Report of the Comptroller and Auditor General of India

for the year ended March 2008

Union Government
Scientific Departments
No. CA 16 of 2008-09

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PREFACE

This Report for the year ended 31 March 2008 has been prepared for submission to the President under Article 151(1) of the Constitution. It covers matters arising from test audit of transactions of Scientific Departments of the Union Government, autonomous bodies funded by these Departments and other scientific institutions engaged in research and development and scientific pursuit.

This Report contains 28 audit paragraphs, which include eight long paragraphs on:

- Non-establishment of world class gamma-ray observatory by Department of Atomic Energy,
- Non-achievement of objectives by Board of Radiation and Isotope Technology under Department of Atomic Energy,
- Activities of Institute of Minerals and Materials Technology, Bhubaneswar under Department of Scientific and Industrial Research,
- Development of technologies on batteries/cells and their commercialisation by Central Electro Chemical Research Institute, Karaikudi under Department of Scientific and Industrial Research,
- Activities of Central Glass and Ceramic Research Institute, Kolkata under Department of Scientific and Industrial Research,
- Activities of Birbal Sahni Institute of Palaeobotany, Lucknow under Department of Science and Technology,
- Functioning of Central Zoo Authority, New Delhi in Ministry of Environment and Forests, and
- Works management in Indian Council of Medical Research.

The observations in this Report are those which were noticed by Audit during 2007-08. For completeness, the observations relating to earlier years, not covered in the previous Reports, have also been included, wherever pertinent. Similarly, results of audit of transactions subsequent to March 2008 have also been mentioned, wherever relevant.

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 the Scientific Ministries/Departments of the Government of India. The report contains 10 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 on thematic basis. Chapters II to X present detailed findings/observations arising out of the compliance audit of Scientific Ministries/Departments/Organisations. An important feature of this report is that activities of eight scientific institutions/schemes have been reviewed for ascertaining their efficiency in project management and extent of success achieved in development and commercialisation of technologies.

This report contains 51 specific recommendations, compliance to which would help in better oversight of research and development activities in the country and promoting good governance.

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

- Inefficient project management, failure to achieve objectives and low success rate in comercialisation of technologies developed;
- Deficiencies in execution of works and asset management;
- Autonomous institutions authorising higher benefits to their employees without requisite approvals; and
- Weaknesses in the procurement system.

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

Inefficient project management, failure to achieve objectives and low success rate in comercialisation of technologies developed

Functioning of Central Zoo Authority, New Delhi

Central Zoo Authority (CZA), under Ministry of Environment and Forests, functioned only as a grant releasing agency instead of an agency to ensure conservation of endangered species of animals in zoos. CZA failed to ensure effective protection of animals/breeding programmes in the zoos. It had not fully identified the list of endangered species and undertook conservation breeding programmes for only three of the identified 63 endangered species. There was decrease in the number of endangered animals in the zoos all over the country due to high mortality. There was over-crowding of animals such as tigers, sambar/ spotted deer, leopards etc., in a large number of zoos, much beyond the optimal number of animals prescribed under CZA guidelines. CZA was unaware as to whether the zoos were following the norms and regulations introduced by it for upkeep etc., to ensure the proper health of animals in zoos as it did not conduct any regular monitoring of

the functioning of zoos. The system of financial management in CZA was also weak with CZA unable to monitor whether the funds released by it were actually being spent by state zoos for the sanctioned purpose.

(***Paragraph 6.3***)

Non-achievement of objectives by Board of Radiation and Isotope Technology

Failure of Board of Radiation and Isotope Technology (BRIT), under Department of Atomic Energy, to ensure timely execution of projects, both in the Ninth and Tenth Plan resulted not only in time and cost overruns but also in delayed/non-achievement of socio-economic objectives relating to application of radioisotopes and radiation in areas of health care, industry, agriculture, research etc. Monitoring of projects was lax which also contributed to slippages in milestones set out for projects. BRIT had still not taken steps to attain commercial viability which was one of the objectives of BRIT when it was set up in 1988.

(***Paragraph 2.6***)

Activities of Central Glass and Ceramic Research Institute, Kolkata

Central Glass and Ceramic Research Institute (CGCRI), under the Department of Scientific and Industrial Research, could not reduce its dependence on government grants which continued to remain at 74 *per cent*. During the period 2003-08, CGCRI transferred six technologies. However, premium and royalty earned by transferring the technologies was not commensurate with the cost of development of these technologies. CGCRI could not achieve the target fixed for publishing research papers. Project management in CGCRI was deficient as a result of which projects objectives remained unachieved in many important projects.

(***Paragraph 4.6***)

Activities of Institute of Minerals and Materials Technology, Bhubaneswar

Although Institute of Minerals and Materials Technology, under Department of Scientific and Industrial Research, developed 35 technologies from 27 projects, it failed to transfer and commercialise a single technology. There were shortfalls in achievement of targets for generation of revenue and filing of patents. Project documentation was weak in respect of in-house projects. Intellectual fees and service tax amounting to Rs.29.20 lakh was under-charged in a number of consultancy projects which indicated lack of internal controls. Delays in the range of 6 to 63 months were noticed in installation and commissioning of 26 imported equipment. Management Council did not meet for the mandated number of times and monitoring at higher levels was inadequate.

(***Paragraph 4.4***)

Non-establishment of world class gamma-ray observatory

Despite an expenditure of Rs.16.18 crore on setting up of TACTIC and MYSTIQUE telescopes by Department of Atomic Energy, the objective of establishing world class gamma-ray observatory with state-of-the-art technology for gamma-ray astrophysics experiments could not be achieved. While TACTIC and MYSTIQUE telescopes were established at Mount Abu, Rajasthan with significant cost and time overruns, BEST telescope was not sanctioned and the MACE telescope was shifted

to Hanle, Ladakh. Thus, the objective of establishing the four telescopes at a single location could not be fully achieved. In addition, the TACTIC and MYSTIQUE telescopes were under-utilised and commercial spin-offs expected from the project also did not accrue.

(***Paragraph 2.5***)

Activities of Birbal Sahni Institute of Palaeobotany, Lucknow

Birbal Sahni Institute of Palaeobotany (BSIP), under Department of Science and Technology, dedicated to promote research on basic as well as applied aspects of palaeobotany, failed to achieve fully the envisaged objectives of test-checked in-house and sponsored projects. Equipment planned for purchase in the Tenth Five Year Plan were not procured despite provision of funds, thus affecting their successful implementation. Projects were terminated mid-way resulting in unfruitful expenditure. The contribution of scientific publications in the Scientific Citation Index journals by its scientists was very low. In addition, the collaboration of BSIP with foreign agencies was not approved by Department of Science and Technology.

(***Paragraph 5.3***)

Failure of village tree plantation project

Due to improper planning and lack of monitoring on part of National Afforestation and Eco-development Board, under Ministry of Environment and Forests, the objective of undertaking plantation of trees all over the country at a cost of Rs.5.87 crore was not achieved, defeating the purpose for which the project was sanctioned. Only an amount of Rs.2.34 crore could be spent on the scheme as of January 2009 by the states/UTs as per the utilisation certificates received in the Ministry.

(***Paragraph 6.1***)

Development of technologies on batteries/cells and their commercialisation by Central Electro Chemical Research Institute, Karaikudi

Technologies/processes developed by Central Electro Chemical Research Institute, under the Department of Scientific and Industrial Research, in nine disciplines of major R&D programmes could not be transferred to industries due to non-existence of demand from industries and deficiencies in technology developed thus rendering expenditure of Rs.3.72 crore unfruitful.

(***Paragraph 4.5***)

Non-commercialisation of broadband access system for rural communication

Execution of a project by Centre for Development of Advanced Computing, under Department of Information Technology, without studying the cost effectiveness of equipment to be developed resulted in non-fulfillment of the objective of providing low cost broadband access system for rural communication, thereby rendering the expenditure of Rs.1.31 crore wasteful.

(***Paragraph 3.2***)

Deficiencies in execution of works and asset management

Works management in Indian Council of Medical Research

Audit test checked 20 capital works costing Rs.160.48 crore executed in Indian Council of Medical Research (ICMR) during the period 2002-08. Audit observed that ICMR irregularly transferred 9714 sq.m. land to a private Housing Society at a significantly lower rate, leading to conflict of interest besides grant of undue benefit of Rs.22.82 crore to the members of the Housing Society. Delay in approval and release of funds by ICMR resulted in non-commencement of works for upto 13 years and cost overrun of Rs.30.94 crore, besides non-achievement of objectives. Blockade and wasteful expenditure of Rs.21.82 crore was observed in nine works as a result of delayed decisions in commencement of works and payment of penalty. ICMR did not have adequate budgetary and financial control mechanisms in place for exercising periodical review of expenditure by its Institutes. ICMR also did not have a mechanism to watch progress of works and adjustment of advances to its Institutes and ensure, thereby, timely completion of works within the scheduled cost.

(Paragraph 10.1)

Loss of Rs.1.84 crore due to non-termination/renegotiation of an agreement

Failure of Department of Atomic Energy to negotiate/terminate the lease agreement with Indian Oil Corporation Ltd. under the relevant clause, caused revenue loss of Rs.1.84 crore.

(Paragraph 2.2)

Unfruitful expenditure due to non-finalisation of lease deed on acquisition of land

Failure of Centre for Development of Advanced Computing (C-DAC), under the Department of Information Technology, to ensure finalisation of the lease deed within the validity period and to make payment to Pune Municipal Corporation (PMC) without signing lease deed resulted in unfruitful expenditure of Rs.72.06 lakh paid as premium and Rs.16.18 lakh incurred on security for the land. Further, C-DAC also incurred loss of interest amounting to Rs.45.64 lakh as premium paid to PMC remained idle due to non-commencement of construction activities.

(Paragraph 3.3)

Recovery of dues at the instance of Audit

Inaction on part of National Institute of Oceanography, Goa, under the Department of Scientific and Industrial Research, in recovering rent and electricity charges etc., resulted in accumulation of dues amounting to Rs.47.71 lakh for over 17 years of which Rs.31.53 lakh were recovered at the instance of Audit.

(Paragraph 4.2)

Construction of residential quarters and hostel units without demand

Despite incurring Rs.9.32 crore on construction of residential quarters and hostels, the National Centre for Medium Range Weather Forecasting could not allot these quarters as there was no demand for them.

(***Paragraph 7.1***)

Autonomous institutions authorising higher benefits to their employees without requisite approvals

Implementation of a liberalised scheme for doctors in Tata Memorial Centre without approval of Ministry of Finance

Tata Memorial Centre (TMC), an autonomous body under Department of Atomic Energy, was receiving grants-in-aid constituting more than 50 *per cent* of its expenditure from the Government. It implemented a Private Practice Scheme under which doctors were allowed to receive a share of 40 to 45 *per cent* of hospital income in lieu of non-practicing allowance. This scheme was implemented without the approval of Cabinet/Ministry of Finance or concurrence of other departments. This resulted in payment of Rs.27.22 crore to the doctors at TMC without requisite approvals. No such lucrative scheme is being implemented in other autonomous bodies/centers of excellence such as All India Institute of Medical Sciences under control of Ministry of Health and Family Welfare.

(***Paragraph 2.1***)

Excess expenditure due to selective adoption of pay structure

Selective adoption of pay and allowances structure for academic staff in Bose Institute, under Department of Science and Technology, without consultation of Ministry of Finance resulted in excess expenditure of Rs.51.01 lakh to 30 academic staff.

(***Paragraph 5.2***)

Inadmissible payment of Transport Allowance

Grant of Transport Allowance by Indian Council of Forestry Research and Education, under Ministry of Environment and Forests, in violation of orders of Ministry of Finance led to inadmissible payment of Rs.67.66 lakh as transport allowance.

(***Paragraph 6.2***)

Weaknesses in the procurement system

Non-commissioning of equipment

Failure of Geological Survey of India and Central Chemical Laboratory to seek replacement of the equipment even after repeated failed attempts of the service engineer to commission the same resulted in non-utilisation of the equipment for more than three years despite payment of Rs.41.12 lakh.

(***Paragraph 8.1***)

Avoidable expenditure due to excess procurement

Indian Agricultural Research Institute, under Indian Council of Agricultural Research, purchased three Gas Liquid Chromatographs (GCs) against the requirement of only one. As such, the expenditure of Rs.25.92 lakh on procurement of two additional GCs was avoidable.

(***Paragraph 9.1***)

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 the transactions of the Scientific Ministries/Departments of the Government of India like Department of Atomic Energy, Department of Space, Ministry of Science and Technology, Ministry of Environment and Forests, Department of Information Technology, Ministry of Earth Sciences etc.

Compliance audit refers to examination of the transactions relating to expenditure, receipts, assets and liabilities of the audited entities to ascertain whether the provisions of Constitution of India, applicable laws, rules, regulations and various orders and instructions issued by the competent authorities are being complied with.

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 should 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 the significant audit observations followed by a brief analysis of the expenditure of Scientific Ministries/Departments, significant deficiencies in accounts of autonomous bodies, position of outstanding utlisation 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 X present findings/observations arising out of the compliance audit of Scientific Ministries/Departments/Organisations. Weaknesses that exist in the system of project management, financial management, internal controls etc., in various scientific institutions are highlighted in the report through long paragraphs.

1.2 Auditee profile

A brief profile of the Scientific Ministries/Departments of the Government of India and some of the major units/autonomous bodies under their control which are audited by the office of the Principal Director of Audit, Scientific Departments are discussed in ***Appendix I***.

The comparative position of expenditure of major Scientific Ministries/Departments, during 2007-08 and in the preceding two years is given below:

(Rupees in crore)

Table I

Sl. No.	Ministry/Department/Organisation	2005-06	2006-07	2007-08
1.	Department of Atomic Energy	5544.93	8057.96	6010.98
2.	Department of Space	2667.60	2988.67	3278.00
3.	Indian Council of Agricultural Research (under Department of Agricultural Research and Education)	1446.74	1924.25	2209.88
4.	Ministry of Environment and Forests	1254.52	1371.31	1583.24
5.	Department of Science and Technology	1414.91	1158.22	1514.93
6.	Department of Scientific and Industrial Research	1470.10	1486.43	1892.55
7.	Ministry of New and Renewable Energy	303.89	385.59	485.15
8.	Geological Survey of India (under Ministry of Mines)	311.26	268.71	308.91
9.	Department of Information Technology	916.13	1091.70	1295.26
10.	Department of Biotechnology	400.91	507.10	636.62
11.	Indian Council of Medical Research (under Ministry of Health and Family Welfare)	365.00	445.44	311.65
12.	Ministry of Earth Sciences	270.77	510.85	562.84
13.	Centre for Development of Telematics (under Department of Telecommunications)	75.12	82.00	131.89
Total		**16441.88**	**20278.23**	**20221.90**
Percentage increase/decrease		**3.66**[1]	**23.33**	**0.28**

The total expenditure on above listed Scientific Ministries/Departments of the Government of India during 2007-08 was Rs.20,221.90 crore. Of the total expenditure, Rs.6010.98 crore representing 29.73 *per cent* pertained to Department of Atomic Energy and Rs.3278 crore representing 16.21 *per cent* pertained to the Department of Space.

While there was a significant increase of 23.33 *per cent* in expenditure of the Scientific Ministries/Departments during 2006-07 over 2005-06, a moderate decline of 0.28 *per cent* in expenditure has been observed during 2007-08 over 2006-07. This was mainly due to a steep decline in expenditure of 25.40 *per cent* in the Department of Atomic Energy and 30.04 *per cent* in Indian Council of Medical Research.

1.3 Authority for Audit

The authority for audit by the C&AG is derived from Articles 149 and 151 of the Constitution of India and the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. C&AG conducts audit of expenditure of Ministries/Departments of the Government of India under

[1] The percentage increase has been calculated on the basis of expenditure of Rs.15860.84 crore in 2004-05.

Section 13[2] of the C&AG's (DPC) Act[3]. C&AG is the sole auditor in respect of nine autonomous bodies under the Scientific Ministries/Departments which are audited under sections 19(2)[4] and 20(1)[5] of the C&AG's (DPC) Act. In addition, C&AG also conducts supplementary/superimposed audit of 62 other autonomous bodies under sections 14[6] and 15[7] of C&AG's (DPC) Act, which are substantially funded by the Government of India and whose primary audit is conducted by Chartered Accountants. Principles and methodologies for compliance audit are prescribed in the Regulations on Audit and Accounts, 2007 issued by the C&AG.

1.4 Planning and conduct of Audit

Audit process starts with the assessment of risk of the Ministry/Department/ Organisation as a whole and each unit based on expenditure incurred, criticality/complexity of activities, level of delegated financial powers, assessment of overall internal controls and concerns of stakeholders. Previous audit findings 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 2007-08, 3672 audit party-days were used to carry out compliance audit of 265 out of 536 units of Scientific Ministries/Departments/ Organisations. Our audit plan covered those units/entities which were vulnerable to significant risk, as per our assessment.

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

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

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

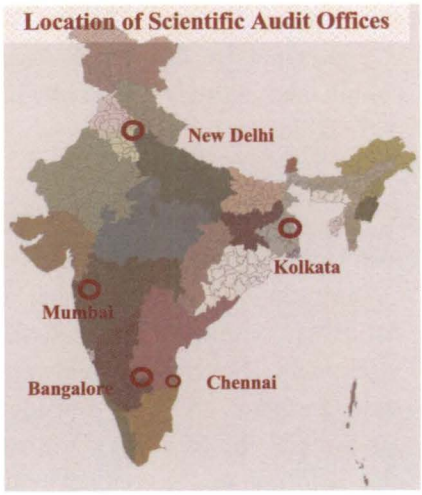
[5] Audit of accounts of any body or authority on the request of the President, on such terms & conditions as may be agreed upon between the C&AG and the Government.

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

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

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

Under the directions of the C&AG, the Office of the Principal Director of Audit, Scientific Departments, New Delhi conducts audit of Scientific Ministries/ Departments and autonomous institutions under them. There are 536 units under Scientific Ministries/ Departments/Organisations which are spread all over India. Three branch offices located at Mumbai, Kolkata and Bangalore and one sub-office at Chennai assist the Principal Director of Audit, Scientific Departments, New Delhi in conducting audit at field level.



1.6 Significant audit observations

In the last few years, Audit has reported on several significant deficiencies in critical areas which impact the effectiveness of functioning of Scientific Ministries/Departments/Organisations.

The significant areas of concern requiring corrective action include:

- Inefficient project management, failure to achieve objectives and low success rate in comercialisation of technologies developed;
- Weaknesses in the procurement system;
- Deficiencies in execution of works and asset management; and
- Autonomous institutions authorising higher benefits to their employees without requisite approvals.

1.6.1 Inefficient project management, failure to achieve objectives and low success rate in comercialisation of technologies developed

One of the most significant deficiencies, which audit has been pointing out is the failure 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, both in the areas of pure as well as applied scientific research. While we recognise the fact that the success of scientific endeavor cannot be predicted, the deficiencies pointed out are largely a result of poor project management, which is well within the control of these institutions. Further, scientific institutions have not adequately been able to commercialise technologies identified by them for

commercialisation. This indicates that either the selection of technology for commercialisation is not based on market assessment or the technology developed is outdated. This assumes importance as greater thrust on self-sufficiency and internal generation of revenue is being placed on these institutions. Another problem observed in scientific institutions is the weak documentation of project and research activities.

The reports of the C&AG presented to the Parliament in 2007 and 2008 expressed serious concerns about inefficient project management and low success in transfer and commercialisation of technology by the Center for Development of Telematics[8] (C-DOT) and National Aerospace Laboratories[9] (NAL). In the absence of notable success of C-DOT in development, transfer and commercialisation of technologies, it was recommended that the relevance of C-DOT in today's global competitive scenario needed to be reviewed by the Department of Telecommunications. The success of NAL, the country's premier aerospace laboratory, in the development, transfer and commercialisation of technologies has also been low.

The current report also reviewed functioning of other scientific institutions and noted that many of these institutions are also faced with similar issues and problems which require immediate attention of the government. Some of these institutions having poor track record in achievement of objectives/low success in commercialisation of technology are Board of Radiation and Isotope Technology (Paragraph 2.6), Birbal Sahni Institute of Palaeobotany (Paragraph 5.3), Central Zoo Authority (Paragraph 6.3), Institute of Minerals and Materials Technology (Paragraph 4.4), Central Glass and Ceramic Research Institute (Paragraph 4.6), Central Electro Chemical Research Institute (Paragraph 4.5), Center for Development of Advanced Computing (Paragraph 3.1 & 3.2) etc.

1.6.2 Weaknesses in the procurement systems

Scientific Ministries/Departments/Organisations spend a significant part of their budget on procurement of stores and equipment 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.

A comprehensive review on procurement of stores in the Department of Space included in the C&AG's Report[10] presented to Parliament in October 2008 had highlighted serious deficiencies in procurement planning and contract management like inaccurate assessment of requirement, lack of transparency and competition, excessive lead-time in the procurement process, lack of objectivity in selection and award of contracts, delays in installation of equipment, non-replacement of rejected items etc. Similar deficiencies were

[8] Paragraph No.1 of Report No.2 of 2007-Performance Audit.
[9] Paragraph No.1 of Report No.PA 2 of 2008.
[10] Paragraph 2 of Report No.PA 2 of 2008

also observed in procurement of equipment for modernisation of laboratories of Council of Scientific and Industrial Research as reported in the C&AG's Report[11].

The current report also points out instances of weaknesses in procurement systems of various scientific institutions[12].

The respective ministries need to review and streamline the procurement procedures/practices in Scientific Ministries/Departments/Organisations to (i) ensure accurate assessment of requirement of scientific equipment and stores, (ii) achieve greater transparency and effective competition to obtain value for money in the procurements, (iii) minimise delays in tendering process and (iv) ensure efficient post-contract management for timely delivery of stores/equipment of desired quality and their prompt installation/ commissioning.

1.6.3 Deficiencies in execution of works and asset management

Many of the Scientific Ministries/Departments/Organisations such as DAE, DOS, MoEF, ICMR, CSIR etc., have their dedicated works establishment for the execution of works projects specific to their requirements. Our reports in recent years, have repeatedly pointed out cases of faulty execution of works and improper asset management, especially relating to land and building. While large number of flats constructed by Saha Institute of Nuclear Physics, Kolkata remained unoccupied[13], the Tropical Forest Research Institute, Jabalpur also constructed a scholar transit hostel without adequate demand[14]. In Solar Energy Center, Gurgaon[15], more than 20 rooms in administrative and technical block were lying vacant since 1991. These instances clearly indicated that the requirement for office space and residential accommodation was not properly assessed in various scientific institutions, despite having dedicated works establishments.

In the current report, findings on management of works in Indian Council of Medical Research[16] contained also bring out significant deficiencies in works execution including injudicious planning, delays/non-construction of buildings resulting in time and cost overruns, wasteful expenditure and transfer of government land to a private housing society at a significantly lower rate, leading to conflict of interest besides grant of undue benefit to the members of the housing society. In addition, the current report also contains[17] many instance of improper asset management by the scientific institutions.

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[11] Paragraph 3 of Report No.2 of 2007-Performance Audit.
[12] Paragraphs 4.4.25, 4.4.26, 4.6.2.7, 5.3.2.1, 8.1 and 9.1.
[13] Paragraph 2.4 of Report No.CA3 of 2008.
[14] Paragraph 6.1 of Report No.CA3 of 2008.
[15] Paragraph 8.10 of Report No.CA3 of 2008.
[16] Paragraph 10.1.
[17] Paragraph 2.2, 3.3, 4.2 and 7.1.

1.6.4 Autonomous institutions authorising higher benefits to their employees without requisite approvals

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

The report of the C&AG presented to the Parliament in 2008 had commented on grant of excess pay/allowances and retirement benefits to academic staff by Indian Association of Cultivation of Science, Jadavpur[18] by irregularly extending their services to 65 years. The current report also brings out three such cases[19] wherein beneficial treatment was extended to the employees of autonomous institutions, without requisite approvals of the competent authority.

Tata Memorial Center, Mumbai, without obtaining approval from Ministry of Finance, has substantially enhanced benefits under the Private Practice Scheme by providing for 45 *per cent* share in hospital income to the medical officers over and above their normal pay and allowances (Paragraphs 2.1). No such scheme exists in other premier government institutions in India. In another case, Bose Institute, Kolkata, in violation of UGC guidelines and without seeking approval of Ministry of Finance granted early promotions to its academic staff, thus extending undue financial benefit (Paragraphs 5.2).

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

Theme-wise specific audit findings that have emerged from the audit of Scientific Ministries/Departments during five years have been listed in ***Appendix IA.*** In the current report, 47 projects/schemes on which audit has framed comments have been incorporated as ***Appendix IB.***

This report also contains 51 specific recommendations, compliance to which would help in achieving the larger objective of promoting good governance and better oversight over research activities in the country. We impress upon the Ministries/Departments to take cognisance of these recommendations and address them in a time bound manner.

[18] Paragraph 5.2 of CA No. 3 of 2008.
[19] Paragraphs 2.1, 5.2 and 6.2.

1.7 Budget and expenditure controls

A summary of Appropriation Accounts for 2007-08 in respect of Scientific Departments/major scientific organisations is given below:

(Rupees in crore)

Table II

Sl. No.	Ministry/Department/Organisation	Grant/ Appropriation (including supplementary)	Expenditure	(-) Unspent Provision/ (+) Excess	Percentage of Unspent provision
1.	Department of Atomic Energy	8492.32	6010.98	(-) 2481.34	29.22
2.	Department of Space	3858.80	3278.00	(-) 580.80	15.05
3.	Indian Council of Agricultural Research (under Department of Agricultural Research and Education)	2230.43	2209.88	(-) 20.55	0.92
4.	Ministry of Environment and Forests	1639.28	1583.24	(-) 56.04	3.42
5.	Department of Science and Technology	1789.26	1514.93	(-) 274.33	15.33
6.	Department of Scientific and Industrial Research	1902.22	1892.55	(-) 9.67	0.51
7.	Ministry of New and Renewable Energy	632.92	485.15	(-) 147.77	23.35
8.	Geological Survey of India (under Ministry of Mines)	341.77	308.91	(-) 32.86	9.61
9.	Department of Information Technology	1536.02	1295.26	(-) 240.76	15.67
10.	Department of Biotechnology	703.00	636.62	(-) 66.38	9.44
11.	Indian Council of Medical Research (under Ministry of Health and Family Welfare)	311.65	311.65	Nil	Nil
12.	Ministry of Earth Sciences	888.14	562.84	(-) 325.30	36.63
13.	Centre for Development of Telematics (under Department of Telecommunications)	96.00	131.89	(+) 35.89	
	Total	**24421.81**	**20221.90**	**4199.91**	**17.20**

With reference to budget allotment of Rs.24,421.81 crore, the Scientific Departments had an overall unspent balance of Rs.4199.91 crore which constitutes 17.20 *per cent* of the total grant/appropriation. The Department of Atomic Energy, Department of Space and Ministry of Earth Sciences had savings of Rs.2481.34 crore (29.22 *per cent*), Rs.580.80 crore (15.05 *per cent*) and Rs.325.30 crore (36.63 *per cent*) respectively.

Budget and expenditure controls in the Scientific Ministries/Departments continue to be an area of concern, requiring attention and strengthening of control and oversight systems. C&AG's Report No. CA 13 for the year 2007-08 mentions some of these areas in Chapter 7 & 8, which are briefly recapitulated below.

1.7.1 Rush of expenditure

It was observed that a major part of disbursements of grants-in-aid under various major heads were made during last quarter of the financial year/in the month of March 2008 by MoES & DST (3 major heads each), MNRE, DAE & DOS (2 major heads each) and MoEF (1 major head). The percentage of

expenditure during last quarter in these major heads ranged between 34 to 100 *per cent* and during the month of March, it was 17 to 100 *per cent*.

MoES and DST released the entire funds under the major heads 5425- Capital Outlay on Other Scientific and Environmental Research and 3601- Grants-in-aid to State Governments during the last quarter of the financial year 2007-08. Since the funds released in March to various organisations cannot be constructively spent during the year which closes on the last day of March, it is difficult to conclude whether these funds were applied for the purpose for which they were authorised.

1.7.2 Excess expenditure over available provisions

The Pay and Accounts Officer can make payments in excess of the budget allotment under any sub-head or primary unit on receipt of an assurance from the head of the department controlling the grant that necessary funds to accommodate the disbursement would be provided by issue of re-appropriation orders etc. It was, however, observed from the head-wise appropriation accounts for the year 2007-08 that though expenditure had exceeded the available provisions under the respective sub-heads in MoES, MoEF and DBT (Rupees one crore and more), the authority administering the concerned grant/appropriation did not issue re-appropriation orders to accommodate the final excess expenditure, indicating laxity in budgetary control.

1.7.3 Unspent provision of Rs.100 crore or more

Unspent provisions in a grant or appropriation indicate either poor budgeting or shortfall in performance or both. Unspent provisions of more than Rs.100 crore, which need a detailed explanatory note to the Public Accounts Committee, were observed in DAE, DIT, MNRE & DST under Revenue heads and DAE, MoES & DOS under Capital heads during the year 2007-08. The unspent provision ranged between Rs.139.67 crore to Rs.1241.01 crore.

Persistent savings of Rs.100 crore and above were observed in DAE, MNRE, DST & DOS under Revenue head and DAE under Capital head during the last three years (2005-08). When compared to 2005-06, savings had increased in 2007-08 in case of DST and DAE. Savings of Rupees two crore and above constituting more than 40 *per cent* of the budget provision were also observed in various sub-heads in DAE, MoES, MNRE and DOS, the unspent provision being upto 100 *per cent*. This indicated deficient budgeting and can also be indicative of non-fulfillment of targets.

1.7.4 Unnecessary supplementary grant

It was observed in DBT (revenue-voted) and DST(capital-voted) that despite taking supplementary grant of Rs.8.30 crore and Rs.1.95 crore, these two departments were unable to spend the original provision of Rs.694.70 crore and Rs.73.90 crore respectively. The unspent provision was Rs.66.38 crore

(DBT) and Rs.3.26 crore (DST) indicating that the entire amount of supplementary provision was unnecessary.

1.8 Audit of accounts of Autonomous Bodies

C&AG is the sole auditor of nine autonomous bodies (details in ***Appendix II***) for which Separate Audit Reports (SAR) are prepared on their accounts under sections 19 (2) and 20 (1) of the CAG's (DPC) Act, 1971. The total grants released to these autonomous bodies during 2007-08 were Rs.4678.39 crore.

In addition, C&AG may also conduct supplementary/superimposed audit of 62 other autonomous bodies under sections 14 or section 15 of the CAG's (DPC) Act, 1971. The total grants released to these autonomous bodies during 2007-08 were Rs.1774.72 crore, details of which are indicated in ***Appendix III***.

1.8.1 Delay in submission of accounts

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

While for the year 2005-06, only two autonomous bodies submitted their accounts within the prescribed time limit of three months, for the year 2006-07, five out of nine autonomous bodies made available their accounts to Audit within the prescribed time limit of three months after the close of the accounting year. The position of submission of accounts for the year 2006-07 is indicated below:

Table III

Sl. no.	Name of Autonomous Body	Date of submission of accounts to audit	Delay in submission of accounts exceeding one month (in months)
1.	Wild Life Institute of India, Dehradun	06.11.2007	More than four months
2.	Central Zoo Authority, New Delhi	03.07.2007	Nil
3.	Sree Chitra Tirunal Institute of Medical Sciences & Technology, Thiruvananthapuram	17.10.2007	More than three months
4.	Technology Development Board, New Delhi	17.08.2007	More than one month
5.	Indian Council of Agricultural Research, New Delhi	02.07.2007	Nil
6.	Indian Council of Medical Research, New Delhi	18.07.2007	Nil
7.	Council of Scientific and Industrial Research, New Delhi	03.07.2007	Nil
8.	National Biodiversity Authority, Chennai	08.08.2007	More than one month
9.	Tea Board, Kolkata	27.06.2007	Nil

It can be seen from the above table that four autonomous bodies submitted their accounts after a delay ranging between one to more than four months.

1.8.2 Significant deficiencies in accounts

Some of the important issues highlighted in SARs on the accounts for the year 2006-07 are listed below:

- Technology Development Board and National Biodiversity Authority failed to adopt the uniform format of accounts prescribed by Ministry of Finance;
- Indian Council of Medical Research, Council of Scientific & Industrial Research and Wildlife Institute of India did not follow various instructions relating to the maintenance of common format of accounts;
- Indian Council of Medical Research and Council of Scientific & Industrial Research depicted minus balances in their accounts;
- Indian Council of Medical Research did not charge depreciation as per rates disclosed in their significant accounting policies;
- Indian Council of Agricultural Research and Council of Scientific & Industrial Research did not depict separately, the assets acquired out of project grants; and
- Improper/non-maintenance of assets registers were observed in Indian Council of Agricultural Research and Indian Council of Medical Research.

1.9 Outstanding Utilisation Certificates

Ministries and Departments are required to obtain certificates of utilisation of grants from the grantees i.e., statutory bodies, non-governmental institutions etc., indicating that the grants had been utilised for the purpose for which these were sanctioned and where the grants were conditional, the prescribed conditions had been fulfilled. According to the information furnished by the Pay and Accounts Officers of the concerned Departments, 11,371 utilisation certificates (UC) for grants aggregating Rs.2395.08 crore were outstanding as given in ***Appendix IV***. The major defaulting ministries were Ministry of Environment and Forests contributing 42.33 *per cent* towards outstanding utilisation certificate amounts, followed by Department of Information Technology (36.38 *per cent)* and Ministry of Earth Sciences (16.89 *per cent*).

Ministry of Earth Sciences furnished only the provisional figures of outstanding utilisation certificates which indicated that the ministry did not have centralised mechanism of collecting the information and updation thereof.

1.9.1 Age-wise analysis of Utilisation Certificates outstanding as on 31 March 2007

Out of the total 11371 UCs amounting to Rs.2395.08 crore awaited from eight major Ministries/Departments at the end of March 2008, 8323 certificates amounting to Rs.950.70 crore were still pending even after a lapse of two years. Similarly, 5813 certificates amounting to Rs.516.10 crore were pending even after a lapse of five years. Department-wise position of outstanding UCs is given in the table below:

(***Rupees in lakhs***)

Table IV

Sl. No	Ministry/Department	UCs pending for more than two years		UCs pending for more than five years	
		No.	Amount	No.	Amount
1.	Department of Atomic Energy	70	284.89	31	51.78
2.	Department of Space	189	1566.24	58	533.05
3.	Ministry of New and Renewable Energy	5	1210.87	Nil	Nil
4.	Ministry of Environment and Forests	6983	51643.72	5094	45771.92
5.	Department of Biotechnology	67	23.27	43	14.05
6.	Geological Survey of India	5	0.90	Nil	Nil
7.	Department of Information Technology	207	23308.00	2	11.00
8	Ministry of Earth Sciences	797	17032.60	585	5227.88
Total		**8323**	**95070.49**	**5813**	**51609.68**

Out of the total UCs pending for more than five years, Ministry of Environment and Forests alone accounted for 87.27 *per cent* of the total number and 88.64 *per cent* in terms of value of UCs pending.

1.10 Departmentally Managed Government Undertakings - Position of Proforma Accounts

The General Financial Rules stipulate 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 Comptroller and Auditor General of India.

There were three departmentally managed Government Undertakings of commercial or quasi-commercial nature as of March 2007 which were under audit jurisdiction of this office. 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 the summarised financial results of the departmentally managed government undertakings on the basis of their latest available accounts is given in ***Appendix V.*** It is observed that in case of Nuclear Fuel Complex, figures were provisional in nature, whereas format of proforma account was yet to be approved for Heavy Water Board.

1.11 Losses and irrecoverable dues written off/waived

Statement of losses and irrecoverable dues, duties, advances written off/ waived during 2007-08 furnished by the Ministries/Departments, is given in ***Appendix VI*** to this Report. It will be seen from Appendix that while in 18 cases involving Rs.1.89 crore the amounts were written off for 'other reasons', two cases involving Rs.0.56 lakh pertained to 'neglect /fraud' etc., on the part

of individual Government officials which were written off during 2007-08. Further items valuing Rs.1.81 crore were written off by ICMR due to a fire incident at Entero Virus Research Centre, Parel.

1.12 Response of the Ministries/Departments to Draft Audit Paragraphs

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

The Draft Paragraphs are forwarded to the Secretaries of the Ministry/Departments concerned drawing their attention to the audit findings and requesting them to send their response within six weeks. It is brought to their personal attention that in view of likely inclusion of such Paragraphs in the Audit reports of the Comptroller and Auditor General of India, 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 June 2008 and January 2009 through letters addressed to them personally.

Concerned Ministries/Departments did not send replies to 8 out of 27 Paragraphs featured in Chapters II to X. The responses of concerned Ministries/Departments received in respect of 19 paragraphs have been suitably incorporated in the Report.

1.13 Follow-up on Audit Reports

In its Ninth Report (Eleventh Lok Sabha) presented to Parliament on 22 April 1997, the Public Accounts Committee had recommended that Action Taken Notes (ATNs) on all paragraphs pertaining to the Audit Reports for the year ended 31 March 1996 onwards be submitted to them, duly vetted by Audit, within four months from the laying of the reports in Parliament. A review of outstanding ATNs on paragraphs included in the Reports of the Comptroller and Auditor General of India pertaining to Scientific Ministries/Departments as of December 2008 (details in ***Appendix VII***) revealed that a total of 15 ATNs were pending from eight Ministries/Departments/Autonomous Bodies as of December 2008, indicating a delay in submission of ATNs ranging between 6 to 49 months.

