¹ for sewage treatment.

All these projects were sanctioned and work order accepted by respective firms in May 2011 and these were to be implemented within one year. Respective State Governments were to meet Operation and Maintenance (O&M) costs after one year of operation of the projects.

CPCB was made the nodal agency for implementation of the projects. It was to monitor progress of the projects through fortnightly progress reports to be submitted by the firms. It was also required to ensure involvement of concerned State Government and commitment towards O&M costs.

MoEF also constituted (May 2011) a committee consisting of representatives from DBT¹⁰², MoUD¹⁰³, University of Hyderabad, besides officers from MoEF for monitoring progress of the project. Frequency of monitoring was to be decided in the first meeting of the committee.

⁹⁹ All floatable and suspended solids are trapped in this biological bridge and the turbidity of flowing water is reduced substantially. The growing green plants help in absorption of soluble substances including heavy metals. There are four treatment cells between five green bridges which are activated and provided with micro organisms at the bottom. The embankments are treated with plantation and rocks for further enhancement of treatment process, which takes care of contamination of groundwater by seepage into the surrounding drain areas.

¹⁰⁰ In Emtech technology, bio-augmentation is done using a blend of aerobic and facultative bacteria occurring naturally, to work in low oxygen level and enhance degradation of organic matters in waste water.

¹⁰¹ The technology works on bio-augmentation based on self cleaning and bio-mimicry concepts. Fermented mud ball, gravel and charcoal with net are used for treatment of water courses with locally available materials.

¹⁰² Department of Bio-Technology

¹⁰³ Ministry of Urban Development

7.2.2 Audit scope

Audit examined the records relating to implementation of these four projects at CPCB and MoEF. Deficiencies observed in implementation of the projects are discussed in succeeding paragraphs.

7.2.2.1 Demonstration project at Budha Nala, Ludhiana

CPCB issued (May 2011) work order for execution of project at Budha Nala, Ludhiana to Green Infrastructure Private Ltd., Pune at a cost of ₹ 15.28 crore for duration of one year. Funds were to be released in four equal instalments of ₹ 3.82 crore each. Each instalment was to be released only after receiving bank guarantee from the firm for the said amount.

The work involved construction of five green bridges at the site and providing microbial dosing in treatment cells located between the bridges. The embankments were to be treated with plantation and rocks to prevent seepage of waste water into the surrounding drain areas.



Budha Nala, Ludhiana

Although the firm accepted the work order (May 2011) with the said terms and conditions, CPCB informed (November 2011) MoEF that the firm had requested (May 2011) that funds may be released on re-imbursement basis and therefore no bank guarantee was required to be submitted by the firm. MoEF agreed (December 2011/March 2012) to revise the terms and conditions to the effect that the firm would incur expenditure up to 25 *per cent* of the work and then claim reimbursement from CPCB. Accordingly, CPCB issued (April 2012) a revised work order. Audit also observed that there were no penal provisions in the terms and conditions of the project, for non-start/inordinate delay of work by the firm.

Although CPCB was required to ensure coordination with State Governments, the firm obtained no-objection certificate from the State Government authorities in August 2012, after lapse of 15 months from award of work order. There was further delay in construction of green bridges due to difficulty in procuring materials such as boulders from the neighbouring State and technical problems in the first bridge.

The firm submitted its first claim for payment of ₹ 4.12 crore (December 2012) to CPCB. CPCB released (July 2013) an amount of ₹ 3.26 crore after delay of nearly six months. Against the second bill of ₹ 4.63 crore submitted (December 2013) by the

firm, CPCB released ₹ 4.40 crore in three instalments in February 2014 (₹ 58 lakh), November 2014 (₹ one crore) and December 2014 (₹ 2.82 crore).

Audit observed that as of December 2013, after more than two and half years of issue of work order, only three of five bridges were completed. However, the firm took more than four years of issue of work order in respect of the fourth bridge and completed belatedly in June 2015. The fifth and final Green Bridge was still incomplete (June 2015). CPCB did not facilitate timely implementation of the project by ensuring that necessary clearances were obtained prior to award of work. Further, CPCB took nearly six months and one year for verification and release of the firm's claim for payment in respect of first and second running bill respectively. CPCB also did not release the balance amount of ₹ 22.83 lakh against second bill on account of non-receipt of funds from MoEF, delaying the project further.

Although CPCB was to monitor the project through fortnightly reports to be submitted by the firm, Audit observed that progress reports were received irregularly from the firm. However, the firm did not submit the same for January 2015 to June 2015. CPCB failed to ensure timely submission of progress reports. Audit further observed that the committee constituted by MoEF for monitoring progress of the project failed to meet even once during the course of the project. As a result, no monitoring was carried out by MoEF either.

Thus, although the location for implementing the demonstration project was identified with the involvement of State Government, failure to obtain necessary clearances in time, procedural delays, absence of penal provision for non-execution/inordinate delay of work by firm, delay in payments and lack of monitoring by CPCB/MoEF resulted in inordinate delay of more than four years as of June 2015 in implementation of the project.

MoEF stated (June 2015) that the project was delayed due to delay in obtaining No Objection Certificate (NOC) and administrative reasons. They further accepted delay in payment of one year. They also stated that the work was awarded only after obtaining the required NOC and commitment from State to the O&M cost.

The fact, however, remained that the project was inordinately delayed even after receipt of NOC (August 2012).

7.2.2.2 Demonstration project at Bakarganj Nala, Patna

CPCB issued (May 2011) work order to US Environ, Delhi for executing the demonstration project at Bakarganj Nala, Patna at a cost of ₹ 2.24 crore. Funds were to be released in four equal instalments of ₹ 56 lakh each. Each instalment was to be released after receiving bank guarantee from the firm for said amount. The firm

accepted (May 2011) the work order and submitted a Bank Guarantee for ₹ 56 lakh valid for one year.



Bakarganj Nala, Patna

CPCB received commitment of the State Government for meeting O&M costs of the project in January 2012, after seven months from award of work. Subsequently, CPCB released (December 2012) the first instalment of ₹ 56 lakh to the firm. The firm renewed (October 2012) validity of bank guarantee for another year. However, the firm was unable to obtain NOC from the State Government and requested CPCB for assistance. With the intervention of CPCB, NOC was eventually received (November 2013) from State Government but by then, validity of bank guarantee had again lapsed. As of December 2014, neither was bank guarantee renewed nor work was initiated by the firm. CPCB took no further action to get the project work commenced.

Thus, despite being the nodal agency for implementation of the project, CPCB could not ensure timely implementation by obtaining necessary clearances prior to award of work. Instead, CPCB issued work order and released the first instalment of ₹ 56 lakh to the firm without availability of clearances. Further, CPCB failed to exercise due care in releasing funds for the project. After expiry of bank guarantee on the second occasion, CPCB did not take action to get it renewed. Consequently, ₹ 56 lakh remained with the firm since December 2012 without any security, besides loss of interest of ₹ 5.60 lakh¹⁰⁴ on the same (January 2013 to June 2015).

Audit also observed that there were no penal provisions in the terms and conditions of the project for inordinate delay/non-execution of work by the firm.

There was no monitoring of the project by CPCB and MoEF. CPCB did not ensure that the firm submitted fortnightly progress report regularly. First progress report was received by CPCB in February 2014. Further, as mentioned in para 7.2.2.1, committee constituted by MoEF to monitor progress of the project did not meet at all.

MoEF accepted (June 2015) the fact regarding non-start of work by the firm upto March 2015. However, it reported that site cleaning work was started by the firm, as reported in first fortnightly report of April 2015.

¹⁰⁴ Based on SBI saving bank interest rate of four per cent.

7.2.2.3 Demonstration projects at Allahabad and Farrukhabad

As per the project conception, CPCB was to bear the Operation and Maintenance (O&M) costs of the bioremediation plants for one year, after which the respective State Governments were to meet the same. According to the terms of the administrative approval issued to CPCB by MoEF, CPCB was to ensure the involvement of State Governments and their commitment in respect of O&M costs. Accordingly, in a meeting held (August 2011) by MoEF to review the project, it was decided that CPCB would obtain commitment from the State Government for meeting O&M costs after one year of operation of the project.

The Uttar Pradesh State Government observed (December 2011) that O&M costs of projects to be implemented at Mori Gate, Allahabad (₹ 1.38 crore) and City drain, Farukhabad (₹ 61 lakh) were high and suggested a change of locations. Based on the suggestions of Uttar Pradesh Jal Nigam, CPCB forwarded fresh project proposals in respect of Movaiya Nala, Allahabad and Tokaghat Nala, Farukhabad at capital cost of ₹ 2.03 crore and ₹ 1.12 crore respectively to Uttar Pradesh State Government, seeking its commitment on bearing O&M costs after one year of operation. The proposed annual O&M costs for the new locations were ₹ 2.03 crore and ₹ 69 lakh respectively. However, response of State Government was not received, due to which the projects could not be initiated at any of the locations in Uttar Pradesh.

Audit observed that neither MoEF nor CPCB could obtain commitment from the State Government for bearing O&M costs of the projects prior to sanction of project, which indicated deficient planning. As a result, the demonstration project could not be set up at any location in UP.

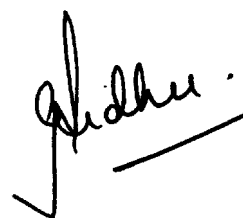
MoEF stated (June 2015) that infrastructure requirements for the project may change from place to place depending upon the local situation which may not be fully envisaged through prior-planning, and the project could not be initiated at both locations due to non-receipt of commitment from the State Government for bearing O&M costs. CPCB further mentioned that the State Government also did not agree to demonstrate the technology.

The fact remained that the projects were sanctioned and awarded to the firms before obtaining firm commitment from State Government.

7.2.3 Conclusion

Central Pollution Control Board (CPCB) failed to plan the demonstration projects properly, as it did not ensure commitments of the concerned State Governments before awarding work to the implementing agencies. As a result, projects could not be initiated at three locations and was badly delayed at the fourth. CPCB also failed to coordinate release of funds with progress of work which resulted in blocking of funds of ₹ 56 lakh with a private firm. Monitoring of the projects by both CPCB and Ministry of Environment and Forests (MoEF) was deficient. The monitoring committee constituted by MoEF did not meet even once.

Thus, the objective of setting up demonstration projects for treatment of sewage and thereby mitigate resultant environmental and health hazards remained unachieved even after more than four years of sanction and incurring expenditure of ₹ 8.22 crore.



(GURVEEN SIDHU)
Principal Director of Audit,
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New Delhi
Dated: 14 August 2015

Countersigned



(SHASHI KANT SHARMA)
Comptroller and Auditor General of India

New Delhi
Dated: 17 August 2015

APPENDICES

Appendix I (Refer to Paragraph 1.2)

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 2013-14 was ₹ 13,437.26 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 2013-14 was ₹ 5,168.95 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 2013-14 was ₹ 1,248.15 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 2013-14 was ₹ 2,158.80 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 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 2013-14 was ₹ 1,633.52 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 following 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 2013-14 was ₹ 1,291.32 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 2013-14 was ₹ 2,610.22 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 2013-14 was ₹ 3,159.54 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 2013-14 was ₹ 1,094.71 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 1.5)**Audit findings from Compliance Audits conducted during the last five years**

Report No. and year	Para no.	Subject	Ministry/ Department
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
	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	

Report No. and year	Para no.	Subject	Ministry/ Department
	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
22 of 2014	Stand alone	Management of satellite capacity for DTH service by DOS	DOS
27 of 2014	2.1	Non-utilisation of equipment	DAE
	3.1	Fraudulent payment of legal fees	DST
	3.2	Non-installation of equipment	
	4.1	Inordinate delay in realization of SRE-2 mission	DOS
	4.2	Loss in allocation of satellite capacity	
	4.3	Avoidable expenditure due to improper contract management	
	4.4	Infructuous expenditure on procurement of components	
	5.1	National Data Buoy Project	MoES
	5.2	Irregular payment of gratuity	
	6.1	Activities of Zoological Survey of India in exploration, identification and monitoring of faunal diversity	MoEF
	6.2	Inordinate delay in setting up of National Botanic Garden	
	6.3	Wasteful expenditure on hiring of office accommodation	
	6.4	Non-establishment of model facilities for management of Municipal Solid Wastes	

Appendix III (Refer to paragraph 1.7)

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 2013-14
DEPARTMENT OF ATOMIC ENERGY		
1.	Harish Chandra Research Institute, Allahabad	28.69
2.	Institute of Mathematical Sciences, Chennai	43.10
3.	Atomic Energy Education Society, Mumbai	45.23
4.	Tata Institute of Fundamental Research, Mumbai	519.80
5.	Tata Memorial Centre, Mumbai	356.93
6.	Institute for Plasma Research, Gandhinagar	642.16
7.	Institute of Physics, Bhubaneswar	24.00
8.	National Institute of Science Education and Research, Bhubaneswar	220.00
9.	Saha Institute of Nuclear Physics, Kolkata	95.93
DEPARTMENT OF BIOTECHNOLOGY		
10.	National Brain Research Institute, Gurgaon	0.50
11.	National Institute for Plant Genome Research, New Delhi	23.00
12.	National Centre for Cell Sciences, Pune	26.00
13.	National Institute of Immunology, New Delhi	47.15
14.	Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram	23.50
15.	Centre of DNA Finger Printing and Diagnostics, Hyderabad	34.00
16.	Institute of Bio-resources and Sustainable Development, Imphal	21.09
17.	Institute of Life Sciences, Bhubaneswar	22.10
18.	Translational Health Science and Technology Institute, Faridabad	37.00
19.	UNESCO Regional Centre for Education and Training, Faridabad	41.40
20.	National Agri-Food Biotechnology Institute and Bio-processing Unit, Mohali	20.10
21.	Institute for Stem Cell Research and Regenerative Medicine, Bengaluru	55.00
22.	National Institute of Biomedical Genomics, Kalyani	42.00
23.	National Institute of Animal Biotechnology, Hyderabad	18.00
24.	Centre of Innovative and Applied Bio-processing, Mohali	7.00
25.	International Centre for Genetic Engineering and Biotechnology, New Delhi	13.00
DEPARTMENT OF SCIENCE AND TECHNOLOGY		
26.	Aryabhata Research Institute for Observational Sciences, Nainital	23.00
27.	Birbal Sahni Institute of Paleobotany, Lucknow	26.48
28.	Indian National Academy of Engineering, New Delhi	4.30
29.	Indian National Science Academy, New Delhi	21.50
30.	National Academy of Sciences, Allahabad	10.22
31.	National Accreditation Board for Testing and Calibration Laboratories, New Delhi	0.10
32.	Technology Information, Forecasting and Assessment Council, New Delhi	8.16

Sl. No.	Ministry/ Department Name of Autonomous Body	Amount of grants released in 2013-14
33.	Vigyan Prasar, New Delhi	13.60
34.	Wadia Institute of Himalayan Geology, Dehradun	36.18
35.	Agarkar Research Institute, Pune	12.07
36.	Indian Institute of Geomagnetism, Mumbai	25.16
37.	Raman Research Institute, Bengaluru	33.00
38.	Centre for Soft Matter Research, Bengaluru	5.60
39.	International Advanced Research Centre for Powder Metallurgy, Hyderabad	47.83
40.	Indian Institute of Astrophysics, Bengaluru	50.77
41.	Indian Academy of Sciences, Bengaluru	12.54
42.	Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru	55.00
43.	Bose Institute, Kolkata	80.77
44.	Indian Association for the Cultivation of Science, Kolkata	58.09
45.	S N Bose National Centre for Basic Science, Kolkata	29.20
46.	Indian Science Congress Association, Kolkata	7.04
47.	Institute of Advanced Study in Science and Technology, Guwahati	15.96
48.	National Innovation Foundation, Ahmedabad	9.49
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH		
49.	Consultancy Development Centre, New Delhi	**
DEPARTMENT OF SPACE		
50.	North Eastern Space Application Centre, Shillong	15.23
51.	Indian Institute of Space Technology, Thiruvananthapuram	75.00
52.	National Atmospheric Research Laboratory, Tirupati	15.00
53.	Physical Research Laboratory, Ahmedabad	90.00
54.	Semi Conductor Laboratory, Chandigarh	68.00
MINISTRY OF EARTH SCIENCES		
55.	National Institute of Ocean Technology, Chennai	177.80
56.	Indian Institute of Tropical Meteorology, Pune	193.11
57.	Indian National Centre for Ocean Information Services, Hyderabad	68.19
58.	National Centre for Antarctic and Ocean Research, Goa	200.54
MINISTRY OF ENVIRONMENT AND FORESTS		
59.	Central Pollution Control Board, Delhi	68.90
60.	G.B. Pant Institute of Himalayan Environment and Development, Almora	14.00
61.	Indian Institute of Forest Management, Bhopal	12.34
62.	Indian Council of Forestry Research and Education, Dehradun	142.91
63.	Indian Plywood Industries Research and Training Institute, Bengaluru	7.51
64.	Padmaja Naidu Himalayan Zoological Park, Darjeeling	**
65.	Centre for Environment Education, Ahmedabad	**
66.	Tropical Forest Research Institute, Jabalpur	**