CHAPTER II: DEPARTMENT OF ATOMIC ENERGY

2.1 Implementation of a liberalised scheme for doctors in Tata Memorial Centre without approval of Ministry of Finance

Tata Memorial Centre (TMC), Mumbai an autonomous body under Department of Atomic Energy, was receiving grants-in-aid constituting more than 50 *per cent* of its expenditure from the Government. It implemented a Private Practice Scheme under which doctors were allowed to receive a share of 40 to 45 *per cent* of hospital income in lieu of non-practicing allowance. This scheme was implemented without the approval of Cabinet/Ministry of Finance or concurrence of other departments. This resulted in payment of Rs.27.22 crore to the doctors at TMC without requisite approvals. No such lucrative scheme is being implemented in other autonomous bodies/centers of excellence such as All India Institute of Medical Sciences under control of Ministry of Health and Family Welfare.

Tata Memorial Centre (TMC) at Mumbai is one of the autonomous institutions funded by the Department of Atomic Energy (DAE). TMC comprises of Tata Memorial Hospital (TMH) and Advanced Centre for Treatment, Research and Education in Cancer (ACTREC) engaged in research, education and comprehensive care of cancer patients. The staff doctors of TMH are eligible for compensation as applicable to their grade and similar to those in the DAE establishment. In addition to their emoluments, the doctors are eligible for Non-Practicing Allowance (NPA) as permissible under the rules.

Tata Memorial Hospital

As per Rule 209 (6) (iv) of General Financial Rules (GFR) 2005, all grantee institutions receiving more than 50 *per cent* of their recurring expenditure in the form of grants-in-aid are ordinarily required to formulate the terms and conditions of service of their employees which are, by and large, not higher than those applicable to similar categories of employees in the central government and relaxation, if any, is required to be made in consultation with the Ministry of Finance (MoF). Further, as per Rule 3 of GFR 2005, when a subject concerns more than one department, no decision should be taken until all such departments have concurred or failing such concurrence, a decision has been taken by or under the authority of the Cabinet.

TMH introduced a revised 'Private Practice Scheme (PPS)' in January 2000 which provided improved incentives and monetary benefits to all eligible Medical Officers (MOs). This scheme permitted doctors fulfilling certain eligibility criteria, as laid down by the Governing Council of TMC, to retain a 'share in the hospital income' (SHI) accrued from the treatment of private patients in the hospital. In December 2001, the Governing Council of TMC revised the Private Practice Scheme with additional incentives for in-house private practice with effect from 1 April 2002. As per the revised Private Practice Scheme notified by TMC:

- All MOs of TMH with a continuous service of minimum five years and in the pay scales of not less than Rs.12,000-16,500 were eligible to draw pay and allowances in the grade to which they were appointed and based on their option, either receive NPA at prescribed rate or receive SHI under the scheme in lieu of NPA.
- All professional income which included all consultation charges, charges for all reporting and services rendered, charges for all procedures, investigations and treatments and any other professional charges accrued on consultancy basis generated by the MOs from the patients other than those in General Out Patient Department at TMH/ACTREC was considered as 'Pooled Income' as a whole, which was to be apportioned at 50, 40 and 10 *per cent* among Hospital share, MOs share and Academic Funds respectively. The professional income so arrived at was then to be distributed among the eligible MOs in respect of the respective units depending upon the various grades in the pay scale.

The scheme was further liberalised in January 2004 by increasing the share of MOs from 40 to 45 *per cent*, correspondingly reducing the hospital share to 45 *per cent*. The norms for minimum service for appointment to various grades were also relaxed. During the period from 2002 to 2008, TMC paid SHI amounting to Rs.27.22 crore. Had the MOs been paid NPA, TMC would have incurred an expenditure of Rs.2.72 crore. The difference between SHI actually paid and NPA that would have been otherwise admissible to the MOs during the period 2002-08 was Rs.24.50 crore. Thus, SHI was financially beneficial to the MOs (upto 539 *per cent* of the basic pay) as compared to NPA (only upto 44 *per cent* of basic pay).

SHI paid to MOs increased from Rs.1.99 crore in 2000-2001 to Rs.6.14 crore in 2007-08, a huge increase of 208.54 *per cent*. During the same period, dependence of TMC on Government grants did not reduce. Instead, the grants to TMC from the Government increased from Rs.66.13 crore in 2000-2001 to Rs.144.24 crore in 2006-07, an increase of 218.11 *per cent*. Thus, the liberalised SHI Scheme did not help TMC in reducing its dependence on Government grants.

As TMC was a grantee institution receiving more than 50 *per cent* of its recurring expenditure in the form of grants-in-aid from the Government, the terms and conditions of services of the employees of TMC should not have been higher than those applicable to similar Central Government employees

and relaxation, if any, was required to be made in consultation with MoF as per Rule 209 (6) (iv) of GFR. Further, as per Rule 3 of GFR 2005, as the subject concerned more than one department, concurrence from other departments or approval of Cabinet should have been sought. Thus, the payment of SHI of Rs.27.22 crore was made without the requisite approvals.

TMC stated in May/June 2006 that since NPA admissible to the MOs was not commensurate with the qualifications of MOs and in order to retain the professional talent and to prevent their exodus from the Centre, the scheme for payment of SHI among the MOs was implemented with the explicit approval of TMC Governing Council and DAE. TMC further contended that the decision was consistent with the provision contained in Rule 208 (vi) of GFR 2005, which stated that an organisation whose performance was found to be outstanding and internationally acclaimed should be granted greater autonomy and increased flexibility in the matters of recruitment and financial rules. However, TMC overlooked the enabling provision under Rule 208 (vi) of GFR which stated that only those organisations whose performance was found to be outstanding and internationally acclaimed as a result of an external/peer review[1] should be granted greater autonomy and flexibility. DAE did not intimate Audit that any such external/peer review had been conducted. As such, TMC was not eligible for flexibility in devising its own pay structure without the concurrence of Cabinet/MoF/other departments.

DAE stated in November 2007 that in order to correct the procedural lacuna of SHI being operated by TMC without the approval of the competent authority, DAE submitted a proposal in the 183rd meeting of Atomic Energy Commission (AEC) held in November 2007. Accordingly, AEC approved DAE's proposal for SHI as it exists now. DAE further stated that AEC recognised that the SHI scheme has evolved over the years and the incentive scheme predates the takeover of the institution by DAE in 1962 and the scheme could be considered as a model for adoption by other similar institutions to attract and retain talented medical professionals.

TMC further stated in December 2008 that its performance was found to be outstanding and various international organisations in the field of cancer/healthcare had conferred awards on it. While Audit acknowledges the achievements of TMC for the last 50 years, the contention put forth for payment of SHI needs to be viewed in the light of the following:

(i) TMC receives more than 50 *per cent* of its recurring expenditure in the form of grants-in-aid from Government of India. Relaxation, if any, in the service conditions of its personnel was required to be made in consultation with MoF, especially in view of the fact that substantial financial burden on account of this liberal scheme would be borne by the Government by way of grants-in-aid.

(ii) No such similar scheme is implemented in other autonomous bodies of repute like All India Institute of Medical Sciences under control of Ministry of Health

[1] As per Rule 208 (v) of GFR 2005.

and Family Welfare. As the subject of grant of SHI to MOs in Government-aided autonomous bodies is common to medical institutions functioning under various Ministries/Departments, it merited inter-departmental concurrence/approval of the Cabinet as per Rule 3 of GFR, 2005.

(iii) The rules for transaction of business in AEC mandated that all proposals concerning the conditions of service of personnel of DAE involving major departures from normal Government rules were required to be brought before AEC. The approval of AEC was taken in this case only after being pointed out by Audit. Further, Member (Finance) in his comments on DAE's note on SHI, had observed in October 2007 that DAE should adhere to the conditions laid down under Rule 208 of GFR to enable flexibility in compensation structure for staff of TMC. He also observed that continuation of SHI needed to be additionally justified from the point of societal benefit and alternatives available.

(iv) The international accolades cited by TMC can, in no way, be termed as external/ peer review in terms of the provisions of Rule 208 (v) of GFR 2005.

Recommendations

1. DAE may seek inter departmental concurrence and approval from MoF/Cabinet for continuance of the scheme.
2. The Government may also review such schemes implemented in various Government-aided medical institutions to ensure uniformity in compensation provided to medical professionals working in institutions of repute/centers of excellence.

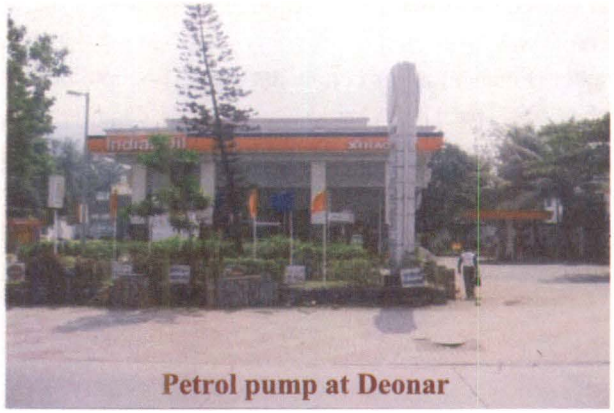
2.2 Loss of Rs.1.84 crore due to non-termination/renegotiation of an agreement

Failure of Department of Atomic Energy to negotiate/terminate lease agreement with Indian Oil Corporation Ltd. under the relevant clause, caused revenue loss of Rs.1.84 crore.

Directorate of Construction Services and Estate Management (DCS&EM), in July 1969, leased a plot of land measuring 1908.89 sq.metres to Indian Oil Corporation Ltd. (IOCL) at Deonar, Mumbai with the approval of Department of Atomic Energy (DAE) for erecting petrol/high speed diesel pump and servicing/lubricating station. The lease agreement was entered into in March 1972 for a period of 30 years effective from December 1970, on payment of lease rent of Rs.1500 per month and automatic renewal for a further term of 10 years from the expiry of the said term. However, according to clause III (a) of the agreement, the lessee or lessor were entitled to renegotiate the agreement by six months previous notice, in writing, to the other party.

DCS&EM, in another case, leased a plot of land measuring 836.13 sq.m. at Prabhadevi, Mumbai to IOCL in July 1973 for similar purpose. The lease,

executed in May 1979 for a period of 30 years, with effect from July 1973 and on payment of monthly lease rent of Rs.3600, expired in July 2003. DAE, while approving the proposal of DCS&EM to renew this lease agreement beyond 6 July 2003 (for a further period of 30 years), instructed DCS&EM to fix the lease rent at 12 *per cent* of the capital cost at commercial rate of land valuation, to be revised after five years. DAE further directed DCS&EM to pursue the matter with IOCL for enhancing the lease rent for the property at Deonar in line with Prabhadevi lease agreement. Accordingly, DCS&EM worked out the lease rent as Rs.1.89 lakh and Rs.1.87 lakh per month for Prabhadevi and Deonar plots respectively. Though, in January 2005, IOCL accepted the revised monthly rent of Rs.1.89 lakh for Prabhadevi plot, it did not agree to the revised rent of Rs.1.87 lakh for Deonar plot on the plea that the revision was not covered by the agreement of March 1972. IOCL continued to pay the monthly lease rent of Rs.1500 per month in respect of Deonar plot.



Petrol pump at Deonar

It was observed in audit that DAE could have terminated the lease agreement in December 2000 for the Deonar plot and could have negotiated a fresh agreement as per determination clause III(a) of the agreement. This would have ensured protection of financial interest of the Government. However, DAE did not invoke this provision and continued to receive rent at the rate of Rs.1500 per month which led to the revenue loss of Rs.1.84 crore.

DAE, in its reply of July 2008 and of November 2008, confirmed the revenue loss to DAE from December 2000 onwards. It further stated that a notice has been issued in August 2008 to IOCL invoking the provision of clause III(a) of the lease agreement, giving them six months notice for termination of the lease agreement and handing over peaceful possession of the said land. The notice period would expire in February 2009.

Thus, failure of DAE to negotiate/terminate the lease agreement under the determination clause caused revenue loss of Rs.1.84 crore for the period from December 2000 to February 2009. Further, loss of Rs.1.86 lakh per month till November 2010 can be avoided by timely action of DAE.

Recommendation

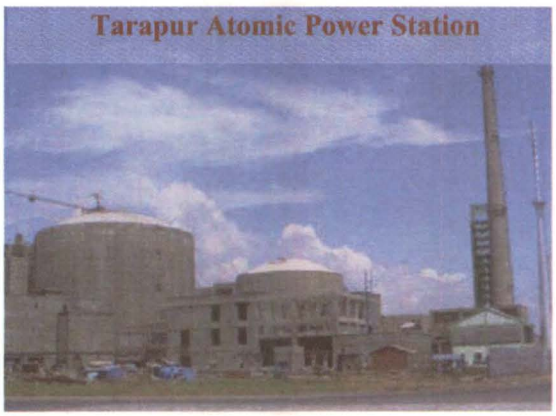
3. It is recommended that DAE may review all such long term agreements wherein Government land had been leased out at concessional rates for long periods, to safeguard its financial interests.

2.3 Excess expenditure on security

Failure of Bhabha Atomic Research Centre to share the expenditure for security on the basis of actual deployment of Central Industrial Security Force personnel at each facility led to excess expenditure of Rs.3.38 crore.

Department of Atomic Energy (DAE) decided in 1995 to induct the Central Industrial Security Force (CISF) for security of the facilities of (i) Bhabha Atomic Research Centre (BARC), Tarapur and (ii) Tarapur Atomic Power Station (TAPS) 1&2, which are units of the Nuclear Power Corporation of India Ltd. (NPCIL), a public sector enterprise under DAE. Accordingly, CISF was engaged for security of BARC facilities and TAPS 1&2 at Tarapur with effect from December 1999. TAPS was to incur the expenditure and claim reimbursement from BARC on yearly basis in the ratio 2:1 (BARC: TAPS) till 2002-03. On commencement of TAPS 3&4 in 2002-03, the ratio was changed to 2:1:1 between BARC, TAPS 1&2 and TAPS 3&4 from 2003-04 onwards.

Review of expenditure shared by BARC during the period 1999-2000 to 2007-08 revealed that the expenditure reimbursed by BARC was much more than the amount to be reimbursed, had the expenditure been shared on the basis of actual number of CISF personnel deployed.


Tarapur Atomic Power Station

It was observed that BARC released Rs.25.31 crore as against Rs.21.93 crore calculated on the basis of actual deployment of CISF personnel during 1999-2000 to 2007-08. CISF personnel deployed at TAPS facilities increased from 72 (1999-2000) to 191 (2007-08) as against the deployment of CISF personnel at BARC, which ranged between 124 and 147 during the corresponding period. As the deployment of CISF personnel at BARC remained much below the strength of personnel deployed at TAPS facilities from 2002-03 onwards, sharing the expenditure on the fixed ratio basis lacked justification. Thus, BARC incurred an excess expenditure of Rs.3.38 crore during 1999-2000 to 2007-08 due to sharing of expenditure on the fixed ratio basis rather than working out its liability on the basis of the actual deployment of CISF personnel.

At the instance of Audit, DAE agreed in August 2008 to share the expenditure of CISF security on actual deployment basis from 2008-09. BARC also intimated in August 2008 that DAE had instructed that if payment to NPCIL had not been made for 2007-08, the security related expenditure would be settled on actual deployment basis. Further, as regards settlement of excess

expenditure for 1999-2007, DAE stated that BARC would take up the matter with Tarapur Management Committee and NPCIL for their approval.

DAE also stated in December 2008 that pursuant to the issue pointed out by Audit, it was promptly taken up to rectify the mode of sharing based on actual deployment of CISF personnel at each of the establishments of BARC and NPCIL respectively and the revised mode of sharing of expenditure has already been complied with and is being followed from 2008-09 onwards. Regarding issue of recovering excess reimbursements for the period 1999-2000 to 2007-08, DAE further assured that it did not anticipate any problems on this issue.

Thus, failure of BARC to share the expenditure on the basis of actual number of personnel deployed at each facility, resulted in excess expenditure of Rs.3.38 crore, which was yet to be recovered from NPCIL. Failure to recover this amount from NPCIL will amount to irregularly providing financial assistance to the NPCIL out of DAE's budget.

2.4 Avoidable expenditure on power consumption

Failure of Variable Energy Cyclotron Centre, Kolkata to realistically assess the demand for electricity periodically resulted in an avoidable expenditure of Rs.59.75 lakh towards shortfall in consumption against the contracted demand during July 2004 to December 2007.

Variable Energy Cyclotron Centre (VECC), Kolkata obtains supply of electricity from West Bengal State Electricity Board (WBSEB) for its Salt Lake premises.


Variable Energy Cyclotron Centre

VECC approached WBSEB in January 2004 for enhancement of its existing contract demand as it planned to commission two projects namely, superconducting cyclotron project and Radio Active Ion Beam project and executed an agreement in January 2004. As per the revised agreement, the contract demand was raised to 6000 KVA for first two years and 7000 KVA for the next three years. The revised demand was made effective from May 2004. From July 2004 to December 2007, minimum chargeable demand was 75 *per cent* of the contract demand or actual demand which ever was higher. The contracted demand was reduced from 7000 KVA to 6000 KVA in September 2006 after the excessive contracted load was pointed out in Audit.

Audit further examined the actual consumption pattern of electricity for the period July 2004 to December 2007 and observed that the actual consumption was far below the contract demand. Even the minimum chargeable demand of 75 *per cent* of the contracted demand was not achieved in 38 out of 42 months, resulting in avoidable payment of Rs.59.75 lakh for 32,668 units of electricity not actually consumed. The actual consumption varied between 2660 KVA to 4700 KVA against the contracted demand of 6000 KVA.

VECC stated in March 2008 that since their installations were in many ways different from an industry/other scientific organisations having same connected load, it was difficult to predict the exact demand and energy consumption over a full year. The reply was not acceptable as the contract demand of electricity needed to be revised based on the periodic assessment of future requirement and in fact, during July 2004 and December 2007, in 38 out of 42 months, VECC could not even reach the level of 75 *per cent* of the contracted demand.

VECC further intimated Audit in November 2008 that superconducting cyclotron project was in the commissioning phase but some more time was needed to commission the Radio Active Ion Beam project. VECC, however, agreed to review the existing contract demand and stated that considering the present status of all the systems at the Centre, they were taking action to modify the contract demand with WBSEB.

Thus, failure of VECC to realistically assess its demand for electricity periodically resulted in an avoidable expenditure of Rs.59.75 lakh towards shortfall in consumption against the contracted demand, during July 2004 to December 2007.

Recommendations

4. VECC may periodically review its connected load based on actual consumption in order to ensure that payment for electricity not consumed is minimised.
5. VECC may realistically assess its future requirements before contracting any additional demand and should also keep in view the applicable tariffs both for 'excess consumption' and 'shortfall in consumption below the minimum chargeable demand'.

2.5 Non-establishment of world class gamma-ray observatory

Despite an expenditure of Rs.16.18 crore on setting up of TACTIC and MYSTIQUE telescopes, the objective of establishing world class gamma-ray observatory with state-of-the-art technology for gamma-ray astrophysics experiments could not be achieved. While TACTIC and MYSTIQUE telescopes were established at Mount Abu, Rajasthan with significant cost and time overruns, BEST telescope was not sanctioned and the MACE telescope was shifted to Hanle, Ladakh. Thus, the objective of establishing the four telescopes at a single location could not be fully achieved. In addition, the TACTIC and MYSTIQUE telescopes were under-utilised and commercial spin-offs expected from the project also did not accrue.

2.5.1 Introduction

Indian scientists have been actively pursuing observational gamma-ray astronomy ever since its introduction in the world stage in 1960. Department of Atomic Energy (DAE), in June 1993, approved the creation of a world class facility for observational gamma ray astronomy to ensure a commensurate role and opportunity in the field of gamma-ray astronomy for Indian scientists and engineers. The objectives of the project were:

- to create a new world astronomical facility for comprehensive studies in the gamma- ray spectral window through four state of the art telescope systems from a single geographical location; and
- to provide Indian astronomers a unique opportunity to make fundamental contributions in one of the frontline areas of basic sciences.

An important technology spin-off of the project was that Electronics Corporation of India Limited (ECIL) would be able to market the indigenously developed international quality units/modules to other users of fast electronics in the country and overseas.

To achieve these objectives, Bhabha Atomic Research Centre (BARC), a constituent unit of DAE, had planned to set up four telescopes, as discussed below.

- Two indigenous high sensitivity gamma-ray telescopes - TACTIC[2] and MYSTIQUE[3] were to be established under the project titled 'Gamma-Ray Astrophysics Cerencov[4] Experiments' (GRACE). The proposed observatory campus was to be built at Gurushikhar,

[2] Tera electron Volts (TeV) Atmospheric Cerencov Telescope with Imaging Camera.
[3] Multi-Element Ultra Sensitive Telescope for Quanta of Ultra-High Energies.
[4] later renamed as Coordinated.

Mount Abu, Rajasthan in the close vicinity of the already existing infra-red observatory of Physical Research Laboratory, Ahmedabad. While TACTIC was to consist of four fully steerable telescope units located over an area of two hectares, MYSTIQUE was to involve a spaced array of around 225 detector elements, spread over 40 hectares.

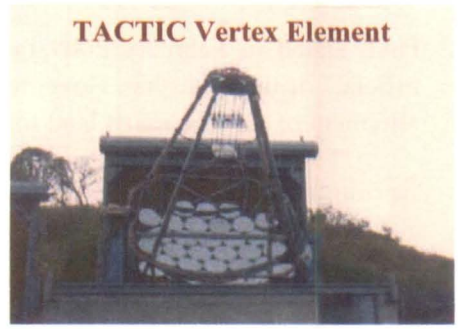
- Two other telescopes MACE[5] and BEST[6] were to be set up under the project titled 'SUB-TeV Light Experiments (SUBTLE)'.

Scrutiny of activities relating to execution of the project revealed the following:

2.5.2 Audit findings

2.5.2.1 GRACE project: TACTIC and MYSTIQUE telescopes

The project was to be executed in two phases with an estimated cost of Rs.12.20 crore[7] and was to be completed by December 1998. Financial sanction for Rs.2.99 crore for Phase I was issued in June 1993 with expected completion in March 1997. The financial sanction for Phase II was issued in February 1999 at a revised cost of Rs.13.32 crore. While seeking approval for Phase-II of the project, the date of completion of Phase-II was projected as March 2002.


TACTIC Vertex Element

It was observed in audit that the establishment of both TACTIC and MYSTIQUE telescopes under the GRACE project was considerably delayed. Further, the telescopes had to be located at a smaller/alternate location after reducing the scope of MYSTIQUE which impacted on its performance and effectiveness, as discussed below.

(a) Problems in land acquisition for TACTIC and MYSTIQUE telescopes


TACTIC imaging

The essential pre-requisite for the GRACE observatory site was a reasonably flat terrain with excellent observing conditions like sky transparency, minimum sky brightness, mild climate, freedom from optical and electrical noises of man-made origin etc. Accordingly, Gurushikhar, Mount Abu, was selected after a comprehensive site-selection programme covering a total of 10

[5] Major Atmospheric Cherenkov Experiments.
[6] Burst Exploration through Scintillation Technique.
[7] Phase I – Rs.2.99 crore & Phase II - Rs.9.21 crore.

candidate sites in six different states of the country. Finally, 42 hectares of land was identified at Mount Abu to be acquired from the Government of Rajasthan.

It was observed in audit that the availability of land was not ensured by BARC. Subsequent to the sanction of project in June 1993, the proposal for acquisition of land was approved by the State Government only in March 1999. Ministry of Environment and Forests (MoEF) in July 1999, however, declined to issue 'No Objection Certificate' for allotting the identified 42 hectares land to DAE since BARC refused to pay the afforestation cost of around Rs.3 crore. The proposal was reactivated by BARC in August 2000 and a high level committee of MoEF visited the proposed site in April 2002. In view of the recommendations of the expert committee of BARC, acquisition of the site at Mount Abu was stopped in April 2003.

In view of the prolonged negotiations regarding land acquisition, BARC had to set up the project at a temporary site measuring only 0.5 hectares acquired on rent free basis from Government of Rajasthan in February 1995.

DAE stated in February 2009 that detailed discussions were held with the officials of the Rajasthan Government at the project planning stage regarding allotment of 42 hectares of land for the project.

Recommendation

6. In the future, keeping in view the difficulties faced in land acquisition and its deleterious effect on the project, BARC may obtain a firm commitment for acquisition of land before actual commencement of any project so that non-availability of desired land does not impact the achievement of objectives.

(b) Cost escalation of TACTIC and MYSTIQUE telescopes

Under Phase I, though the project was stated to be completed by December 1997 with the installation of TACTIC and MYSTIQUE, TACTIC was made operational only in May 2000. Similarly, Phase II of the project envisaged upgradation of TACTIC and MYSTIQUE to be completed by December 1998, was completed only in March 2005. Thus, due to delay in operationalising the two telescopes, the project originally estimated to cost Rs.12.20 crore, was completed at an expenditure of Rs.16.18 crore. The cost escalation of Rs.3.98 crore was despite the fact that upgradation of MYSTIQUE, which was estimated to cost Rs.3.10 crore, had not been taken up.

DAE, in February 2009, attributed cost escalation to the fact that the initial project, which was envisaged in 1992, could be taken up only in 1999. The reply of DAE needs to be viewed in light of the fact that Phase I had already been initiated subsequent to its sanction in 1993 and BARC could not ensure timely acquisition of land. Against the requirement of 42 hectares of land for both the telescopes, BARC could only acquire 0.5 hectares of land from Rajasthan Government.

(c) Non-upgradation of MYSTIQUE telescope

It was observed in audit that MYSTIQUE was established with only 30 detector elements instead of the envisaged 225 detector elements. Further, the upgradation of MYSTIQUE under Phase II did not take place due to advancements in the field of high energy gamma-ray astronomy. Thus, the world class gamma-ray observatory with state of the art technology for gamma-ray astrophysics experiments could not be established and made available to the scientific community even after a delay of 10 years and an expenditure of Rs.16.18 crore.

The reasons for non-achievement of this objective, as stated by BARC were the global developments in very high energy gamma-ray astronomy, which indicated that extragalactic space was essentially opaque to gamma rays of energies > 30TeV, thus, making it almost impossible to detect extragalactic gamma-ray sources by wide-angle Cherenkov telescopes like MYSTIQUE. BARC/DAE further stated in October 2008/ February 2009 that CASA[8] & AIROBICC[9] which were two international high budget survey experiments similar to MYSTIQUE were shut down in the year 1998 and 2000 respectively after first few detections, as progress in the field was slow. It was, therefore, decided to concentrate on improving the detection sensitivity of the TACTIC telescope and operate the prototype MYSTIQUE array only in an innovative manner to derive maximum scientific output from it.

The reply needs to be viewed in light of the fact that DAE was well aware of the developments in gamma-ray astronomy since 1989 and poor results of international experiments similar to MYSTIQUE since 1997. As such, DAE should not have sanctioned the upgradation of MYSTIQUE to 225 detector elements under Phase II of the project in February 1999. Further, the decision to abandon the upgradation of MYSTIQUE from the original envisaged objectives was taken at the divisional level in BARC and not with the approval of DAE.

(d) Under-utilisation of TACTIC and MYSTIQUE telescopes

As per the Project Report, average effective observation time was expected to be around 1100 hours annually. It was, however, observed in audit that the annual average utilisation of TACTIC telescope was only 54 *per cent*[10] during 2003-04 to 2007-08. MYSTIQUE was operated only as a survey instrument in various configurations during the period 1994-99 for about 500 hours, i.e., approximately 100 hours per annum. The telescopes were largely used by BARC scientists only, except the visit of a Russian team of three scientists in December 2007 as part of a collaborative programme using TACTIC.

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[8] CASA: Chicago Air Shower Array.
[9] AIROBICC: Air shower Observation By angle Integrating Cerenkov Counters.
[10] ranging between 543 hours to 678 hours during 2003-04 to 2007-08.

Thus, there was significant under-utilisation of both TACTIC and MYSTIQUE telescopes.

DAE accepted the facts in February 2009 and stated that due to the changing weather patterns at Mount Abu and its surrounding areas, the experiments could be operated only for about 600 hours per year on an average. DAE also stated that TACTIC telescope had observed a number of putative galactic and extra-galactic gamma ray sources and detected gamma-ray emissions from some of them. These results had been published in high impact referred international journals. In addition, M.Sc/Ph.D thesis related to the GRACE project had been completed and several presentations made at various scientific conferences. Regarding MYSTIQUE, DAE stated that useful data on the polarisation characteristics of the atmospheric Cherenkov events were collected up to 1999. This also functioned as an effective platform for testing some of the technologies used in the TACTIC telescope.

The reply of DAE needs to be viewed in the light of the fact that despite investment of Rs.16.18 crore, neither could TACTIC be used for the targeted number of hours as of February 2009 nor could MYSTIQUE be operated beyond 1999, thus limiting the achievement of stated objectives of the project.

(e) Non-commercialisation of the technology developed for TACTIC and MYSTIQUE

The project report of the Phase–II of the project indicated that an important technology spin-off likely from the project was that ECIL would be able to market the new indigenously developed international quality units to other users of fast electronics in the country and overseas. It was, however, observed in audit that due to weaknesses in execution of GRACE project, ECIL could not market these units in India or overseas.

DAE stated in February 2009 that the electronic modules developed indigenously by BARC and ECIL were comparable with similar internationally manufactured modules and were largely used for the GRACE project.

Thus, commercial spin-offs from the project did not accrue and technology developed after incurring Rs.16.18 crore could not be commercialised.

2.5.2.2 SUBTLE project: MACE and BEST telescopes

BARC proposed a project titled 'SUB-TeV Light Experiments' (SUBTLE) at Mount Abu as a Tenth Plan project which consisted of setting up two telescopes viz., BEST and MACE. This project proposal was reviewed by an expert committee in April 2003, which recommended setting up of a larger diameter MACE telescope at Hanle in the Ladakh region of Jammu & Kashmir instead of Mount Abu, due to clear sky conditions. Viability of BEST was explored and it was found that since better methods to detect gamma-ray bursts using satellite experiments were developed, the use of ground-based facilities for such detections was not considered advantageous and BEST was not sanctioned accordingly. DAE sanctioned the project for installation of

MACE telescope in January 2005 at an estimated cost of Rs.38.30 crore with the objective of carrying out coordinated multi-wave length observations through ground-based telescope systems which would supplement the results of satellite borne experiments.

Audit scrutiny revealed that at the project formulation stage, it was proposed to implement the project by procuring component sub-systems and assembling them with in-house facilities available with BARC. However, in view of limited manpower available for implementation of the project, DAE decided in July 2007 to award the work to ECIL on turnkey basis. This led to revision of the project cost to Rs.49.43 crore in February 2008. In March 2008, the work orders for detailed design, supply, installation and commissioning of MACE telescope at Hanle were issued on ECIL at an estimated cost of Rs.38.75 crore. As of October 2008, the telescope was only at the design stage.

Thus, the SUBTLE project, which envisaged completion of MACE telescope by March 2007, was also delayed and was only at the design stage as of October 2008.

DAE stated in February 2009 that the detailed mechanical design of the telescope was at an advanced stage and fabrication work was expected shortly.

2.5.3 Non-establishment of TACTIC, MYSTIQUE, BEST and MACE telescopes at a single location

The project proposals for both GRACE and SUBTLE indicated that when successfully completed, the projects would result in the creation of a unique international class astronomy facility in India where a wide gamma-ray window can be comprehensively studied in a time-coordinated manner from a single location at Mount Abu, Rajasthan. This would generate path-breaking results which would lead to discovery of new gamma ray sources and emission regions.

However, it was observed in audit that though TACTIC and MYSTIQUE telescopes were set up at Mount Abu, Rajasthan, DAE did not sanction the establishment of BEST telescope and decided to establish MACE telescope at Hanle, Ladakh instead of at Mount Abu, Rajasthan. Consequently, Indian astronomers were not given an opportunity to study the entire gamma-ray window in a time coordinated manner from a single location.

DAE stated in February 2009 that BEST was not sanctioned as better methods to detect gamma-ray bursts were developed and high altitude and year round clear sky conditions at Hanle were important considerations for change in location of MACE.

2.5.4 Conclusion

Embarking on a project without ascertaining availability of the land and world-wide development in gamma-ray astronomy resulted in installation of TACTIC and MYSTIQUE telescopes in 0.5 hectare of land as against the envisaged 42 hectares. MYSTIQUE upgradation was suspended due to global

developments in this field, thus, making it irrelevant. Resultantly, the world class gamma-ray observatory with state of the art technology for gamma-ray astrophysics experiments could not be established and made available to the scientific community even after a delay of 10 years and an expenditure of Rs.16.18 crore. The new project SUBTLE sanctioned to undertake the enhanced objective of MACE telescope at a cost of Rs.49.43 crore was in the design stage as of February 2009. Besides, the expected commercial spin-off from the project also did not accrue, as envisaged in the project proposal.

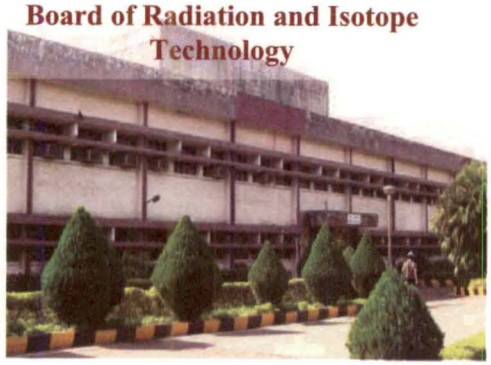
2.6 Non-achievement of objectives by Board of Radiation and Isotope Technology

Failure of Board of Radiation and Isotope Technology (BRIT) to ensure timely execution of projects, both in the Ninth and Tenth Plan resulted not only in time and cost overruns but also in delayed/non-achievement of socio-economic objectives relating to application of radioisotopes and radiation in areas of health care, industry, agriculture, research etc. Monitoring of projects was lax which also contributed to slippages in milestones set out for projects. BRIT had still not taken steps to attain commercial viability which was one of the objectives of BRIT when it was set up in 1988.

2.6.1 Introduction

Board of Radiation and Isotope Technology (BRIT), Mumbai an industrial unit of Department of Atomic Energy (DAE), was formed in March 1988 to exploit commercially, the application of radioisotopes[11] and radiation in the areas of healthcare, industry, agriculture and research with the following objectives:

Board of Radiation and Isotope Technology



- to promote the growth of the applications of isotope technology in the country;
- to support new applications in the areas of nuclear medicine, teletherapy[12], food irradiation and industry; and
- to become commercially viable as early as possible.

[11] Radioisotopes are isotopes that are unstable and release radiation. Isotopes are atoms that have the same number of protons but a different number of neutrons in the nucleus.

[12] Treatment in which the source of the therapeutic agent, e.g. radiation, is at a distance from the body.

BRIT is headed by a Chief Executive and its activities are coordinated by the Board of Management, consisting of Additional/Joint Secretary in charge of BRIT in DAE, Joint Secretary (Finance)/DAE, nominees from Bhabha Atomic Research Centre (BARC), Nuclear Power Corporation of India Limited (NPCIL) and two representatives of major users with background in industry, public health, food and agriculture.

As of March 2008, BRIT had 507 sanctioned posts, of which 374 were scientific and technical and the remaining 133 posts were for administrative and auxiliary work. As against this, scientific and technical personnel in position were 359 while the administrative and auxiliary field comprised of 131 personnel. The total annual expenditure of BRIT varied between Rs.26.87 crore to Rs.36.73 crore during 2002-08.

Audit examined the activities of BRIT covering the period 2002-03 to 2007-08 with reference to the execution and management of R&D activities to achieve the mandated objectives of BRIT. The audit findings are discussed below:

2.6.2 Audit findings

2.6.2.1 Financial Management

The details of funds budgeted and actual expenditure incurred during 2002-07 (Tenth Plan) and 2007-08 were as under:

(Rs. in crore)

Table V

Year	Budget Estimates			Expenditure			Unspent provision		
	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
2002-03	25.01	8.01	33.02	24.49	2.69	27.18	0.52	5.32	5.84
2003-04	27.80	8.00	35.80	21.72	5.15	26.87	6.08	2.85	8.93
2004-05	25.70	17.06	42.76	22.65	4.83	27.48	3.05	12.23	15.28
2005-06	24.91	15.64	40.55	23.42	5.61	29.03	1.49	10.03	11.52
2006-07	26.00	19.25	45.25	22.09	14.64	36.73	3.91	4.61	8.52
Tenth Plan Total	129.42	67.96	197.38	114.37	32.92	147.29	15.05	35.04	50.09
2007-08	23.85	21.84	45.69	23.44	5.10	28.54	0.41	16.74	17.15

It was observed from the above table and analysis of the budget that:

- As against budget provision of Rs.197.38 crore, BRIT could spend only Rs. 147.29 crore in the Tenth Plan (2002-07).
- The unspent provision of Rs.15.05 crore in the revenue head was due to delay in receipt of supplies, materials and equipment. Unspent provision of Rs.35.04 crore in the capital head was largely due to slow progress of the Plan projects undertaken in the Tenth Plan, which represented 51.56 *per cent* of the capital budget provision of Rs.67.96 crore.
- There was no improvement in arresting the trend of huge unspent provision, as even in the first year of Eleventh Plan, BRIT could spend only Rs.28.54 crore

against budget provision of Rs.45.69 crore. In the capital head, against the budget provision of Rs.21.84 crore, only Rs.5.10 crore was spent, indicating a saving of 76.65 *per cent* of the budget estimates.

Huge unspent amount especially under capital head was indicative of deficient financial management, which needed to be addressed by DAE.

BRIT stated in July 2008 that the completion schedule of projects was revised due to enhancement of scope, finalising civil contracts, increase in prices of raw materials forcing contractor to slow down the work, delay in supply of imported equipments etc. It further stated that all the projects would be completed as per the revised schedule.