Sl. No.	Ministry/ Department Name of Autonomous Body	Amount of grants released in 2013-14
MINISTRY OF NEW AND RENEWABLE ENERGY		
67.	Centre for Wind Energy Technology, Chennai*	14.00
68.	Sardar Swaran Singh National Institute of Renewable Energy, Kapurthala	8.00
	TOTAL	4,163.27

* 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 1.8)

Outstanding Utilisation Certificates

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2014	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	13	13.46
	2006-07	46	101.25
	2007-08	39	262.72
	2008-09	24	68.45
	2009-10	34	458.49
	2010-11	45	570.58
	2011-12	170	972.32
	2012-13	204	1,418.48
Total		616	4,038.17
Department of Biotechnology	Nil		
Department of Science and Technology	Details not available		
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

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2014	Amount (₹ in lakh)
	1985-86	1	0.05
	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	12	134.30
	2009-10	36	150.80
	2010-11	25	78.68
	2011-12	28	79.07
	2012-13	54	433.62
Total		281	1,730.10
Ministry of Earth Sciences	1983-84	9	0.72
	1984-85	16	12.62
	1985-86	12	4.58
	1986-87	11	7.31
	1987-88	24	16.99
	1988-89	32	85.84
	1989-90	47	22.65
	1990-91	30	78.70
	1991-92	3	0.38
	1992-93	12	177.12
	1993-94	6	59.57
	1994-95	8	35.51
	1995-96	24	114.57

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2014	Amount (₹ in lakh)
	1996-97	30	37.23
	1997-98	32	140.66
	1998-99	22	217.40
	99-2000	24	528.30
	2000-01	16	54.60
	2001-02	10	12.59
	2002-03	8	10.40
	2003-04	37	57.52
	2004-05	24	459.20
	2005-06	31	217.15
	2006-07	20	443.55
	2007-08	58	618.50
	2008-09	40	864.51
	2009-10	36	217.95
	2010-11	128	683.92
	2011-12	81	1,185.37
Total		831	6,365.41
Ministry of Environment and 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

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2014	Amount (₹ in lakh)
	1994-95	78	160.61
	1995-96	78	170.88
	1996-97	278	1,002.24
	1997-98	149	541.37
	1998-99	298	702.59
	99-2000	277	663.53
	2000-01	311	768.24
	2001-02	333	961.75
	2002-03	299	850.25
	2003-04	349	1,223.02
	2004-05	343	1,388.46
	2005-06	270	1,380.06
	2006-07	258	1,675.93
	2007-08	266	2,322.21
	2008-09	221	1,749.33
	2009-10	92	821.02
	2010-11	118	15,149.86
	2011-12	183	5,295.86
Total		6,278	49,830.13
Ministry of New and Renewable Energy	2005-06	1	3.34
	2006-07	1	2.00
	2007-08	8	27.56
	2008-09	13	263.14
	2009-10	41	799.56
	2010-11	92	2,544.69
	2011-12	178	12,763.24
	2012-13	520	60,733.63
Total		854	77,137.16
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

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2014	Amount (₹ in lakh)
	2001-02	2	40.00
	2006-07	5	36.53
	2007-08	12	81.28
	2008-09	46	738.57
	2009-10	46	359.85
	2010-11	69	585.59
	2011-12	47	399.92
	2012-13	16	782.68
Total		257	3,062.76
Grand Total		9,117	1,42,163.73

Appendix V (Refer to Paragraph 1.9)

Summarised financial results of Departmentally Managed Government Undertakings

(₹ in lakh)

Sl. No.	Name of the Undertaking	Period of Accounts	Government Capital	Mean Capital	Block Assets (Net)	Depreciation to date	Profit (+) Loss (-)	Interest on Government Capital	Total return	Percentage of total return to mean Capital	Remarks
1.	Nuclear Fuel Complex	2013-14					Not available				
2.	Heavy Water Board	2013-14	18,00,816.29	14,01,395.42	35,521.15	1,27,609.66	(-)43,644.80	1,11,971.49	68,326.69	4.88	Figures are provisional

Appendix VI (Refer to Paragraph 1.10)**Statement of losses and irrecoverable dues written off/waived during 2013-14***(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	-	-	-	-	22	12.03	-	-	-	-
Department of Bio-Technology	Nil									
Department of Science and Technology	Nil									
Department of Scientific and Industrial Research	Nil									
Department of Space	-	-	-	-	7	0.37	20	465.36	-	-
Ministry of Earth Sciences	Nil									
Ministry of Environment and Forests	Nil									
Ministry of New and Renewable Energy	Nil									
Ministry of Water Resources	-	-	-	-	34	0.81	-	-	-	-
Total	-	-	-	-	63	13.21	20	465.36	-	-

Appendix VII (Refer Paragraph 1.12)

Summarised position of the Action Taken Notes (ATNs) awaited from various Ministries/ Departments up to the year ended March 2014 as of March 2015- 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	28
2.	22 of 2013	2.2	Hasty procurement of equipment without creating infrastructure facilities for installation	15
3.	27 of 2014	2.1	Non-utilisation of equipment	1
DEPARTMENT OF SCIENCE AND TECHNOLOGY				
4.	27 of 2014	3.1	Fraudulent payment of legal fees	1
5.	27 of 2014	3.2	Non-installation of equipment	1
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH				
6.	22 of 2013	4.1	Public Private Partnership for setting up 'The Centre for Genomic Application' by Institute of Genomics and Integrative Biology	15
DEPARTMENT OF SPACE				
7.	22 of 2014	Stand alone	Management of satellite capacity for DTH service by DOS	1
8.	27 of 2014	4.3	Avoidable expenditure due to improper contract management	1
MINISTRY OF EARTH SCIENCES				
9.	27 of 2014	5.1	National Data Buoy Project	1
10.	27 of 2014	5.2	Irregular payment of gratuity	1
MINISTRY OF ENVIRONMENT AND FORESTS				
11.	21 of 2013	Stand alone	Compensatory Afforestation in India	15
12.	22 of 2013	6.1	Repeated unauthorized creation and up-gradation of posts by Central Pollution Control Board	15
13.	27 of 2014	6.2	Inordinate delay in setting up of National Botanic Garden	1
14.	27 of 2014	6.4	Non-establishment of model facilities for management of Municipal Solid Wastes	1

Appendix VIII (Refer Paragraph 1.12)

Summarised position of the Action Taken Notes (ATNs) awaited from various Ministries/ Departments up to the year ended March 2014 as of March 2015- 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)	23
3.	5 of 2001	5.5	Recovery at the instance of Audit (Sl no. 5.23 to 5.25)	17
4.	5 of 2002	9.1	Avoidable expenditure due to negligence	17
5.	CA 16 of 2008-09	2.5	Non-establishment of world class gamma ray observatory	3
6.	PA 19 of 2008	Stand alone	Management of Fuel for Pressurised Heavy Water Reactor (Front end of Nuclear Fuel Cycle)	5
7.	PA 13 of 2010-11	Stand alone	Procurement of Stores and Inventory Management	1
8.	22 of 2013	2.1	Avoidable expenditure on compensation due to breach of agreement	4
DEPARTMENT OF BIOTECHNOLOGY				
9.	5 of 2003	3.1	DBT Review	136
DEPARTMENT OF SCIENCE AND TECHNOLOGY				
10.	13 of 2007 (PA)	5.3	Internal controls in DST	7
11.	CA 16 of 2008-09	5.2	Excess expenditure due to selective adoption of pay structure	4
12.	22 of 2013	5.1	Avoidable expenditure on hiring of office premises	4
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH				
13.	6 of 1996	5.2	Review on Central Road Research Institute	14
14.	6 of 1996	5.8	Extra expenditure for unconsumed power	7
15.	5 of 1998	2.4	Loss due to defective agreement	23
16.	5 of 1999	4.4	Extra expenditure due to defective design	12
17.	5 of 2001	3.2	National Institute of Oceanography	26
18.	5 of 2005	6.1	Wasteful expenditure	95
19.	5 of 2005	10.2	Non-installation of Fermentation System	12
20.	2 of 2007 (TA)	13.1	Non-recovery of Service Tax	18
21.	CA 16 of 2008-09	4.1	Non-recovery of dues from private company on short closure of the project	57
22.	CA 16 of 2008-09	4.2	Recovery of dues at the instance of Audit	44

Sl. No.	Report No. & Year	Paragraph No.	Title	Delay in submission of ATNs (in months)
23.	CA 16 of 2008-09	4.5	Development of technologies on batteries/cells and their commercialisation by Central Electro Chemical Research Institute, Karaikudi	1
24.	29 of 2013	Standalone	Network Projects of Council of Scientific and Industrial Research for Tenth Five Year Plan	2
DEPARTMENT OF SPACE				
25.	9 of 2006 (PA)	5	Non Tax Receipts	9
26.	22 of 2013	3.1	EDUSAT Utilisation Programme	10
MINISTRY OF EARTH SCIENCES				
27.	2 of 2007 (TA)	5.1	Wasteful expenditure	28
28.	CA 3 of 2008	7.1	Non-achievement of the objectives of modernizing the Accounting and Personnel Management functions	26
29.	CA 16 of 2008-09	7.1	Construction of residential quarters and hostel units without demand	7
30.	22 of 2013	8.1	Irregular introduction of pension scheme and diversion of funds	7
MINISTRY OF ENVIRONMENT AND FORESTS				
31.	3B of 2001	1.0	Implementation of environment act relating to water pollution	19
32.	5 of 2002	3.1	Review of Zoological Survey of India	1
33.	CA 16 of 2008-09	6.2	Inadmissible payment of Transport Allowance	35

Appendix IX (Refer to Paragraph 2.1.2.2 (ii))

Procurement cases in which high lead time was taken for fulfillment

A. Mod lab Zonal Stores

Sl. No.	Goods Receipt No.	Zone Goods Receipt No.	Zone Goods Receipt Date	Zone Receipt Voucher Clearance Date	Lead Time
1.	6565/07	07/4588	27-Nov-2007	17-Sep-2010	1,025
2.	08/7442	08/4384	17-Dec-2008	16-Nov-2010	699
3.	09/862	09/774	6-May-2009	3-Mar-2011	666
4.	09/886	09/770	6-May-2009	10-Nov-2010	553
5.	09/186	09/325	20-April-2009	21-Jun-2010	427
6.	09/2162	09/1561	22-Jun-2009	25-Jun-2010	368
7.	09/4231	09/2831	27-Aug-2009	28-Aug-2010	366
8.	09/2591	09/1937	7-Jul-2009	1-Jul-2010	359
9.	09/5935	09/3754	27-Oct-2009	9-Oct-2010	347
10.	09/6076	09/3798	28-Oct-2009	9-Oct-2010	346
11.	09/1910	09/1549	19-Jun-2009	26-Apr-2010	311
12.	10/519	10/424	27-Apr-2010	4-Mar-2011	311
				Total lead time	5,778

B. Receipt Zonal Stores

Sl. No.	Goods Receipt No.	Purchase Order No.	Receipt Voucher Date	Receipt Voucher Clearance Date	Lead Time
1.	8676/09	6609/FE	21-Jan-2010	10-Dec-2010	323
2.	6773/09	6618	19-Nov-2009	25-Oct-2010	340
3.	7883/09	190874	29-Dec-2009	10-Dec-2010	346
4.	1989/09	6908	15-Jun-2009	16-Aug-2010	427
5.	4636/09	192161	7-Sep-2009	31-Jan-2011	511
6.	6254/08	5968	6-Nov-2008	27-Jul-2010	628
7.	6255/08	5988	6-Nov-2008	27-Jul-2010	628
8.	6816/08	6374	24-Nov-2008	17-Jan-2011	784
9.	3100/08	186477/FE	18-Jul-2008	15-Dec-2010	880
10.	162/06	4467	10-Apr-2006	27-Jul-2010	1,569
11.	5633/05	4467	4-Oct-2005	27-Jul-2010	1,757
12.	620/05	4467	26-Apr-2005	27-Jul-2010	1,918
				Total lead time	10,111

C. Vashi Zonal Stores

Sl. No.	Goods Receipt No.	Purchase Order No.	Receipt Voucher No.	Goods Receipt Date	Receipt Voucher Clearance Date	Lead Time
1.	4636/09	192161	133954	07-Sep-2009	1-Feb-2011	512
2.	4913/09	6705	134225	16-Sep-2009	30-Jun-2010	287
3.	6736/09	6705	136008	19-Nov-2009	30-Jun-2010	223
4.	6773/09	6618	136044	19-Nov-2009	26-Oct-2010	341
5.	7883/09	190874	137278	29-Dec-2009	16-Dec-2010	352
6.	8365/09	9611	137752	12-Jan-2010	3-Jun-2010	142
7.	8676/09	6609/FE	138057	21-Jan-2010	16-Dec-2010	329
8.	8777/09	193391	138156	27-Jan-2010	21-Jul-2010	175
9.	9396/09	6923	138774	15-Feb-2010	28-May-2010	102
10.	9466/09	7037	138842	17-Feb-2010	1-May-2010	73
11.	9673/09	6883	139049	24-Feb-2010	8-Jun-2010	104
12.	10006/09	7071	139377	5-Mar-2010	8-Jun-2010	95
13.	10032/09	6867	139403	8-Mar-2010	17-Apr-2010	40
14.	10104/09	194859	139474	9-Mar-2010	1-May-2010	53
15.	10106/09	6911	139476	9-Mar-2010	8-Jun-2010	91
16.	10259/09	7015	139628	15-Mar-2010	28-Aug-2010	166
				Total lead time		3,085

Appendix X (Refer to Paragraph 2.1.2.3 (ii))

Details of delayed projects that were awarded points in assessment report of Heavy Water Board for Performance Related Incentive Scheme-Group

Sl. No.	Group	Name of project	Scheduled date of completion	Actual date of completion	Delay (months)	Points awarded
ASSESSMENT FOR 2009-10						
1.	HWPB	Setting up of VSPP facility at HWP (Talcher)	March 2007	June 2009	27	3
2.		Setting up of Scale -up TBP production facility at HWP (Baroda)	December 2008	Ongoing as of March 2011	27	3
3.		Establishment of ion Chromatography process for production of Enriched Boron at HWP (Manuguru)	December 2008	End of 2009-10	15	3
4.		Technology Demonstration Plant (TDP) for extraction of Uranium from Phosphoric Acid at RCF, Chembur	January 2007, revised as September 2008	Not completed as of March 2010	18	9
5.		Heavy Water Clean-up Facility (HEWAC)	August 2005, revised as October 2006.	Not completed as of March 2010	41	6
TOTAL						24
ASSESSMENT FOR 2010-11						
6.	HWP, Manuguru (Group-1)	Construction of Liaison Office and Guest House at Hyderabad,	July 2010	May 2011	10	1
		Construction of 153 “D Type” quarters at HWP(M) colony	December 2009	June 2010	6	1
		Construction of 50 Efficiency Apartments and 30 E Type quarters at HWP(M) colony	December 2009	September 2011	21	1
7.	HWP, Kota (Group-2)	Solar based steam generation system	July 2008	Ongoing as of March 2011	32	1
		Storage shed for 2000 D20 drums of 200 litres capacity	January 2010	Ongoing as of March 2011	14	1

Sl. No.	Group	Name of project	Scheduled date of completion	Actual date of completion	Delay (months)	Points awarded
		DCS for Water Treatment Plant	December 2009	Ongoing as of March 2011	15	1
8.	HWP, Baroda (Group-3)	Commissioning of Tri Butyl Phosphate Plant	January 2009	Ongoing as of March 2011	26	20
		Production of Tri Butyl Phosphate		Ongoing as of March 2011	26	10
		Hydrogen Water Exchange Catalyst Test facility	First set of sample by December 2008 and HP catalyst testing unit by February 2009.	Ongoing as of March 2011	25	4
9.	HWP, Talcher (Group-5)	VSPC Commissioning	March 2007	September 2010	42	8
		IETP Commissioning, trial operation and processing	April 2008	April 2010	24	6
		CCR mechanical completion and commissioning	August 2009	November 2010	15	3
10.	HWP, Mumbai (Group-6)	Developmental work of Heavy Water Clean-up Facility (HEWAC)	October 2006	Ongoing as of March 2011	53	4
		Dry Ash Collection, segregation and storage facility at HWP, Manuguru	December 2008	Ongoing as of March 2011	27	4
		Steam Turbine Generator at HWP, Manuguru	January 2009	Ongoing as of March 2011	26	4
		Housing colony at HWP, Manuguru	December 2009	Ongoing as of March 2011	15	3
		Liaison Office and Guest House at Hyderabad	July 2010	Ongoing as of March 2011	8	1
TOTAL						73

Appendix XI (Refer to Paragraph 2.1.2.4 (iii))

Cases in Directorate of Construction and Estate Management in which incorrect performance assessment was made during 2010-11