DAE stated in February 2009 that unspent amount was minimal when compared to revised estimates. The unspent provision under capital head was due to the fact that a huge part of the budget provision was towards major works like civil, electrical, mechanical and procurement of other expensive equipment, which were to be executed at the later stage of the projects. DAE also stated that BRIT was dependent on other external agencies for execution of the project especially safety regulatory issues, specialised mechanical designs and civil construction and that efforts were being made to ensure that all the pending Tenth Plan projects and the new Eleventh Plan projects were completed as per schedule. DAE further added that in BRIT, a well established internal mechanism of monitoring physical progress of plan projects was in place.

The reply needs to be viewed in light of the fact that

- DAE had set up its own construction wing, purchase wing, regulatory board etc., to ensure speedy completion of the respective works,
- Even after having the adequate internal mechanisms for monitoring physical progress of the Plan projects, there were significant slippages in completion of projects, and
- Secretary/DAE observed in August 2002/March 2003 that a system should be drawn up for monitoring projects sanctioned under the Tenth Plan to ensure that they were completed in time and financial outlays utilised as planned and there was a need to make the monitoring exercise effective to bring in a degree of credibility to DAE's ability to plan and implement projects as DAE was dealing with large amounts of taxpayers' money.

2.6.2.2 Execution of Projects

While reviewing the performance of BRIT in January 2003, Secretary/DAE had observed that the project implementation set-up in BRIT needed to be improved for timely completion of Plan projects. However, Audit analysis in April/May 2008 revealed that there were no visible improvements in project administration/implementation at BRIT, as discussed below:

a) Projects spilled over to Tenth Plan

It was observed in audit that three projects which were sanctioned during the Ninth Plan period spilled over to the Tenth Plan period as discussed below.

- DAE sanctioned a Ninth Plan project 'Design and Development of Radiation Equipment and Test Facility' in June 1999 at a cost of Rs.8.50 crore, which was scheduled to be completed in March 2002. The project comprised of two components (i) design and development of four new radiation technology equipment and (ii) design and construction of a Test Facility for conducting requirement tests for radioisotope packages. The first sub-project was completed only in May 2006 and the second was completed in January 2006. Apart from time overrun of more than four years, in the first sub-project, only one of the four envisaged equipment was produced and in the second project, the test facility was grossly under-utilised.
- DAE, in June 1998, sanctioned a project 'Augmentation of Cobalt Handling Facility' for augmenting the Kota facility which is the prime source of the entire Cobalt based programme of BRIT. The project was completed only in March 2006 with time overrun of five years and the expected revenue of Rs.10 crore per annum from export of Cobalt-60 could not be achieved.
- A project called 'Augmentation of Radiochemical Laboratories at BARC Campus by BRIT' was sanctioned by DAE in June 1999 at an estimated cost of Rs.4.60 crore and was scheduled to be completed by March 2002. The augmentation sub-project was completed after a time overrun of more than five years and the sub-project for production of new isotopes was still not complete as there was hardly any increase in the production of three isotopes and production of four new isotopes had not begun at all.

Thus, apart from the time and the associated cost overruns, these projects also could not meet the objectives identified for them. Details of these projects are attached as ***Appendix VIII***.

b) New Schemes/Projects in Tenth Plan

(i) Establishment of Medical Cyclotron[13] Facility

DAE, in January 2004, sanctioned a project for setting up of 'DAE Medical Cyclotron Project at Kolkata' at an estimated cost of Rs.78.01 crore scheduled for completion by January 2007. It was to be jointly executed by Variable Energy Cyclotron Center (VECC) and BRIT. The responsibility for setting up of the Cyclotron System at an estimated cost of Rs.58.78 crore with a foreign exchange component of Rs.42.30 crore was entrusted to VECC and the responsibility for setting up processing facility for radioisotopes[14] and radio pharmaceuticals, including sales and distribution, estimated to cost Rs.19.23 crore, with a foreign exchange component of Rs.14.60 crore, rested with

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[13] A Cyclotron is an accelerator used for accelerating charged particles like protons, deuterium, alpha particles etc to discharge energies.

[14] Radioisotopes such as Galium-67, Thallium-201, Indiam-111, Iodine-123 etc.

BRIT. The project was justified on the grounds that the medical cyclotron would be the only one of its kind in the country capable of producing radioisotopes useful for medical diagnostics purposes which, at present, were being imported.

DAE revised the cost of the project, to Rs.98.25 crore[15] in May 2006 and rescheduled the date of completion of the project from January 2007 to March 2008. However, the project had not been completed as of July 2008 as discussed below:

- Directorate of Purchase and Stores (DPS), took about 20 months to finalise the proposals (December 2005) from the raising of indent in May 2004 for the cyclotron, beam line, targets and associated items etc. Moreover, the project was embarked upon without finalising the configuration of all the technical systems. The final configuration of the complete facility was worked out based on extensive interaction with the suppliers during this period, resulting in an increase of Rs.18.53 crore under the head Machinery and Equipment alone, which was 91.96 *per cent* of the total cost overrun of Rs.20.15 crore. Under the head Material and Supplies, there was a downward cost revision from Rs.2.35 crore to Rs.0.70 crore as, subsequent to project sanction, it was decided for economical reasons to purchase assembled hot cell instead of assembling the same.
- Though Atomic Energy Regulatory Board's (AERB) clearance to operate the facility at the designated site was another major milestone in the project, the clearance was obtained only in February 2005 due to delay in compilation of operational data by the project team.
- As per the quarterly progress report of the project for the quarter ending December 2007, the project had attained only around 10 *per cent* of physical progress with delays ranging from 12 to 18 months, as purchase orders and civil construction was delayed. DAE had conveyed its sanction for award of works contract for the construction of the medical cyclotron and its ancillary building at VECC only in January 2008, at a cost of Rs.18.33 crore. Due to delays in construction of building, BRIT spent only Rs.10.55 crore till March 2008 as against an estimate of Rs.25.15 crore. This indicated lapses in planning and execution.

BRIT attributed the delays in May 2008/July 2008 partially to the time lost in the visit to the facilities of the vendors and partially to the delay in the receipt of the revised financial sanction by DAE and also stated that the production schedule now stands shifted to September 2009.

DAE in February 2009 stated that an effective monitoring and coordination system had been put in place to ensure completion of the project as per the revised schedule.

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[15] VECC- Rs.73.10 crore and BRIT-Rs.25.15 crore.

(ii) Integrated Facility for Radiation Technology

BRIT conceived a Tenth Plan project 'Integrated Facility for Radiation Technology' (IFRT) in March 2003 at an estimated cost of Rs.9.10 crore. The project report envisaged that the integrated facility would enable BRIT to carry out complete operation of source loading, unloading, assembly and supplying of the unit from a single point, thus leading to overall improvement in functioning. It would also help in meeting increased requirements of the future, in addition to avoiding movement in the high security zone of BARC.

Civil Construction under progress under IFRT

Audit scrutiny revealed that the project, though scheduled for completion by October 2007, had not been completed even as of February 2009. The completion date of the project had been further extended till December 2009. There were also cost revisions on two occasions in July 2006 and March 2007, increasing the cost of the project to Rs.15.19 crore. It was mainly towards increase in the cost of the major works which included civil, electrical, ventilation and cranes etc., which included change in classification of civil structure from existing Tecdoc-348[16] to Tecdoc-1347[17] as recommended by Preliminary Safety Review Committee (PSRC) in its meeting held in September 2004. However, PSRC decided to recommend consent for construction of IFRT in July 2005 and revised report on civil engineering aspects was cleared in October 2006.

Thus, the primary responsibility for the delay in the execution of the project and the related time overrun and cost escalations were attributable to BRIT as Tecdoc-1347 was issued in the middle of 2003 whereas clearance for adopting the same was issued only in October 2006. As of March 2008, total expenditure on the project was only 35.16 *per cent* of the revised project cost which also pointed to the need for further improvements in project management and monitoring at BRIT.

DAE, in February 2009, stated that the facility required high degree of safety for operation and hence guidelines given by AERB had to be complied with before commencement of civil construction. It further stated that all efforts had been taken to ensure the completion of the project as per the revised schedule.

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[16] Tecdoc 348 is an IAEA Technical document (Series No. 348) used for "Earthquake Resistant Design of Nuclear Facilities with limited Radioactive Inventory".

[17] Tecdoc 1347 is an IAEA Technical document (Series No. 1347) used for "Consideration of external events in the design of nuclear facilities other than nuclear power plants with emphasis on earthquake".

(iii) Revamping and Augmentation of Infrastructural Facilities

DAE, in November 2003, sanctioned a Tenth Plan project 'Revamping and Augmentation of Infrastructure Facilities' (RAIF) at a cost of Rs.12.12 crore for completion by October 2007. The project mainly aimed at enhancing infrastructural support at BRIT. DAE changed the scope of project on the basis of BRIT's proposal of July 2007 by revising the cost from Rs.12.12 crore to Rs.15.92 crore and the date of completion from October 2007 to March 2010. Upward cost revision was on account of expansion in the scope of work.

However, it was observed in audit that the progress of the project, both physically and financially, was slow. During 2005-06, as against BE of Rs.4.04 crore, actual expenditure was only Rs.2.35 crore. During 2006-07, the unspent provision was 52 *per cent* of the budget estimates. The slow progress of the project was due to the delay in commencement of procurement in supplies and materials, machinery and equipments and commencement of civil works.

Clean room facility constructed under RAIF

BRIT, in May 2008, attributed this to delay in the supply of some of the items from foreign and local suppliers and also delay in finalisation of foreign suppliers and the interruption in the work by civil contractors due to various reasons which resulted in re-tendering. BRIT, in July 2008, also stated that it would complete the project by March 2010. DAE stated in February 2009 that the project was being monitored by internal monitoring system and by Chief Executive, BRIT, on a continuous basis. It further stated that efforts were being taken to ensure completion of the project as per the revised schedule.

2.6.2.3 Commercialisation of technology

One major objective of BRIT was to support new applications in the areas of food irradiation and radiopharmaceuticals. A review of activities of BRIT to commercialise technologies developed by them revealed the following:

a) Demonstration plant for irradiation of spices

BRIT decided in March 1999 to set up a spices irradiation plant at a cost of Rs.3.13 crore, which was scheduled for completion by November 1996. The plant was to provide an internationally acceptable irradiation service facility for hygienisation of spices and meeting the standards of exports. The plant, which had an installed capacity to process 12,000 tonnes of spices per year and was capable of generating an estimated surplus revenue of over Rs.3 crore from fifth year of its operation, had processed only 9947 tonnes of various products and realised a cumulative receipt of only Rs.5 crore during the past

eight years and three months of its operation from January 2000 to March 2008.

Audit analysis of performance of demonstration plant for irradiation of spices revealed the following facts:

- As against the installed capacity of 12,000 tonnes per annum, the quantity per year processed in the spices irradiation plant, during the eight years of its operation, was only within the range of 437 to 2348 tonnes. Thus, the capacity utilisation of the plant was within the range of 3.64 *per cent* and 19.57 *per cent* only.
- As against the total 53,970 plant hours available for operation during the years 2000-01 to 2007-08, BRIT operated its plant only for 39,091 hours during the corresponding period.
- During the performance review of BRIT held in January 2003, Secretary, DAE had observed that BRIT should earn more revenue and improve capacity utilisation of the plant. He observed that the idea of locating the Irradiation Plant in Navi Mumbai was to cater to the irradiation of items being exported through the Jawaharlal Nehru Port. Hence, he directed that BRIT should have proper marketing strategy and efforts were needed to get more and more items notified for radiation processing sterilisation. However, it was observed that though the total quantity processed in the plant increased from 1453 tonnes in 2004-05 to 2347 tonnes in 2005-06, thereafter it steadily decreased to 1812 tonnes and 1434 tonnes in 2006-07 and 2007-08 respectively. Likewise, the revenue realisation also came down from Rs.1.29 crore in 2005-06 to Rs.0.88 crore in 2007-08.
- Spices irradiated in the plant depicted a sharp decline in 2007-08 as only 547 tonnes had been irradiated during the year as against 1190 and 1033 tonnes irradiated in 2005-06 and 2006-07 respectively. During 2007-08, irradiation of pet feed (831 tonnes) constituted more than 50 *per cent* of total quantity of 1434 tonnes irradiated during the year.

The above analysis indicated that BRIT had not made serious efforts to increase capacity utilisation of the plant and increase country's foreign exchange earnings through spices irradiation.

BRIT stated in July 2008 that reduced requirements of irradiated products from abroad may be one of the factors for decline in quantity of products processed. Further, it stated that it was conducting awareness programmes and participating in seminars/conferences to increase the use of their technology.

DAE stated in February 2009 that since food was a very sensitive issue, people showed reluctance in acceptance of new technology product and that efforts were being made to create greater awareness. It further stated that since commissioning of the plant, it had realised cumulative receipt of Rs.5 crore which was more than the capital expenditure incurred on the plant.

However, the fact remained that the capacity utilisation of plant was within the range of 3.64 *per cent* and 19.57 *per cent* only during 2000-01 to 2007-08

even after eight years of its operation and lagged much behind the anticipated revenue generation. The plant capacity utilisation had declined and BRIT, till date, had no data regarding foreign exchange earnings as a result of spices irradiation. Thus, maximum economic benefits could not be reaped as envisaged.

b) Radiopharmaceuticals-- Extension of nuclear medicine facilities

In June 1992, DAE sanctioned a project 'Extension of nuclear medicine facilities' at a cost of Rs.8.90 crore to be executed by BRIT in 1996-97 to enable better facilities for cancer treatment in small towns and semi rural areas. The project envisaged setting up of 20 comprehensive Nuclear Medicine Centers (NMCs) with gamma cameras in public sector hospitals and 50 RIA[18] centers in teaching medical institutions. It was observed in audit that only 16 NMCs and eight RIA centers were established by BRIT. It was further observed that:

- One gamma camera installed at the Medical College, Calicut was not commissioned as of July 2008, although BRIT provided Rs.0.37 crore in July 1993. On failure of Electronics Corporation of India Limited (ECIL) to commission the camera, BRIT arranged a private party to execute the work. However, the party also could not execute the work as ECIL had not provided required drawing and other details as of July 2008.
- Three NMCs at Indira Gandhi Medical College, Shimla, Indira Gandhi Institute of Medical Science, Patna and Government Arihgnar Anna Medical Cancer Hospital, Kancheepuram established with financial assistance ranging between Rs.0.30 crore and Rs.0.35 crore also remained non-functional as of July 2008. These faults could not be rectified by ECIL even after lapse of over six to ten years.

It was further observed that as proper service of the gamma cameras could not be arranged by ECIL, these centers were finding it difficult to provide the service to patients for want of repair of the gamma cameras.

BRIT stated in July 2008 that as the technical competence was only with ECIL, it had been following up with ECIL for commissioning and service of these gamma cameras. DAE, in February 2009, stated that since the technology made a rapid stride in the developed countries and various modules of such devices offering much better features were available in the market, ECIL decided to move out of this technology and stopped making such cameras and providing services to these cameras.

The reply needs to be viewed in light of the fact that ECIL is a public sector undertaking under DAE and onus rested with DAE to provide uninterrupted smooth maintenance of the cameras supplied by them.

Thus, the major objective of BRIT to support new applications in the areas of food irradiation and radiopharmaceuticals had not yielded the desired results.

[18] Radio Immuno Assay.

2.6.2.4 Attainment of commercial viability

Attainment of commercial viability, as early as possible, was one of the objectives of BRIT when it was set up in 1988. Review Committee on Application of Radiation and Isotope, in its report in 1998, had observed that BRIT's operation was nowhere near the standard definition of commercial viability and that BRIT should set a goal of increasing its commercial operation in the next 10 years. According to the Review Committee, for the first year of Tenth Plan period, the definition of viability should be reviewed to examine the feasibility of adding to the minimum sales revenue, an element of return, at least at 10 *per cent* on net fixed assets at the end of the immediately preceding financial year.

While reviewing the performance of BRIT in January 2003, Secretary/DAE had observed that at the time of formation of BRIT, it was envisaged that it would function on commercial lines. He had further observed that the primary objective of BRIT was to make radiation technology application as viable as possible, the immediate aim should be to avoid cash losses and in the long run it should be possible to make full profit and it was necessary to work out strategies towards that. Secretary further stated that the expectations of Government were very high and the Planning Commission and Ministry of Finance had been highlighting the need to provide benefits to the society on applications of atomic energy.

The table below depicts BRIT's sales turnover vis-à-vis the Non-Plan revenue expenditure for the period 2002-03 to 2007-08.

(Rs. in crore)

Table VI

Year	Revenue Expenditure	Capital Expenditure	Target	Sales turnover
2002-03	24.49	2.69	20.00	21.67
2003-04	21.72	5.15	19.00	24.45
2004-05	22.65	4.83	23.50	31.85
2005-06	23.42	5.61	33.00	33.37
2006-07	22.09	14.64	40.00	39.95
2007-08	23.44	5.10	50.00	44.22

From the table above it was observed that the sales turnover of BRIT had exceeded the target during all the years except 2007-08. However, this was in no way indicative of commercial viability as one of its essential criteria of accounting for a return of least 10 *per cent* on net fixed assets, as viewed by DAE's own Committee, had yet not been initiated by BRIT.

Audit also observed that BRIT could have generated Rs.13 crore per year from only two projects namely, augmentation of cobalt handling facility and demonstration plant for irradiation of spices. However, failure to execute these projects timely led to non-achievement of projected revenue generation

targets. Efficient project execution could have helped BRIT to generate more revenue and attain commercial viability.

DAE, in February 2009, stated that BRIT had registered appreciable growth during 2006-07 and 2007-08, keeping the revenue expenditure much below the total sales. The reply of DAE has to be viewed in light of the fact that to assess BRIT's commercial viability from the Tenth Plan onwards, it was required to consider its sales not merely against revenue expenditure but also against a fixed return on investment of 10 *per cent* of net fixed assets.

2.6.2.5 Non-maintenance of proforma accounts

BRIT is one of the industrial units of DAE like Nuclear Fuel Complex (NFC) and Heavy Water Board (HWB). However, it was not preparing proforma accounts like NFC and HWB. BRIT had also not commenced determining depreciation on fixed assets as recommended by the Peer Review Committee due to non-switching over to proforma accounts.

As one of the macro objectives of BRIT was to attain commercial viability as early as possible, maintenance of proforma accounts was mandatory. Further, as per General Financial Rules when the operation of a department includes undertakings of a commercial or quasi-commercial character and the nature and scope of the activities of the undertaking are such as cannot suitably be brought within the normal system of Government account, the Head of the undertaking is required to maintain such subsidiary and proforma accounts in commercial form as may be agreed between Government and the Comptroller and Auditor General of India.

DAE, in February 2009, while accepting the suggestions made by Audit, stated that action had already been initiated for early compliance.

2.6.3 Monitoring

Board of Management is the apex body in BRIT to moot recommendations to the Government for approval of five year plans, annual plans, individual plans for the schemes and the periodical review of its activities. According to norms set by DAE, Board of Management is required to meet at least once in three months. However, it was observed that during 2003-04 to 2007-08, it met only 10 times, as against minimum 20 mandatory meetings during this period.

BRIT stated in July 2008 that more number of Board meetings were aimed to be conducted to sort out the issues pertaining to technical and financial requirements and get guidance for future growth. DAE, in February 2009, further stated that Board meetings were now being regularly conducted.

Recommendations

7. BRIT needs to give special attention to the design and implementation mechanism of individual projects/schemes with a view to improve accountability and efficacy of Plan funding.

8. In order to make the monitoring focused and meaningful, clearly defined indicators (input and output indicators) need to be identified, with specific timeframes at the project/scheme formulation stage itself so that project objectives are achieved within the defined time schedule and cost overruns are avoided.
9. BRIT needs to take steps to achieve its objective of attaining commercial viability, as early as possible, which was set out as early as in 1988.

2.6.4 Conclusion

The system of financial management in BRIT needs to be improved as BRIT had huge unspent provisions, even in the first year of Eleventh Plan. There were considerable slippages in physical completion of projects undertaken by BRIT in the Ninth and Tenth Plan. As a result, anticipated benefits from the projects had not accrued as yet. The pace of projects like Integrated Facility for Radiation Technology and Revamping and Augmentation of Infrastructural Facilities was very slow, with the projects neither meeting the financial nor physical milestones. One of the major objectives of BRIT was to support new applications in the areas of food irradiation and radiopharmaceuticals, which was also not achieved completely. In the field of radiopharmaceuticals, BRIT had not been able to commercialise and effectively market the developed technology. Moreover, BRIT is still a long distance away from promoting growth of the applications of isotope technology, nuclear medicine, teletherapy and food irradiation in the country. BRIT had still not taken steps to attain commercial viability which was one of the objectives of BRIT when it was set up in 1988 as BRIT had not implemented the suggestions of DAE's Review Committee. BRIT also failed to prepare proforma accounts, which were required for assessing commercial viability.

CHAPTER III: DEPARTMENT OF INFORMATION TECHNOLOGY

3.1 Infructuous expenditure due to non-commercialisation of technology

Failure of Centre for Development of Advanced Computing to develop 'Set Top Boxes with Conditional Access System' resulted in infructuous expenditure of Rs.1.18 crore.

Centre for Development of Advanced Computing (C-DAC), Noida, undertook a project entitled 'Design and Implementation of Set Top Box (STB) for internet access on Television' in March 2005 with the financial assistance of the Department of Science and Technology (DST). This project was taken up in view of the fact that the rural population of India could not avail of the internet facility due to high cost of internet access terminals like PCs etc. The STB to be developed under the project was to be a low cost (around Rs.3500) internet access terminal which could serve the purpose of receiving digital feeds for TV and access internet on TV and hence, would have a huge market demand. C-DAC indicated in its project proposal that it would develop prototypes utilising the expertise it already had in developing different versions of digital STBs, field test them and transfer the technology developed under the project. Indian Telecom Industries (ITI), Bangalore and Electronic Corporation of India Limited (ECIL), Hyderabad were projected as technology takers.

Out of the total project cost of Rs.1 crore, Rs.0.56 crore was to be paid by DST and the balance of Rs.0.44 crore was to be borne by C-DAC. The duration of the project was six months i.e., upto September 2005. DST had emphasised in October 2004 that C-DAC should keep the Telecom Engineering Centre Generic Requirement (TEC-GR) in mind from the design stage itself. The Project Evaluation Committee of DST, while approving the project in December 2004, further observed that the STBs should meet the TEC-GR on broadband access on cable TV architecture. This generic requirement specifically stipulated that STBs must implement the Conditional Access System (CAS).

Though C-DAC made prototypes of STB within the scheduled time of the project, it did not incorporate CAS in the STB. It also could not complete the field trials of the said prototype. In the Project Review Steering Group (PRSG) meeting held in October 2005, C-DAC reported that ECIL, which was already manufacturing other STBs, had shown interest in the future versions of STBs and assured production of the same. Accordingly, PRSG extended the duration of the project for six months (i.e., upto March 2006) for undertaking the field trial of the STB prototypes. PRSG also instructed C-DAC to find out two more vendors in addition to ECIL who would take the technology. However, it was noticed that C-DAC could not identify any other production

agency apart from ITI and ECIL which were projected as technology takers in the project proposal.

The project was completed in March 2006 with a total expenditure of Rs.1.18 crore (the excess expenditure of Rs.0.18 crore was met out of C-DAC fund) and C-DAC submitted the project completion report to DST in April 2006. After submission of the completion report, C-DAC conducted ten more field tests and modified the STB. However, it did not transfer the technology even to the two projected technology takers as it stated that the prevailing market demand was for STB with CAS. C-DAC conducted a seminar in October 2006 in which potential parties were invited for commercialisation of the technology but it found no takers.

Department of Information Technology (DIT), in their reply of November 2008, enclosed a document titled 'STB for Content Services in IP Network' issued by TEC in June 2005 and stated that nothing had been mentioned about CAS in the documents. DIT also stated that cost implication of incorporating CAS in STB was to the tune of about a crore or more of which the licensing fee was about 90 *per cent* and the manufacturing firm would have to bear this licensing cost. Additional manpower cost to C-DAC would have been only of the order of Rs.5-10 lakh but investment was not viable without a confirmation from the manufacturing firm for making payment for the licenses.

The reply of DIT does not reflect the position correctly since the project was sanctioned by DST on the basis of TEC-GR on broadband access on cable TV architecture which stipulated that STBs must implement CAS and DIT's reference was to a different set of generic requirement. As regards cost implication of incorporating CAS in STBs, the reply needed to be seen in view of C-DAC's assurance to PRSG in October 2005 that ECIL had shown interest in future versions of STBs and had assured production of the same.

Thus, failure of C-DAC to follow the generic requirements of the Telecom Engineering Centre regarding implementation of CAS in developing STBs, led to its not being commercialised, even after a lapse of two years, resulting in infructuous expenditure.

3.2 Non-commercialisation of broadband access system for rural communication

Execution of a project without studying the cost effectiveness of equipment to be developed resulted in non-fulfillment of the objective of providing low cost broadband access system for rural communication, thereby rendering the expenditure of Rs.1.31 crore wasteful.

Centre for Development of Advanced Computing (C-DAC), Noida undertook a project entitled 'Development of Orthogonal Frequency Division

Multiplexing[1] (OFDM) based broadband access system for rural communication' in April 2004 with the financial assistance of Department of Science and Technology (DST). The sanctioned cost of the project was Rs.1.06 crore of which DST was to contribute Rs.52 lakh and the duration of the project was one year. The project envisaged development of a broadband-based equipment that would use low cost wireless link to enable every rural house to access high speed data and services. It was also projected in the project proposal that the equipment would be very useful for mass education and distance learning programmes.

Audit scrutiny revealed that though the project was application oriented with production potential, C-DAC did not conduct any cost analysis of the future product before undertaking the project. It was further observed in audit that Indian Telecom Industry (ITI), Bangalore, which was identified as a production agency, repeatedly requested C-DAC (between December 2004 and February 2005) to compute the estimated cost of the proposed equipment for bulk production, to enable them to compare it with the existing market rate. However, C-DAC did not conduct any such cost analysis and continued with the project.

The project was completed in December 2005 after incurring an expenditure of Rs.1.31 crore against a sanctioned cost of Rs.1.06 crore. The excess expenditure of Rs.25.25 lakh was borne by C-DAC.

In the project completion meeting held in February 2006, ITI agreed for production, provided all necessary details were provided by C-DAC to ITI. C-DAC was also asked to finalise the amount for technology transfer and royalty. C-DAC sent the final project report along with the details of cost of the materials, technical specifications, test results etc., to ITI in July 2006. However, the details furnished were not sufficient and ITI, in August 2006, requested C-DAC to intimate the material cost for pilot production of 100 units, 50,000 units and bulk production of one lakh units. C-DAC did not furnish the required details as it did not prepare any such cost estimates and, therefore, the affordability of the product could not be established. Further, ITI Bangalore did not produce the equipment due to technology upgradation. C-DAC also did not take any initiative to commercialise the product through any other agency.

Thus, the objective of providing low cost broadband access system for rural communication could not be achieved, thereby rendering the expenditure of Rs.1.31 crore wasteful.

DIT, in its reply of November 2008, neither provided reasons for not conducting cost analysis of the product nor explained reasons for non-commercialisation of the product and stated that the product was still operational and available in the laboratory to be seen and verified. The reply

[1] OFDM is a modulation technique for transmitting large amounts of digital data over a radio wave. OFDM works by splitting the radio signal into multiple smaller sub-signals that are then transmitted simultaneously at different frequencies to the receiver.

of DIT needs to be viewed in light of the fact that there is no future scope for commercialisation of the product in view of technology upgradation.

3.3 Unfruitful expenditure due to non-finalisation of lease deed on acquisition of land

Failure of Centre for Development of Advanced Computing (C-DAC) to ensure finalisation of the lease deed within the validity period and to make payment to Pune Municipal Corporation (PMC) without signing lease deed resulted in unfruitful expenditure of Rs.72.06 lakh paid as premium and Rs.16.18 lakh incurred on security for the land. Further, C-DAC also incurred loss of interest amounting to Rs.45.64 lakh as premium paid to PMC remained idle due to non-commencement of construction activities.

Centre for Development of Advanced Computing (C-DAC), is an autonomous scientific society under the Department of Information and Technology (DIT), Government of India. It is a national initiative of the Government of India for the design and development of supercomputers and supercomputing.

Land at Pune

C-DAC, in May 1997, responded to a public tender notice issued by the Pune Municipal Corporation (PMC) for leasing out two acres of land which was reserved for educational purposes at Vishrantwadi, Pune. PMC had acquired this land in October 1992 from the Government of Maharashtra on a lease basis for a period of 15 years till October 2007. C-DAC proposed in June 1997 to construct an Advanced Computer Training School along with its Research and Development (R&D) wing, hostel, staff quarters etc., within a time frame of five years i.e., by June 2002.

PMC offered the land to C-DAC on lease basis for nine years at a premium of Rs.72.06 lakh in September/October 1998 stating that further efforts would be made to increase the lease period. C-DAC had initially agreed to pay Rs.36.06 lakh at the time of execution of lease agreement and balance amount in monthly installments of Rs.1 lakh each. However, it was observed in Audit that without signing the lease agreement, C-DAC made the entire payment in two installments of Rs.36.06 lakh and Rs.36 lakh in March and August 2000 respectively. C-DAC took over the possession of the land in April 2000.

However, even after lapse of over eight years from the date of acquisition of the land, C-DAC neither commenced its construction activities, nor finalised the lease agreement till date (September 2008). The main reason for non-finalisation of the lease agreement was that C-DAC did not agree to PMC's proposal of October 1998 for imparting free training and /or training at concessional fees to the children of PMC employees. Reasons for not resolving this issue before payment of Rs.72.06 lakh in March/August 2000 were not on record. Meanwhile, PMC lost its hold over the land as the lease period expired in October 2007. However, C-DAC had not handed over the land to PMC till September 2008. C-DAC also withdrew its security staff deployed at Vishrantwadi Pune, in January 2008 after incurring an expenditure of Rs.16.18 lakh.

Thus, failure to finalise the lease deed within the validity period of lease and making payment without signing of lease agreement resulted in unfruitful expenditure of Rs.72.06 lakh for over seven years in addition to Rs.16.18 lakh incurred for security of the land. Further, C-DAC also incurred loss of interest amounting to Rs.45.64 lakh as premium paid to PMC remained idle due to non-commencement of construction activities. In addition, the intended objectives of C-DAC to construct the Advanced Computer Training School and allied infrastructure for imparting training and carrying out R&D activities from this campus also remained unachieved.

DIT stated in September 2008 that the second installment of Rs.36 lakh was paid to avoid payment of 10 *per cent* interest on balance amount and admitted that it would not have been prudent to invest large amount for construction which it would occupy only for few years. It also stated that C-DAC was pursuing with PMC the extension of lease duration and formal signing of lease agreement. It further claimed that the land continued to remain with C-DAC and had not been surrendered implicitly or otherwise.

The reply needs to be viewed in light of the fact that C-DAC has not been able to execute the lease deed with PMC despite making payment for the same way back in the year 2000 and further, the lease period had already expired in October 2007.

CHAPTER IV: DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

4.1 Non-recovery of dues from private company on short-closure of the project

Failure of Department of Scientific & Industrial Research to adhere to the provisions of the agreement resulted in non-recovery of Rs.27 lakh from a private firm. In addition, objectives of the project, which were of vital importance for national security, remained unachieved.

Department of Scientific & Industrial Research (DSIR) sanctioned a project titled 'Development of 32 Channel Digital Voice Logger[1]' to M/s Abacus Softech, New Delhi in March 2004. The total cost of the project was Rs.2.15 crore, out of which the share of DSIR was Rs.75 lakh. The objective of the project was to develop an upgraded Digital Voice Logger having additional features like allowing 32 channels to be recorded simultaneously, Windows 2000 compatibility, fax compatibility etc. National Research Development Corporation (NRDC) was to license the developed technology to third parties on behalf of DSIR and M/s Abacus Softech. The project was scheduled to be completed by March 2005.

As per the agreement signed in March 2004:

- DSIR had the right to terminate the agreement, based on recommendation of Project Review Committee (PRC) at any stage, if it was satisfied that money released had not been properly utilised, if appropriate progress had not been made and if the project was not being carried out as per terms and conditions/nature and scope of the project (Clause 13 a).
- DSIR had the right to recover the entire grant disbursed by it along with 12 *per cent* simple interest from M/s Abacus Softech if it abandoned the project on its own without approval of DSIR or if the project was terminated as above (Clause 13 b).
- If the project was abandoned for any techno-economic reasons, other than the above, based on recommendations of PRC and as directed by DSIR, M/s Abacus Softech was to pay back all unspent grant and interest accrued thereon and/or any amounts recoverable by way of disposal of assets procured out of DSIR funds (Clause 13 c).

DSIR released Rs.30 lakh in March 2004 and the project was reviewed by Project Review Committee (PRC) in July 2004, February 2006 and April 2006

[1] A parallel port based digital voice recorder for recording conversations on a parallel line from a telephone exchange.

with DSIR proposing to close down the project in May 2007. It was observed that:

- M/s Abacus Softech did not submit any monthly reports on project activities to DSIR despite directions.
- M/s Abacus Softech informed DSIR in February 2006 that the project was expected to be completed by 31 August 2006, though it did not submit any of the requisitioned documents except the revised schedule for the completion of the project.
- DSIR arranged a surprise visit to M/s Abacus Softech in August 2006, and was informed that the project would be completed by 10 September 2006. However, M/s. Abacus Softech neither completed the project nor submitted the statement of expenditure/utilisation certificate (SoE/UC).
- DSIR again arranged a surprise visit in February 2007 and was assured by M/s Abacus Softech that the project would be completed by 20 April 2007 and the SoE/UC would be submitted by 23 February 2007. However, the project could not be completed.

In May 2007, M/s Abacus Softech stated that due to the employee turnover, it had incurred loss and was not in a position to continue the project. It requested for waiver of interest and agreed to return the entire grant of Rs.30 lakh to DSIR. It was observed in audit that though the company failed to adhere to its commitments to complete the project, instead of insisting payment of interest at the rate of 12 *per cent* along with the full government grant (Rs.30 lakh), PRC recommended that NRDC would collect 50 *per cent* of the grant i.e., Rs.15 lakh from M/s Abacus Softech along with audited Statement of Expenditure (SoE)/UC by 15 June 2007. It further allowed M/s Abacus Softech to close the project as per clause 13 (c) of the agreement, if it maintained the above schedule.

It was noticed that that M/s Abacus Softech sent a cheque of Rs.15 lakh on 26 June 2007 to NRDC requesting NRDC to deposit the same after 4 July 2007 due to shortage of funds. NRDC transferred Rs.15 lakh in March 2008 to the Government Account. However, the SoE/UC of the balance amount from M/s Abacus Softech has not been received till September 2008.

DSIR replied in March 2008 that PRC recommended recovery of only the unspent grant and interest accrued, instead of recovery of the entire grant disbursed by DSIR along with interest, as M/s Abacus Softech had not willfully defaulted. DSIR further replied in October 2008 that failures are common in R&D projects and that PRC protected the interests of the Government by making M/s Abacus Softech agree to return Rs.15 lakh as it is known from experience that a disputed claim would end up in arbitration with unpredictable result. DSIR also took the view that the government had lost some money but the small firm lost much more.

The reply is not acceptable as M/s Abacus Softech had agreed to refund the entire grant of Rs.30 lakh while DSIR claimed a refund of only half the amount. DSIR and PRC were also not aware whether the money released by them had been properly utilised till date as no SoE/UCs had been furnished by M/s Abacus Softech Since the company did not adhere to the schedule of payment, as recommended while closing the project, closure of the project under clause 13(b) and recovery of the entire grant along with interest was the appropriate course of action.

Thus, the action taken by DSIR against the defaulting company was not in consonance with the agreement, which resulted in non-recovery of Rs.15 lakh of principal amount and Rs.12 lakh as interest. In addition, objectives of the project which were of vital importance for national security, remained unachieved.

4.2 Recovery of dues at the instance of Audit

Inaction on part of National Institute of Oceanography, Goa in recovering rent and electricity charges etc., resulted in accumulation of dues amounting to Rs.47.71 lakh for over 17 years of which Rs.31.53 lakh were recovered at the instance of Audit.

National Institute of Oceanography (NIO) Goa, a constituent unit of Council of Scientific and Industrial Research (CSIR), had leased its premises to various organisations like State Bank of India (SBI), Bharat Sanchar Nigam Ltd (BSNL), India Meteorological Department (IMD) and other units like Apna Bazar etc. NIO was collecting lease rent and water and electricity charges from these agencies. However, it was noticed in audit that NIO neither revised the lease agreements nor collected dues of Rs.47.71 lakh as discussed below:

- **SBI**: In August 1994, SBI executed a lease agreement with NIO for three years with effect from December 1993 at the rate of monthly licence fee of Rs.2990 for carrying out its banking business at NIO Campus, Goa. The agreement has not been renewed as of July 2008 despite its expiry in December 1996. In May 1999, in view of an audit observation, NIO constituted a Rent Control Committee under the directives of CSIR of April 1984[2]. Accordingly,

[2] Instructing laboratories of CSIR to charge standard license fee/market rent from bank.

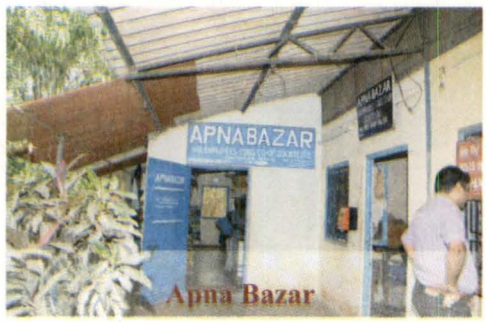
NIO revised the rent to Rs.7100 and Rs.20,476 per month from October 2000 and April 2001 but the same was communicated to SBI only in February 2002. However, SBI continued to pay the old rate of Rs.2990 per month stating that the matter was referred to the higher authorities of the bank. It was only after five years in January 2007 that NIO asked SBI to pay the revised rent. Further, in April 2008, rent was fixed at the rate of Rs.25,595 per month and Rs.59,300 per month from April 2006 and April 2008 respectively.