Sl. No.	Name of Work	Targets	Achievement reported	Points awarded	Remarks
PLANNING AND DESIGN GROUP					
1	Construction of Hostel for trainees of HBNI/BARC- Phase-I				
	Construction of main building Ph-I	Main work order to be issued.	Main works Phase1, work order issued	4.5	<ul style="list-style-type: none">• Work order for main works Phase-1 was issued only in April 2012 but it was shown as issued during 2010-11.• Statutory approvals were partially obtained and therefore the target was not achieved.• Application for IOD was completed in 2009-10. Therefore the assessment was incorrect.
		Statutory approval to be obtained.	Statutory approval partly obtained.		
		Structural Design up 5 th floor to be completed.	Structural Design completed.		
	Construction of Phase-II building	Design, estimating to be completed.	Design, estimating completed.		
		Application for Intimation of Disapproval to be made.	Application for Intimation of Disapproval made.		
2	National Institute of Scientific Education and Research, Bhubaneswar - works				
	Construction of Main campus at Jatni	Main campus tender to be finalised, Review/checking of design, drawings to be completed. Work order to be issued.	Main campus tender finalised, Review/checking of design, drawings completed. Approval from DAE awaited for issue of work order.	5.75	The work order was actually issued in July 2011. Therefore the assessment was incorrect.
3	Construction of Variable Energy Cyclotron Centre, Kolkata				
	Medical Cyclotron	Review of design/drawings with progress of work.	Review of design/drawings with progress of work.	17	<ul style="list-style-type: none">• Construction of Medical Cyclotron and its ancillary building was already badly delayed as it was to be completed by June 2009. Target was assigned for finalisation of design and drawings which is a preliminary work.• The target for ‘Design & drawings for tender to be completed and estimate to be made’ was shown as achieved fully. But the Security Gate tender process and fire station tender process was
	Radioactive Ion Beam facility building	Radioactive Ion Beam building tender to be finalised. Design and drawings to be completed.	Radioactive Ion Beam building tender finalised. Design and drawings completed.		
	Security Gate, Anunet building National Knowledge Centre, fire station, connecting corridor.	Design and drawings for tender proposed to be completed. Estimate to be made.	Design and drawings for tender proposed completed. Estimate made.		

Sl. No.	Name of Work	Targets	Achievement reported	Points awarded	Remarks
	Computer and Information Building	Design and drawings for tendering to be completed. Estimate to be completed. Tendering action to be taken up.	Design and drawings for tendering completed. Estimate completed. Tendering action taken up.		finalised only in October 2011 and August 2011. • Report on retro-fitting scheme was submitted to AERB only in June 2011. Therefore the assessment was incorrect.
	Engineering Hall, Infrastructure building, ADSS building.	Design, drawings for tender to be completed.	Design, drawings for tender completed.		
	Retro-fitting of super conducting cyclotron building	Retro-fitting scheme to be submitted to AERB for approval.	Retro-fitting scheme submitted to AERB for approval.		
TOTAL POINTS				27.25	
EXECUTION GROUP					
1	Construction of Convention Centre Complex at Anushaktinagar	22% of Main works to be completed.	24% of Main works completed.	15	Only 15 <i>per cent</i> of Main works was completed.
2	Construction of Hostel for trainees' of HBNI/BARC-main building Ph-I	10%	5%	3	Target was not achieved.
3	Construction of Quarters for CISF at Anushaktinagar			6	Construction of Substation was already delayed as it was to be completed by February 2010. Only eight <i>per cent</i> work of construction of main building was completed.
	Construction of Substation and development works.	100%	100%		
	Construction of Main building	10%	10%		
4	Aquatic and Athletic facility at Anushaktinagar			3.75	Only 70 <i>per cent</i> (Development works) and 60 <i>per cent</i> (Filtration Plant) work was completed.
	Development works	100%	85%		
	Filtration Plant	95%	70%		
5	Miscellaneous work			3.50	• Targets were not achieved. • According to the activities assigned to different groups, design and tender processing activity was to be carried out by Planning and Design Group and not by Execution Group. • No progress was recorded in respect of work of Canadian Bungalow.
	Construction Drywell	60%	10%		
	Fire fighting pumping system	10% Tendering work to be finalised.	3% Tender being called for.		
	Canadian Bungalow	80%	80%		
	Molybdenum facility for BRIT at BARC	Geo-technical investigation to be completed.	Geo-technical investigation completed.		

Sl. No.	Name of Work	Targets	Achievement reported	Points awarded	Remarks
6	Integrated Facility for radiation Technology Project at BRIT, Vashi.				
	Civil works	100%	100%	6	<ul style="list-style-type: none">Civil Work was awarded in December 2007 and was required to be completed by April 2009. Electric work was to be completed by December 2009. The work was already delayed.Erection and commissioning of EOT crane was required to be completed by January 2011. Target for 2010-11 was set on lower side.
	Electrical Works	100%	100%		
	EOT Crane-1	80%	80%		
	EOT Crane-2	50%	50%		
	HVAC work	50%	50%		
7	National Institute of Scientific Education and Research, Bhubaneswar Works				
	Substation Building	100%	100%	16.5	<ul style="list-style-type: none">Works of construction of substation was awarded in August 2009 and was required to be completed by May 2010. Construction of Quarters and Girls Hostel was required to be completed by March 2010. Electrical works for substation was required to be completed by December 2010. All works were already delayed.Only 90 <i>per cent</i> work of Dining facility was completed.Target for construction of main campus was not achieved.
	Construction of V-E Quarters and Girls Hostel	100%	100%		
	Dining facility	100%	100%		
	Sub-station equipments	100%	100%		
	Construction of Main Campus at Jatni	5%	Tender finalized, DAE approval for issue of work order awaited.		
8	Construction for Variable Energy Cyclotron Centre				
	Medical Cyclotron centre	35%	40%	4.5	Construction of Medical Cyclotron was required to be completed in June 2009. The work was already delayed and target of only 35 <i>per cent</i> was set. Only three <i>per cent</i> work of RIB facility building was completed. Target of computer and information building was not achieved.
	Radiation Ion Beam facility Building	50%	50%		
	Computer and Information Building	30%	Tender in Process		
TOTAL POINTS				58.25	
ENGINEERING SERVICES DIVISION					
1	Attending day to day routine complaints	92%	92%	7	Out of 12 numbers of Annual maintenance repairing works considered for purpose of setting of targets, Audit test checked six contracts and found that none of the works were completed in scheduled time.

Sl. No.	Name of Work	Targets	Achievement reported	Points awarded	Remarks
2	Arresting leakages (terrace, end wall, upper floor bathroom & shaft leakages)	65% to 90%	65% to 90%	5	Of 11 cases of water proof works considered for setting of targets, Audit test checked six water proof works and found that none of the works were completed in scheduled time.
3	Structural repairs and external painting	9% to 100%	4% to 100%	9	Of the 12 cases of structural repairs and external painting considered for setting of target only one was completed in scheduled time.
4	Infrastructure development	70% to 100%	85% to 100%	6	None of the three Infrastructure developments works considered for setting of targets were completed in scheduled time.
5	Cosmetic maintenance	85%	85%	4.5	None of the six cosmetic maintenance works considered for setting of targets were completed in scheduled time.
6	Attending to daily complaints	100 %	100 %	7.5	No targets for attending to daily complaints were actually set.
7	Maintaining External Electrical services	10 % to 100%	10 % to 100%	6.5	Of 57 minor works/renovation works considered for setting of target test check of 18 works revealed that none of the works were completed in schedule time.
8	Automation and access control works	10 % to 100%	10 % to 100%	2	Four cases of Automation and access control works were considered for setting of targets. Test check of two cases revealed that there was a delay of more than two years for completion of works.
9	Up-gradation of services	10 % to 100%	10 % To 100%	18.5	Of 34 works of restoration, renovation and up-gradation considered for setting of target 17 cases were test checked and it was found that none of the works were completed within scheduled time.
TOTAL POINTS				66	

Appendix XII (Refer to Paragraph 3.1.2)

Details of 19 projects under Drugs and Pharmaceutical Research Programme examined in audit

(₹ in crore)

Sl. No.	Name of the industry partner	Name of the project	Date of Sanctioning of Project	Sanctioned date of completion (extended date)	Project cost	DST share (loan)	Loan released	Project status (completed/foreclosed)
1.	Bharat Serums and Vaccines Limited, Mumbai	Development of a commercially viable manufacturing process of monoclonal tetanus immunoglobulin (mTIG) expressed in recombinant Chinese Hamster Ovary (CHO) cell line	March 2006	March 2009 (March 2011)	20.03	10.00	7.07	Foreclosed
2.	Bigtech Pvt. Ltd., Bengaluru	Development of a high yielding Recombinant Human Insulin strain & Process lead to commercialization	December 2006	December 2008 (December 2009)	3.87	1.92	1.92	Completed
3.	Biological E. Ltd., Hyderabad	Development of a tetravalent dengue vaccine by using a combination of 30 deletion mutant and chimeric constructs of DEN-1, DEN-2, DEN-3 and DEN-4 viruses against dengue infections	March 2005	March 2007 (March 2008)	13.77	4.75	4.75	Completed
4.	Cadila Pharmaceuticals Ltd., Ahmedabad	Development of Therapeutic Vaccine for Pancreatic Cancer	October 2007	October 2009	14.05	7.02	7.02	Completed
5.	Cadila Pharmaceuticals Ltd., Ahmedabad	Development of new generation therapeutic and prophylactic Hepatitis B vaccines	March 2006	March 2007	3.20	1.50	1.50	Completed
6.	Chembiotek Research International Private Limited	Discovery and Development of novel inhibitors of Undercaprenyl Pyrophosphate Synthase (UPPs)	May 2007	May 2010 (March 2011)	22.03	11.00	11.00	Completed
7.	Indigene Pharmaceuticals Pvt. Ltd, Hyderabad	Clinical development of prioritized drug candidates through Phase-C. To develop and deliver innovative, safe and effective plant derived Natural Molecular Combinations (NMC) based drugs to address the unmet medical and market needs	October 2007	October 2008	24.95	14.95	14.95	Completed

Sl. No.	Name of the industry partner	Name of the project	Date of Sanctioning of Project	Sanctioned date of completion (extended date)	Project cost	DST share (loan)	Loan released	Project status (completed/foreclosed)
8.	Institute of Molecular Medicine, Kolkata	RNAi approach for the Gene silencing of HIV-1" (The SyneRgy Project)	March 2006	March 2009	24.50	12.25	10.00	Completed
9.	Mediclone Biotech Private limited, Chennai	Development and manufacturing of Anti-Rabies Monoclonal Antibody (MAB) cocktail and Immunodiagnostic MAB for Rabies Virus Detection	March 2008	March 2011	18.81	11.27	10.22	Completed
10.	Promed Exports Pvt. Ltd, New Delhi	Formulation development, stability studies, pre-clinical and clinical studies of anti-cataract eye drops for applying the technology and innovation in effective prevention and treatment of cataract by bringing the drug to commercialization stage	March 2005	March 2008	10.84	5.00	4.00	Completed
11.	Strides Arco lab Limited, Bengaluru (Medegne)	Development of Novel Recombinant Staphylokinase for the treatment of cardiovascular disease	December 2006	December 2009	8.19	4.08	0.89	Foreclosed
12.	Ranbaxy Laboratories Ltd., Gurgaon	A novel muscarinic receptor antagonist for chronic obstructive pulmonary disease	August 2006	August 2009	12.30	6.15	4.70	Foreclosed
13.	Ranbaxy Laboratories Ltd., Gurgaon	A novel phosphodiesterase-4B inhibitor for Chronic Obstructive Pulmonary disease	July 2007	July 2010	12.30	6.15	4.95	Foreclosed
14.	Thirteen Herbs and Cure, New Delhi	Development of an indigenous immuno-restorative herbal formulation P-JyotiAmritam for HIV/AIDS	March 2008	March 2010	3.41	1.70	1.11	Completed
15.	Sudershan Biotech Ltd., Hyderabad	Production of para-hydroxyphenyl glycine (PHPG) using Hydantoinase and carbamoylase enzymes cloned E.coli	March 2006	March 2009	3.93	1.96	1.96	Completed
16.	ABL Biotechnologies Limited, Chennai	C-Phycocyanin in COX-2 inhibition and diagnostic	February 2006	February 2009 (February 2010)	8.29	4.00	4.00	Completed
17.	Promed Exports Pvt. Ltd., New Delhi	Formulation, development, stability studies, pre-clinical and clinical studies of anti-glaucoma herbal eye drops	March 2007	March 2010	8.08	4.02	2.05	Completed
18.	Cellmax Pharma Limited, Aligarh	Development of commercially viable recombinant product and diagnostics kits	January 2008	January 2011	8.74	4.34	2.00	Completed
19.	Microtest Innovations Pvt. Ltd., Bengaluru	Development of a cost effective viral load assay and its commercial application in monitoring drug efficacy in HIV/AIDS	December 2005	December 2007 (December 2008)	2.37	1.18	1.18	Completed
Total					223.66	113.24	95.27	

Appendix XIII (Refer to Paragraph 3.1.2.4 (ii))**Details of outstanding utilisation certificates in projects implemented under Drugs and Pharmaceutical Research Programme***(₹ in crore)*

Sl. No	Name of the project	Name of the industry partner	No. of UCs out-standing	Amount	Amount Released in	UC pending since	Delay as of August 2014 (months)
1.	Development of a high yielding Recombinant Human Insulin strain & Process lead to commercialisation	Bigtec Pvt. Ltd., Bengaluru	2	0.98	December 2006 August 2008	January 2008 August 2009	80 months 61 months
2.	Development of a tetravalent dengue vaccine by using a combination of 30 deletion mutant and chemeric constructs of DEN-1, DEN-2, DEN-3 and DEN- viruses against dengue infections 4	Biological E. Ltd., Hyderabad	2	4.75	April 2005 April 2006	April 2006 April 2007	111 months 89 months
3.	Discovery and Development of novel inhibitors of Undercaprenyl Pyrophosphate Synthase (UPPs)	Chembiotek Research International Private Limited	1	3.38	March 2010	March 2011	42 months
4.	Development of a cost effective viral load assay and its commercial application in monitoring drug efficacy in HIV/AIDS	Microtest Innovations Pvt. Ltd., Bengaluru	1	0.28	April 2008	April 2009	65 months

Sl. No	Name of the project	Name of the industry partner	No. of UCs out-standing	Amount	Amount Released in	UC pending since	Delay as of August 2014 (months)
5.	Formulation, development, stability studies, pre-clinical and clinical studies of anti-glaucoma herbal eye drops	Promed Exports Pvt. Ltd., New Delhi	2	1.31	April 2007 November 2009	April 2008 November 2010	77 months 45 months
6.	Production of para-hydroxyphenyl glycine (PHPG) using Hydantoinase and carbamoylase enzymes cloned E.coli	Sudershan Biotech Ltd., Hyderabad	1	0.39	December 2008	December 2009	57 months
TOTAL			09	11.09			

Appendix XIV (Refer to Paragraph 3.1.2.5)

Details of meetings of Project Monitoring Committee for projects implemented under Drugs and Pharmaceutical Research Programme

Name of the industry partner	Name of the project	Project duration (extended)	Frequency of MC meeting fixed, as per agreement	Number of PMC meetings to be held	Number of PMC meetings held	Period during which no monitoring by PMC was done due to non-conduct of meeting
1. ABL Biotechnologies Limited, Chennai	C-Phycocyanin in COX-2 inhibition and diagnostic.	48 months February 2006 to February 2009 (February 2010)	Annual	4	2	12 months March 2009 to February 2010
2. Bharat Serums and Vaccines Limited, Mumbai	Development of a commercially viable manufacturing process of monoclonal tetanus immunoglobulin (mTIG) expressed in recombinant Chinese Hamster Ovary (CHO) cell line	60 months, March 2006 to March 2009 (March 2011)	Annual	5	1	61 months July 2007 to March 2011
3. Bigtech Pvt. Ltd. Bengaluru	Development of a high yielding Recombinant Human Insulin strain & Process lead to commercialization	36 months December 2006 to December 2008 (December 2009)	Annual	3	1	45 months June 2008 to December 2009
4. Biological E. Ltd. Hyderabad	Development of a tetravalent dengue vaccine by using a combination of 30 deletion mutant and chimeric constructs of DEN-1, DEN-2, DEN-3 and DEN-4 viruses against dengue infections	36 months March 2005 to March 2007 (March 2008)	Bi-annual	6	2*	9 months July 2007 to March 2008
5. Cadila Pharmaceuticals Ltd., Ahmedabad	Development of Therapeutic Vaccine for Pancreatic Cancer	24 months October 2007 to October 2009	Annual	2	1	12 months November 2008 to October 2009
6. Cadila Pharmaceuticals Ltd., Ahmedabad	Development of new generation therapeutic and prophylactic Hepatitis B vaccines	12 months March 2006 to March 2007	Bi-annual	2	1	5 months November 2006 to March 2007
7. Cellmax Pharma Limited	Development of commercially viable recombinant product and diagnostics kits	36 months January 2008 to January 2011	Bi-annual	6	1	25 months December 2008 to January 2011