This inaction of NIO in recovery of the rent at revised rate had resulted in accumulation of outstanding recovery of rent of Rs.16.46 lakh towards license fee as of March 2008. Moreover, as per the provision in the lease agreement, interest at the rate of 18 *per cent* per annum was required to be levied on the defaulted amount. In view of this, the interest payable worked out to Rs.11.47 lakh as of March 2008. NIO also did not recover the electricity and water charges payable by the bank since it occupied the NIO premises. NIO, in July 2008 and in October 2008, confirmed the recovery of Rs.12.88 lakh and Rs.16.46 lakh from SBI towards electricity and water charges for the period December 1993 to June 2008 and rent for the period upto 31 March 2008 respectively. It further stated that rent for the period beyond April 2008 would be finalised after review. However, the fact remains that NIO made the recovery of rent only at the instance of Audit and interest amount of Rs.11.47 lakh still remained to be recovered as of October 2008.

- **BSNL**: NIO had fixed a rent at the rate of Rs.1802 per month from August 1994 and Rs.4373 from April 2001. BSNL vacated the premises in January 2004 without paying the arrears of rent amounting to Rs.2.92 lakh pertaining to the period August 1994 to March 2001. NIO, in October 2008, stated that the matter would be pursued with higher authorities.

- **IMD:** NIO had fixed a rent at the rate of Rs.2050 per month from May 1978 and Rs.4996 from April 2001. IMD vacated the premises in May 2004. Arrears of Rs.1.62 lakh towards rent, electricity and water charges were yet to be paid by IMD for the period April 1991 to March 1992 and April 2002 to May 2004. NIO, in October 2008, stated that the matter was being taken up with the concerned authorities for remittance.

- **Apna Bazar:** NIO had leased out an area of 102.40 sq.metres to Apna bazar in August 1994. NIO decided in January 2007 to fix the rent at the rate of Rs.500 per month plus five *per cent* profit plus electricity charges from August 1994, Rs.2445 from October 2000 and Rs.9193 from April 2001. On request by Apna Bazar, a revised rent at the rate of Rs.3050 was fixed from April 2001. It was also decided that arrears from April 2001 to



Apna Bazar

December 2006 would be paid in 30 installments. Audit examination in July 2008 disclosed that Apna Bazar had not paid the outstanding dues of Rs.2.20 lakh for the period April 2001 to March 2007. On being pointed out by Audit, NIO made recovery of outstanding dues amounting to Rs.2.20 lakh in October 2008.

Thus, lackadaisical attitude of NIO in effecting prompt renewal of lease agreement, levy and recovery of revised rent, electricity charges etc., allowed accumulation of Rs.47.71 lakh for over 17 years of which Rs.31.53 lakh was recovered only after being pointed out by Audit. Moreover, inaction of NIO was in contravention of the Rule 9 and 15(1) of General Financial Rules which stipulated that the Administrator of the concerned Department was responsible for proper/prompt assessment and collection of Government receipt, rent and dues and their credit to the Consolidated Fund of India or Public Accounts as the case may be.

Recommendations

10. CSIR may review the position in all laboratories/institutes to ensure that the agreements relating to giving its premises to other users are revised periodically and appropriate charges on account of lease rent, electricity and water charges etc., are recovered from them promptly.

11. CSIR may also institute a mechanism to ensure accountability of the concerned officials who fail to safeguard its interest.

4.3 Avoidable expenditure on electricity for staff quarters

Failure of Central Institute of Mining and Fuel Research, Dhanbad to get separate electric connection for its staff quarters despite assurance given by CSIR in July 2003 resulted in avoidable expenditure of Rs.32.70 lakh from August 2003 to March 2008 due to payment of electricity charges at commercial rates for residential staff quarters.

Central Institute of Mining and Fuel Research (CIMFR), Dhanbad (formerly Central Mining Research Institute), a constituent unit of Council of Scientific and Industrial Research (CSIR), gets its supply of high tension bulk electrical energy from Jharkhand State Electricity Board (JSEB) for use in office cum laboratory building as well as staff quarters. For consumption of electricity, CIMFR paid energy charges at the rate of Rs.4.22 per kWh to JSEB upto April 2004 and Rs.4 per kWh from May 2004 onwards. Inspite of paying charges for electricity at higher rates, i.e., rates for high tension bulk supply, CIMFR recovered the charges for supplying electricity to the residents of the staff quarters at lower domestic rates ranging from Rs.1.12 to Rs.1.37 per unit.

Earlier, in an Action Taken Note on paragraph 4.1 of the Report of the Comptroller and Auditor General of India (No.5 of 2003), CSIR had stated in July 2003 that instructions had been issued to all its national

laboratories/institutes to switch over to individual connections for its residential houses. But these instructions were not strictly complied with.

Analysis of consumption details of electricity from August 2003 to March 2008 of 172 staff quarters revealed that CIMFR recovered Rs.14.61 lakh from the occupants of the staff quarters against the amount of Rs.47.31 lakh paid to JSEB at the rates applicable for high tension bulk supply energy charges. This led to an extra payment of Rs.32.70 lakh to JSEB which was avoidable.

It was observed that CIMFR approached JSEB in October 2003, March 2004, September 2007 and April 2008 to get a separate connection for the staff quarters. However, it was seen that the matter was taken up with JSEB at the level of only General Manager-Cum-Chief Engineer and the Electrical Superintending Engineer and not at an appropriately higher level. Further, CIMFR also did not pursue the matter with a sense of urgency.

CIMFR stated in April 2008 that despite their repeated requests, no tangible reply from JSEB had been received. Reply of CIMFR needs to be viewed in the light of the fact that JSEB had advised CIMFR to segregate the domestic utility points from other utilities so that a separate High Tension – Domestic Supply (HT-DS) connection could be provided to CIMFR residential colony, after demand, on proper application. Had CIMFR pursued the matter effectively with a sense of urgency, the matter could have been resolved much earlier.

Thus, failure of CIMFR to get separate electric connection for its staff quarters despite instructions of CSIR issued in July 2003, resulted in avoidable expenditure of Rs.32.70 lakh from August 2003 to March 2008, on account of payment of electricity charges at commercial rates for residential staff quarters.

4.4 Activities of Institute of Minerals and Materials Technology, Bhubaneswar

Although Institute of Minerals and Materials Technology developed 35 technologies from 27 projects, it failed to transfer and commercialise a single technology. There were shortfalls in achievement of targets for generation of revenue and filing of patents. Project documentation was weak in respect of in-house projects. Intellectual fees and service tax amounting to Rs.29.20 lakh was under-charged in a number of consultancy projects which indicated lack of internal controls. Delays in the range of 6 to 63 months were noticed in installation and commissioning of 26 imported equipment. Management Council did not meet for the mandated number of times and monitoring at higher levels was inadequate.

4.4.1 Introduction

Institute of Minerals and Materials Technology (IMMT), formerly Regional Research Laboratory (RRL) was set up as a premier establishment of the Council of Scientific & Industrial Research (CSIR) in 1964 at Bhubaneswar, Orissa. The Institute provides research and development (R&D) support in Eastern India for process and product development with special emphasis on conservation and sustainable utilisation of natural resources.

IMMT is headed by a Director who is assisted by a Research Council (RC) and a Management Council (MC). IMMT has 13 divisions which undertake research activities in various disciplines. While RC reviews the progress of research, MC manages the day-to-day affairs and environs of IMMT.

IMMT received Rs.57.17 crore under Plan and Rs.36.86 crore under Non-Plan funds from CSIR during 2003-08. In addition, during these years, IMMT received Rs.18.88 crore from Government Departments/other agencies for undertaking various projects.

Audit examined the activities of IMMT with regard to financial management, R&D, stores, purchases and other activities pertaining to the period 2003-04 to 2007-08. Audit findings are brought out in the succeeding paragraphs.

4.4.2 Audit findings

4.4.2.1 Generation of External Cash Flow

The laboratories/institutes of CSIR generate external cash flow (ECF) by undertaking projects funded by the Government/non-government organisations and from the charges collected on testing, calibration and licensing of the technologies transferred. Performance Appraisal Board (PAB) of CSIR recommended in January 2002 that ECF of IMMT should increase to about 40 *per cent* of the government grant by the end of the Tenth Five Year Plan.

Scrutiny revealed that though IMMT received government grant ranging between Rs.12.74 crore and Rs.25.10 crore during 2003-08, its earning from ECF varied only between Rs.2.15 crore and Rs.7.29 crore, registering a shortfall of 26 *per cent* to 63 *per cent*, thus continuing its dependence on government grants.

IMMT stated in August 2008 that serious efforts were being made to enhance ECF. CSIR stated in March 2009 that the suggestions of PAB regarding target for generation of ECF were received by the laboratory in 2005 and its findings were taken as future guidance. The reply of CSIR needed to be viewed in the light of the fact that this important suggestion of PAB was communicated to IMMT after expiry of more than two years.

Though we recognise the fact that there have been improvements in the generation of ECF during the last two years, IMMT needs to make sustained efforts to achieve the prescribed targets.

4.4.2.2 Filing of Patents

In Annexure D to paragraph 3.6.1.3 of the Report of the Comptroller and Auditor General of India for the year ended 31 March 2006 (No.2 of 2007, Performance Audit, Scientific Departments), a mention was made regarding failure of IMMT to achieve the target of filing foreign patents fixed by PAB in 2001-02. Scrutiny revealed that IMMT filed only three foreign patents as against the target of 20 patents during 2006-08. Thus, IMMT registered a shortfall of 85 *per cent* in respect of filing of foreign patents against PAB targets. Further, IMMT filed 16 patents in India though no targets were fixed for the same. Of the 19 patents filed (Foreign:3 and Indian:16), none has been granted so far. However during the period during 2003-08, only three patents were granted which were filed prior to April 2003.

IMMT in its reply of August 2008 did not explain the reasons for shortfall in filing of foreign patents against the targets fixed by PAB. As regards delay in grant of filed patents, it clarified that the Indian Patent Office takes five to six years on an average to grant a patent. CSIR stated in March 2009 that IMMT is making concerted efforts to file patents based on their R&D work to achieve the set targets.

Recommendation

12. IMMT may make efforts to achieve its targets for filing and sealing of patents.

4.4.2.3 Non-commercialisation of technologies

During the period 2003-08, IMMT developed 35 technologies from 27 projects but failed to transfer a single technology till date, as it did not attract any user industry.

IMMT stated in August 2008 that efforts were being made to seek funds for up-scaling the developed technologies. CSIR stated in March 2009 that IMMT was pursuing with industry, including engineering consultants, arrangements for scaling up of technologies at pilot and higher scale as this capability was not available in-house. It also stated that it was making fresh efforts to tie up with engineering firms to develop full technological packages.

Recommendation

13. MMT may ensure association of industry at appropriate stages of development of technology to ensure successful commercialisation of developed technologies.

4.4.2.4 Project Management

Project management of in-house, grants-in-aid, sponsored, collaborative and consultancy projects undertaken by IMMT was studied with regard to their planning, implementation and monitoring. During 2003-08, IMMT completed

190[3] projects. A sample of 50 *per cent* of completed projects was selected for detailed review in audit.

(a) In-house projects

IMMT completed 15 projects during 2003-08. IMMT spent Rs.2.59 crore in 13 out of these 15 projects[4]. However, of the 15 completed projects, IMMT failed to furnish project documents viz., project proposals, progress reports and final reports of 12 projects. Of the remaining three projects, though IMMT furnished final reports, it could not furnish the relevant project proposals in respect of two projects. Therefore, the achievement of objectives of 14 completed projects could not be verified in audit due to non-maintenance of documents of in-house projects.

IMMT/CSIR stated in August 2008/March 2009 that audit observations regarding weakness in project documentation were noted for compliance in future and serious steps were being taken for streamlining the system of maintenance of documents for in-house projects.

Recommendation

14. IMMT may improve its documentation of projects to provide support of the work done and also to aid peer review, both internal and external.

(b) Grants-in-aid projects

During 2003-08, IMMT completed 49 projects and dropped one project. Audit examination of these projects revealed:

- delay in completion of the projects ranging from 3 months to 25 months was noticed in 26 out of 49 completed projects;
- non-preparation of final reports of 16 completed projects; and
- non-achievement of project objectives and also failure to utilise funds provided by the clients due to ineffective project management.

CSIR stated in March 2009 that non-production of completion reports for 16 Grants-in-aid projects would be looked into.

In four cases costing Rs.3.69 crore, technologies were not transferred as IMMT could not identify industrial partner or failed to test the results of the bench scale studies in the pilot plants, thus rendering the expenditure unfruitful. In one project costing Rs.19 lakh, IMMT did not provide necessary manpower for the project in time and failed to clarify doubts raised by the Ministry to its satisfaction which resulted in Ministry's decision of not providing further funds and time extension. In another project costing

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[3] 15 In-house projects, 49 Grants-In-Aid projects, 71 Sponsored projects, 25 Consultancy projects, 16 Collaborative projects and 14 Network projects.

[4] Expenditure on remaining two projects was not furnished.

Rs.12.80 lakh, IMMT closed the project before completion of the work for want of funds.

Important audit findings on four projects where the technologies were not transferred are discussed below:

(i) A project titled 'Smelting reduction of chromite for manufacture of Ferro Chrome/charge Chrome' was undertaken in April 2002 for a period of one year at a cost of Rs.3 crore. Ministry of Steel (MoS) was to contribute Rs.23.31 lakh to the project cost. As per the project proposal, after successful completion of the laboratory scale investigation in phase I of the project, results of the research were to be tested in a pilot plant in phase II. Due to delay in completion of the work of the first phase of the project, the project duration was extended by one year.

After completion of laboratory scale studies in March 2004 (extended up to July 2004), one interactive meet was organised in September 2005, where Indian Metal and Ferro Alloy Corporation (IMFAC) agreed to take part in the proposed pilot plant work and requested IMMT to interact with IMFAC and other ferro-chrome industries for possible participation in proposed pilot plant work. Meanwhile, the project leader retired and IMMT neither took initiative to interact with IMFAC nor approached MoS for release of funds for phase II of the project.

Thus, the result of the bench scale studies could not be tested in the pilot plant due to lack of initiative on part of IMMT to undertake further work.

IMMT/CSIR stated in August 2008/March 2009 that no further proposal was sent to MoS for funding due to shift in their priority by IMFAC. The replies of IMMT/CSIR needed to be viewed in the light of the fact that IMMT failed to convince IMFAC about the importance of undertaking second phase work to translate bench scale studies in the pilot plant. As such, the work done in the first phase could not be brought to a logical conclusion despite an expenditure of Rs.23.31 lakh.

(ii) IMMT proposed to undertake a project titled 'Preparation of Nickel Hydroxide Suitable for Nickel Cadmium and Nickel Metal Hydride Batteries' at a cost of Rs.30.13 lakh and forwarded the proposal to the Ministry of Non-Conventional Energy Sources (MNES), New Delhi. The objectives of the project were preparation of nickel hydroxide by using selected additives/complexing agents by chemical followed by hydrothermal treatment. While examining the project proposal, the experts of MNES suggested in December 2002 that the project might be carried out in collaboration with battery industry. IMMT informed in January 2003 that the end user M/s. HBL Nife Power System Ltd., Hyderabad would be associated with the project. IMMT initiated the work on the project in May 2003 and completed it in November 2005 after incurring an expenditure of Rs.24.57 lakh. Scrutiny revealed that after completion of the project, no work was undertaken for

commercialisation of the technology developed in bench scale resulting in the expenditure of Rs.24.57 lakh being infructuous.

IMMT stated in August 2008 that commercialisation of the technology would be possible only after techno-economic feasibility report and successful demonstration of such results. The reply of IMMT tends to suggest that it failed to prepare techno-economic feasibility report on the project despite a lapse of nearly three years.

CSIR stated in March 2009 that IMMT was looking for sponsors in the limited battery industry sector and that it has patented the technology.

Thus, failure of IMMT to conduct pilot plant studies in association with battery industry resulted in non commercialisation of the technology developed at a cost of Rs.24.57 lakh, which has been rendered infructuous.

(iii) A project titled 'Recovery of Gallium from Bayer Liquors using Ion-exchange/chelating Resin (Part-II)' was undertaken by IMMT in August 1999 at a cost of Rs.65.94 lakh jointly with Central Electrochemical Research Institute (CECRI), Karaikudi. The project was to be funded by the Department of Science and Technology (DST). Of these, DST was to contribute Rs.13.62 lakh and Rs.31.30 lakh to IMMT and CECRI and Rs.8.47 lakh and Rs.12.55 lakh were to be contributed by them respectively. The duration of the project was three years. In the project, IMMT was to establish the optimum conditions to recover Gallium from Bayer Liquor to a level of 50-100 gms/day/cells. IMMT completed the project after extension of nine months in April 2003. It was observed that the same could not be translated to pilot plant scale for possible commercialisation as funds were not forthcoming in the form of sponsored projects from the aluminium industry.

CSIR stated in March 2009 that since the market for gallium was saturated and there was lack of interest in the industry, the technology could not be commercialised. It also stated that it would be more watchful in future.

Thus, the technology developed remains to be commercialised five years after the completion of the project as no industry has shown its interest in the technology for funding pilot plant studies and further commercialisation.

(iv) In April 2004, IMMT signed a Memorandum of Understanding (MoU) with Technology Information, Forecasting & Assessment Council (TIFAC), New Delhi for undertaking a project titled 'Development/up-gradation of technology on manufacture of cold setting fly ash bricks/products with ash content around 80 *per cent*'. As per the MoU, the total cost of the project was Rs.17 lakh and TIFAC was to contribute Rs.8.50 lakh. MoU also indicated that the prime objective of the project was to transfer the technology for large-scale utilisation.

The project started in April 2004 for period of one year. IMMT sought three extensions due to delay in procurement and installation of equipment, which were approved by TIFAC upto June 2006. IMMT developed the technology

for manufacturing 4000 bricks per shift capacity at laboratory scale. This technology was demonstrated to industries like National Thermal Power Corporation, National Aluminium Company Limited etc. However, it was observed in audit that this technology could not be transferred to industrial partners for large scale utilisation as the industries wanted a proven technology at a pilot plant scale of 8000 to 10,000 bricks per shift capacity.

CSIR stated in March 2009 that TIFAC had sanctioned Rs.2.19 crore to set up the pilot plant facility at IMMT. However, the fact remains that the prime objective of the project which was to transfer the technology for large-scale utilisation has still not been achieved.

(c) Sponsored projects

During 2003-08, IMMT completed 71 sponsored projects. Scrutiny of completed projects revealed that IMMT did not prepare final reports of 10 projects and delay in completion ranging from three months to 15 months was observed in 11 projects.

CSIR stated in March 2009 that the deviations observed by audit would be looked into to improve institute's functioning.

(d) Consultancy projects

During 2003-08, IMMT completed 25 consultancy projects. It was noticed that there was short realisation of intellectual fee and service tax amounting to Rs.29.20 lakh in respect of consultancy projects test checked. Further, IMMT did not submit final reports in respect of eight projects and the reports of six projects were submitted after a delay ranging between three months to seven months.

Important findings are discussed below:

(i) Undercharging of intellectual fees

The guidelines for technology transfer and utilisation of knowledgebase issued by CSIR in August 1989 provided that the Laboratories/Institutes of CSIR, while arriving at the cost of the sponsored and collaborative projects would *inter alia*, calculate the intellectual fees to be charged from clients. As per the guidelines, the rate of intellectual fee would be 33.3 *per cent* of the direct expenses of the contract projects. The rate of intellectual fee was, however, revised to 40 *per cent* with effect from June 2005. Further, in the case of consultancy projects, the intellectual fee would be at least equal to the manpower charges, a component of the direct expenses of the projects.

Scrutiny revealed that in 13 consultancy projects which were to be executed during March 2003 to November 2008, IMMT did not charge intellectual fees in 11 projects and in two projects, it undercharged the client which resulted in short realisation of intellectual fee of Rs.24.53 lakh.

IMMT/CSIR stated in August 2008/March 2009 that IMMT is now strictly following the guidelines for charging intellectual fee.

(ii) Non/undercharging of Service Tax

As per the Finance Act, 2001, any scientific or technical consultancy, advice or assistance rendered in any manner by a scientist or a technocrat or any science and technology institution to a client in one or more disciplines of science or technology are termed as scientific or technical consultancy and such services attract service tax.

CSIR, in November 2004, instructed the laboratories/institutes to realise service tax on all scientific and technical services rendered to the clients. Scrutiny revealed that in 15 consultancy projects, IMMT did not charge service tax from 13 parties and undercharged it from two parties resulting in non/undercharging of service tax totalling Rs.4.67 lakh.

CSIR/IMMT stated in March 2009/August 2008 that IMMT is now strictly following the instructions for charging service tax.

4.4.2.5 Stores and Purchase

During 2003-08, IMMT imported 127 equipment costing Rs.25.33 crore. It was observed that of the imported equipment, installation of 48 equipment costing Rs.15.05 crore was delayed. The extent of delay ranged from 6 months to 36 months, and in one case, 63 months as can be seen from the table below:

Table VII

Delay in installation	Number of equipment
6 to 12 months	18
12 to 24 months	4
24 to 36 months	3
More than 36 months	1 (63 months)
Total	**26**

CSIR in its reply of March 2009 did not explain the reasons for delay.

Recommendation

15. IIMT may ensure timely installation of equipment so that the equipment are utilised for the intended purpose.

4.4.2.6 Non-completion of laboratory building

In March 2005, IMMT issued work order to a contractor for construction of a laboratory building under a project titled 'Custom Tailored Special Materials' at a cost of Rs.23.06 lakh for completion within a period of nine months from the date of execution of the agreement. The purpose of the laboratory building was to provide space for activities like high temperature material synthesis, mechanical testing of advanced materials and slag characterisation which were to be carried out as part of the project.

IMMT executed the agreement for construction of the building in the same month i.e., March 2005. It was observed in audit that the building could only be completed in December 2007 at a cost of Rs.27.49 lakh after a delay of nearly two years. This delay was mainly due to making provision for additional items, increase in the scope of work and delay in handing over structural designs. As the project was completed in March 2007, the laboratory could not be utilised for the intended purpose thereby rendering the entire expenditure of Rs.27.49 lakh infructuous.

Thus, failure of IMMT to finalise the structural design of the building in time and enhancement of the scope of the work resulted in non-utilisation of the building for the entire duration of the project for which it was constructed thereby rendering the expenditure infructuous.

CSIR accepted the facts and stated in March 2009 that the work was stretched due to change in scope of work and extra work done by contractor.

4.4.2.7 Monitoring and evaluation

As per the by-laws of CSIR, there shall be a Management Council (MC) for each laboratory to administer and manage the affairs and environs of the laboratory. The functions of MC include monitoring the progress of R&D and other activities of the laboratory. The by-laws also provide that MC shall meet as and when required for effective management of the laboratory/institute, but not less than thrice in a financial year.

Scrutiny revealed that during 2003-08, MC did not meet even once during 2003-04 and 2005-06 and met on only four occasions during 2004-05, 2006-07 and 2007-08, as against scheduled nine meetings. Though reasons for shortfall in conducting meeting of MC were not communicated, IMMT stated in August 2008 that efforts would be made to convene the meetings as per the prescribed frequency. CSIR accepted the facts and stated in March 2009 that due to non-availability of external member and regular Director, the meetings of MC could not be organised.

4.4.3 Conclusion

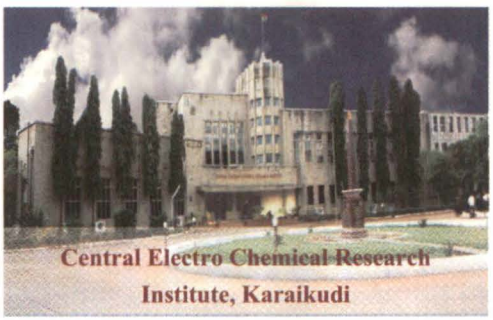
It was seen that during the period 2003-08, although IMMT developed 35 technologies, it failed to transfer and commercialise a single technology. The target fixed for filing of patents was not achieved. Of the patents filed, none were granted during the period of review. Non-achievement of objectives and non-commercialisation of developed technologies were observed in a number of grants-in-aid and sponsored projects and there were deficiencies in maintenance of documents in respect of in-house projects. Undercharging of intellectual fees and service tax amounting to Rs.29.20 lakh were observed in consultancy projects. Cases of delays of over six months in installation of equipment were also observed. Monitoring and evaluation of projects was inadequate and needed to be strengthened to ensure timely achievement of project objectives.

4.5 Development of technologies on batteries/cells and their commercialisation by Central Electro Chemical Research Institute, Karaikudi

Technologies/processes developed under nine disciplines of major R&D programmes could not be transferred to industries due to non-existence of demand from industries and deficiencies in technology developed thus rendering expenditure of Rs.3.72 crore by Central Electro Chemical Research Institute unfruitful.

4.5.1 Introduction

Central Electro Chemical Research Institute, Karaikudi (CECRI), a constituent unit of Council of Scientific and Industrial Research (CSIR), conducts research in different areas of electrochemistry and allied fields to develop new processes and products in the areas of specialisation. CECRI undertook major research and development programmes under 10 disciplines i.e., (i) batteries and power sources; (ii) corrosion science & engineering; (iii) electro-chemicals; (iv) electrochemical material science; (v) electro hydrometallurgy; (vi) electro-pyrometallurgy; (vii) electrochemical instrumentation; (viii) electronics; (ix) electro-biology; and (x) industrial metal finishing.



Central Electro Chemical Research Institute, Karaikudi

During the period 2002-07, projects completed in nine[5] of the 10 disciplines were reviewed in audit to study the commercial success of the R&D activities in these areas. Of the 17 projects taken up under these nine disciplines, 11 projects had been completed. Audit examined all the 11 projects completed after incurring an expenditure of Rs.4.04 crore and having the objective of commercialisation of technology/process. The audit findings in respect of eight such projects are discussed in the succeeding paragraphs.

4.5.2 Audit findings

4.5.2.1 Non-commercialisation of technology

(i) Development of Batteries for electric vehicles

CECRI submitted a project proposal to Ministry of Non-renewable Energy Sources (MNES)[6] in December 1995 in collaboration with Defence

[5] No project was completed in corrosion science & engineering discipline.

[6] Now Ministry of New and Renewable Energy.

Metallurgical Research Laboratory (DMRL) and Banaras Hindu University (BHU), Varnasi. The objective of the project was to develop Nickel-Metal Hydride (Ni-MH) Batteries system and facilitate a prototype of 1-2v/50 AH[7] for electrical vehicle applications. The product developed was to be a maintenance-free sealed version.

MNES sanctioned the project titled 'Development of High Energy Density Nickel-Metal Hydride Batteries for electric vehicles' in March 1998 at a cost of Rs.1.13 crore for a duration of 30 months.

The project was completed in September 2001 after an expenditure of Rs.1.13 crore with CECRI assembling and testing more than 60 1.2 V/50 AH cells. However, it was observed in audit that no industry was identified for participation even during the tenure of the project, though it was decided in the internal project meeting held in March 1999 that industrial participation would be initiated at appropriate stages.

In September 2002, CECRI submitted a fresh proposal to MNES for Phase II of project with the objectives to design and fabricate advanced Ni-MH battery packs for electric cycles using indigenous MH alloys. Phase II of the project was also sanctioned by MNES in December 2003 at a cost of Rs.24.96 lakh for a duration of two years.

Meanwhile, the Research Council of CECRI constituted a Core Committee comprising of experts to review ongoing R&D activities of CECRI. The Core Committee observed in August 2005 that Ni-MH was costlier than Ni-Cd and even Lithium-ion and cycle life was also lower. The observations of the Core Committee indicated that the batteries developed by CECRI were deficient in quality and unsuited for the intended purpose.

CECRI completed Phase II of the project in June 2006 by incurring Rs.24.57 lakh. Final report indicated that CECRI assembled and tested more than 100 1.2V/15 AH cells and field trials of electric cycle fitted with the assembled battery pack were successfully completed. But CECRI could not transfer the technology as no industry evinced interest in taking up this technology.

CECRI replied in July 2007 that manufacturers were not prepared for collaboration before initiation of the project due to prevailing industrial recession. It further stated that presently also there was no ready and ripe market and hence technology was not evoking positive response for absorption. CECRI further contended that sealed maintenance-free version as desired by the Core Committee could be developed if adequate funding and support were provided. CECRI also added in its reply that funds allotted for the project were meager and asserted that financial inputs with industry involvement and operation in consortium mode were required for achieving

[7] Ampere hour.

desired results. It also hoped that the battery would find commercial application once the market emerges.

Reply of CECRI needs to be viewed in light of the fact that it had not contacted any industry ever since project was initiated until July 2007, despite emphasis of the Advisory Committee of MNES, on the need for associating vehicle manufacturers in the project. Despite clarifying in December 1996 to MNES that the battery developed would be a maintenance-free sealed version, CECRI developed a vented version.

CSIR, in March 2009, however, stated that interest in the development of Ni-MH batteries has slowly decreased and at present the global interest on the technology is at a bare minimum level. CSIR further stated that rechargeable Lithium batteries have taken the centre stage of battery and for this reason, Ni-MH battery could not be commercialised.

The reply proved that the technology for Ni-MH battery has become obsolete and has already been phased out. Thus, the development of Ni-MH batteries proved to be incorrect as pointed out by MNES in December 1997 and the expenditure of Rs.1.38 crore incurred on Phase-I and Phase-II on the project became infructuous.

(ii) Development and commercialisation of electrochemical cell

DIT sanctioned the project titled 'Electrolytic regeneration of acidic and ammonical cupric chloride etchants with simultaneous recovery of copper' in March 1999 at a total cost of Rs.39.89 lakh for a period of two years with DIT's contribution being Rs.24.49 lakh. The project, though initially envisaged development of two systems i.e., acidic and ammonical cupric chloride etchants, development of ammonical cupric sulphate was also added as an additional item at the instance of Project Monitoring Committee since many PCB industries were switching over to sulphate system from ammonical cupric chloride. CECRI developed three prototypes at the end of the project in March 2002. DIT released additionally Rs.6.35 lakh, making its total contribution Rs.30.84 lakh.

CECRI could install only one demonstration unit at M/s. NSP Electronics. The technology did not attract PCB industries as expected by CECRI even for installation of demonstration units. CECRI, therefore, closed the project in March 2006 after three processes were developed at a cost of Rs.66.75 lakh. In November 2007, CECRI could transfer one process namely 'Regeneration of spent acidic cupric chloride with simultaneous recovery of copper' to M/s. AT&S, and an amount of Rs.10 lakh was received as lump sum fee. The other two processes however were not commercialised.

While accepting that two firms identified for installation of demonstration plants did not respond positively, CECRI replied in November 2005 that efforts to persuade other firms also failed. It is apparent from the reply that there was no demand for the technology developed and application-oriented

project was taken up without ascertaining demand for such technologies among end-users.

CSIR stated in March 2009 that the hesitation on the part of the industries to put up the regeneration plants might be due to the fact that the spent etchant contained high copper which was readily saleable in the secondary market for the recovery of copper as salt. CSIR further stated that even though electrolytic process developed was economical, industries did not want to add another unit operating in their process.

The reply needs to be viewed in light of the fact that CECRI should have ascertained the constraints faced by the industries in adopting the technology by formally conducting market survey and product survey and also associating them in the development of technology.

(iii) Development and technology transfer of 400 watt Hydrogen Generator

MNES sanctioned a project titled 'Development of 400 watt capacity Hydrogen Generator' in March 2003 for duration of two years at a total cost of Rs.40.36 lakh. The objective of the project was scaling up the existing 100 watt (50 ampere capacity) to 400 watt electrolysis module/stack to deliver approximately 0.08 cubic million/hour of hydrogen. CECRI indicated in the project proposal that 400 watt module could be utilised as a pure hydrogen source for some of the small-scale applications and such of those clients for whom this capacity satisfied their requirement would be identified and possible technology transfer considered.

CECRI successfully developed and also demonstrated the hydrogen generator capable of generating 0.08 cubic million per hour of hydrogen, after incurring Rs.38.54 lakh. The project was completed in March 2006. CECRI, however, has not so far identified and transferred the technology to small scale clients as envisaged in the proposal, even after a lapse of more than two years of development of the technology.

CECRI stated in January 2007 that unit developed was cost effective and efforts were being taken to identify clients for transfer of technology. In September 2008, CECRI indicated that the capacity of 400 watt was too small to commercialise and CECRI was in the process of developing 25 kilo watt electrochemical generator for fuel cell application under CSIR network programme. CSIR also stated in March 2009 that up-scaling of the technology was in progress for its commercial use in fuel cell.

Reply of CECRI and CSIR are contradictory to the assertion made by CECRI in the project proposal that 400 watt module could be utilised for various small scale applications and that suitable clients would be identified for possible technology transfer.

(iv) Technology for removal of arsenic from drinking water

CECRI proposed in March 2003 to undertake a project with an objective of developing an electrochemical technology for removal of arsenic content in drinking water to acceptable concentration and scaling up of the process to higher capacities. The developed technology was to be made available to the arsenic affected people of villages in West Bengal by establishing linkages with concerned ministries of central and state governments. Department of Science and Technology (DST) sanctioned a project titled 'Electrochemical Technology for the removal of arsenic from drinking water' in February 2004 for duration of three years at a total cost of Rs.9.73 lakh.

CECRI successfully developed the technology and brought down the presence of arsenic to an acceptable level of international standards like that of World Health Organisation. CECRI also priced the technology at Rs.10 lakh after working out cost estimate and profitability. The removal efficiency achieved was 99.60 *per cent*. An amount of Rs.9.56 lakh was spent on the project. CECRI specifically requested extension of the project duration from December 2006 to June 2007 to facilitate transfer of technology. DST approved the extension of the project up to June 2007. CECRI, however, could not transfer the technology as of September 2008 as necessary linkages with Ministry of Rural Development, Ministry of Water Supply & Sanitation and State Government of West Bengal were not established as envisaged in the project proposal to enable them to utilise the technology for providing safe drinking water. Thus, the societal benefit of providing safer drinking water to people by making available the technology to state governments, especially the Government of West Bengal, through appropriate agencies as envisaged was not achieved.

CECRI replied in September 2008 that it furnished details of technology to interested persons but no reply was received from them. CSIR, in March 2009, stated that enquiries were being received and technology would be commercialised as and when end-user was identified.

Thus, CECRI did not take adequate proactive action either before initiation of or after completion of the project to establish linkages with the various state Governments and Central Ministries for achieving societal benefit of providing safe drinking water to arsenic affected people. The reply of the CSIR also proved that end-user has not been identified so far.

(v) Technology for recycling of chromium from metal finishing waste-water using electrochemical ion exchange

The Ministry of Environment & Forests (MoEF) sanctioned a project titled 'Recycling of chromium from metal finishing waste-water using electrochemical ion exchange' in May 2002 for a period of three years at a total cost of Rs.8.54 lakh. CECRI intended to apply this technology as resource recovery and purification of rinse water of deleterious effects.

MoEF, however, released only Rs.5.34 lakh during the tenure of the project out of which CECRI incurred an expenditure of Rs.5.23 lakh. Notwithstanding reduced release of funds, the project was completed in July 2005. CECRI established that toxic pollutants could be treated successfully using ion exchange methods. The technology provided optimum recovery of chromium from industrial effluent when compared with the conventional chemical precipitation methods and other methods. CECRI also found the technology most economical and effective. CECRI, however, could not transfer the technology for its application even after a lapse of three years of development of technology.

CECRI replied in September 2008 that the technology could be implemented in the industry on pilot scale and market strategy had to be carried out for customers' attention. CECRI also stated that further study was to be conducted in the needy industries based on their requirement. CSIR in March 2009 however, replied that the project was exploratory in nature and expertise developed under the project could be used for tailor-made consultancy to the needy industry for monitoring their pollution.

It is evident from the reply that CECRI neither carried out any market strategy nor established requirement of the technology among industries before undertaking the project. During last three years, CECRI could not identify even a single industry for carrying out further studies and determining their requirement. The contention of CSIR that the project was of exploratory in nature is not acceptable as CECRI itself admitted that technology could be implemented in the industry after carrying out market strategy and market requirement.

Thus, it is seen that though CECRI developed technologies after incurring expenditure of Rs.2.58 crore in the above five projects, it could not transfer any technology resulting in unfruitful expenditure and non-utilisation of the developed technologies. Moreover, non-commercialisation defeats the very purpose of undertaking sponsored projects with specific objectives of commercialisation of technology.

Recommendations

16. In order to ensure effective commercialisation of technologies developed, CECRI may adequately conduct market surveys and assess the demand for technology before taking up such projects.

17. CECRI may involve user industries so that the technologies developed after incurring expenditure are transferred successfully, instead of remaining unutilised and resulting in unfruitful expenditure. Apart from being useful to industry, technology developed should be cost-effective and contemporary.

18. CECRI may carefully study the reasons for non-commercialisation of

technology and to take appropriate steps to avoid such problems in its future projects.

4.5.2.2 Non-development of technologies and non-commercialisation thereof

(i) Development of a process for Electro-refining of aluminum metal

CECRI developed and operated 200 A capacity cell for electro-refining of aluminum metal, in a laboratory scale. Considering strategic importance of super fine aluminum and the fact that the country's requirement of 200 tonnes of aluminum was met by import, causing foreign exchange drain, CECRI submitted a project proposal to Ministry of Mines (MoM) in March 2000 to upscale the indigenous technology to 2000 A capacity from 200 A for producing super purity aluminum.

MoM sanctioned the project in August 2000 at a cost of Rs.43.80 lakh for duration of two years. It was specifically indicated in the sanction to involve Non-Ferrous Materials Technology Development Centre (NFTDC) for taking over commercialisation of the process at an appropriate time.

CECRI commenced project activities in March 2001 but could not construct and operate envisaged capacity of cell due to various problems like poor quality of the bricks, solidification of electrolyte and leaching of impurities. In view of these operational difficulties, MoM, in July 2004, requested NFTDC to suggest modifications for successful completion of the project and also to extend the duration of the project till March 2005. NFTDC, in July 2004, suggested to give graphite lining on all sides of the wall and evaluate the feasibility in smaller capacity cells and then consider configuration of 2000 A cells.

CECRI, by implementing the suggestion, successfully operated cells of 200 A with graphite lining but did not consider configuration of 2000 A cells due to poor financial position of the project. The project was, therefore, closed in March 2005 without upscaling the capacity of the cell to 2000 A as envisaged. NFTDC also did not take over the technology for commercialisation, the purpose for which it was involved in the project. CECRI incurred an expenditure of Rs.41.10 lakh towards the project.

CECRI, in July 2007, stated shortage of time and money as main reasons for not operating cells of 2000 A cells. CSIR, in March 2009, agreed that due to unforeseen problems in the process, expected efficiency could not be achieved.

The reply needs to be viewed in light of the fact that CECRI did not implement the recommendations of providing graphite lining given by the expert to overcome the problem due to lack of sufficient funds. CECRI also did not seek resources and funds for successful completion of the project.

(ii) Development of conducting polymer based super capacitors

MNES sanctioned a project titled 'Development of conducting polymer based super capacitors' in March 2002 for duration of three years at a cost of Rs.31 lakh. In addition, CECRI's notional financial contribution towards project was Rs.34 lakh. CECRI proposed this project with the objective of developing electrochemical super capacitors for application in electrical vehicles as hybrid power source. CECRI envisaged that outcome of the project would be a launching pad for fabricating suitable capacitor as a complimentary device in electrical vehicle to provide peak power acceleration and hill climbing. CECRI also indicated in the proposal that no electrochemical double layer capacitor was produced in India and the project was taken up to fulfill the increased demand for custom-made super capacitors. CECRI did not identify and involve any industry in the project.

The project was closed in July 2005 after spending Rs.26.10 lakh, out of Rs.26.84 lakh received from MNES. CECRI, however, did not develop a prototype of super capacitor for meeting the requirement for application in electrical vehicle. Thus, the objective of project was not achieved even after spending Rs.60.l0 lakh (Rs.26.10 from grant and Rs.34 lakh as CECRI contribution).

CECRI replied in September 2008 that basic experimental protocols for the fabrication of custom required super capacitors had been established to facilitate assembling of desired super capacitors. CECRI further stated that specific use like in electrical vehicle required potential user partner and as and when suitable industry partner came forward, the envisaged application would be realised. CSIR, in its reply in March 2009, reiterated that the R&D base built on this activity required further refining and upscaling for which work is under progress and that envisaged application would be realised as and when suitable industry partner is identified.

The reply needs to be viewed in the light of the fact that no industrial partner was identified even after a lapse of three years of completion of the project. No industry also came forward for partnership with CECRI for further refining/upscaling the technology. Thus, industries did not evince any interest in the technology despite investment of Rs.60.10 lakh.

(iii) Failure of the project for recovery of tungsten from scrap

CECRI indicated in its project proposal submitted to MoM in January 2001 that the total Indian consumption of tungsten was around 1500 to 2000 tonnes per annum and recovery of this metal from scrap accounted for nearly 35 *per cent* of the total demand. Since Indian industries generated about 200-300 tonnes of scrap per annum and if this scrap was converted into value added product, India would save an amount of nearly Rs.12 crore of foreign exchange. The Standing Scientific Advisory Group (SSAG) in January 2003 raised doubts about commercial feasibility of the operation and suggested conducting a study on commercial feasibility of the operation. SSAG also

suggested involvement of M/s. Heavy Alloy Penetrator Project (HAPP) after the process was established in the laboratory.

MoM sanctioned a project titled 'Recovery of Tungsten from Tungsten Alloy Swarf' in July 2003 for duration of two years at a total cost of Rs.18.40 lakh. While the contribution of MoM was Rs.13.80 lakh, the contribution of DST was Rs.4.60 lakh. CECRI, however, did not establish a process for recovery of tungsten from the scrap, as envisaged.

CECRI commenced the project in September 2003 without conducting any study to ensure commercial feasibility. MoM and DST released Rs.10 lakh and Rs.4 lakh respectively as first installment in September 2003. The project duration was extended from September 2005 to September 2006. When CECRI supplied the end product to HAPP, it found that the product was having other elements concentrated higher than the permissible limit. HAPP, therefore, did not evince interest in the technology. CECRI also did not take any further action to remove shortcomings identified by HAPP. MoM and DST also did not release second and final installment. No final report on the project was prepared and submitted. Thus, the envisaged objective was not achieved and the entire expenditure of Rs.12.69 lakh was rendered unfruitful.

While admitting that proven know-how had not been established, CECRI replied in September 2008 that HAPP was interested in the recovery of tungsten metal powder and CECRI did not have the expertise and the facility to make the powder. CECRI also stated that commercial feasibility of the operation was not studied. CSIR also admitted in its reply in March 2009 that technology had not been standardised due to insufficient scale of operation. CSIR further stated that standardisation would be taken up in future with an industrial partner. It is apparent from the reply that the project was taken up without assessing the availability of required expertise and facilities. The feasibility study was also not undertaken despite suggestion made by SSAG. Further, no industrial partner was identified for carrying out standardisation even after a lapse of more than two years of completion of the project.

Thus, it can be seen from the above cases that neither could CECRI develop technologies nor did the technologies developed by CECRI match the requirements of user industries. As a result, expenditure of Rs.1.14 crore was rendered unfruitful.

Recommendations

19. Before upgrading projects with objective of commercialisation of technology, CECRI may conduct proper market studies to assess the requirement and specifications of technology in the market for successful transfer of technology to user industries.

20. CECRI may also conduct mid-term reviews of projects to decide whether the projects need to be continued or terminated based on the status, so as to avoid incurring further unfruitful expenditure.

4.5.3 CECRI replied in June 2008 that these projects were funded for basic or exploratory R&D in the respective fields and CECRI had acquired basic knowledge and developed expertise in the respective fields and it hoped that expertise developed could be fine tuned as a technology with suitable industrial partners in future. CSIR stated in March 2009 that CECRI had since introduced a system to scrutinise the project in the proposal stage itself by a committee before submitting to the funding agency. CSIR further stated that suggestions made by Audit have been taken in right spirit and all efforts would be made to incorporate them in the process of project evaluation in future.

4.5.4 Conclusion

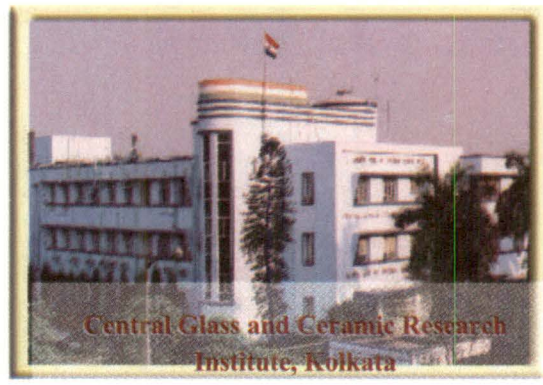
CECRI could not initiate commercialisation in eight projects undertaken during 2002-07 due to not identifying and involving industries in these projects, thus rendering an expenditure of Rs.3.72 crore infructuous.

4.6 Activities of Central Glass and Ceramic Research Institute, Kolkata

Central Glass and Ceramic Research Institute (CGCRI) could not reduce its dependence on government grants which continued to remain at 74 *per cent.* During the period 2003-08, CGCRI transferred six technologies. However, premium and royalty earned by transferring the technologies was not commensurate with the cost of development of these technologies. CGCRI could not achieve the target fixed for publishing research papers. Project management in CGCRI was deficient as a result of which projects objectives remained unachieved in many important projects.

4.6.1 Introduction

The Central Glass and Ceramic Research Institute (CGCRI), Kolkata was established in 1950 as one of the constituent units of Council of Scientific and Industrial Research (CSIR) to carry out basic and applied research in the fields of special glass, ceramics, refractories[8], ceramic coatings, composites and allied areas. It also develops glass and ceramic materials/related technologies relevant to the country's economic, industrial and social needs.



Central Glass and Ceramic Research Institute, Kolkata

[8] Refractories are materials that retain their strength at high temperatures.

CGCRI is headed by a Director who is assisted by 10 research & development divisions. It has two outstation centers at Naroda (Gujarat) and Khurja (Uttar Pradesh). During 2003-08, CGCRI received Rs.180.26 crore from CSIR and Rs.28.50 crore from various agencies for undertaking contract research and for providing technical services.

Audit examined the activities of CGCRI with regard to management of finance, research and development, stores and purchases and other affairs pertaining to the period from 2003-04 to 2007-08. It was seen in audit that (i) CGCRI failed to reduce its dependence on government grants, (ii) premium and royalty earned by transferring the technologies were not commensurate with the cost of development of these technologies, (iii) target fixed for publishing research papers was not achieved, and (iv) project management was deficient and projects objectives remained unachieved. Detailed audit findings are brought out in the succeeding paragraphs.

4.6.2 Audit findings

4.6.2.1 Generation of External Cash Flow

CSIR asked all its laboratories in January 1996 that dependence on grants from the Government should be brought down to 50 *per cent* by 2001. During 2003-08, CGCRI received Rs.180.26 crore from CSIR and spent Rs.120.22 crore on research and development activities. Of the total amount spent, Rs.30.97 crore was met out from the sources other than CSIR. Therefore, during 2003-08, CGCRI obtained 74 *per cent* support from the Government and failed to bring it down below the targeted levels of 50 *per cent*. CGCRI stated in October 2008 that in view of the enhanced funding made available to CSIR laboratories during the Tenth Five Year Plan, it was not necessary to generate additional funds from external sources in the form of External Cash Flow (ECF). CGCRI also stated that it was not possible for them to make additional commitments to the external funding agencies with the existing human resources. The reply may be viewed in light of the fact that the spirit of CSIR instructions of 1996 was to encourage the laboratories to match the Government contribution with ECF and not to do away with generation of additional funds from external sources in the form of ECF.

4.6.2.2 Research Publications

Performance Appraisal Board (PAB) of CSIR, in its meeting held in October 2001, set out a target of publishing 100 papers each year in Scientific Citation Index (SCI) journals. The details of publication of research papers during 2003-08 were as follows:

Table VIII

Year	No. of scientists	Target of publications in SCI journals	No. of papers published in SCI journals	No. of papers published in non-SCI journals	Percentage shortfall in achievement of target
2003-04	107	100	54	18	46
2004-05	103	100	54	9	46

Table VIII

Year	No. of scientists	Target of publications in SCI journals	No. of papers published in SCI journals	No. of papers published in non-SCI journals	Percentage shortfall in achievement of target
2005-06	99	100	72	25	28
2006-07	110	100	67	8	33
2007-08	104	100	75	4	25
Average of 2003-08	105	100	64	13	

Against the target for publication of 500 papers in SCI journals during last five years, CGCRI could publish 322 papers registering a shortfall ranging from 25 *per cent* to 46 *per cent*. Moreover, the average number of papers per scientist was less than one per year. CGCRI was silent on this issue in its reply.

4.6.2.3 Filing of patents

During 2003-08, CGCRI filed 75 patents (44 Indian and 31 foreign). The number of patents filed in India and abroad showed a declining trend as the number came down from 13 in 2004-05 to six in 2007-08 in case of Indian patents and from 11 in 2004-05 to nil in 2007-08 in the case of foreign patents. No targets were fixed by CGCRI for filing of patents; hence there was an absence of benchmark to assess performance of CGCRI in this field. However, declining trend in filing of patents indicates need for corrective action.

CGCRI did not intimate the number of patents which were granted out of the patents filed by it. CGCRI also did not furnish information such as project details, project costs etc., of the patents filed during 2003-08. As such, it could not be ascertained whether and to what extent these patents were filed on the basis of research activities conducted during 2003-08.

4.6.2.4 Commercialisation of technologies

CSIR guidelines of January 2002 for technology transfer and utilisation of knowledgebase stipulate that for arriving at the price of the intellectual property, cost of development, estimate of net benefit to be derived by the licensee, size and number of potential licensees, comparative cost of imported intellectual property and opportunity value should be taken into consideration. The guidelines also stipulate that the laboratory/institute should obtain approval of the Management Council/CSIR before fixing price of the intellectual property.

During 2003-08, CGCRI developed seven technologies and transferred six technologies to six industries. Of the technologies transferred, four were developed from three projects which were completed during 2003-08 and two from two projects completed prior to April 2003. Scrutiny revealed that CGCRI realised lump sum fees of Rs.31 lakh on transferring six technologies during the five year period though it incurred a total expenditure of Rs.2.58 crore on development of those technologies. CGCRI did not furnish any document showing approval of Management Council/CSIR for fixing the price of the intellectual properties which were transferred during 2003-08. It was

further seen that in only two cases, commercial production had started for which CGCRI received royalty of Rs.4.14 lakh.

Thus, premium and royalty earned by transferring the technologies was not commensurate with the cost of development of these technologies.

CGCRI replied in October 2008 that some of the technologies developed by the Institute might not have attracted sufficient technology transfer fee, but they had far reaching consequences in terms of social impact and strengthening of knowledgebase.

The reply of CGCRI needs to be viewed in light of the fact that the guidelines for technology transfer and utilisation of knowledgebase did not empower CGCRI to charge less amount of technology transfer fee.

4.6.2.5 Monitoring/evaluation

As per the Rules and Regulations of CSIR, the Research Council (RC) shall meet not less than two times a year and the Management Council (MC) shall meet not less than thrice in a financial year. Scrutiny of agenda and minutes of RC and MC meetings held during 2003-04 to 2007-08 revealed that during the said period, while RC met on seven occasions against the prescribed 10 meetings, MC met only on five occasions against the mandated 15 meetings. This resulted in shortfall of 30 *per cent* in RC meetings and the shortfall of MC meetings varied from 33 *per cent* to 100 *per cent*. Thus, monitoring of research and development activities on the part of RC and MC was inadequate.

CGCRI stated in October 2008 that RC meetings were not convened as the Chairman, RC visited the Institute outside the schedule of RC meeting and by such visits, advisory role of RC was maintained. As regards inadequate MC meetings, it stated that in view of not having pressing agenda, such meetings were not convened. The reply of CGCRI was not acceptable as frequencies of meetings of both RC and MC were framed for effective monitoring of activities of the Laboratories/Institutes and visits of chairman RC cannot substitute for the formal meeting of the full RC.

4.6.2.6 Project Management

Management of in-house, grants-in-aid, sponsored, collaborative and consultancy projects undertaken by CGCRI was studied with regard to their planning, implementation and monitoring. During 2003-08, CGCRI completed 28 in-house projects, 44 grants-in-aid, 21 sponsored, six collaborative and 11 network projects. A sample of 50 *per cent* of completed projects was selected for detailed review of projects. Audit findings with respect to these are discussed below.

(a) Network projects

During 2003-08, CGCRI completed 11 network projects. While giving its reply regarding in-house projects, CGCRI stated that they kept in-house

projects lower in priority to give more emphasis on sponsored and network projects. However, a review of network projects revealed that there were deficiencies in project management which led to objectives remaining unachieved and developed technologies not being commercialised due to lack of demand in the industry/market. Important audit findings in five cases are indicated below:

(i) CGCRI undertook a project titled 'Development of Nitride Ceramics for Aerospace Applications' in April 2003 at an estimated cost of Rs.2.55 crore for a period of four years. The objectives of the project were fabrication of silicon nitride hybrid ball bearing as per ISO 9002 specifications and hot pressed Hexagonal Boron Nitride (HBN) components. Four research papers and three patents were the expected deliverables from the project. Also, under the project, a technology package for production of silicon nitride hybrid ball bearing was proposed to be prepared. Scrutiny revealed that silicon nitride balls for making hybrid ball bearing as per ASTM[9] 2094 were produced under the project. CGCRI discontinued the work on Boron Nitride Composite articles as it was discouraged by MC.

For testing, characterisation and evaluation of the ball bearings, CGCRI entered into an agreement with M/s Tata Steel in November 2005. As per the agreement, CGCRI was to transfer the technology to Tata Steel if the technology proved viable. Though the testing of the ball bearings was carried out at Tata Steel, field trial was not done as the same needed huge quantity of ball bearings, which was not possible for CGCRI to produce with their existing lab facility. As such, the project was declared complete in September 2007 without testing the ball bearing produced by CGCRI.

CGCRI stated in October 2008/March 2009 that National Aerospace Laboratories (NAL), another CSIR laboratory which was the nodal laboratory for the network project, could not provide them with very high value testing facility as a result of which the R&D results could not be utilised and that this project was part of a CSIR network project. CGCRI also stated in March 2009 that the agreement with Tata Steel was an attempt to explore the possibility of using the expertise in a commercial product like ceramic ball bearing.

The reply of CGCRI needs to be viewed in light of the fact that NAL would provide them with high value testing facility was not spelt out in the project documents. Also, development of technology package was envisaged in the project objectives itself. Thus, failure of CGCRI to conduct field trials to test the commercial viability of product developed resulted in its non-commercialisation. Besides, the expected deliverables like research papers and patents also could not be achieved.

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[9] American Society for Testing of Material

(ii) CGCRI undertook a project titled 'Design and development of prototype (1000L capacity) for treatment of tannery effluent using ceramic membranes' in March 2004 at an estimated cost of Rs.1.07 crore with the objectives of designing and development of prototype using ceramic membrane for pre-treatment of tannery waste-water for efficient Total Dissolved Solids (TDS) control by Reverse Osmosis (RO) and removal of total coliform from municipal waste-water. The project was completed in March 2007 after incurring an expenditure of Rs.1.06 crore. Though a prototype was fabricated and performance evaluation was conducted using tap water, the same was not tested for pre-treatment of tannery waste-water for efficient TDS control by RO and removal of total coliform from municipal waste-water due to lack of manpower and non-identification of site.

CGCRI accepted the observation and stated in October 2008/March 2009 that activities in this area were being continued in the Eleventh Five Year Plan. Thus, the objectives of the project for pretreatment of tannery waste-water remained only partially achieved despite incurring an expenditure of Rs.1.06 crore.

(iii) A project titled 'Pollutant specific chemo-sensors: Development of solid state sulphur dioxide sensors' was taken up in April 2004 at an estimated cost of Rs.32 lakh with the objective to develop an indigenous technology of making semi-conductor sensors for monitoring sulphur dioxide leak. The project was undertaken without conducting any market survey regarding demand of the semi-conductor sensors for sulphur dioxide leak detection. MC of the project, in its meeting held in September 2005, advised CGCRI to make comparison with the similar sensors in the market and to contact State Pollution Control Board (SPCB), Central Pollution Control Board (CPCB) and industry/users (such as NTPC) for sponsorship. CGCRI could not compare the semi-conductor as the same was not available in the market and no field trial of the product was carried out due to lack of response from the industries. SPCB, CPCB and industry/users for sponsorship/evaluation of its product were, however, not contacted on the ground that the detection level of the developed sensor was much higher. Though the project was declared complete in September 2007 after incurring an expenditure of Rs.31.93 lakh, till date the developed sensors could not be commercialised due to lack of demand. Sixteen companies were contacted in this regard, but CGCRI received no response.

CGCRI stated in October 2008 that the project was a new approach as sulphur dioxide gas was not reported earlier. It also stated that without first establishing viability of the sensor developed, it was irrelevant to carry out a market survey. The reply of CGCRI was not tenable on the ground that any technology needs to be developed only after adequately assessing market demand.

Thus, failure of CGCRI to assess market demand before initiation of the project resulted in non-commercialisation of developed sensors despite incurring an expenditure of Rs.31.93 lakh.

(iv) CGCRI undertook another project titled 'Membrane based systems for waste-water treatment' in April 2004 at an estimated cost of Rs.1.03 crore with the objectives of design and development of ceramic membrane based technologies for treatment of textile waste-water and development of new membranes and system design. The ultimate objective of the project was to upscale the technology for treatment of waste-water from breweries/fermentation industry. The deliverables included a target of 10 research papers, three patents and two technologies.

After development of laboratory scale technology, CGCRI contacted M/s Singhal Brothers in January 2006 to set up a pilot plant in its premises to explore the feasibility of reusing the waste-water. In June 2006, the firm agreed to accommodate the pilot plant in its premises but the pilot plant studies could not be undertaken as CGCRI was required to conduct more studies in the laboratory scale. The laboratory scale work was completed in collaboration with the firm. Despite encouraging results and willingness of the firm (February 2007) to conduct scale-up studies jointly, CGCRI could not do the same due to shortage of time and funds. The project was declared complete in September 2007 after incurring a total expenditure of Rs.1.03 crore.

CGCRI replied in October 2008 that the knowledgebase generated from the project was being utilised for projects on drinking water purification. However, fact remains that CGCRI did not conduct scale-up studies of the process developed, resulting in non-transfer of the same to any industry. Against the deliverables targeted, CGCRI could publish only four research papers.

(v) CGCRI undertook a project titled 'Development of new building construction materials and technologies' in April 2002 for a period of five years at an estimated cost of Rs.1.30 crore. Under the project, CGCRI proposed to develop glazed building bricks, low cost ceramic floor and wall tiles from industrial wastes, porous tiles utilising marble dust wastes and heat reflecting coating on flat glass. While CGCRI proposed to commercialise the technology of glazed building bricks, low cost ceramic floor/wall tiles and technology on porous tiles utilising marble dust wastes, it was proposed only to document the technology on heat reflecting coating on flat glass.

CGCRI developed the technology of glazed building bricks in December 2004 and low cost ceramic floor/wall tiles in September 2006 but failed to develop any technology on porous tiles utilising marble dust wastes due to not conducting repetitive activity. The technology document on heat reflecting coating on flat glass could not be prepared as up-scaling work was not undertaken. Though the technology on glazed building bricks and low cost ceramic floor/wall tiles were developed, the same could not be

commercialised as the same required further developmental and up-scaling work.

CGCRI stated in October 2008 that the expertise gained from the project had been adequately utilised for developing industrial floor tiles based on the waste materials from the steel plant. However, the fact remains that the technologies developed from the project were yet to be commercialised.

Thus, the technologies which were proposed to be commercialised from the project, could not be transferred due to not conducting further developmental and up-scaling work.

(b) Grants-in-aid projects

Audit reviewed 50 *per cent* of 44 completed grants-in-aid projects. Deficiencies were noticed in project implementation and in a number of cases the technology could not be commercialised due to lack of adequate work or lack of interest shown by the market/industry. Important audit findings are indicated below:

(i) In order to scale up the process for regular production of ultra-low expansion transparent glass ceramics developed in the lab scale, CGCRI signed a Memorandum of Understanding (MoU) in May 2001 with Electro Optical Instruments Research Academy (ELOIRA) Hyderabad for establishment of a national facility for development of process technology and supply of ultra-low expansion transparent glass ceramic (ULETGC). As per the MoU, total cost of setting up of the development and production facility was around Rs.5.60 crore out of which ELOIRA was to make one time funding of Rs.3.25 crore and the balance amount was to be borne by CGCRI. The MoU also stipulated that CGCRI would execute the task of setting up of the process technology followed by limited series production of glass ceramics pieces of specified dimensions (90mm x 90mm x 40mm) within two years from the date of the agreement and would supply ULETGC @ 225 pieces per year for 10 years beginning the third year from the agreement date. The duration of the project was two years from the date of release of funds. ELOIRA released Rs.3.25 crore in July 2001.

CGCRI entered into a contract in October 2001 with M/s JSJ GmbH, Germany for procurement and handling of noble metal ingot for the development and limited scale production of ultra-low expansion transparent glass-ceramics with a basic glass composition in the lithium aluminosilicate system at a cost of Euro 3.03 lakh. CGCRI entered into another contract with this firm on the same date for procurement of a relatively large size (melt size: 40 Kg. approx.) experimental facility for the development and limited scale production of these glass-ceramics at a cost of Euro 7.62 lakh.

Between February 2003 and November 2003, the glass melting furnace equipments were received at CGCRI. Installation and commissioning of all the

equipments was done by engineers from M/s JSJ GmbH, Germany during November-December 2003.

During the trial run in November 2003, the casting machine did not function properly. The engineers from M/s JSJ, Germany visited CGCRI in February 2004 and could carry out three casting operations instead of required six operations. CGCRI also could conduct three consecutive melting operations up to March 2004 and prepared 16 glass blocks. After processing, 16 glass blocks of dimension 90mm x 90mm x 40mm were supplied to ELOIRA, Hyderabad for their evaluation during May – June 2004. Of the total supply, 10 glass ceramic blocks were accepted and six blocks were found unsuitable. Thereafter, CGCRI could not produce glass blocks as per the specification due to series of defects developed in the furnace after installation/commissioning. As such, CGCRI had spent Rs.3 crore out of its own funds for implementation of the project which did not succeed.

CGCRI stated in March 2009 that three *per cent* of the total cost was withheld by it to the firm supplying the equipment.

Thus, failure of CGCRI to take appropriate action for rectifying the defects in the equipment resulted in non-fulfillment of the target of production of ultra-low expansion transparent glass ceramic.

(ii) CGCRI, undertook a grants-in-aid project titled 'Development of economic viable technology for making of Sulphur Glass Frits (SGF) and also to explore the possibilities of NPK[10] glass fertiliser for optimisation of agricultural yield of oilseeds and pulses (chick pea and pigeon pea)' at a cost of Rs.50 lakh funded by Technology Mission of Oilseeds, Pulses and Maize (TMOP&M), Ministry of Agriculture & Cooperation. The project was started in December 2000 for a period of two years. The objective of the project was to develop an economically viable technology for production of SGF and NPK type glass fertiliser. The project was completed in December 2004 after incurring expenditure of Rs.49.60 lakh. It was observed in audit that the economic viability of the product developed in lab scale was not assessed.

CGCRI stated in October 2008 that technology developed by them could not be used for production by fertiliser industry without major government help and intervention. The reply of CGCRI needed to be viewed in the light of the fact that CGCRI did not ascertain economic viability of the developed technology which was an essential aim of technology development under the project.

(c) Sponsored Projects

CGCRI completed 21 sponsored projects during the period 2003-08. Of the projects completed, time overrun was noticed in respect of 19 projects. Of 19 projects, time overrun of more than one year was noticed in respect of eight

[10] Sodium, Phosphorus and Potassium.

projects. It was further observed that 12 grants-in-aid projects were wrongly classified as sponsored projects. CGCRI agreed that these were actually grant-in-aid projects funded by government agencies. In one project titled 'Development of rare earth based glass and glass ceramic phosphorous for use in compact fluorescent lamps and CRT[11] display screens' costing Rs.14.71 lakh, CGCRI failed to attract any industry due to failure in up scaling the laboratory scale technology. In another project titled 'Development of high damage resistant sol-gel coatings for High Power Laser' costing Rs.49.19 lakh, the objectives of the project remained unachieved because CGCRI failed to utilise the equipment as it could not be repaired within tenure of the project. One case related to sponsored projects is discussed below:

(i) Intellectual fees not charged

The guidelines for technology transfer and utilisation of knowledgebase issued by CSIR in August 1989 provided that the laboratories/institutes of CSIR while arriving at the cost of the sponsored research and development projects would calculate, amongst others, the intellectual fees to be charged against the sponsors. As per the guidelines, the rate of intellectual fee would be 33.3 *per cent* of the direct expenses on the contract projects after deduction of the amount of the cost of the equipment provided by sponsors. The rate of intellectual fee was, however, revised to 40 *per cent* with effect from June 2005.

It was noticed that in respect of five sponsored projects funded by various private organisations, CGCRI did not charge intellectual fees for Rs.5.59 lakh from the sponsors.

(d) In-house projects

CGCRI completed 28 in-house projects during 2003-08. However, it did not furnish project documents viz., project proposals, progress reports and completion reports in respect of 18 completed projects. Therefore, achievement of objectives of 18 projects could not be verified. Further, in respect of six cases, approval of the Director was not found on the project proposals. This indicated that the documentation in respect of in-house projects was not adequate.

CGCRI replied in October 2008 that some in-house projects were kept in a low key condition due to emphasis being put on externally sponsored and network projects. However, this does not undermine the need for proper documentation of in-house projects.

4.6.2.7 Stores and purchase

Audit reviewed 36 cases of procurement of equipment and noticed that equipment were received after completion of the project and there were delay in installation of equipment. A few such cases are discussed below.

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[11] Cathode Ray Tube.

- CGCRI proposed in May 2006 to procure a complete set of Tube Furnace to sinter green tube shapes (450mm long) at high temperature. The equipment was required for a project titled 'Establishment of the optimum fabrication procedure of reaction bonded silicon nitride cylindrical tubes having controlled porosity range for nuclear reprocessing applications' which was undertaken in April 2006 for a period of two years. CGCRI placed the supply order in January 2007 and equipment costing Rs.23.63 lakh was received in August 2007. CGCRI paid 80 *per cent* cost of the equipment amounting to Rs.19.21 lakh. In September 2007, CGCRI informed the supplier about the inferior performance of the equipment. The supplier informed CGCRI in October 2007 that the transformer of the equipment required replacement. The transformer was sent to the supplier in November 2007 and it was replaced in January 2008. After replacement of the transformer, a crack developed in the core furnace tube. The crack could not be repaired till July 2008 resulting in the furnace lying unused. Thus, the furnace procured after payment of Rs.19.21 lakh is still not in working condition and cannot be used for the project as of July 2008. CGCRI stated in March 2009 that the project was not yet complete and has been extended.

- CGCRI proposed to procure an FTIR Spectrophotometer with accessories costing Rs.20 lakh in July 2005 for a project titled 'Pollutant Specific Chemo-sensors: Development of solid state sulphur dioxide sensors' which was undertaken in April 2004. The purchase order was placed with a foreign firm in December 2005. The equipment was received in June 2006 and the service engineer visited CGCRI in August 2006 and found that the room was too humid to install the equipment and suggested a dehumidifier. After procurement of dehumidifier, the equipment was installed in March 2007. In the same month, the project for which equipment was procured was declared complete. However, a fault was detected in the machine in August 2007. The service engineer attended the machine in the same month and found that the interferometer was out of alignment and accordingly the Potassium Bromide beam splitter was taken to their service station for checking. The service engineer suspected that the problem was due to the lack of controlling the moisture level in the room adequately and a misalignment of the beam was also suspected as the cause of the problem. The beam alignment was fixed in October 2007 and the machine was made operational.

  CGCRI stated in October 2008 that the project was extended for six months and hence the equipment was utilised for the same. The reply of CGCRI needed to be viewed in the light of the fact that though the project was extended for six months, the activities of CGCRI were completed in March 2007. Thus, the equipment costing Rs.22.70 lakh could not be utilised for the project for which it was procured.

4.6.3 Conclusion

During 2003-08, CGCRI could not reduce its dependence on government grants to 50 *per cent* and its share of government grants remained at 74 *per cent*. Also, during this period, CGCRI developed seven and transferred six

technologies. However, premium and royalty earned by transferring the technologies was not commensurate with the cost of development of these technologies. The target fixed for publishing research papers was also not achieved. Deficiencies were noticed in project management as a result of which projects objectives remains unachieved in the test- checked cases and developed technologies could not be transferred due to lack of demand in the market. Also equipment required for projects were not procured in time, leaving project objectives unachieved.

CHAPTER V: DEPARTMENT OF SCIENCE AND TECHNOLOGY

5.1 Non-recovery of dues despite development of technology

Inaction on part of Technology Information, Forecasting & Assessment Council to enforce recovery of dues and contemplating changes in the terms and conditions of repayment of dues eight years after signing the MoU led to non-recovery of Rs.1.87 crore from Indian Institute of Chemical Technology.

Technology Information, Forecasting & Assessment Council (TIFAC), an autonomous body under Department of Science & Technology, entered into a Memorandum of Understanding (MoU) with Indian Institute of Chemical Technology (IICT), Hyderabad, a constituent laboratory of the Council of Scientific and Industrial Research, in March 2000, for 'Development of technology for the manufacture of mononitrotoluenes with high selectivity for para-isomer'. IICT was to complete the installation and commissioning, including the start up operation and trial runs of the plant, within 24 months from the date of signing the MoU, i.e. by March 2002. The final total cost of the project was Rs.1.41 crore, with Rs.60 lakh as TIFAC's share of which Rs.15 lakh each was released in April 2000 and May 2000 and Rs.30 lakh was released in February 2001. As per the MoU, if the project was declared successful by the Monitoring Committee, IICT was to pay back to TIFAC, without any condition, an amount of Rs.90 lakh in ten half-yearly installments, starting after 24 months from the date of MoU or within six months of completion of the project, whichever was earlier. In the event IICT failed to pay any of the installments, penal interest at the rate of 18 *per cent* per annum was recoverable from IICT.

Audit observed that:

(i) The project was not completed by the scheduled date. The pilot plant demonstration was made only in June 2004, after a delay of more than two years.

(ii) The Monitoring Committee noticed in November 2005 that the project was closed, technically the reactor was operated successfully and a patent was filed for the process. The developed technology could not be transferred, despite its demonstration to two clients.

(iii) IICT did not pay any installment of repayment of Rs.90 lakh as of July 2008 which was to be paid in ten installments of Rs.9 lakh each from April 2002 onwards, as envisaged in the MoU. TIFAC also did not make any correspondence with IICT for non-receipt of installments of repayments. Instead, it proposed signing of a supplementary agreement for changing the mode of repayment through sharing of technology transfer revenue. As a result of non-payment of installments in time, interest of Rs.97.20 lakh @ 18 *per cent* per annum for six years also became due to TIFAC. Thus, failure on the part of TIFAC to make any efforts for obtaining

repayment resulted in non-recovery of Rs.90 lakh, along with interest of Rs.97.20 lakh.

TIFAC stated in July 2008 that at the time of initiation of the project, IICT was extremely confident of commercial utilisation and this led to the framing of the project agreement on fixed installments basis.

The reply of TIFAC was not acceptable because, according to the agreement signed in March 2000, IICT was to pay back Rs.90 lakh to TIFAC without any conditions. It was improper on part of TIFAC to make a supplementary agreement, eight years after signing the original agreement, only to give undue benefit to IICT by linking the repayments with the transfer of technology, particularly in view of the fact that it had not been able to transfer the technology, even after more than four years of demonstration of the technology.

TIFAC stated in October 2008 that the purpose of R&D project was met as the process was upscaled and demonstration was given on pilot scale and the patent was acquired by IICT. The reply is not acceptable since TIFAC did not get anything despite ploughing Rs.60 lakh into the project and its inaction to enforce recovery of dues and contemplating changes in the terms and conditions of repayment of dues, eight years after signing the MoU, led to non-recovery of Rs.1.87 crore from IICT.

5.2 Excess expenditure due to selective adoption of pay structure

Selective adoption of pay and allowances structure for academic staff in Bose Institute without consultation of Ministry of Finance resulted in excess expenditure of Rs.51.01 lakh to 30 Academic staff.

Bose Institute (BI) Kolkata, an autonomous research organisation which is substantially funded by the Government through the Department of Science and Technology (DST), conducts research on various disciplines of science. According to bye-laws of BI, scales of pay of regular employees of BI were to be determined from time to time, in consultation with the Government of India. The pay structure of the academic staff of the Institute was governed by their Recruitment and Service Rules of 1980[1]. In 1984, DST directed BI to incorporate a clause in their bye-laws for taking prior approval of the Government in consultation with Ministry of Finance, Department of Expenditure (MoF) for proposals relating to their emolument structure. BI Council had observed in February 1985 that since the provision for determination of the scales of pay of BI employees in consultation with the Government of India already exists in the regulations of BI, no fresh instructions needed to be issued.

[1] As per these rules, the pay scales of the staff of BI were same as UGC pay scales and allowances as per the rates of the West Bengal State Government.

DST, in February 1989, conveyed approval of the Government to the extension of UGC package of pay, allowances and all other terms and conditions of service to the academic staff of the Institute and desired that while adopting UGC pay structures, the academic institutions should follow all the terms and conditions and should not follow any flexible complementing scheme[2].

It was noticed in Audit that DST had approved an 'Assessment and Promotion Scheme' for academic staff of BI for promotions in January 1993, which was adopted by the Governing Council of BI in May 1993. DST was silent on the fact as to whether it had taken approval of the Ministry of Finance, Department of Expenditure, despite provisions in the bye-laws of BI, as amended in 1985, necessitating such approval. This scheme of DST was also in violation of its own orders of February 1989 whereby it had conveyed approval of the UGC package of pay and allowances, as approved by the Government of India, on the condition that BI should not follow any other flexible complementing scheme for the academic staff and should instead implement the UGC scheme in a composite manner. This deviation of DST from its own earlier order resulted in payment of extra pay and allowances to 30 academic staff who were appointed after February 1989 as detailed below:

- Though, as per the UGC guidelines of July 1988, eight years of service as a Lecturer was required (with relaxation of one year and three years for those with M.Phil and Ph.D respectively) for promotion to the post of Sr.Lecturer, seven out of above 30 were promoted to the post of Sr. Lecturer, just after completing three years of service as Lecturer.
- Similarly, as per the UGC guidelines of December 1998, though six years of service as a Lecturer was required (with relaxation of two years and one year for those with Ph.D and M.Phil respectively) for promotion to the post of Sr.Lecturer, 11 out of 30 were promoted to the post of Sr.Lecturer, just after completing three years of service as Lecturer.
- Further, as per the UGC guidelines of December 1998, though there was no provision for direct appointment to the post of Sr.Lecturer, four academic staff were appointed directly at the post of Sr.Lecturer.
- Again, though eight years of service as a Reader was required for promotion to the post of Professor, eight out of above 30 were promoted to the post of Professor after completion of only six years of service as Reader.

Thus, by violating the UGC guidelines for promotion of academic staff and DST's own orders for implementing the composite UGC scheme, as well as not seeking approval of Ministry of Finance, BI conferred early promotions and made excess payment of Rs.51.01 lakh till March 2008 to these 30 academic staff who were appointed after February 1989.