Name of the industry partner	Name of the project	Project duration (extended)	Frequency of MC meeting fixed, as per agreement	Number of PMC meetings to be held	Number of PMC meetings held	Period during which no monitoring by PMC was done due to non-conduct of meeting
8. Chembiotek Research International Private Limited	Discovery and Development of novel inhibitors of Undercaprenyl Pyrophosphate Synthase (UPPs)	47 months May 2007 to May 2010 (March 2011)	Annual	4	2*	14 months February 2010 to March 2011
9. Indigene Pharmaceuticals Pvt. Ltd, Hyderabad	Clinical development of prioritized drug candidates through Phase-C. To develop and deliver innovative, safe and effective plant derived Natural Molecular Combinations (NMC) based drugs to address the unmet medical and market needs	12 months October 2007 to October 2008	Bi-annual	2	1	5 months June 2008 to October 2008
10. Institute of Molecular Medicine, Kolkata	RNAi approach for the Gene silencing of HIV-1" (The SyneRgy Project)	36 months March 2006 to March 2009	Annual	3	2	6 months October 2008 to March 2009
11. Mediclone Biotech Private limited, Chennai	Development and manufacturing of Anti-Rabies Monoclonal Antibody (MAb) cocktail and Immunodiagnostic MAb for Rabies Virus Detection	36 months March 2008 to March 2011	Annual	3	1	17 months November 2009 to March 2011
12. Microtest Innovations Pvt. Ltd., Bengaluru	Development of a cost effective viral load assay and its commercial application in monitoring drug efficacy in HIV/AIDS	36 months December 2005 to December 2007 (December 2008)	Bi-annual	6	1	11 months February 2008 to December 2008
13. Promed Exports Pvt. Ltd, New Delhi	Formulation development, stability studies, pre-clinical and clinical studies of anti-cataract eye drops for applying the technology and innovation in effective prevention and treatment of cataract by bringing the drug to commercialization stage	36 months March 2005 to March 2008	Bi-annual	6	2*	8 months August 2007 to March 2008
14. Promed Exports Pvt. Ltd. New Delhi	Formulation, development, stability studies, pre-clinical and clinical studies of anti-glaucoma herbal eye drops	36 months March 2007 to March 2010	Annual	3	1	6 months October 2009 to March 2010
15. Strides Arco lab Limited, Bengaluru(Medegne)	Development of Novel Recombinant Staphylokinase for the treatment of cardiovascular disease	36 months December 2006 to December 2009	Annual	3	1	18 months July 2008 to December 2009

Name of the industry partner	Name of the project	Project duration (extended)	Frequency of MC meeting fixed, as per agreement	Number of PMC meetings to be held	Number of PMC meetings held	Period during which no monitoring by PMC was done due to non-conduct of meeting
16. Sudershan Biotech Ltd., Hyderabad	Production of para-hydroxyphenyl glycine (PHPG) using Hydantoinase and carbamoylase enzymes cloned E.coli	36 months March 2006 to March 2009	Annual	6	2	5 months November 2008 to March 2009
17. Thirteen Herbs and Cure, New Delhi	To develop an indigenous immuno-restorative herbal formulation P–JyotiAmritam for HIV/AIDS.	24 months March 2008 to March 2010	Annual	2	0	24 months March 2008 to March 2010
18. Ranbaxy Laboratories Ltd., Gurgaon	A novel muscarinic receptor antagonist for chronic obstructive pulmonary disease	36 months August 2006 to August 2009	Annual	3	2	7 months February 2009 to August 2009
19. Ranbaxy Laboratories Ltd., Gurgaon	A novel phosphodiesterase-4B inhibitor for Chronic Obstructive Pulmonary disease	36 months July 2007 to July 2010	Annual	3	1	17 months March 2009 to July 2010

* Composition of PMC was changed in the second meeting.

Appendix XV (Refer to Paragraph 4.1.2)

Details of year-wise releases under New Millennium Indian Technology Leadership Initiative Scheme

(₹ in crore)

Year	Funds released	No. of new projects sanctioned
2000-01	32.45	9
2001-02	28.91	8
2002-03	13.55	8
2003-04	48.22	7
2004-05	56.36	5
2005-06	38.74	5
2006-07	80.13	8
2007-08	56.94	7
2008-09	52.24	Nil
2009-10	54.19	3
2010-11	53.95	5
2011-12	46.01	7
2012-13	38.37	Nil
2013-14	30.44	1
Total	630.50	73

Appendix XVI (Refer to Paragraph 4.1.3.5 (i))**Shortfall in frequency of meetings of Monitoring/Steering Committees under New Millennium Indian Technology Leadership Initiative**

Sl. No.	Project Title	No. of Monitoring Committee (MC) Meetings		Percentage of shortfall	No. of Steering Committee (SC) Meetings		Percentage of shortfall
		Scheduled	Actual		Scheduled	Actual	
1.	Development of Next Generation Plasma Display Technology and a 50 inch High Definition (HD) TV prototype	5	4	20	9	7	22
2.	Design & Development of cushion bonded organic ceramic clutch discs	7	6	14	14	11	21
3.	Versatile, portable PC based software for bioinformatics	6	6	Nil	12	7	42
	And Development of Linux cluster version of Bio-suite	2	2	Nil			
4.	Biotechnology for replacing chemical process in leather sector (Phase-II)	12	6	50	24	10	58
5.	Development of Globally competitive 'Triple-Play' Broadband Technology	5	6	Nil	6	6	Nil
6.	Value added polymeric materials from renewable resources: Lactic acid and lactic acid based polymers (Phase-II)	13	13	Nil	25	16	36
7.	A cost effective Simple Office Computing (Sofcomp) platform to replace PC	4	4	Nil	SC not constituted	SC not constituted	100
8.	Market seeding of SofComp and Mobilis to develop wide-ranging applications as well as increase awareness	3	3	Nil	SC not constituted	SC not constituted	100

Sl. No.	Project Title	No. of Monitoring Committee (MC) Meetings		Percentage of shortfall	No. of Steering Committee (SC) Meetings		Percentage of shortfall
		Scheduled	Actual		Scheduled	Actual	
9.	Nano-material coatings and advanced composites for tribological applications in automotive industry	8	6	25	16	9	44
10.	Functionalization of alkanes	6	6	Nil	12	8	33
11.	Development of selected Medical Implants	14	10	29	28	13	54
12.	5 & 25 KW decentralized power packs	6	6	Nil	13	10	23
13.	Development of Novel Fungicides	7	5	29	14	8	43
14.	Nano-material catalysts and associated process technology for alkylation/ acylation/ nitration of well identified industrial chemicals, pre-reforming of hydro-carbons and sulphur removal (<50 ppm) from petroleum fuels	8	6	25	16	9	44
15.	Development of a 500 kW low cost horizontal-axis Wind Turbine	13	9	31	27	12	56
16.	Biotechnological Approaches for Improvement of Plant Species with Special Reference to Pulpand Paper	7	4	43	15	10	33
17.	Enhanced productivity in cement manufacture through Improved granular processing and resource conservation	8	7	13	16	11	31
18.	A prospective study to correlate gene signatures with clinical outcome of astrocytomas and identification of potential therapeutic target(s)	10	8	20	20	14	30

Sl. No.	Project Title	No. of Monitoring Committee (MC) Meetings		Percentage of shortfall	No. of Steering Committee (SC) Meetings		Percentage of shortfall
		Scheduled	Actual		Scheduled	Actual	
19.	Wireless Sensor Network Chipset based on Ultra-Wideband Technology	6	6	Nil	6	9	Nil
20.	Environmentally secure rare earth based colorants for surface coatings	3	3	Nil	6	3	50
21.	Biodegradable plastics from agricultural wastes: Cellulose esters based on bagasse	6	6	Nil	11	9	18
22.	Novel molecular diagnostics foreye diseases and low vision enhancement devices	6	6	Nil	13	9	31
23.	Recombinant approach to produce α -linolenic acid and docosahexanoic acid (DHA) in sunflower and yeast	8	7	13	16	12	25
24.	Oral Delivery of Insulin	16	9	44	28	10	64
25.	Defunctionalization of carbohydratesas a feedstock to manufacture well identified industrial chemicals	6	5	17	12	7	42
26.	Novel expression system	7	6	14	14	4	71
27.	A PC based high-end 3D visualization platform for computational biology – ‘Darshee’	4	3	25	SC not constituted	SC not constituted	100
28.	Two orders of magnitude improved liquid crystals for flat panel display devices	8	5	38	16	9	44
29.	Microbiological conversion of Erythromycin to Clarithromycin and other novel biologically active molecules	3	3	Nil	6	5	17
30.	Process for Tamiflu – a Blockbuster drug to combat the menace of avian flu		MC not constituted due to short time	100		SC not constituted due to short time	100

Appendix XVII (Refer to Paragraph 4.1.3.5 (ii))**Details of time overrun in projects under New Millennium Indian Technology Leadership Initiative**