DST stated in February 2009 that:

[2] A beneficial Assessment and Promotion scheme for promotion of S&T staff wherein they carry their post to next higher grade.

- The academic staff of BI were primarily engaged in research activities and generally their minimum qualifications for appointment was Ph.D whereas the minimum qualification of lecturers was merely M.Sc. Since the staff has put in additional five years in research activities after M.Sc., the benefit of the same was needed to be given to the selected staff.
- Since all the promotions and recruitments to the various posts of Lecturers, Senior Lecturers, Reader and Professor had been made with the approval of the Governing Council of BI, there was no irregularity.
- DST had approved an 'Assessment and Promotion Scheme' for academic staff for promotions in January 1993 which was subsequently approved by the Governing Council in May 1993.

The reply of DST needs to be viewed in the light of the fact that:

- The academic staff of BI had themselves opted for UGC pay scales in March 1988.
- The MoF instructions and bye-laws of BI clearly necessitated that scales of pay of the staff of BI were to be determined in consultation with Ministry of Finance, Government of India.
- DST's approval for the 'Assessment and Promotion Scheme' for academic staff in January 1993 was itself in violation of its orders of 1989 wherein it had stated that the UGC scales were to be adopted as a composite package.

Thus, selective adoption of pay and allowances structure for academic staff in BI resulted in excess expenditure of Rs.51.01 lakh to 30 academic staff which needs to be recovered.

Recommendations

21. DST may review the implementation of schemes governing the structure of pay and allowances in all the 25 autonomous bodies under its control. Further, while revising pay and allowances, DST may ensure that staff of the autonomous bodies substantially funded by the Government do not get higher benefits/allowances than those admissible to Central Government employees without approval of the Ministry of Finance.

22. In case DST is convinced about the international acclaim and outstanding work of any autonomous body under its control, it should conduct a peer review as envisaged under Rule 208 (vi) of GFR and fix beneficial pay and allowances, after approval of the Ministry of Finance.

5.3 Activities of Birbal Sahni Institute of Palaeobotany, Lucknow

Birbal Sahni Institute of Palaeobotany (BSIP), dedicated to promote research on basic as well as applied aspects of palaeobotany, failed to achieve fully the envisaged objectives of test-checked in-house and sponsored projects. Equipment planned for purchase in the Tenth Five Year Plan were not procured despite provision of funds, thus affecting their successful implementation. Projects were terminated mid-way resulting in unfruitful expenditure. The contribution of scientific publications in the Scientific Citation Index journals by its scientists was very low. In addition, the collaboration of BSIP with foreign agencies was not approved by Department of Science and Technology.

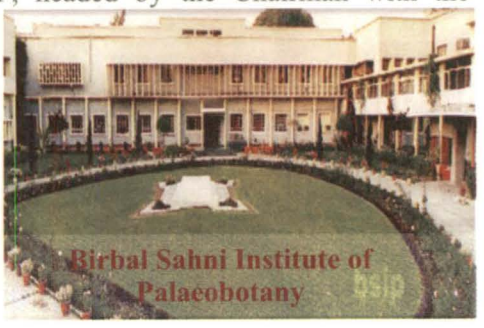
5.3.1 Introduction

Birbal Sahni Institute of Palaeobotany (BSIP), Lucknow, an autonomous institute under Department of Science and Technology (DST), was established in 1946 for the development of the science of palaeobotany[3] to understand the origin and evolution of plant life and to use the knowledge of fossil plants in resolving various geologic problems including exploration of fossil fuels. BSIP is dedicated to promoting research in basic as well as applied aspects of palaeobotany and allied earth system sciences[4].

The objectives of BSIP are:

- To develop palaeobotany in all its botanical and geological aspects;
- To constantly update data for interaction with allied disciplines;
- To co-ordinate with other palaeobotanical and geological research centres in the areas of mutual interest, such as diversification of early life, exploration of fossil fuels, vegetational dynamics, climatic modeling, conservation of forests; and
- To disseminate palaeobotanical knowledge in universities, educational institutions and other organisations.

The Governing Body (GB) of BSIP, headed by the Chairman with the Director as Member-Secretary, is the highest executive body of BSIP. It is responsible for the organisation, general superintendence, direction and control of activities of BSIP. The Research Advisory Committee (RAC), whose chairman and members are nominated by GB, is responsible for all matters relating to the scientific activities of BSIP.



[3] The study of fossil plants of the geologic past.
[4] Term for the sciences related to the planet Earth.

BSIP is financed through grants-in-aid released by DST. Against the receipts of Rs.57.44 crore under plan and non-plan heads during 2002-03 to 2007-08, the actual expenditure was Rs.53.88 crore. As of 31 March 2008, 57 scientists, 42 technical, 30 administrative and 34 auxiliary staff were in position.

During 2002-03 to 2007-08, BSIP undertook 25 sponsored projects of which three projects were discontinued/terminated midway and 11 projects were completed. BSIP had taken up 63 in-house projects out of which 38 projects were carried forward to the Eleventh Five Year Plan i.e. 2007-08 and Audit examined 20 projects undertaken during the Tenth Five Year Plan.

A test check of records relating to research and development activities undertaken by BSIP through in-house, sponsored, collaborative projects during 2002-03 to 2007-08 was conducted to assess the performance of BSIP with reference to milestones and achievement of objectives set out for it.

5.3.2 Audit findings

The audit findings are discussed in the succeeding paragraphs.

5.3.2.1 Non-procurement of equipment impacting project execution

It was observed that BSIP had projected a requirement of 90 equipment at a total cost of Rs.18.86 crore for in-house projects during the Tenth Five Year Plan. As one project 'National Centre for Global Geosphere/Biosphere change research' for which eight equipment costing Rs.11.65 crore were required was not taken up, there was a requirement of 82 equipment at a cost of Rs.7.21 crore. As per the financial outlays fixed by the Planning Commission for the Tenth Five Year Plan, there was a provision of Rs.5.21 crore for infrastructure, research apparatus and equipment, books and journals, upgradation of computer system, furniture and fixtures and office and miscellaneous equipment for BSIP.

It was observed in audit that BSIP had purchased only five equipments at a cost of Rs.95.01 lakh during the period 2002-08. Non-procurement of equipment despite availability of funds indicates inefficiency of the procurement managers of BSIP. The amount of unspent balance of grant available with BSIP ranged between Rs.96 lakh to Rs.10.08 crore under the plan head during the years 2002-07.

Further, it was seen that in the following three projects, objectives could not be achieved due to non-availability of equipment.

(a) BSIP undertook an in-house project on 'Radiocarbon dating of deposits relating to Quaternary geological and archaeobotanical investigations and chemical analysis of sediments for palaeoenvironmental and palaeoclimatic studies' in the Tenth Five Year Plan at an estimated cost of Rs.1.28 crore, including salary component of Rs.48.76 lakh. As per the Plan document for taking up the in-house project, radiocarbon dating was the most essential component in reconstructing palaeoclimatic and palaeoenvironmental changes, understanding ocean circulation and carbon

cycle, archaeological investigation etc. Under the project, one ultra low level counter was required to be procured at a cost of Rs.68 lakh. The objectives of the project were (i) installation and standardisation of a new ultra low background Liquid Scintillation Counter (LSC), (ii) fabrication of a vacuum system for preparation of benzene samples, (iii) increasing the capacity to process and date 250 samples per year and (iv) palaeoclimatic reconstruction through the analysis of lake sediments, ocean sediments and establishing their radiocarbon dates. The ultimate aim of the project was to build an Accelerator Mass Spectrometry (AMS) laboratory which would have been the only second laboratory in the country with an estimated capacity of 500 samples per year.

It was, however, observed from the completion report of the project that fabrication of a second high vacuum glass system had been initiated for benzene preparation. Some parts had been procured for making a system for graphite target preparation and the work on LSC had not been taken up by BSIP as necessary equipment required for the work was not procured.

Thus, the ultimate objective of the project to build AMS laboratory with an estimated capacity of 500 samples per year to augment the conventional radiocarbon dating by AMS dating could not be achieved and expenditure on the project to that extent remained unfruitful.

BSIP stated in July 2008 that the concerned scientists were free to use central facilities or the facilities available with another scientist. Further, BSIP stated that the release of funds from DST was not as per the Tenth Five Year Plan document. BSIP added that the procedures and processes of purchase also caused delay in procurement of equipments which often reflected in shortfall in expected target of the project. BSIP further stated in February 2009 that setting up an AMS laboratory was a very expensive proposal and the actual aim of the project was to make a system for graphite target preparation. However, the reply of BSIP was silent on AMS analysis and building a second laboratory with an estimated capacity of 500 samples per year and for non-procuring of LSC during the project period, which was to be procured in the first year of the start of the project.

The reply needs to be viewed also in light of the fact that sufficient funds were available with BSIP under plan head during 2003-08. Further, the required equipment was not available at BSIP and indent for purchase of the same was made in November 2007, only after expiry of Tenth Five Year Plan (the equipment was planned to be procured during 2002-03 i.e. first year of the plan period) which was not received as of September 2008. Thus, project objectives remained unachieved due to non-procurement of the required equipment.

(b) BSIP initiated an in-house project titled 'Accretionary evolution, tectonics and palaeoclimate in Lahaul-Spiti, Ladakh & eastern Karakoram regions' in the Tenth Five Year Plan at a total cost of Rs.50.88 lakh (including salary component of Rs.36.23 lakh). Under the project, two equipment namely, MS2 Bartington Susceptibility meter (to measure the susceptibility of

the samples) and Petrological Microscope (for thin section study of rocks) were required, at a cost of Rs.5.50 lakh. The project was executed upto March 2005 and from April 2005, the title of the project was changed to 'Palynological, geochemical and magnetic studies in Lahaul-Spiti and Ladakh regions: implications to palaeoclimate and neotectonics' and the objectives were also revised accordingly, as two scientists associated with the project had left BSIP. The two equipment required for the project were also not purchased. In the completion report, it was mentioned that except palynology, no work on other disciplines viz., sedimentology, mineralogy, magnetic and geochemistry could be taken up by BSIP.

BSIP stated in its reply that any original scientific problem having multidisciplinary aspects is a long term process and needs continuous efforts on several fronts. It further stated that some extra work had been done and published in some journals. While admitting that there was laxity shown by the office in purchase of equipment required under the project, it stated that it was pursuing the work in current Five Year Plan i.e. 2007-12.

Thus, due to non-availability of required infrastructure, the objectives of the project could not be achieved in full, thus rendering the expenditure incurred on the project as unfruitful.

(c) BSIP undertook an in-house project on 'Terrestrial Megafloral change during Mesozoic in Rajmahal Basin' in Tenth Five Year Plan. The total cost of the project was Rs.28.21 lakh, including Rs.25.71 lakh on salaries.

BSIP undertook the above project with one of the objective 'to tag biostratigraphic data with the absolute dates[5]'. In the document it was mentioned that no new equipment, except the existing ordinary binocular and higher resolution (Leica) Binocular, was required under the project.

The project was declared complete in March 2007. From the completion report, it was observed that the absolute dating of rock, which was one of the objectives of the project, could not be done as the Potassium-Argon dating machine of BSIP was not in working condition. The reason stated by BSIP for non-achievement of the objective was not acceptable because requirement of this particular equipment was not mentioned at the time of taking up of the project. Moreover, the project was for five years, the machine could have been rectified during this period. Thus, the objective of the project could not be achieved even during five years of the project duration and the expenditure incurred proved unfruitful.

Though the progress of the project was required to be monitored at least twice in a year by RAC, it was observed that the progress of the project was not reviewed regularly. The project was reviewed by RAC in February 2003 and March 2005 after more than two years and then in August 2005, after one and a half years. The subsequent review meetings were held in February 2006 and August 2007. In the minutes of the RAC meetings, a general comment was

[5] Radiometric dating Potassium- Argon/Argon-Argon.

mentioned as 'satisfactory' and there were no project-wise recommendations/suggestions of the committee. Thus, monitoring of the project was inadequate.

BSIP stated in July 2008 that release of funds from DST was not as per the Tenth Five Year Plan document and BSIP was forced to draw the priorities for purchase of specific equipment.

The reply needs to be viewed in light of the fact that efforts made to assess requirement of equipment and to obtain the funds from DST were not on record. Moreover, the Potassium-Argon dating machine was not functioning although sufficient funds were available with BSIP under plan head during 2003-08.

BSIP, in February 2009, accepted the audit comment of non-monitoring of the progress and stated that during February 2003 to February 2005 there was no regular Director in the institute. It further stated that due to this reason, the meetings of RAC & GB could not be held in time.

5.3.2.2 Midway closure of projects due to superannuation/resignation of Project Investigators

Audit observed that three in-house projects and one sponsored project were foreclosed due to superannuation/resignation of the Project Investigators (PI) and failure to timely associate any other scientist with the project, thus resulting in unfruitful expenditure of Rs.40.69 lakh, apart from non-achievement of objectives as indicated below:

Table IX

Name of the Project	Project duration and cost	Expenditure on the Project	Remarks and Reply
In-house project on 'Neogene[6] Microfloristics of Andaman & Nicobar islands and their stratigraphic[7] significance'	April 2002 to March 2007 Rs.24 lakh, including salary component of Rs.22 lakh	Rs.17.77 lakh[8]	Project was foreclosed in December 2004 due to superannuation of the PI. Completion report did not have any details of achievements of the project. BSIP, in February 2009, accepted the fact that the project could not be extended after superannuation of the PI as other scientists could not be associated. BSIP also stated that a new project had been taken up to achieve the remaining objectives in the Eleventh Five Year Plan.
In-house project on 'Pollen analytical studies in Rajasthan Lake sediments to reconstruct vegetational history and climatic	April 2002 to March 2007 Rs.5.40 lakh, including salary component of Rs.3.90 lakh.	Rs.0.73 lakh[10]	The project was discontinued after superannuation of the PI in July 2002. BSIP stated in February 2009 that the PI, after superannuation, continued the project as Emeritus Scientist and the project was completed in July 2005. The reply needs to be viewed in light of the fact that the consolidated Project Completion Report (PCR) disclosed

[6] The Neogene is a geologic period and system starting 23.03 ± 0.05 million years ago and lasting either until today or ending 2.588 million years ago.
[7] Stratigraphy is the study of rock layers (strata) deposited in the earth.
[8] Proportional expenditure.

Table IX

Name of the Project	Project duration and cost	Expenditure on the Project	Remarks and Reply
changes during LGM[9]'			that the project was discontinued after superannuation of the PI in July 2002 and BSIP did not furnish the completion report of the project stated to be completed in July 2005.
In-house project titled 'Sedimentary organic matter characterisation of Indian lignite and possible DNA sequencing' and New project titled 'Floral diversity and ecology of Mahuadanr beds, Palamau, Jharkhand'	April 2002 to March 2007 Rs.28.37 lakh, including salary component of Rs.26.22 lakh (For new project) March 2005 Rs.18.80 lakh, including the salary component of Rs.17.75 lakh	Rs.16.71 lakh[11]	On the request of the scientist, the project was dropped and in its place a new project 'Floral diversity and ecology of Mahuadanr beds, Palamau, Jharkhand' was taken up. The project was discontinued after the superannuation of the PI in September 2004. BSIP stated in February 2009 that the work was continued by allowing one of BSIP's personnel to do his Ph.D. thesis. However, no completion report of the project in respect of the achievement of the new project was prepared and the project was shown discontinued.
Sponsored project titled 'Tree-ring based Millennium-long climatic reconstructions for the Himalayan region'	Three years from June 2005 Rs.9.84 lakh subsequently revised to Rs.11.43 lakh	Rs.5.48 lakh	The project was dropped in February 2007 due to resignation of the Project Investigator. BSIP stated in July 2008 that due to the resignation of PI, the project was closed mid-way and the report was submitted to DST. BSIP further stated in February 2009 that the sponsored projects were managed on the guidelines of sponsoring agency and the agency was informed about the developments. The reply needs to be viewed in light of DST's guidelines which state that the implementing institution has an important role to play and in consultation with DST, it would have to take steps to ensure successful completion of the project.

Thus, failure of BSIP to timely associate any other scientist in these four projects resulted in unfruitful expenditure of Rs.40.69 lakh besides non-achievement of envisaged objectives.

5.3.2.3 Non/partial achievement of objectives

BSIP undertook an in-house project for the Tenth Five Year Plan period on 'Tertiary floristics of north-western peninsular India i.e. Rajasthan and Gujarat'. The total estimated cost of the project was Rs.16.06 lakh. Under the project, one Leica DMLB Microscope for studying carbonised woods was required to be purchased at a cost of Rs.5.50 lakh. The objectives of the project were (i) to build up floristic history of Rajasthan and Gujarat, (ii) to unravel the climatic changes undergone by the area during the Tertiary Period, (iii) to know about plant migration and their geographical implications, (iv) to

[9] Last Glacial Maximum.
[10] Represents the pro-rata expenditure incurred on the project for the first four months.
[11] Represents the pro-rata expenditure incurred on the project for the first four months.

decipher the vegetal matter involved in the formation of lignite available in the area, and (v) to generate sufficient data to understand the evolution of modern flora of the region.

The project was completed in March 2007. From the completion report, it was observed that out of the five objectives, only three objectives (i), (ii) and (iv) as mentioned above had been taken up under the project. The other two objectives were not taken up at all. Further, the completion report did not indicate that the three objectives were adequately addressed. Moreover, one Leica DMLB Microscope required for studying carbonised woods was not purchased during the entire project period of five years indicating that necessary work in this regard had not been done.

BSIP stated in January 2008 that these objectives were purely scientific and came under the purview of RAC and thus, these aspects were discussed and explained to RAC and accordingly RAC had given 'satisfactory' remarks. It also stated that the work on the project had provided data to build the floristics, history and evolution of the flora. BSIP further stated in February 2009 that the (iii) & (v) objectives were interpretational in nature and were taken up. It also stated that the work on carbonised woods was continued in the Eleventh Five Year Plan and the microscope was provided to the scientist.

The reply of BSIP needs to be viewed in light of the fact that according to the completion report of the project, these objectives were totally omitted. The minutes of the RAC meetings also did not indicate whether these aspects were discussed in the RAC meetings. The reply also indicated that the objectives of the project were not achieved during the duration of the project as work was again taken up in the Eleventh Five Year Plan period. Thus, complete objectives of the project could not be achieved and the expenditure incurred on the project remained unfruitful.

5.3.2.4 Inadequate documentation of research projects

Though BSIP had projected the estimated cost of each in-house project, it had not maintained project-wise accounts, in the absence of which expenditure incurred on each project could not be verified in audit. BSIP had not kept the project-wise folders of each in-house project containing, *inter-alia,* project proposals, sanctions, progress reports, evaluation reports, completion report etc. Audit examination of the projects was thus, confined only to the scrutiny of the Tenth Five Year Plan document containing project proposals, objectives and estimated expenditure, completion report of the Tenth Five Year Plan and the minutes of RAC. Thus, lack of proper documentation of the research projects also contributed to deficiencies in the system of review and evaluation of projects. As a result, it was not clear as to how BSIP satisfied itself that the individual projects were being implemented as per the approved plan and within the sanctioned expenditure.

BSIP, stated in July 2008, that the folders of different projects were made during Tenth Five Year Plan. However, the specific entries on the progress of

the project and expenditure details were not maintained during the Tenth Five Year Plan and were being followed in present Eleventh Five Year Plan.

The reply needs to be viewed in light of the fact that the folders prepared in the previous as well as current Five Year Plan did not have the project proposal, approval of the competent authority, the annual progress reports and comments of the monitoring bodies.

BSIP in February 2009 accepted the audit comment and stated that the documentation of the research projects is being done as per audit advice.

5.3.2.5 Inadequate monitoring of in-house projects

One of the functions of RAC is to review, evaluate and monitor research work carried out by BSIP and make recommendations thereon to the Governing Body. In this connection, all members of the scientific staff are required to present their work for evaluation and discussion and meetings of RAC are required to be convened twice in a year. It was, however, observed that the progress of the projects was not reviewed regularly. RAC met only six times during 2002-08 as against the mandated 12 meetings. The minutes of RAC meetings indicated that there were no project-wise and objective-wise recommendations/suggestions. In the minutes of RAC meetings, a general comment was mentioned as 'satisfactory' against almost all the projects. There were no comments of RAC in any of the completion reports of the in-house projects completed in March 2007, in the absence of which it could not be verified whether the objectives envisaged had been achieved under all the in-house projects. Thus, monitoring of the projects was not adequate.

BSIP stated in July 2008 that when RAC is satisfied with the progress of the project, it makes general statements as 'satisfactory' which does not mean that the data presented by the scientists before RAC has not been critically examined by RAC.

The reply needs to be viewed in light of the fact that comments of RAC on the progress should be self explanatory. Further, meetings of RAC were not held regularly, which also indicated improper monitoring. In absence of the proper maintenance of project folders/documents, the system adopted by RAC to monitor progress of these projects appears inadequate.

BSIP further stated in February 2009 that the comments of audit would be communicated to RAC for consideration.

5.3.2.6 Non-preparation of Completion Reports

It was observed in audit that BSIP did not submit the project completion reports despite completion of the projects as discussed below:

(a) DST sanctioned a project titled 'Analysis of climatic changes in North-East India during last several thousand years using pollen and tree-ring data' in June 2003 at a cost of Rs.10.92 lakh for a period of three years which was extended upto June 2007. Records revealed that the project had been completed in June 2007 but no completion report was submitted to DST even

after 14 months of completion of the project. In absence of completion report/utilisation certificate, the total expenditure incurred and the achievement of the objectives could not be verified in audit. Further, the monitoring reports of the project by DST/RAC were not found on record which was indicative of inadequate monitoring by DST/ BSIP in taking up and implementation of the sponsored projects.

BSIP stated in September 2008 that the progress report for the year 2006-07 was submitted to DST. The PI of the project was deputed for Antarctica expedition from December 2007 to April 2008 and the preparation of completion report was under process.

The reply needs to be viewed in light of the fact that the project was completed in June 2007 and the PI proceeded on expedition in December 2007 i.e. after completion of the project. Further, the PI had returned in April 2008 but the completion report was not prepared till September 2008. The PI further stated in January 2009 that the completion report of the project would be submitted to DST by February 2009.

(b) Another project titled 'Glacier morphology and Quaternary glacial history of Durung Drung glacier, Zanskar, Ladakh' was sanctioned by DST in October 2004 to Jammu University wherein BSIP had a co-investigator, for the period of three years. The total cost of the project was Rs.40.14 lakh including Rs.5.10 lakh for the component of the project to be implemented at BSIP. Though the project was completed in December 2007, project completion report was not prepared. As the work of BSIP was already completed, the non-preparation and submission of completion report (BSIP component) to the Jammu University would lead to non-preparation of consolidated final report and would hamper the main project also.

BSIP stated in September 2008 that the completion report has been finalised and would be submitted to DST as well as project investigator (at Jammu University) after receiving the utilisation certificate and statement of expenditure. BSIP further stated in February 2009 that the project was extended for one more year upto January 2010.

Since the project duration was completed in December 2007 and the completion report was stated to be finalised in September 2008, the extension of more than two years by DST was not justified. Thus, slackness by BSIP as well as DST in monitoring of the project had defeated the very purpose of the work done.

5.3.2.7 Collaborative Research with foreign countries without approval of DST

During 2002-03 to 2007-08, BSIP signed eight Memorandums of Understanding (MoUs), of which, two MOUs were signed with foreign agencies. Examination of the records relating to them revealed the following:

(a) BSIP signed a MoU with Chinese Academy of Sciences, Beijing in August 2005 for collaborating research activities between two countries for

three years. The work done during the period was to be published jointly and was to be utilised by herbarium, natural history museums and oil industry etc. The information was to be utilised by the agencies in the conservation of the Himalayan flora.

As per DST's guidelines for implementing research projects "the Investigator(s) should not enter into collaboration with a foreign party without prior approval of DST". It was however observed that BSIP signed the above MoU without the approval of DST. Further, the scope of work in the Himalaya which is a very sensitive zone was not approved by the competent authority.

BSIP stated in September 2008 that MoU was signed with Chinese Academy of Sciences for the collaborative project but approval of DST was awaited for initiation of the project. BSIP further stated in February 2009 that the collaborative projects were recommended by RAC and approved by GB and subsequently by DST in September 2008.

Replies of BSIP need to be viewed in light of the fact that prior recommendation and approval of RAC/GB and DST, as required under the guidelines framed by DST for signing of the MoU was not found on record/obtained. Therefore, the action of BSIP was improper.

(b) Similarly, BSIP signed another MoU in December 2006 for collaboration on 'Cretaceous Tertiary (K/T) event in marine sequences in India and correlation to sequences worldwide' with Department of Geo-sciences, Princeton University, USA which was an academic collaboration for joint publication in international journals, without the approval of DST. The BSIP component in the project was 'Study of dinoflagellate cysts, nanno-fossils, palynofacies for biostratigraphy, biotic turnover, environment and sea level change'.

BSIP stated in September 2008 that the collaboration was proposed between groups of scientists of BSIP and Princeton University, USA without any financial component. It further stated that the collaboration was duly recommended and approved by RAC & GB and submitted to DST.

However, the fact remains that BSIP entered into MOU with a foreign agency without the prior approval of DST which was not in accordance with the guidelines of DST for safeguard of intellectual property rights. The reply of BSIP (February 2009) was silent in this regard.

5.3.2.8 Scientific Research Publications

Publication of research papers in journals is one of the key indicators to evaluate the performance of scientific institutes. The Research Advisory Committee of BSIP, in its meetings held in August 2005, noted that the quality of research publications of BSIP scientists may be improved by publishing papers in national and international journals which were well referred. RAC, in its meeting held in August 2007, re-emphasised its concern on lack of publications in some projects/components and decided to give more

focus in publications on conceptual themes. RAC further expressed the need to raise publication profile of BSIP in international Impact Factor journals. The committee also decided to create an electronic database of the information on mega & micro fossils available at BSIP. Therefore, publication of high quality research paper for greater impact and visibility in reporting to national and international journals was one of the key indicators identified by BSIP to evaluate the performance of individual scientist and BSIP.

It was noticed in audit that there were 61 scientists in BSIP on an average during last six years, in various disciplines/divisions of BSIP. A total of 158 research papers were published in the SCI journals during 2002-03 to 2007-08. One scientist did not contribute any research paper during 2002-03 to 2007-08 and 20 to 23 scientists, in intermittent years, did not contribute any research paper. Of these, 13 scientists did not contribute even a single research paper in SCI journals and the average contribution of scientific publications in SCI journals by each scientist per annum was 0.43. Further, there were seven scientists who contributed only one paper in SCI Journals during 2002-03 to 2007-08. Six scientists had contributed only one or two research papers during last six years and that too in non-SCI Journals. Thus, the publication of the research papers by BSIP scientists was very low.

Further, it was noticed that most of the scientists of BSIP were engaged in various non-scientific/administrative works during 2002-03 to 2007-08. During 2006-07, 47 scientists out of 59 (i.e. 80 *per cent* of the total strength) were engaged in administrative works as convener and member of different committees viz., accommodation committee, transport committee, reception committee, garden upkeep committee, decoration committee, catering committee, cultural programme committee, security committee, disposal of old & unserviceable material committee etc. The number of committees increased from 20 to 25 in the year 2008 and the number of scientists involved was also increasing continuously.

BSIP stated in July and September 2008 that it was taking steps to enhance research profile of the scientists and they were encouraged to publish their research papers in Impact Factor Journals. However, BSIP did not intimate any reasons for non-contribution by the scientists. Regarding involvement of scientists in different committees, it stated that the audit observation would be taken into consideration.

BSIP further stated in February 2009 that the research papers were regularly published in renowned journals and the SCI journals of palaeobotanical researches were few with relatively less impact factor. Regarding involvement of scientists in different committees/ administrative work, it stated that these committees were temporary and valid for a very brief period which was formed to organise specific and important functions as well as scientific conferences in a better way.

The reply needs to be viewed in light of the fact that the committees mentioned above were of non-scientific nature and would require a certain

amount of theoretical background and practical experience. Therefore, the functions in administration and finance were better left in the hands of related professionals; since scientists constitute specialised human resource, their diversion to these activities amounts to wastage of scientific manpower.

Recommendations

23. BSIP may ensure project costing for in-house projects so that projects are completed within the sanctioned outlay.

24. BSIP may also strengthen monitoring of projects to ensure successful implementation of projects as per the approved plan and timely completion.

25. BSIP may procure equipment required for the completion of projects well in time so that the equipment are optimally utilised and facilitate achievement of project objectives.

26. Scientists should be encouraged to produce high quality publications in standard national/international SCI journals.

5.3.4 Conclusion

BSIP which is dedicated to promote research on basic as well as applied aspects of palaeobotany to understand the origin, evolution of plant life and fossil plants did not achieve its envisaged objectives fully. Equipment planned to be procured in the Tenth Five Year Plan were not procured despite provision of funds, thus affecting successful implementation of projects. Non/partial achievement of objectives and mid-way closure of projects was observed in collaborative, sponsored and in-house projects. Documentation, monitoring and evaluation of projects by RAC were inadequate and needed to be strengthened. The contribution of scientific publications in SCI journals by its scientists was low.

CHAPTER VI: MINISTRY OF ENVIRONMENT AND FORESTS

6.1 Failure of village tree plantation project

Due to improper planning and lack of monitoring on part of National Afforestation and Eco-development Board, the objective of undertaking plantation of trees all over the country at a cost of Rs.5.87 crore was not achieved, defeating the purpose for which the project was sanctioned. Only an amount of Rs.2.34 crore could be spent on the scheme as of January 2009 by the states/UTs as per the utilisation certificates received in the Ministry.

National Afforestation and Eco-development Board (NAEB), under the Ministry of Environment and Forests, conceived a project entitled 'Swarna Jayanti Kunj' in March 1998. The project envisaged planting of 50 seedlings of popular variety of indigenous trees in a cluster in each village. Under the project, funds for planting 50 seedlings (at the rate of Rs.2 per seedling) in all the 5.87 lakh inhabited villages of the country were to be provided by NAEB to the all the state governments. The State Forest Departments (SFD) were required to provide seedlings to each village panchayat and plantation of these seedlings was be taken up by the village communities through voluntary labour. Further, SFDs were to make suitable plan for maintenance and protection of these plantations, in consultation with the local communities.

Village tree plantation

Accordingly, on 30 March 1998, NAEB sanctioned the project and released Rs.5.87 crore to 30 states/UTs under its scheme of Integrated Afforestation and Eco-development Projects. The project was to be completed by 15 August, 1998. In March 1999, NAEB extended the project duration by one year i.e. upto 15 August, 1999. According to available Utilisation Certificates (UCs), an expenditure of Rs.2.34 crore was incurred on the project until January 2009. The project failed to achieve the desired objectives because of the following deficiencies:

(i) Deficient project planning: The funds for the project were released on 30 March 1998 and by the time the funds reached the states, the planting season was already over. Further, NAEB sanctioned the project without taking the views of the implementing agencies. As a result, some states like Haryana and Arunachal Pradesh expressed their inability to undertake the project with meagre amount of Rs.2 per seedling. Moreover, NAEB did not obtain action

plans from SFDs to ensure maintenance and protection of these plantations; therefore, the actual survival of seedlings after planting was not taken into account at the time of sanctioning of the project.

(ii) Lack of monitoring: As per the sanction order, the state governments were required to monitor the implementation of the project and submit a consolidated report to NAEB. In April 1999, NAEB requested states/UTs to intimate physical and financial progress achieved under the project. Thereafter, no action was taken by NAEB to ascertain the actual status of the projects from the states/UTs for more than six years. In June 2005, at the instance of Audit, NAEB requested states/UTs for submission of UCs and details of corresponding achievements of physical targets. The status of utilisation of funds and physical progress was as below:

- Only four states namely Meghalaya, Mizoram, Punjab, Sikkim and UT of Chandigarh could spend the complete funds released to them. However, villages benefitted in Punjab and Chandigarh was not known and only 29 *per cent* of villages were benefitted in Meghalaya by the project. Further, NAEB had not asked these states/UTs for submission of detailed consolidated report as required under the sanction.
- 15 states/UTs (including Jharkhand) to whom Rs.2.42 crore were released by NAEB had neither reported physical progress nor submitted UCs. Therefore, the status of utilisation of the grant released to them was not known.
- Two states viz, Bihar and Haryana, and UT of Dadra and Nagar Haveli had reported 'nil' physical and financial progress but did not refund, for the last nine years, Rs.57.26 lakh released to them. Andaman & Nicobar Islands refunded entire amount of Rs.0.54 lakh in November 2008.
- Though the sanctioned duration of the project was over in August 1999, Karnataka and Tripura had spent Rs.19.05 lakh and Rs.0.59 lakh respectively only during 2006-07.
- Arunachal Pradesh, Gujarat, Karnataka, Madhya Pradesh (including Chhattisgarh), Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal could achieve partial objectives of the project and refund of unspent balance of Rs.1.10 crore was due from these states. Further, these states had not submitted detailed consolidated report, in the absence of which, the actual villages benefitting from the project could not be ascertained.

MoEF stated in February 2009 that they were pursuing the matter with the respective States/UTs for submission of UCs and progress reports. MoEF also stated that apart from requesting the State/UT Chief Secretaries for personal attention in the matter, the urgency was brought to the notice of the State Forest Department officials in the meeting held in December 2008.

Thus, due to deficient planning and lack of monitoring on part of NAEB, the objective of undertaking plantation of trees at a cost of Rs.5.87 crore was not achieved even after 10 years of initiation of the project, thus defeating the purpose for which the project was sanctioned.

Recommendations

27. To ensure successful completion of projects, NAEB may sanction the projects only after obtaining views of the implementing agencies including necessary commitments from these agencies.

28. NAEB may carry out effective monitoring to ensure completion of project according to the envisaged objectives.

6.2 Inadmissible payment of Transport Allowance

Grant of Transport Allowance in violation of orders of Ministry of Finance led to inadmissible payment of Rs.67.66 lakh as transport allowance.

According to Ministry of Finance (MoF), Department of Expenditure's instructions, Transport Allowance (TA) shall not be admissible to those employees who are provided with government accommodation within a distance of one kilometer (km) or within a campus housing the places of work and residence. The grant of allowance under these orders would be subject to furnishing of a certificate by the employee that the government accommodation is not located within one km from the place of work of the concerned employee or within a campus housing the place of work and residence.

To enhance functional autonomy of R&D autonomous institutes, instructions issued by the Ministry of Science and Technology, New Delhi stated that exercise of enhanced financial and administrative powers by R&D autonomous institutes would be subject to the provisions of General Financial Rules (GFR)/Delegation of Financial Powers Rules (DFPR) and other central government orders issued from time to time. Also, according to DFPR, Rule 13(2), a department of the central government can confer powers not exceeding those vested in that department, upon an administrator or Head of Department or any other subordinate authority in respect of any matter covered by these rules. Thus, the Governing Body/Council of an R&D institution can exercise powers limited to the powers enjoyed by the administrative ministry/department concerned.

It was noticed in audit that the Board of Governors (BoG) of the Indian Council of Forestry Research and Education (ICFRE) Dehradun, an autonomous R&D institute under the Ministry of Environment and Forests, New Delhi, in 1998, approved the grant of TA to the staff of ICFRE

(Headquarters) and one of its constituent institutes called Forest Research Institute (FRI), Dehradun who were residing in government accommodation within the campus and who had not been provided the facility of government transport. This was in violation of MoF, Department of Expenditure orders which stated that TA would not be admissible to those employees who were provided with government accommodation within a distance of one km or within a campus housing the places of work and residence. Thus, the grant of TA to employees residing within the campus was inadmissible and in violation of MoF orders.

The campus had 821 staff quarters of various categories. During the period between October 1998 and July 2008, an expenditure of Rs.67.66 lakh was incurred towards payment of TA, which was inadmissible and in violation of MoF orders' as well as of GFR/DFPR.

ICFRE stated in September 2008 that New Forest Estate, covers approximately an area of 1,150 acres and the distance from one end to other by road ranges from two to three kms and residential bungalows/quarters were scattered all over the area. It was stated that in most of the cases, the residence was more than one km from the place of work. Therefore, keeping the spirit of the aforesaid orders, ICFRE sought approval of BoG to compensate the cost incurred by the employees on transport, which was approved by BoG. The reply further stated that Rule 55b of the By-Laws of the Council provided that "BoG shall have the powers to relax the requirement of any rules mentioned in Rule 55a of the By-Laws to such extent and subject to such conditions as may be considered necessary". The reply has to be viewed in the light of GFR 209(6) (iv)(a) 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. In exceptional cases, relaxation may be made in consultation with the MoF". There was no evidence available that such a relaxation in paying of TA had been made in consultation with MoF. Thus, the payment of Rs.67.66 lakh was inadmissible and remains recoverable.

Audit also observed that total expenditure of ICFRE during 2004-08 was Rs.246.05 crore against Rs.270.21crore[1] provided by the Government of India. Its internal revenue generation was only Rs.14.22 crore over the same period and as such, it was totally dependent on the government for financial support. Since ICFRE is an autonomous body fully funded by the Government of India, it was incumbent on them to follow provisions of GFR. Such deviations permitted by the BoG are not only violations of GFR but also put extra burden on the government exchequer.

The matter was referred to the Ministry of Environment and Forests in August 2008; their reply was awaited as of December 2008.

[1] As per Income & Expenditure accounts of ICFRE.

Recommendations

29. MoEF may review instances of deviations in autonomous institutions under its control to ensure that government liability towards sanction of grants is not unnecessarily increased by permitting various deviations from the applicable rules. Such review is also essential in the light of acceptance and implementation of recommendations of the Sixth Pay Commission by the Government. It needs to be ensured that while revising pay and allowances of their staff, the autonomous bodies substantially funded by the Government do not sanction higher benefits/allowances than those admissible to Central Government employees and pass on the burden to the Central exchequer.

30. MoEF, in consultation with MoF, may also issue clear instructions on the extent of powers that can be exercised by the Governing Body of substantially financed autonomous institutions while approving pay, allowances and other benefits in excess of those ordinarily admissible to government employees.

6.3 Functioning of Central Zoo Authority, New Delhi

Central Zoo Authority (CZA) functioned only as a grant releasing agency instead of an agency to ensure conservation of endangered species of animals in zoos. CZA failed to ensure effective protection of animals/breeding programmes in the zoos. It had not fully identified the list of endangered species and undertook conservation breeding programmes for only three of the identified 63 endangered species. There was decrease in the number of endangered animals in the zoos all over the country due to high mortality. There was over-crowding of animals such as tigers, sambar/spotted deer, leopards etc., in a large number of zoos, much beyond the optimal number of animals prescribed under CZA guidelines. CZA was unaware as to whether the zoos were following the norms and regulations introduced by it for upkeep etc., to ensure the proper health of animals in zoos as it did not conduct any regular monitoring of the functioning of zoos. The system of financial management in CZA was also weak with CZA unable to monitor whether the funds released by it were actually being spent by the state zoos for the sanctioned purpose.

6.3.1 Introduction

Central Zoo Authority (CZA), an autonomous statutory body under the administrative control of Ministry of Environment and Forests (MoEF), was constituted in February 1992 under the Wild Life (Protection) Act, 1972 to regulate the functioning of all zoos/rescue centers[2] in India. The main

[2] 180 recognised zoos/rescue centers in 2007-08.

objective of CZA is to complement the national effort in conservation of wildlife, set standards and norms for housing, upkeep, health care and overall management of animals in zoos. Its primary aim is to enact legally enforceable standards and norms of upkeep and management of animals in zoos and support the conservation of endangered species by giving species, which have no chance of survival in wild, a last chance of survival through coordinated breeding under ex-situ condition.

6.3.2 Functions

The main functions of CZA are:

- Specify the minimum standards for housing, upkeep and veterinary care of the animals kept in a zoo;
- Evaluate and assess the functioning of zoos with respect to the standards or the norms as may be prescribed;
- Identify endangered species of wild animals for purposes of captive breeding and assigning responsibility in this regard to a zoo;
- Co-ordinate the acquisition, exchange and loaning of animals for breeding purposes;
- Ensure maintenance of stud books of endangered species of wild animals bred in captivity;
- Co-ordinate training of zoo personnel in India and outside India; and
- Co-ordinate research in captive breeding and educational programmes for the purposes of zoos.

Audit findings relating to the functioning of CZA during 2002-08 are discussed in the succeeding paragraphs.

6.3.3 Compliance to minimum standards for housing, upkeep and veterinary care of the animals kept in a zoo and evaluation/ assessment of the functioning of zoos with respect to the standards/norms

6.3.3.1 Evaluation and assessment of the functioning of zoos

CZA has laid down a number of guidelines/ norms/ standards specifying the minimum standards for housing, upkeep and veterinary care of animals kept in zoos all over India. Standards have been specified for establishment of new zoos, submission of proposals relating to development activities in zoos and upkeep of animals like elephants, population control measures for lions, tigers and common ungulates. In addition, norms have also been specified for supply of quality feed for zoo animals, health and hygiene like disposing of carcasses of zoo animals, constitution of Health Advisory Committee, monitoring of hygiene and incidence of blood borne diseases in zoos, suggested health monitoring protocol for zoos, measures for preventing avian influenza and welfare of animal like euthanasia of zoo animals.

Audit observed that:

- CZA did not make adequate efforts to check whether the guidelines/norms/ standards prescribed by it were being followed and implemented in the zoos for ensuring the good health and proper upkeep of animals in the zoos.
- CZA had not drawn up a schedule for conducting the inspection of zoos to ensure that the norms prescribed by it were being followed.
- No monitoring reports or any schedule of inspection of all the zoos was provided by CZA to substantiate the fact that it carried out regular monitoring of all the zoos.
- No mid-term evaluation was conducted regarding functioning of the zoos which were granted recognition by CZA.

The fact was also confirmed by National Zoological Park, Delhi, which stated that the compliance report of norms and standards prescribed by CZA was not being prepared by it for submission to CZA.

CZA replied in October 2008 that it regularly evaluates zoos against the prescribed standards, norms and compliance. This reply has to be viewed in light of the fact that National Zoological Park, New Delhi clearly stated that no such compliance reports were being sent to CZA. In addition, no such monitoring reports were available for scrutiny at CZA. MoEF replied in December 2008 that all facilities are evaluated by a team of experts, drawn from a panel of zoo experts, every 2-3 years. It also stated that there was no technical manpower available with CZA and the mid-term evaluation should have been a regular routine, but could not be adhered to because of the above reasons. It also stated that CZA was regularly receiving compliance reports from different recognised zoos with some exceptions like the National Zoological Park, New Delhi.

The fact remains that most of the zoos were only inspected at the time of granting recognition which happens at the time of request for recognition from any zoo. Also, zoos are given recognition for a period of time like 3-5 years and they are inspected before extending the recognition granted to them. Hence, no mid-term evaluation of zoos took place to ensure whether zoos were complying with the guidelines/norms/standards/ issued by CZA after grant of recognition/extension of recognition. Also, no compliance reports or zoo evaluation reports were produced to Audit, which confirms the fact that regular and sustained monitoring to ensure compliance to guidelines/norms/ standards prescribed by CZA was not taking place.

Recommendations

31. CZA may ensure that all the guidelines/norms/standards prescribed for health and care of animals in the custody of zoos are being followed.

32. CZA may consider constituting a monitoring cell, comprising of technical experts, who could visit the zoos and check them for compliance regularly every year so that the animals in the zoos, which are a valuable resource, receive the best upkeep which guarantees their good health and safety.

6.3.3.2 Master Plan

Rule 10(51) of Recognition of Zoo Rules, 1992 prescribes that each zoo should have a long-term Master Plan for its development and copies of such Master Plans should be submitted to CZA. Master Plan foresees the coordinated physical development of many separate facilities and functions of a zoo, in order to guide growth and control the final outcome. Some of the activities envisaged in the Master Plan are inventory of natural systems, evaluation of data for development programme, preparation of conceptual plan and development of final plan of the zoo. Thus, preparation of Master Plan is integral for the functioning and development of a zoo.

However, only 22 zoos (12.22 *per cent*) of the total 180 zoos had submitted the copies of their Master Plan to CZA. CZA also had not taken any initiative to get the Master plans from the rest of the 158 zoos. In the absence of a Master Plan, the growth and development of zoos would not happen in an integrated and planned manner.

CZA replied in October 2008 that all the Master Plans would be ready by March 2009. MoEF also stated in December 2008 that zoos have been given time till March 2009 to submit their Master Plans.

The fact remains that despite CZA being functional for more than 15 years; it has failed to ensure preparation of Master Plan for each zoo which would go a long way in ensuring proper upkeep and efficient running of the zoos.

6.3.3.3 Rescue Centers

To rehabilitate the confiscated animals from the circuses & closed/derecognised zoos, CZA had provided 100 *per cent* financial assistance for establishment of Rescue Centers within the zoos, but off the display area. The recurring and non-recurring cost of animals kept in such rescue centers were to be met by CZA. For this purpose, seven Rescue Centers were created at a cost of Rs.8.81crore during 1999-05. Apart from this, CZA also spent Rs.19.58 crore for housing, upkeep and health care of 352 animals (or more) in Rescue Centers till August 2008. CZA had not prescribed any acceptable mortality rate for animals kept in the rescue centers; the total mortality rate in the Rescue Centers was 25 *per cent,* with the mortality rate of endangered species like lions being 27 *per cent* and tigers 30 *per cent.*

Despite spending Rs.28.39 crore on creation of the rescue centers and maintenance of animals in it, CZA did not monitor physical performance of these Rescue Centers. None of these centers was ever visited by any design/technical/evaluating committee for their evaluation. Also no annual/six monthly compliance report was received from these centers.

CZA replied in October 2008 that Rescue Centers were being monitored regularly; however no such report was made available to Audit for scrutiny. MoEF stated in December 2008 that the animals in these shelters were heavily hybridised, inbred, old and abused animals from the circuses and were kept for

phasing out and that these Rescue Centers were being managed more as old age home for these animals.

The fact remains that from a purely humanitarian point of view, CZA should undertake responsibility for ensuring that these old and abused animals are given proper health care. In addition, since CZA provides 100 *per cent* assistance to these rescue centers, it is also incumbent on CZA to monitor the running of the rescue centers so that it can ensure that these animals are taken well care of.

Recommendations

33. Action may be taken by CZA for preparation of Master Plan for long term development of the zoos.

34. CZA needs to monitor the working of the Rescue Centers to ensure proper health of animals in the Rescue Centers.

6.3.4 Protection of animals/breeding programmes

One of the main functions of CZA was to complement the efforts for conservation of wild animals and endangered species in India through planned breeding programmes and ex-situ research including biotechnological intervention for conservation of species.

6.3.4.1 Identification of endangered species and assignment of responsibility to each zoo

CZA had to identify endangered species of wild animals for purposes of captive breeding and assign responsibility in this regard to a zoo. It was noticed in audit that CZA has identified only 63 species, whereas the IUCN[3] Red List includes 44 species as 'Critically Endangered', 88 species as 'Endangered' and 181 species of animals as 'Vulnerable' in India. Thus, the identification of animals as endangered by CZA is very inadequate and CZA needs to give greater thrust to the identification of threatened animals so that effective conservation of these endangered species can be undertaken.

CZA replied in October 2008 due to lack of funds and expertise, all the threatened animals in the IUCN list had not been identified.

6.3.4.2 Conservation Breeding Programme

CZA had to carry out planned breeding programme for the conservation of wild animals and endangered species.

[3] International Union for Conservation of Nature is the world's oldest and largest global environmental network - a democratic membership union with more than 1,000 government and NGO member organisations, and almost 11,000 volunteer scientists in more than 160 countries.

It was noticed in audit that out of 63 endangered species identified by CZA, only three species i.e, Red Panda[4], Lion tailed macaque[5] and Western tragopan[6] were taken up under Conservation Breeding Programme. Funds for the Conservation Breeding Programme were given to CZA under the head of 'Grants for development of Zoos' and during the Tenth Plan Period, Rs.44 crore was given under this head. During 2007-08, Rs.9.5 crore was allotted to CZA separately for the Conservation Breeding Programme and CZA spent only Rs.1.97 crore, that is, only 21 *per cent* of the allotted funds were utilised during 2007-08.

Western Tragopan

Red Panda

Moreover, even though 'Conservation Breeding of Red Panda' was started in 1995, there was a 33 *per cent* decrease in its population during 2000 to 2008. Thus, breeding programmes for conservation of endangered species needs to be strengthened and expanded by CZA.

Lion tailed macaque

CZA replied in October 2008 it was doing its best to expand the Conservation Breeding Programme. MoEF stated in December 2008 that the success of the Conservation Breeding Programme cannot be monitored by the percentage increase in the population, but by maintaining the genetic, physical and behavioral health of the individuals taken up under the programme.

The fact remains that only three species out of the 63 identified by CZA have been taken up for the Conservation Breeding Programme. In addition, decreasing number of animals taken up under the Conservation Breeding Programme is a matter of great concern as its total demise could mean extinction of the whole species.

Thus, CZA needs to include more animals under the Conservation Breeding Programme and ensure successful breeding programmes so that these animals do not become extinct.

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[4] It is a mostly herbivorous mammal, specialised as a bamboo feeder. Its population continues to decline due to habitat fragmentation.

[5] It is a medium-sized monkey with shiny black fur and long greyish-white hair around its face. According to IUCN, only approximately 2,500 of these animals live scattered over several areas in Karnataka, Kerala and Tamil Nadu. The Lion-tailed Macaque ranks among the rarest and most threatened primates.

[6] These birds are commonly called "horned pheasants" because of two brightly-colored, fleshy horns on their heads that they can erect during courtship displays. The Western Tragopan is considered as the rarest of all living pheasants. The world population is estimated at less than 5000 individuals, including a captive population of less than five at the moment.

6.3.4.3 Preparation of Stud-Book

One of the functions of CZA is to ensure the maintenance of stud-books[7] of endangered species of wild animals bred in captivity. Though CZA was established in December 1992, only in August 2000 it assigned the task of preparing stud-books of four species to Wildlife Institute of India (WII). In October 2006, WII was further entrusted responsibility for preparation of stud-books of 14 species (including earlier four species). The first progress report on current status of stud-books for these 14 species is expected to be submitted by WII in March 2009. Thus, even after 15 years of its existence, CZA was unable to prepare the stud-books of the 63 identified endangered species. In absence of these stud-books, the work of conservation of endangered species could be hampered.

CZA replied in October 2008 that it planned to prepare stud-books for all 63 identified species. MoEF stated in December 2008 that studbooks were being prepared.

6.3.4.4 Facilities refused recognition but having animals

There were 1563 animals in 31 facilities in India which have been refused recognition as zoos due to various reasons. CZA was responsible for the relocation of animals among the various zoos but it was noticed in audit that neither were these animals shifted to recognised zoos nor were these released into the wild. CZA also had no information about the status or health of these animals. In the absence of monitoring of these facilities by CZA, CZA had no information as to whether these animals were being sold off or being displayed for profit or still being run as a zoo or meeting a painful death.

CZA replied in October 2008 that it had decided to evaluate all the 31 facilities. MoEF stated in December 2008 that out of 31 such facilities, seven had already been closed and it had decided to recognise the other 24 facilities as regular zoos after getting the undertaking that the zoo operators would arrange sufficient land, finances and were willing to manage the facilities as per the Recognition of Zoo Rules as per direction of the Supreme Court of India.

6.3.4.5 Decrease in number of animals of endangered species

Scrutiny of details of endangered species showed that the number of some species declined from 2002 to 2008 as detailed in the table X below. The reasons of decrease in number of these animals as intimated by CZA was that inventory of the animals had not been sent by some zoos for updating and also due to increase of mortality among animals due to old age. However, no age-wise analysis of deaths was available with CZA.

[7] Stud-book is an official list of animals within a specific breed whose parents are known and is used to identify those animals which are actively breeding.

Table X

Name of animals	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Bear Brown	9	11	2	2	2	1
Bear Sun-Malayan	2	2	2	2	1	0
Buffalo Wild	0	3	3	18	1	1
Deer Mouse	15	20	13	13	9	8
Keelback Checkered	27	104	98	98	105	58
Keelback Green	0	15	15	14	14	3
Kite	13	73	17	12	14	11
Kite Black Winged	6	15	6	21	7	6
Langur Nilgiri	30	29	28	27	26	21
Leopard Black	3	5	3	3	2	2
Bonnet macaque	360	445	383	369	388	317
Otter Clawless	0	0	4	4	2	1
Otter Smooth Indian	3	5	1	5	6	3
Pangolin	7	8	6	8	5	5
Pheasant Peacock	4	10	3	3	3	3
Pigeon Nicobar	42	43	45	42	28	22
Ratel	14	15	11	9	8	10
Snake Keelback Checkered	142	74	65	64	58	57
Snake Keelback Olivaceous	11	15	12	11	10	10
Turtle Ganges Soft-shelled	228	236	48	45	45	46
Turtle Peacock Marked Soft Shelled	7	7	0	1	2	2
Wolf Indian	52	46	30	36	30	32
Total	**975**	**1181**	**795**	**807**	**766**	**619**

It was also observed that the reasons assigned for death of some of the endangered species were 'due to unknown', 'due to shock', 'due to heatstroke', 'due to infighting' etc. It was also noticed that in many cases of death of the endangered animal, the postmortem reports, though conducted in the year 2004-05 were still awaited in 2008. CZA had not taken any further necessary action to determine the reasons of death of these endangered animals.

The details of reasons of death of these endangered species during 2002 to 2008 are as under:

Table XI

Reasons of death	Number of Animals 2002-2008
Post Mortem Awaited	78
Not fit for Post Mortem	15
Unknown	42
Due to Shock	131
Due to Infighting	90
Heat Stroke	24

CZA should take effective steps to obtain the post mortem reports on time and strive to avert the preventable causes of death like death due to infighting, heat stroke etc.

CZA replied in October 2008 that it was trying its best to minimise the death of endangered species in captivity and to ensure submission of post mortem

reports by zoos in case of death of endangered species. MoEF stated in December 2008 that number of individuals of endangered species in captivity in Indian zoos mainly fluctuated because of non receipt of inventory of some of the zoos at the time of compilation of the inventory of animals in the CZA. MoEF also stated that zoos have been asked to communicate the cause of death only of endangered species to CZA.

The fact remains that decrease in the number of endangered species in zoos of India is a matter of great concern as zoos were mainly created with the purpose of conserving these endangered species. The details of reasons of death of even the endangered species as mentioned in the above table are not available with CZA which further points to the lackadaisical attitude of CZA in probing and putting in place remedial measures to stop deaths of animals which are due to preventable causes.

6.3.4.6 Excess number of prolifically breeding species in Zoos

Zoos in India have prolifically breeding species such as tiger, leopard, panther, black-buck, sambar, spotted deer, blue-bull etc. In the interest of operational efficiency, better management and optimal utilisation of resources, CZA's guidelines prescribe the number of animals of various species housed in the zoos should not exceed the number indicated below:

Table XII

Type of Zoo	Optimum number of Tiger/Leopard	Optimum number of deer
Large	10	20
Medium	6	12
Small	4	10

However, it was observed that the numbers of animals of these categories in the zoos was much more than the prescribed limits, as given below:

Table XIII

Name of Zoo	Number of Tiger/ Tiger Bengal
National Park Bannerghata Zoological Garden (Medium Zoo)	44
Nandankanan Biological Park (Large Zoo)	27
National Zoological Park (Large Zoo)	21
Maitri Bagh Zoo (Small Zoo)	18
Sakkarbaug Zoo (Large Zoo)	16
Tiger & Lion Safari, Thyyarekoppa, Shimoga (Small Zoo)	15
Aurangabad Municipal Zoo (Small Zoo)	14
Van Vihar National Park (Small Zoo)	13
Indira Gandhi Zoological Park (Large Zoo)	11
Name of Zoo	**Number of Leopards**
Sakkarbaug Zoo (Large Zoo)	45
National Park Bannerghata Zoological Garden (Medium Zoo)	21
Sanjay Gandhi National Park (Large Zoo)	20
Van Vihar National Park (Small Zoo)	17
Assam State Zoo Cum Botanical Garden (Large Zoo)	15
Pt. Govind Ballabh Pant High Altitude Zoo (Small Zoo)	12
Dhauladhar Nature Park (Mini Zoo)	9
Tiger & Lion Safari, Thyyarekoppa, Shimoga (Small Zoo)	8

Name of Zoo	Number of Spotted/ Samber deer
Van Vihar National Park (Small Zoo)	882
Sepahijala Zoological Park (Large Zoo)	392
Nandankanan Biological Park (Large Zoo)	263
National Park Bannerghata Zoological Garden (Medium Zoo)	229
State Museum & Zoo (Medium Zoo)	216
Lucknow Zoological Park (Large Zoo)	210
Jaipur Zoo (Large Zoo)	207
Assam State Zoo Cum Botanical Garden (Large Zoo)	202
Indira Gandhi Zoological Park (Large Zoo)	158
Maitri Bagh ZooSmall Zoo	154
Thiruvananthapuram Zoo (Large Zoo)	134
Sayaji Baug Zoo (Medium Zoo)	127
National Zoological Park (Large Zoo)	125
Nehru Zoological Park (Large Zoo)	125
Arinagar Anna Zoological Park (Large Zoo)	116
Kapilash zoo (Mini Zoo)	112
Jodhpur Zoo (Small Zoo)	110
Sakkarbaug Zoo (Large Zoo)	104
Mahendra Chaudhary Zoological Park (Large Zoo)	92
Alipur Zoological Park (Large Zoo)	60

Necessary steps may be taken to control the population of these species or to transfer the excess animals to other zoos so that problems like infighting and death arising from lack of space as well as drain on financial resources of the zoo can be avoided. MoEF stated in December 2008 the zoos have been asked to control of number of animals within the carrying capacity or the prescribed limit with time, as these are live animals and no other mode of disposal can be enforced except relocation or phasing out.

Thus, it is evident that CZA needs to take effective action to curb overcrowding in the zoos, which has serious repercussions on the health and survival of these endangered species.

Recommendations

35. CZA may ensure effective protection of animals/breeding programmes in the zoos. The list of endangered species identified by it needs to be comprehensive and complete to ensure the conservation of endangered species. It also needs to undertake conservation breeding programs for the rest of the endangered species.

36. CZA may ensure that the preparation of stud-books is completed.

37. CZA may also contain the number of prolifically breeding species in the zoos for better zoo management.

6.3.5 Research Projects/ Projects

It was noticed in audit that between 1992 to 2005, CZA did not undertake any research project. It started undertaking research projects only in 2006; currently 15 are underway and 3 were completed. It is emphasised that CZA

undertake/sanction more research projects/projects to reputed agencies to co-ordinate research in captive breeding and educational programmes for the purposes of zoos, which is one of the objectives of CZA.

CZA stated in October 2008 that initially it was engaged in achieving and streamlining other objectives/functions and now it is in a position to identify and conceptualise research requirements.

In December 2008, MoEF accepted the above fact and stated that organised research at the national level has been initiated by CZA recently and CZA has already started receiving reports regarding the same.

6.3.6 Financial Management

CZA gets annual grants from MoEF and disburses funds to 68 zoos/rescue[8] centers all over the country. CZA received Rs.102.23 crore and its expenditure was Rs.104.08 crore during 2002-08.

6.3.6.1 Outstanding Utilisation Certificates

CZA is required to obtain the Utilisation Certificates (UCs) from various zoos/rescue centers immediately on the completion of the work and not later than 12 months from the closure of the financial year. However, it was observed in audit that UCs aggregating to Rs.20.01 crore, i.e. 19.30 *per cent* of grants released for 2000-2007 to 60 zoos were still pending. The table below illustrates the age-wise position of the pending UCs:

Table XIV

Age of pendency	Percentage of UCs pending with reference to the grants released during the year
Pending for more than 5 years	3.28
Pending for more than 3 years	42.22
Pending for more than 2 years	49.61

Although UCs were pending for the last two to four years, CZA continued to release grants to zoos in Hyderabad, Patna, Kolkata, Gwalior, Junagarh, Sikkim and Assam, which was in violation of GFRs. Thus, CZA needs to introduce a mechanism to monitor the funds actually being spent by the zoos.

CZA replied in October 2008 that UCs for grants of Rs.19.11 crore (from 2003-04 to 2006-07) were pending. However, the reply excluded the UCs pending for grants released during 2000-02. MoEF stated in December 2008 that there were only few cases of non submission of UCs within the twelve months time limit and these were mainly because of local reasons in the states.

The reply of MoEF is not acceptable due to the fact that UCs aggregating to Rs.20.01 crore, i.e., 19.30 *per cent* of grants released for 2000-2007 to 60 zoos were still pending, as verified in audit.

[8] CZA provides grants to only those zoos/rescue centers which existed in 1998.

6.3.6.2 Unauthorised release of grants

Expenditure Finance Committee (EFC) for Ninth and Tenth Five Year Plans had recommended that the cost of items related to visitor facilities and all such other works would be borne by the State Government /Authorities controlling the zoo. However, it was observed that CZA had provided financial assistance of Rs.7.78 lakh during 2002-07 for the cost of items related to visitor facilities (construction of parking place, retaining wall at visitors' path and paving of visitors' corridor) for which grants were not to be provided. Some of the zoos to whom this unauthorised grant was provided were Andhra Pradesh, Mizoram and Arunachal Pradesh. Thus, CZA violated the financial norms as set out by EFC. Instead of spending funds on its primary activities relating to protection and conservation of animals in zoos, CZA disbursed funds on expenses which the state governments were responsible for.

CZA replied in October 2008 that construction of parking place, retaining wall at visitors' path and paving of visitors' corridor were covered under EFC. The reply is not acceptable as the minutes of the EFC, clearly state that the costs of items related to visitor facilities and all such other works which are not funded at present, will have to be borne by the State Government/ Authorities controlling the zoo.

MoEF stated in December 2008 that creation of footpath to regulate or restrict viewing of animals is treated as part of animal enclosure. Claiming construction of parking place and paving of visitors corridors/paths as part of animal enclosure is incorrect on part of CZA as well as being in violation of EFC norms.

6.3.6.3 Non contribution of the matching grant by states

As per the approved funding pattern, CZA provides 100 *per cent* financial assistance for activities like improvement of housing, upkeep and health care facilities for zoo animals. For certain activities like developmental works in zoos; CZA provides 50 *per cent* assistance and the balance 50 *per cent* is contributed by the state government. It was noticed that though CZA had released its share of Rs.2.24 crore to Argnar Anna Zoological Park, Vandulur, the state government of Tamil Nadu was yet to release its matching share of Rs.1.17 crore for the year 1999-2000 and 2006-07.

CZA stated that only eight zoos had released their matching grants during the years 2002-07 and information from other states/ zoos was still awaited. Thus, CZA did not have any mechanism to ensure that the states release their matching grants. As a result, activities essential for functioning of the zoo would suffer in the absence of the matching grants by the states.

In October 2008, CZA also replied that grants are released to states only when MoUs are signed by the state government and CZA has been continuously receiving the UCs for the amount released on 50:50 basis which implies that the state government has released the matching grant. This contention by CZA is incorrect as matching grants were not being released by some of the

states, as seen during audit. In addition, it was seen by Audit that CZA had itself noted that grants remained undisbursed due to the fact that the states had not released their matching grant. MoEF stated in December 2008 that CZA releases grants only after receiving the MoUs signed on behalf of the state governments and that it is very rare that zoos fail to get the state share in the proposed activities, though sometimes things may get delayed because of that.

The reply of MoEF has to be viewed in light of the fact that test check by Audit had disclosed non-release of the matching grant by some states. In fact, CZA itself had also informed Audit that only eight zoos had released their matching grants during the years 2002-07 and information from other states/ zoos was still awaited.

6.3.6.4 Non maintenance of details of assets created out of grants released by CZA

According to the MoUs signed by CZA, the zoos/state governments were required to furnish annually, a statement showing the extracts of the assets created out of the grants released by CZA and that such assets should not be disposed off without the prior approval of Government of India/CZA. The total grants released during 2002-2008 by CZA to various zoos for purchase of veterinary equipments was Rs.2.49 crore. However, it was observed in Audit that the details of veterinary equipments purchased during 2002-2008 were not available in CZA, as was pointed out by Audit in the Separate Audit Report on the accounts of CZA for 2005-08. Thus, in the absence of this information, CZA would be unaware of the fact whether equipment was actually purchased by the zoos.

CZA replied in October 2008 that format of MoU would be changed. This reply of CZA has to be viewed in light of the fact that since the equipment were purchased out of the funds disbursed by CZA, it needs to exercise some monitoring and control of the purchases and utilisation of equipment purchased by the state zoos.

MoEF stated in December 2008 that zoos/state governments would be asked to furnish annually a statement showing extracts of the assets created out of the grants released by CZA.

6.3.6.5 Lack of proof of completion of work

CZA had released Rs.26.30 crore during 2002-2007 to zoos towards construction and repair of boundary wall, animal houses, veterinary hospitals, postmortem room, enclosures, feed store & kitchen, separation chambers etc. As per sanction order and MOU, the construction of the enclosures should be in accordance with the designs approved by CZA and photocopies of the measurement books (for the work which was executed from CZA's grant) should also be sent to CZA. But it was observed that no physical verification of the works was conducted by CZA and copy of measurement books and completion certificate were also not received in CZA.

CZA as well as MoEF replied in October/December 2008 that physical verification of works was regularly conducted by CZA's evaluators/experts when they visit the zoo in connection with recognition etc. However, no such physical inspection reports were made available to audit for scrutiny. In the absence of physical inspection reports, it was difficult to verify whether such physical inspections were conducted. In addition, zoos are given recognition for periods ranging from two to three years and thus, officials of CZA visit a zoo after a gap of two to three years for granting recognition/renewing recognition and zoos are not inspected in the interim period.

6.3.6.6 Expenditure incurred through budget procedure of the states

As per Supreme Court order in 1998, the funds released by CZA should be allowed to be utilised by zoo directly without going through the budget procedure of the respective states. As per MoU and sanction orders, the money released by CZA should not be taken in revenue account but should be made available to executing agencies for taking up the work immediately. However, it was observed during audit that only in seven states (Madhya Pradesh, Manipur, Gujarat, Nagaland, Mizoram, Rajasthan and Tamil Nadu) funds disbursed by CZA were released to the zoo directly, without going through the state budget. Information from other states was not received.

CZA/MoEF replied in October/December 2008 that in most of the cases the funds were utilised by the state zoos directly without going through the budget of the state. CZA also stated that the Supreme Court had only suggested that the funds disbursed by CZA should be allowed to be utilised directly by the zoo. This reply is not acceptable because CZA did not give a list of the state zoos which were utilising the funds disbursed by CZA directly; which, as noted by Audit, were only seven.

Recommendations

38. CZA may strengthen its financial management system and introduce checks and controls to ensure that the money being disbursed by CZA is actually being utilised by the zoos for the purposes for which it was disbursed.

39. Financial management can further be improved by CZA by not releasing the grants until the state zoos submit the UCs timely and states release their matching grant.

6.3.7 Manpower

It was observed in audit that CZA had 11 sanctioned posts and there were no shortages in the men in position. However, it was also noticed that the sanctioned strength did not include any technical/scientific personnel. CZA admitted that due to absence of technical/scientific staff, it was finding it difficult to provide technical and other assistance to zoos.

MoEF stated in December 2008 that there was a shortage of manpower and the issue has been taken up with the Ministry of Finance in June 2008.

Recommendation

40. MoEF may consider sanctioning technical/scientific posts to CZA to enable CZA to emerge as a facilitator for proper improvement of zoos in the country.

6.3.8 Conclusion

The evaluation and assessment of the functioning of zoos by CZA was not very effective. CZA was unaware as to whether the zoos were following the norms and regulations introduced by it for upkeep etc., to ensure the proper health of animals in the zoos as it did not conduct any regular monitoring of the functioning of the zoos. CZA had not taken action on the non-preparation of Master Plan by the zoos. It did not monitor the working of the rescue centers and as such, was not able to ensure proper health of the animals in the rescue centers. Thus, CZA failed to ensure the health, upkeep and functioning of the state zoos according to the norms/guidelines laid down by it.

CZA also failed to ensure effective protection of animals/breeding programmes in the zoos. It had not fully identified the list of endangered species and undertook Conservation Breeding Programmes for only three of the identified 63 endangered species. Preparation of stud-book by it was incomplete and it was unable to ensure the health of animals kept in the centers which had been refused recognition by it. There was also decrease in the number of animals in the zoos all over the country which were identified by it as endangered. It failed to control the number of prolifically breeding animals it had in the zoos. Thus, CZA failed to meet one of its primary objectives which was the conservation of endangered species kept in zoos all over the countries. Its breeding programme for endangered species was not adequate and it had not actively engaged in research in captive breeding in ex-situ conditions.

CZA did not exercise any checks to verify whether the grants disbursed by CZA to state zoos were actually being utilised by the state zoos for the purposes for which it was sanctioned. In the absence of timely submission of utilisation certificates by the state zoos, CZA was unable to ascertain whether work was carried out by zoos as per the sanction order. Grants were disbursed by CZA for purposes other than by those sanctioned by EFC and CZA had no means of ensuring that the states also released their matching grant. CZA exercised no check to ensure that the state zoos actually purchased and utilised the equipment for which grant was given by CZA. No completion reports or measurement books existed rendering doubts on the actual execution of the work. CZA also had no mechanism to ensure that the funds disbursed by it reached the states directly, instead of being routed through the state budget, which added to the delays in project implementation. As such, the financial management system of CZA was very weak.

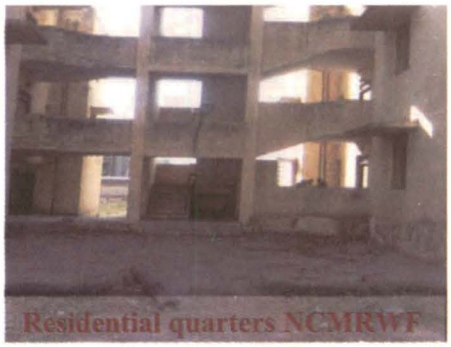
Thus, overall, CZA was ineffective in meeting the objectives set out for it and functioned only as a grant releasing agency instead of an agency to ensure conservation of endangered species of animals in zoos and evaluating the functioning of zoos to ensure they followed the norms set to ensure protection of animals.

CHAPTER VII: MINISTRY OF EARTH SCIENCES

7.1 Construction of residential quarters and hostel units without demand

Despite incurring Rs.9.32 crore on construction of residential quarters and hostels, the National Centre for Medium Range Weather Forecasting could not allot these quarters as there was no demand for them.

In October 1992, Department of Science and Technology (DST) purchased five acres of land from New Okhla Industrial Development Authority (NOIDA) at a total cost of Rs.3.25 crore for the construction of residential complex consisting of 34 quarters of different types and 48 hostel units for National Centre for Medium Range Weather Forecasting (NCMRWF). The justification for construction of these quarters and hostel units was not available on record. National Industrial Development Corporation (NIDC) was the executing agency.


Residential quarters NCMRWF

The possession of residential complex was taken over by NCMRWF from the builder in 2003 on as is where is basis, due to closure of NIDC in August 2002. NCMRWF paid Rs.3.24 crore to NIDC for this work. The flats were not allotted as of July 2008 as discussed below:

- A survey was conducted by a team from DST along with M/s. MECON Limited in 2005 to evaluate the works to be carried out for making residential complex ready for allotment. As per the survey, several works like clearing the jungle, repair of outside plaster, repair of water tanks etc., were to be done in addition to providing water supply connections to many flats. MECON suggested an expenditure of Rs.17.61 lakh on these items which was not agreed to by the Integrated Finance Division of DST. NCMRWF did not intimate the reasons for DST not agreeing to MECON suggestions. As such, NCMRWF/DST was responsible for not getting the flats/hostels ready for allotments till July 2006 (i.e. the period NCMRWF was under DST).
- Before incurring any expenditure for rehabilitating housing complex, NCMRWF invited willingness in October 2007 from its staff including staff of the Ministry of Earth Sciences (MoES) for allotments of quarters. Only two persons viz., one Junior Research Fellow and one Research Associate (who are not regular employees) submitted their willingness in October 2007. In March 2008, Secretary MoES desired to convene a separate meeting on this issue. However, no such meeting could be organised since March 2008. Nor could NCMRWF frame the allotment rules for the flats. As such,

NCMRWF was also responsible for not getting the flats/hostels ready for allotments including its non-utilisation from July 2006 to till date.

- NCMRWF paid a lease rent of Rs.2.83 crore to NOIDA for a period of 99 years.

Residential Quarters-NCMRWF

Thus, improper planning and non-assessment of the requirement of residential quarters/hostels by NCMRWF resulted in an idle expenditure of Rs.9.32 crore on the acquisition of land, lease rent and construction of quarters/hostels.

NCMRWF stated in July 2008 that incurring of any major expenditure on repair/renovation in the absence of sufficient number of applicants for allotment of quarters could have led to further audit objections.

However, the fact remained that 82 quarters/hostel units were lying vacant/un-utilised since March 2003 resulting in an idle expenditure of Rs.9.32 crore.

Recommendation

41. In view of non-existent demand for the quarters, NCMRWF may consider its disposal or transfer to other Departments requiring residential accommodation in that area.

7.2 Avoidable expenditure due to contracting of higher load

Delayed decision of Regional Meteorological Centre, Kolkata to revise the agreemental load from 285 KW to 150 KW for electricity consumption resulted in avoidable expenditure of Rs.51.76 lakh between August 2004 and March 2007.

Regional Meteorological Centre (RMC), Kolkata executed an agreement with the Calcutta Electric Supply Corporation Limited (CESC) in July 1995 for supplying 285 kilowatt (KW) electricity to its premises at Alipore, Kolkata for a period of two years. As per the orders of the West Bengal Electricity Regulatory Commission (WBERC) in May 2004, if the consumer failed to consume the agreemental load, he was liable to pay 'shortfall to make for minimum charge' to CESC. The agreement stipulated that after the expiry of two years, either RMC or CESC could revise the agreement, at any time, giving not less than six calendar month's notice in writing. CESC requested all consumers in July 2004 to intimate whether they needed revision in agreemental load. As RMC could not consume the agreemental load, it started paying, 'shortfall to make up for minimum charge' from August 2004 onwards.

After four months from the date of intimation from CESC, RMC approached CPWD in November 2004 to assess the agreemental load. CPWD advised RMC in December 2004 to reduce the agreemental load from 285 KW to 200 KW. Accordingly, in January 2005, RMC approached CESC to reduce the agreemental load from 285 KW to 200 KW. In February 2005, CESC asked RMC to deposit Rs.6 lakh as security deposit for reducing agreemental load to 200 KW. RMC did not deposit the amount immediately for reduction of the agreemental load. The matter of continued payment of 'shortfall to make up for minimum charge' due to non-revision of the agreemental load was brought to the notice of RMC by Audit in September 2006. On being pointed out, RMC again reviewed the load factor and decided in November 2006, after a gap of 22 months, to reduce the agreemental load from 285 KW to 150 KW and a fresh agreement for the revised agreemental load came into effect from April 2007.

Review of consumption of electricity from August 2004 to March 2007 revealed that the actual demand varied between 58.2 KW and 136.6 KW as against the agreemental load of 285 KW. This shortfall attracted payment of minimum charges of Rs.51.76 lakh, which was avoidable.

Thus, RMC's delayed decision to revise the agreemental load from 285 KW to 150 KW for electricity consumption resulted in avoidable expenditure of Rs.51.76 lakh between August 2004 and March 2007.