Sl. No.	Name of Project	Date of start of project	Scheduled date of completion	Actual date of completion	Time Overrun (In Months)
1.	Development of Next Generation Plasma Display Technology and a 50 inch High Definition (HD) TV prototype	March 2007	September 2009	March 2010	6
2.	Design and development of cushion bonded organic ceramic clutch discs	March 2008	March 2011	September 2011	6
3.	Versatile, portable PC based software for bioinformatics and Development of Linux cluster version of Bio-suite	March 2002	March 2004	March 2005	12
4.	Biotechnology for replacing chemical process in leather sector	January 2006	January 2009	January 2012	36
5.	Development of Globally competitive 'Triple-Play' Broadband Technology	March 2005	September 2006	September 2007	12
6.	Value added polymeric materials from renewable resources: Lactic acid and lactic acid based polymer (Phase-II)	March 2007	March 2010	August 2012	29
7.	A cost effective Simple Office Computing (Sofcomp) platform to replace PC	April 2003	March 2004	May 2005	14
8.	Market seeding of SofComp and Mobilis to develop wide-ranging applications as well as increase awareness	December 2005	September 2006	December 2007	15
9.	Nano-Material Coatings And Advanced Composites for Tribological Applications In Automotive Industry	April 2003	March 2006	March 2007	12
10.	Functionalization of alkanes	April 2003	March 2005	November 2006	20
11.	Development of selected Medical Implants	June 2005	May 2008	May 2012	48
12.	5 & 25 KW decentralized power packs	March 2001	March 2003	June 2004	15
13.	Development of Novel Fungicides	October 2004	September 2007	March 2008	6
14.	Nano-material catalysts and associated process technology for alkylation/acylation/nitration of well identified industrial chemicals, pre-reforming of hydro-carbons and sulphur removal (<50 ppm) from petroleum fuels	March 2001	March 2003	June 2006	39
15.	Development of a 500 kW low cost horizontal-axis Wind Turbine	March 2004	March 2006	December 2010	57
16.	Biotechnological Approaches for Improvement of Plant Species with Special Reference to Pulp and Paper	October 2004	September 2006	March 2008	18
17.	Improved granular processing: towards energy efficiency and resource conservation in cement manufacture	March 2002	March 2005	March 2006	12

Sl. No.	Name of Project	Date of start of project	Scheduled date of completion	Actual date of completion	Time Overrun (In Months)
18.	A prospective study to correlate gene signatures with clinical outcome of astrocytomas and identification of potential therapeutic target(s)	January 2006	December 2009	March 2011	15
19.	Wireless Sensor Network Chipset based on Ultra –Wideband Technology	March 2007	March 2010	June 2013	39
20.	Environmentally secure rare earth based colorants for surface coatings (Phase-II)	March 2005	March 2008	December 2008	9
21.	Biodegradable plastics from agricultural wastes: Cellulose esters based on bagasse (Both phases)	March 2002 March 2005	March 2004 March 2007	December 2004 March 2008	9 + 12 = 21
22.	Novel Molecular Diagnostics for Eye Diseases and Low Vision Enhancement Devices Development of DNA Macroarray for the detection of eye infections and the genetic predisposition to glaucoma	April 2003	March 2005	April 2007	24
23.	Recombinant approach to produce α -linolenic acid and docosahexanoic acid (DHA) in sunflower and yeast	April 2003	March 2006	July 2007	16
24.	Oral Delivery of Insulin	July 2004	July 2007	April 2012	57
25.	Defunctionalization of carbohydrates as a feed stock to manufacture well identified industrial chemicals	March 2001	March 2003	April 2004	13
26.	Novel expression system	March 2005	March 2008	September 2008	6
27.	A PC based high-end 3D visualization platform for computational biology – ‘Darshee’	April 2003	May 2004	May 2004	Nil
28.	Two orders of magnitude improved liquid crystals for flat panel display devices	May 2001	June 2003	June 2005	24
29.	Microbiological conversion of Erythromycin to Clarithromycin and other novel biologically active molecules	September 2002	April 2004	April 2004	Nil
30.	Process for Tamiflu – a Blockbuster drug to combat the menace of avian flu	October 2005	July 2006	October 2007	15

Appendix XVIII (Refer to Paragraph 5.2)
Details of Service Tax payment by Master Control Facility, Hassan

Payment of service tax for the month	Voucher No. and date of payment	Pay and allowances	Leave salary contribution	Pension contribution	NPS	Other amount paid if any	Total cost of CISF service	Service tax (@12.36%) paid on total cost
July 2012	V0 714/14.08.12	37,94,968	2,28,135	1,29,827	56,398		42,09,328	5,20,273
August 2012	V0120883/13.09.12	38,09,106	2,45,155	1,29,272	51,287		42,34,820	5,23,424
September 2012	V0121059/16.10.12	34,32,838	2,52,936	1,35,697	57,164		38,78,635	4,79,399
October 2012	V0121261/20.11.12	44,37,558	3,06,124	1,32,322	56,313		49,32,317	6,09,634
November 2012	V0 1417/17.12.12	39,58,757	2,49,299	1,30,223	57,087		43,95,366	5,43,267
December 2012	V0 1596/15.01.13	33,48,727	2,46,541	1,25,219	59,002		37,79,489	4,67,145
January 2013	V0 1764/14.02.13	32,94,677	2,63,095	1,26,966	57,152		37,41,890	4,62,498
February 2013	V0 1944/12.03.13	40,35,232	2,23,259	1,21,853	59,383		44,39,727	5,48,750
March 2013	V0 0090/16.04.13	40,13,748	2,45,786	1,26,301	58,565		44,44,400	5,49,328
April 2013	V0 0260/15.05.13	35,83,534	2,67,938	1,23,751	57,948		40,33,171	4,98,500
May 2013	V0130465/13.06.13	38,73,994	2,52,444	1,15,236	57,996		42,99,670	5,31,439
June 2013	V0648/15.07.13	34,84,684	2,38,983	1,20,985	62,519		39,07,171	4,82,926
July 2013	V0130852/13.08.13	44,62,437	2,95,238	1,35,951	64,479		49,58,105	6,12,822
July 2013	V0 793/02.08.13	-	-	-	-	1,26,681*	1,26,681	15,658
July 2013	V0 798/02.08.13	-	-	-	-	7,56,230 [#]	7,56,230	93,470
August 2013	V0131114/17.09.13	38,60,961	2,62,374	1,37,026	65,303		43,25,664	5,34,652
September 2013	V01320/17.10.13	36,61,959	3,01,378	1,40,496	66,429		41,70,262	5,15,444
October 2013	V01486/14.11.13	60,81,121	3,05,851	1,43,334	71,557		66,01,863	8,15,990
November 2013	V0131671/11.12.13	38,23,472	3,02,778	1,38,617	69,593		43,34,460	5,35,739
December 2013	V01906/20.01.14	37,27,040	3,14,746	1,37,180	68,919		42,47,885	5,25,039
January 2014	V02076/12.02.14	49,07,063	2,83,206	1,36,851	66,842		53,93,962	6,66,694
February 2014	V02267/14.03.14	32,42,503	2,89,554	1,36,990	67,976		37,37,023	4,61,896
March 2014	V0094/10.04.14	35,64,398	2,63,960	1,35,553	65,008		40,28,919	4,97,974
April 2014	V0140317/12.05.14	56,90,800	3,09,669	1,34,539	69,907		62,04,915	7,66,928
May 2014	V0487/10.06.14	36,05,135	2,36,330	78,908	68,192		39,88,565	4,92,987
June 2014	V0140701/11.07.14	36,96,142	3,18,458	1,28,526	67,418		42,10,544	5,20,423
Total		4,58,60,594	31,88,304	14,48,020	7,47,144		10,73,81,062	1,32,72,299

* Payment for the cost of ammunition for the year 2012-13; # Payment for the cost of clothing and equipment for the year 2012-13

Appendix XIX (Refer to Paragraph 6.2.2.2 (i))

Status of 'departmental' and 'part time' observatories as of May 2015 in Regional Meteorological Centre, Kolkata

Sl. No	Name of the State/Union Territory	No. of districts in State/UT	Area (sq.km)	No. of 'Departmental' observatories	No. of 'Part time' observatories	Total number of observatories	Total area covered (sq.km)	Percentage of coverage	No. of defunct observatories
1	Bihar	38	94,793	4	10	14	40,699	43	3
2	Jharkhand	24	95,617	3	5	8	44,254	46	3
3	Odisha	30	1.56 lakh	10	12	22	1.09 lakh	70	0
4	Sikkim	4	7,096	2	3	5	5,930	84	0
5	West Bengal	20	88,752	12	14	26	82,229	93	3
6	Andaman and Nicobar Islands	3	8,249	1	5	6	8,249	100	0
	Total	119	4.51 lakh	32	49	81	2.90 lakh	64.30	9



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