Ministry of Earth Sciences stated in October 2008 that inadvertently, action to deposit Rs.6 lakh to CESC as security deposit got delayed. As soon as the above fact was highlighted by the Audit in the Inspection Report of 2005-06, RMC Kolkata approached CESC for reducing the load.

Recommendation

42. MoES may review energy consumption in all RMCs to ensure that agreemental load is matched with the actual consumption pattern to avoid unnecessary payment of minimum charges.

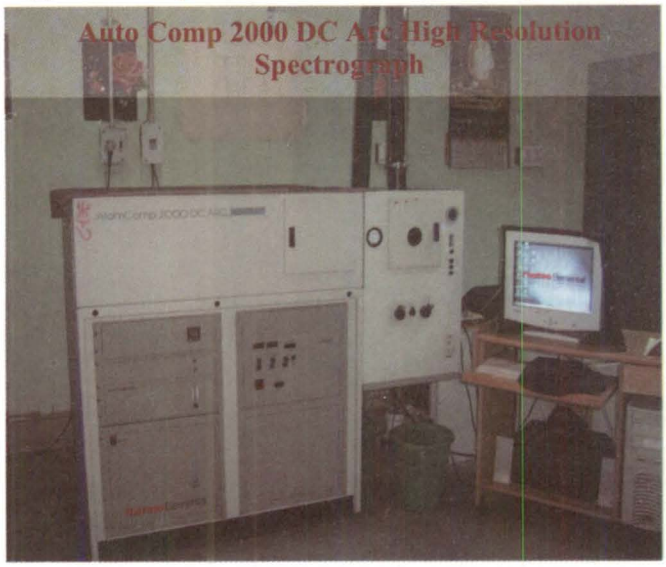
CHAPTER VIII: GEOLOGICAL SURVEY OF INDIA

8.1 Non-commissioning of equipment

Failure of Geological Survey of India and Central Chemical Laboratory to seek replacement of the equipment even after repeated failed attempts of the service engineer to commission the same resulted in non-utilisation of the equipment for more than three years despite payment of Rs.41.12 lakh.

Geological Survey of India (GSI), Kolkata placed a purchase order with a foreign firm in September 2004 for procurement of one 'Auto Comp 2000 DC Arc High Resolution Spectrograph' costing Rs.49.10 lakh for rapid multi element quantitative analysis of geological and environmental samples for its Central Chemical Laboratory (CCL), Kolkata.

CCL received the equipment in May 2005 after payment of Rs.41.12 lakh (being 90 *per cent* cost of the equipment). After receipt of the consignment, representative of the Indian agent of the supplier visited the site on nine occasions from May 2005 to March 2006 but failed to commission the equipment and demonstrate its performance. The equipment, thereafter, remained unutilised. Subsequent visit of an application chemist of the supplier in September 2006 also did not yield any benefit. Though the service engineer again visited CCL in January 2008 but could not commission the equipment. The reasons for repeated failure of the foreign supplier or its Indian agent to commission and demonstrate the equipment was inherent calibration problem causing hindrance to focus all emitted light intensities to the detector. Although the individual sections/units including manually operative Arc chamber of the equipment worked, the combined system, when all units put together, failed to send adequate emission signals of the trace elements to the detector giving very poor or no response in sediments and soil standards.



Auto Comp 2000 DC Arc High Resolution Spectrograph

In June 2008, representative of the supplier again visited CCL and took two boards for repair/replacement, but the progress of repair/replacement of the boards was not intimated to CCL-GSI. Even though the equipment could not be commissioned by the foreign supplier or its Indian agent after expiry of more than three years from the date of receipt, CCL did not ask the supplier to replace the equipment. As a result, the equipment was lying unused for more than three years.

Ministry of Mines stated in July 2008 that it was expected that the equipment would be commissioned after replacement of defective spare, failing which, they would seek replacement. The reply of the Ministry needed to be viewed in the light of the fact that despite repeated failure of the supplier to commission the equipment during the period June 2005 to June 2008, it proposed for seeking replacement of the defective equipment only in July 2008 i.e., after more than three years from the date of receipt of the equipment.

Thus, failure of CCL to seek replacement of the equipment even after repeated failed attempts of the service engineer to commission the same resulted in non-utilisation of the equipment for more than three years, despite payment of Rs.41.12 lakh.

CHAPTER IX: INDIAN COUNCIL OF AGRICULTURAL RESEARCH

9.1 Avoidable expenditure due to excess procurement

Indian Agricultural Research Institute purchased three Gas Liquid Chromatographs (GCs) against the requirement of only one. As such, the expenditure of Rs.25.92 lakh on procurement of two additional GCs was avoidable.

Indian Agricultural Research Institute (IARI) proposed to procure a Gas Liquid Chromatograph (GC) in the Tenth Plan for its Agricultural Chemicals Division as the existing GC in the Division had become obsolete. In view of likely clearance of the Plan proposal by the Expenditure Finance Committee (EFC), IARI obtained indent from the Division in August 2004 and issued notice inviting tender in September 2004. Since the required approval to the Tenth Plan proposals was not received, IARI obtained necessary sanction of funds under Non-Plan budget and placed an order in March 2005 on M/s Perkin Elmer, Singapore for supplying a GC Model Clarus 500 costing US$ 32,826 (equivalent to Rs.14.32 lakh) for replacement of the existing equipment. The equipment had four detectors and a capacity of analysing around 30 samples per day with more information in less time. Accessories for the GC costing Rs.1.25 lakh were procured locally in February 2006.

In the meantime, EFC approved the Tenth Plan proposals of IARI in May 2005. Though IARI was already processing purchase of a new GC to replace the obsolete one, it placed order for purchase of another GC (Model Varian 3800) at a cost of US$ 42,270 (equivalent to Rs.19.17 lakh) on M/s Varian BV, Netherlands along with accessories worth Rs.0.45 lakh under approved Plan funds. The second GC was having same capacity and features as that of the first GC ordered in March 2005 from the Singapore firm.

While the above two purchases were already under process against one obsolete GC, IARI sent a separate proposal in September 2005 to ICAR for sanctioning yet another GC for use in the 'National Fellow' (NF) project certifying that the available GC in the Division was obsolete. It placed purchase order in March 2006 for a GC Varian 3900 model under NF Project for an amount of US$ 8785 (equivalent to Rs.3.92 lakh) for the main equipment and Rs.0.30 lakh for accessories on M/s Varian BV, Netherlands. This GC was a simple one having only one detector against the four detectors available in the other two GCs. Sample analysis capacity of this GC was 15 samples per day.

The three GCs reached IARI in May, June and July 2006 respectively and were installed in August, December and September 2006 respectively. Audit scrutiny revealed that though GC-Clarus 500 was installed in August 2006, it was put to use for sample testing only in May 2007 i.e., after eight months. GC-Varian 3800 was put to use for sample testing in June 2007 i.e. after six

months of installation. Scrutiny also revealed that during the period from installation of the GCs to February 2008, the total samples tested in a day by using all the three GCs ranged between two to 25 per day with an average of 10.5 samples per day[1], which was less than the sample testing capacity of a single GC. On the other hand, the obsolete GC was utilised during April 2002 to September 2005 for testing samples at an average of 23.26 samples per day. This indicated that the second (Varian 3800) and the third GC (Varian 3900) were purchased in excess of requirement which led to an avoidable expenditure of Rs.25.92 lakh (including freight charges and customs duty of Rs.2.18 lakh).

ICAR contended in October 2008 that three procurement cases are not related to each other and the same were procured from different sources of funds. It also stated that the equipments were being operated whole day, though the output in number of samples was less than their capacity due to the nature of analysis. Regarding idling of equipment, it stated that scientists might require some time to test the equipment's performance before it is used for sample analysis. The contention of ICAR was not acceptable in audit since IARI had the requirement of only one GC, but it procured two additional GCs as funds were available. The action of IARI was improper as the rate of utilisation of the three GCs was much less than the obsolete GC.

Thus, IARI purchased three GCs against the requirement of only one, thereby, incurring avoidable expenditure of Rs.25.92 lakh on procurement of two additional GCs. It also failed to ensure optimum capacity utilisation of the additional GCs purchased.

9.2 Avoidable expenditure due to failure to obtain separate electrical connection for staff quarters

Failure of National Dairy Research Institute to get separate electric connection for its staff quarters, resulted in avoidable expenditure of Rs.25.16 lakh from April 2001 to May 2008 due to payment of electricity charges at commercial rates for residential staff quarters.

National Dairy Research Institute (NDRI), Karnal, a constituent unit of Indian Council of Agricultural Research (ICAR), gets supply of bulk electrical energy from Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL) for use in its official and semi-official complex as well as residential staff quarters. For consumption of electricity, NDRI paid energy charges at a rate ranging from Rs.4.19 to Rs.4.57 per kWh to UHBVNL during the period from April 2001 to May 2008. Inspite of paying charges for electricity at higher rates, NDRI recovered the charges for supplying electricity to the residents of the staff quarters at lower domestic rates ranging from Rs.2.73 to Rs.4.78 per unit.

[1] Calculated on the basis of data in log book only where the number of samples were noted against the day of utilisation of the equipment.

Analysis of consumption details of electricity of 434 staff quarters from April 2001 to March 2008 revealed that NDRI recovered Rs.1.19 crore from the occupants of the staff quarters whereas it paid Rs.1.44 crore to UHBVNL at the rates applicable for bulk supply energy charges. This led to an extra payment of Rs.25.16 lakh to UHBVNL which was avoidable.

ICAR replied in October 2008 that if the institute had a separate transmission line for residential campus then the rate of bulk supply would be Rs.4.67 per unit which was 10 paise higher than the present rate of Rs.4.57 per unit paid by the institute. The reply of ICAR may be viewed in the light of prevailing rates of Rs.2.73 to Rs.4.78 per unit for consumption in different slabs of 1-40, 41 to 300 and above 300 units per month for residential quarters, if the electricity meters are provided by UHBVNL. ICAR further replied in November 2008 that it was not feasible to provide additional bulk supply connections for residential use as there were no separate residential and non- residential campuses within the institute. In this connection, it is incumbent upon NDRI to separate the office complex and residential complex to install separate transmission line for residential complex with electricity meters to be provided by UHBVNL so that the extra expenditure of above Rs.3.59 lakh per year being incurred by NDRI could be avoided.


National Dairy Research Institute, Karnal

Thus, failure of NDRI to get separate electric connection for its staff quarters, resulted in avoidable expenditure of Rs.25.16 lakh from April 2001 to March 2008 due to payment of electricity charges at commercial rates to UHBVNL for residential staff quarters.

Recommendations

43. ICAR/NDRI may make efforts to separate electrical connections for residential and office complex to avoid payment of electricity charges at higher rates for the electricity consumed in residential quarters.

44. ICAR and NDRI may issue instructions to all its units in line with instructions issued by Council of Scientific and Industrial Research in July 2003 to switch over to individual domestic connections for its residential quarters so that extra expenditure on account of paying electricity charges at commercial rates could be avoided in all its units.

CHAPTER X: INDIAN COUNCIL OF MEDICAL RESEARCH

10.1 Works management in Indian Council of Medical Research

Audit test checked 20 capital works costing Rs.160.48 crore executed in Indian Council of Medical Research (ICMR) during the period 2002-08. Audit observed that ICMR irregularly transferred 9714 sq.m. land to a private Housing Society at a significantly lower rate, leading to conflict of interest besides grant of undue benefit of Rs.22.82 crore to the members of the Housing Society. Delay in approval and release of funds by ICMR resulted in non-commencement of works for upto 13 years and cost overrun of Rs.30.94 crore besides non-achievement of objectives. Blockade and wasteful expenditure of Rs.21.82 crore was observed in nine works as a result of delayed decisions in commencement of works and payment of penalty. ICMR did not have adequate budgetary and financial control mechanisms in place for exercising periodical review of expenditure by its Institutes. ICMR also did not have a mechanism to watch progress of works and adjustment of advances to its Institutes and ensure, thereby, timely completion of works within the scheduled cost.

10.1.1 Introduction

Indian Council of Medical Research (ICMR), a society registered under the Societies Registration Act (XXI), 1860 is the apex body in India for formulation, coordination and promotion of biomedical research. ICMR is funded by the Government of India through the Ministry of Health & Family Welfare (Ministry). It has 28 Institutes/Centres all over the country to manage its research activities in important areas of national public health. ICMR, in its headquarters at Delhi, has an Engineering and Maintenance Division (EMD) to establish infrastructure of laboratories, buildings, staff quarters etc., for its Institutes and to carry out capital, petty, special & maintenance works. EMD is responsible for vetting of works estimates received from various institutes, issue of administrative approval and expenditure sanctions, maintenance of work related accounts and monitoring the progress of works. EMD is headed by an Executive Engineer and has three technical officers & five administrative staff.

10.1.2 Scope of audit

Audit examined the effectiveness of works management in ICMR for the period 2002-08 with focus on:

- Timely completion within sanctioned cost and extent of achievement of objectives;
- Process of award of contracts; and
- Documentation and monitoring of works.

ICMR released Rs.345.19 crore for capital works to its Institutes/ICMR headquarters during 2002-2008. However, it did not have details of the number of works undertaken, completed, ongoing etc. From the information gathered at the instance of Audit from 20 Institutes, it was observed that out of sanctioned 273 works during 2002-08, 148 works were completed and 125 works were ongoing as of July 2008.

Audit examined a sample of 20 capital works with aggregate outlay of Rs.160.48 crore which disclosed deficiencies in financial reporting and management, injudicious planning of works, non-commencement of projects etc., resulting in non-achievement of objectives, blockade of funds and wasteful expenditure. The detailed audit findings are given in the succeeding paragraphs.

10.1.3 Improper implementation of works

Out of the 20 works examined in Audit, failure to take timely decisions, utilise available land, properly assess scope of work, lack of coordination between ICMR and executing agencies, frequent change in scope of work and delayed release of funds by ICMR were noticed in works. This resulted in:

- Excess procurement of land and irregular transfer of land;
- Construction of staff quarters without construction of administrative blocks and allied buildings, resulting in unproductive expenditure of Rs.7.08 crore (2 Institutes);
- Delay in commencement of works resulting in non-achievement of objectives and cost overrun of Rs.30.94 crore (3 Institutes);
- Blockade of funds of Rs.19.44 crore (6 Institutes) ; and
- Wasteful/Avoidable expenditure of Rs.3.10 crore (3 Institutes).

Thirteen works have been discussed in detail in the following paragraphs:

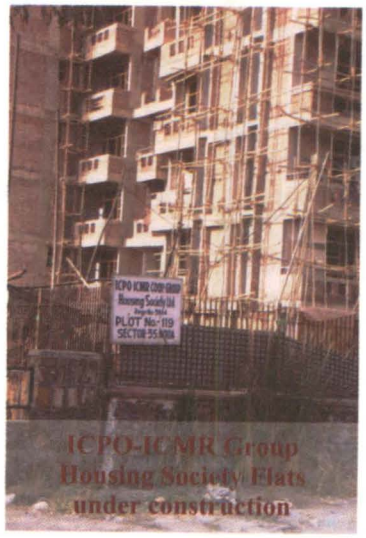
10.1.3.1 Excess Procurement of land

Institute of Cytology and Preventive Oncology (ICPO), an institute under ICMR acquired three plots of land during 1987-89 from New Okhla Industrial Development Authority (NOIDA) at a total cost of Rs.1.55 crore for construction of its various buildings. Audit observed that due to excess procurement of land, it transferred one plot to a private society thereby giving them undue benefit; is paying penalty due to failure to construct the requisite floor area on one plot as of January 2009 and had to surrender one plot due to cancellation of allotment as a result of non-construction. Thus, ICPO did not utilise any plot effectively. The cases regarding transfer of plot to private Housing Society and non-construction of requisite area are discussed below:

(i) Undue benefit to a private Housing Society

ICPO purchased and obtained possession of land in March 1992 measuring 9714 sq.m. in Sector 35 in NOIDA at cost of Rs.93.24 lakh for construction of staff quarters for employees of ICPO and other Delhi based offices.

- After a lapse of ten years, ICPO submitted the construction proposal and conceptual plan to NOIDA authorities through M/s Hospital Services Construction Corporation (HSCC) in November 2002. As a result of the delay, it made a payment of Rs.18.65 lakh as non-construction charges (upto the year 2004) in November 2002 and also gave an assurance to NOIDA authorities that it would begin construction during 2002-03 and complete the work by 2004. Further, in April 2003, Director, ICPO requested ICMR that the project be taken up immediately considering the requirement for staff quarters for employees of other ICMR institutes in Delhi. However, ICPO could not start the work of construction due to non-release of funds by ICMR upto 2006 despite repeated requests. As a result, it again paid Rs.2.10 crore as non-construction charges.



ICPO-ICMR Group Housing Society Flats under construction

- In 2006, employees of ICPO proposed the formation of a private Housing Society for the construction of residential premises for staff on the plot allotted in Sector 35. It was proposed that the payment already made by ICPO to NOIDA authority was to be refunded by the Housing Society.
- In February 2007, ICMR communicated to ICPO, the approval by its executive committee for transfer of this plot to the Housing Society. ICPO, in March 2007, obtained permission from NOIDA authority for transfer of land to the Housing Society.
- The total expenditure of Rs.4.38 crore incurred by ICPO on purchase of land, lease rent, payment of non-construction charges, cost of boundary wall and watch & ward were to be deposited by the Housing Society in lump sum to ICPO/ICMR before transferring the land to the society to safeguard the interest of ICMR. However, ICMR diluted even these payment conditions and allowed payment by the Housing Society in four installments (upto December 2008) instead of in a lump sum.

In this regard, Audit observed that:

- ICMR did not initiate any construction on the said plot for a decade after having obtained possession of land in March 1992 despite there being a requirement for staff quarters for employees of ICPO and other Delhi based institutes of ICMR.
- The land acquired for construction of staff quarters was transferred to a private Housing Society without approval of the Government, in this case being the Ministry. As proof of this transfer, a transfer memorandum issued by the NOIDA authorities was furnished to Audit. The authenticity of the transaction and the completeness of the transfer could not be verified and vouchsafed in Audit. Such transfer to a private Housing Society without the approval of the Government was in violation of Rule 278 of the General Financial Rules which states that no

land belonging to the government shall be sold to a local authority, body or any person or institution without previous sanction of the government.

- **Several members of the executive council of ICMR who granted permission for transfer of land were beneficiaries, as they were also members of the private Housing Society.**
- Despite the astronomical increase in the prices of real estate/land in NOIDA during 1992-2007 from Rs.960 per sq.m to Rs.28,000 per sq.m., ICMR transferred the land to the private Housing Society at a cost of only Rs.4.38 crore. This cost was inclusive of original cost of land @ Rs.960 per sq.m., penalty charges and watch & ward expenses thus making the cost of land for the private Housing Society @ Rs.4509 per sq.m. for 9714 sq.m. By transferring the land to the private Housing Society @ Rs.4509 per sq.m instead of the prevailing allotment rates of Rs.28,000 per sq.m., **ICMR extended undue benefit to the members of the private Housing Society to the tune of Rs.22.82 crore.**
- Further, ICMR did not refund Rs.4.38 crore along with the accrued interest to the Ministry from whom it received the grants.

Thus, ICMR irregularly sanctioned the transfer of land allotted for its staff quarters to the group Housing Society of ICMR employees at a much lower rates and without the approval of the Government. **This transfer was approved by the executive committee, members of which were also members of this private Housing Society. This posed a serious conflict of interest and the possibility of fraud needs to be investigated.**

ICMR stated in January 2009 that it has transferred the land allotted for construction of staff quarters to a group Housing Society of ICPO/ICMR employees with proper approval of the competent authorities. It further stated that the staff members were not interested to take government accommodation as their HRA had increased due to merger of 50 *per cent* of Dearness Allowance as Dearness Pay.

The reply of ICMR was not acceptable as the possession of the land was taken in March 1992 and ICMR failed to start construction upto 2006, even after a span of 14 years. Moreover, approval of the Ministry which is the grant sanctioning authority was not obtained. Further, the land was allotted under special privilege and concessional rates to ICMR which was transferred at much lower rates (Rs.4509 per sq.m.) instead of the prevailing allotments rates of Rs.28,000 per sq.m. in 2007, thus giving undue benefit to the beneficiaries.

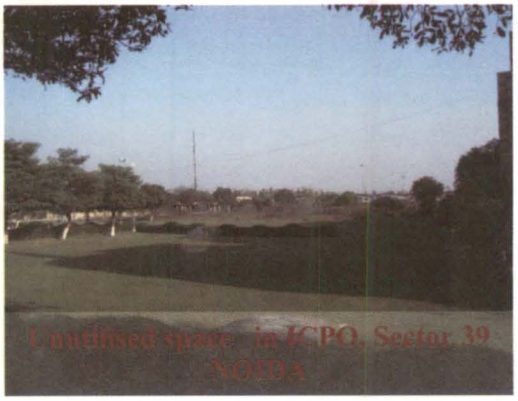
Recommendations

45. ICMR should recover the difference of Rs.22.82 crore in the cost of land from the members of the private Housing Society.

46. The Ministry of Health and Family Welfare may initiate a fraud investigation with immediate effect and fix responsibility on the officials concerned.

(ii) Non construction of requisite area

ICPO, in June 1989, purchased 49881.53 sq.m. of land at a cost of Rs.37.41 lakh in Sector 39 in NOIDA for construction of its research cum clinical complex. It obtained possession of the land in March 1992. In this regard, Audit observed that:



Unutilised space in ICPO, Sector 39 NOIDA

- ICPO awarded the construction work of phase-I and II of research cum clinical complex at Sector 39 to HSCC in the year 1996 and 2000 at estimated cost of Rs.4.96 crore and Rs.6.95 crore respectively. The work of phase–I was completed in October 2003 after a delay of five years and phase-II was also completed though date of completion was not furnished to Audit. The total cost overrun for phase-I and II was Rs.2.13 crore, due to escalation and other related expenditure.
- Despite completion of phase-I and II of research cum clinical complex at Sector 39, ICPO failed to cover 50 *per cent* of maximum permissible covered area. It, therefore, decided to construct a press-cum-library building and expand the Animal House.
- Despite administrative approval & expenditure sanction and release of Rs.2.06 crore to ICPO in March 2007, construction work was yet to start as of August 2008. Moreover, even after completion of these buildings, the required 50 per *cent* of maximum permissible covered area would not be possible and ICPO would be liable to pay penalty.

Thus, due to ineffective planning and non-construction of 50 *per cent* of maximum permissible covered area, ICPO had incurred avoidable expenditure of Rs.24.97 lakh on payment of non-construction charges as of March 2008.

ICMR stated that after completion of phase III of the construction, 44 *per cent* floor area ratio would be covered and the balance area would be covered in future. Audit observed that even after completion of phase-III, ICPO would continue to pay penalty for not covering the minimum requirement of 50 *per cent*. ICPO further stated that ICMR would ensure effective planning in utilisation of allotted land and availability site and other requirements particularly provision of funds for construction before taking up land/new construction works to avoid any wasteful expenditure and follow it up through e-governance.

10.1.3.2 Injudicious planning

Audit observed that in two works, ICMR got staff quarters constructed without construction of administrative/laboratory buildings of Regional Medicine Research Centre (RMRC) Belgaum and Desert Medicine Research Centre (DMRC) Jodhpur for which sanction was available. As a result of inefficient planning, ICMR incurred an unproductive expenditure of Rs.7.08 crore, besides non-establishment of the institutes as detailed below:

(i) Construction of staff quarters without construction of office building by RMRC, Belgaum

For establishing RMRC, Belgaum, for research work on traditional medicine on prevalence of various diseases, ICMR, in May 1994, accorded administrative approval for construction of laboratory and administrative building complex, ancillary buildings and construction of staff quarters, development of site etc., at a cost of Rs.9.16 crore. The sequence of work undertaken was as follows:

- The work was awarded to Karnataka Public Work Department (KPWD) in 1992-93. ICMR released Rs.6.58 crore for construction of staff quarters and guest house to KPWD from March 1993 to March 2008. KPWD completed construction of 39 staff quarters and guest house etc., at the cost of Rs.6.02 crore up to the year 2000. Although asked by KPWD in July 2000, ICMR did not take over the staff quarters and intimated KPWD that as and when officers would be posted, the building would be taken over.
- In January 2001, ICMR approached the Ministry for sanctioning of Group 'A' posts for RMRC, Belgaum. The Ministry responded that construction activity of main building should be completed and intimation in this regard should be sent to it, before any posts could be sanctioned. Despite this, ICMR did not initiate any action for construction of its main administrative building.
- In October 2002, KPWD again asked ICMR to take over the completed staff quarters stating that an average of Rs.15,000 per month was being spent on watch & ward of completed staff quarters. However, ICMR did not take over the staff quarters and in July 2006, it informed KPWD of the defects in staff quarters, which needed rectification. In response, KPWD stated that the problems were mainly due to lack of maintenance for six years since the quarters were completed in 2000.
- In April 2008, ICMR decided to take over only those staff quarters and the guest house, which were in good and satisfactory condition. A joint inspection team of ICMR and KPWD officers observed in April 2008 that out of 39 staff quarters, 27 were defective and only 12 were in position of being taken over. Audit observed that the defects had not been rectified so far and construction of the administrative building was also yet to be initiated. Moreover, it was noticed that in the absence of the administrative building and sanctioned posts, the staff quarters were of no use to ICMR and are currently not being used (January 2009).

It was seen thus, that due to faulty planning of construction of staff quarters without construction of office and laboratory building, ICMR had suffered loss of license fee for the last 17 years. Moreover, the staff quarters could also not be used for the intended purpose.

While accepting these facts, ICMR stated in January 2009 that it would ensure proper planning of the construction work to ensure timely establishment of its Institutes and for effective utilisation of infrastructure created, staff component would also be taken care while obtaining the approval for the project.

Thus, injudicious planning of ICMR to construct staff quarters without construction of administrative building resulted in an unfruitful expenditure of Rs.6.17 crore[1] and defects in the already constructed staff quarters due to their non-utilisation. Further, the objective of setting up the Institutes still remains to be fulfilled.

(ii) Construction of staff quarters without construction of office building by DMRC, Jodhpur

ICMR got constructed 20 staff quarters by CPWD in 1991 at an estimated cost of Rs.91 lakh at DMRC, Jodhpur. It was observed in Audit that:

- Since 1991, no staff quarter has been occupied; instead, these staff quarters were being used as office and laboratory building of DMRC for the last 17 years.
- Only in 2006, ICMR endorsed the need of construction of DMRC laboratories, allied buildings and the work of construction was awarded to M/s National Project Construction Corporation (NPCC) in March 2006 for completion in September 2007. However, the work has not been completed so far (January 2009) due to delay in finalisations of details, drawings, material etc., by ICMR and DMRC continues to operate out of the staff quarters. Besides, due to delay in finalisation of details, the estimates of construction of laboratory and administrative buildings increased from Rs.14.84 crore to Rs.21.46 crore, thus resulting in a cost overrun of 46 *per cent* over the initial estimate.

Thus, due to faulty planning of construction of staff quarters without construction of office and laboratory building, ICMR had suffered loss of license fee for the last 13 years. Moreover, the staff quarters could also not be used for the intended purpose.

ICMR stated in its reply in January 2009 that DMRC Jodhpur was situated next to Air Force Station, Jodhpur and due to local issues with the Air Force, construction work of laboratory building was not taken up. Finally, after the clearance from the Air Force in 2003, the work was awarded to NPCC in March 2006.

The reply may be viewed in light of the fact that ICMR took about 13 years to resolve the issue with the Air Force. After this, ICMR took another three years to finally award the work to NPCC. Moreover, although the work of

[1]Cost of construction and watch & ward (Rs.6.02 crore +0.15 crore @Rs.15,000 per month for 100 months).

construction of laboratory and allied buildings was to be completed in September 2007, the work could not be completed due to delay in finalisation of details, drawings, material, etc., by ICMR and is now expected to be completed by March 2009.

Recommendation

47. ICMR may ensure proper planning and implementation of its construction works to ensure timely establishment of its institutes and effective utilisation of infrastructure created.

10.1.3.3 Delay in commencement of works and non-achievement of objectives

Audit observed that in the following three works, there was a delay ranging from 6 to 13 years in commencement of works and a cost overrun of Rs.24.32 crore, besides non-achievement of objectives:

(i) Delay in construction of Regional Occupational Health Centre at Kolkata

In 1999-2000, Regional Occupational Health Centre East (ROHC), Kolkata, decided to construct the Extension Training Centre (ETC) – a new facility for ROHC and National Institute of Cholera and Enteric Diseases (NICED) at its campus. The main aim of the training centre was to deal with different aspects of occupational health, enteric diseases, biotechnology and molecular biology, both in eastern and south-eastern Asian regions.

ROHC submitted a preliminary estimate in September 2001 to ICMR for Rs.5.65 crore. ICMR sought detailed justification for the same in April 2002 but did not approve the project due to shortage of funds. ROHC, in January 2007, submitted a modified preliminary estimate of Rs.7.73 crore at the present cost index. ICMR issued administrative approval and expenditure sanction and released Rs.5 crore to NICED in March 2007. However, ROHC, in August 2007, again submitted a revised estimate of Rs.10.48 crore due to inclusion of additional items of works and provisions of lift, air-conditioning and other modifications for which ICMR accorded administrative approval and expenditure sanction in November 2007.

Audit observed that as of January 2009, the clearances from local authorities were yet to be received and the work was yet to be started.

Thus, failure of ICMR to appropriate available funds judiciously and to properly assess the scope of work led to delay of six years in issue of administrative approval and expenditure sanction, resulting in delay in achieving the aim of human resources development in the fields of occupational/environmental health, molecular biology and biotechnology.

ICMR, in its reply of January 2009, stated that in future, it would be ensured that scope of work was properly assessed before issue of administrative approval and expenditure sanction for works.

(ii) Delay in establishment of RMRIMS at Patna

To focus on patients of severe forms of malaria, leishmaniasis[2], Japanese encephalitis and dengue which are the major health problems of Patna region, ICMR, in January 2001, decided to construct a 100 bed hospital at Rajendra Memorial Research Institute of Medical Sciences (RMRIMS), Patna. ICMR submitted Expenditure Finance Committee (EFC) memorandum in August 2001 to the Ministry for approval of cost of Rs.18 crore[3] for RMRIMS Patna.

It was noticed in Audit that the hospital was not yet constructed due to the administrative delays of ICMR as detailed below:

- Despite allocation of Rs.27.50 crore during 2001-02 to 2006-07, ICMR did not release any funds to RMRIMS. In February 2004, EFC approved a revised estimated cost of Rs.41.34 crore for completion of the work during the Tenth Plan period. Instead, ICMR diverted Rs.13.77 crore to seven other Institutes.
- ICMR failed to take any decision in July 2002 on the proposal sent by RMRIMS for awarding the work to MECON which had quoted the lowest rate of consultancy fee of 3.42 *per cent* after negotiation. As M/s MECON refused to revalidate its rates quoted in July 2002, RMRIMS, re-invited tenders in February 2005. It requested ICMR to accord approval for award of work to M/s Hindustan Steel Corporation Ltd (HSCL) which quoted the lowest rate of 4 *per cent* consultancy fee. RMRIMS also sought release of Rs.5 crore from provisions made in 2004-05 for construction. However, ICMR issued approval for award of work to HSCL at 4 *per cent* consultancy fee and released Rs.25 lakh to the firm only in March 2006.
- In May 2006, RMRIMS forwarded the preliminary estimate of Rs.45.58 crore to ICMR for approval for which ICMR, in February 2007, approved the concept drawings but did not approve the preliminary estimates, stating that estimates need to be framed as per CPWD norms. In March 2007, ICMR accorded administrative approval and expenditure sanction for Rs.28.35 crore but released only Rs.4 crore to RMRIMS, out of the approved allocation of Rs.15 crore for the year 2006-07. However, since HSCL did not agree to the sanctioned amount, RMRIMS sought revised administrative approval and expenditure sanction for Rs.37.35 crore in June 2007.
- However, ICMR asked RMRIMS in July 2007 to proceed ahead as per approved plans, restricting commitments up to approved cost of Rs.28.35 crore. In January 2008, ICMR approved the tendered cost of Rs.32.24 crore quoted by HSCL but again limited the works cost to Rs.28.35 crore. In March 2008, RMRIMS Patna once again approached ICMR for administrative approval & expenditure sanction for a consolidated amount of Rs.33.99 crore which was inclusive of Rs.1.75 crore i.e., the cost of renovation for which ICMR approved the tendered cost of Rs.33.99 crore, subject to limit of Rs.28.35 crore in May 2008. Despite approving the tendered cost of Rs.32.24 crore and Rs.33.99 crore subsequently,

[2] It is caused by a protozoa transmitted by the bite of a tiny 2 to 3 millimetre-long insect vector, the phlebotomine sandfly which can cause cutaneous and sub-cutaneous lesions.
[3] Rs.10 crore for construction, Rs.5 crore for service of complex and Rs.3 crore as consultancy fee.

the decision of ICMR to limit the works cost to Rs.28.35 crore, defeated the purpose of approving the higher tendered cost.

Thus, abnormal delay in taking decisions and non-release of funds despite availability, resulted in delay in establishment of RMRIMS and achievement of intended objective of research work focusing on the major health problems of Patna region, besides cost overrun of Rs.22.24 crore and avoidable expenditure of Rs.18.70 lakh.

ICMR stated in January 2009 that due to delay in finalising the agency, work could not be started in time. Moreover, work had begun and was on in full swing.

The reply may be viewed in light of the fact that ICMR took four years for award of work. Further, despite allocation of funds of Rs.27.50 crore during 2001-02 to 2006-07, ICMR did not release any funds RMRIMS, Patna and instead, diverted Rs.13.77 crore to other Institutes.

(iii) Construction of additional office building for ICMR

To meet the acute scarcity of space at its headquarters, ICMR decided in 1996 to construct additional office building after demolishing the existing canteen and adjoining garage block. The work was assigned to CPWD at an estimated cost of Rs.1.30 crore in June 1998 after obtaining approval of drawings from local bodies in June 1997. Administrative approval and expenditure sanction was obtained in June 1998 and ICMR released Rs.43.20 lakh in September 1999. It was observed in Audit that:

- ICMR approached CPWD in July 1998, November 1999 and April 2000 for change of drawings to make the building centrally air conditioned and to make provisions for a sub-station and basement respectively. In response, CPWD informed ICMR that the approval for change in drawings would have to be obtained from local authorities. Further, despite repeated requests by CPWD, ICMR failed to vacate the canteen and garage in its office compound and make the site available to CPWD in order to complete the work within scheduled time. In the meantime, as the validity of tenders called for by CPWD expired in June 2001, CPWD informed ICMR that tenders would be recalled only on confirmation of availability of site.


Canteen, ICMR

- In February 2004, ICMR withdrew the work from CPWD and asked for refund of Rs.43.20 lakh which it deposited as first instalment in August 1999. Finally on the request of ICMR, CPWD in April 2008 transferred Rs.41 lakh to CPWD Agra for construction work of National Jalma Institute for Leprosy and Other Mycobacterial Diseases (NJIL) Agra.

- In May 2007, ICMR invited tenders and awarded the work to M/s Uttar Pradesh Rajkiya Nirman Nigam Ltd (UPRNN) @ 6 *per cent* consultancy charges. However, the work was yet to be started.
- In March 2008, ICMR deliberated that construction of new building in ICMR HQ campus would lead to many problems and that it could be constructed at ICPO campus in Sector 39, NOIDA where it was yet to cover the required 50 *per cent* floor area ratio. As of January 2009, ICMR was yet to make a final decision on construction of its new building and the work was yet to begin.

Thus, due to improper assessment of scope of work and frequent change of designs by ICMR, it could not take a decision on where to construct its additional office building even after a delay of 13 years resulting in blockade of funds of Rs.43.20 lakh. Besides this, ICMR continues to face acute scarcity of office space.

ICMR stated in January 2009 that the building could not be constructed due to faulty planning by CPWD and CPWD failed to obtain clearance for power from NDMC.

The reply needs to be viewed in light of the fact that ICMR itself changed the plan several times and asked CPWD to revise the drawings. ICMR further stated that as suggested by Audit, it would ensure provision of all essential services before sanctioning of projects to avoid blockade of funds.

10.1.3.4 Blockade of funds

Audit observed that in four works, ICMR did not take possession of land or begin construction activity as a result of which Rs.14.01 crore remained blocked for over one to nine years as discussed below:

(i) EVRC, Mumbai

Entero-Virus Research Centre (EVRC), Mumbai has been functioning on the campus of Haffkine Bio-Pharmaceutical Corporation Limited (Haffkine Institute) since inception, in a rented area of 8183sq.ft by paying annual rent of Rs.1.22 lakh.

- In March 1985, Maharashtra Government allotted a plot measuring 1022 sq.m. (around 11,000 sq.ft.) in the Haffkine Institute campus, Parel, Mumbai to EVRC on lease at provisional rent of Rs.1.63 lakh per annum with the condition that the land would be utilised within two years of taking over possession.
- In July 1986, EVRC approached Maharashtra Government for allotment of additional 20,000 sq.ft. to which the Maharashtra Government did not agree.
- As EVRC did not take any action to utilise the allotted land, Maharashtra Government cancelled the allotment provisionally in April 1991. Despite requests made by EVRC for revival of allotment of the land, Maharashtra Government cancelled the allotment finally in April 1992.
- EVRC, in September 1999, again approached Maharashtra Government to review and revive the offer of allotment of land in Haffkine Institute's campus.

Maharashtra Government, in October 2002, agreed to allot 1826 sq.m. land at current market rate of Rs.2.47 crore which EVRC deposited in February 2003.

- EVRC did not get the possession of land from Haffkine Institute/ Maharashtra Government as of January 2009 even after five years of depositing the requisite amount with the Maharashtra Government. The reasons for not getting the possession of land were not on record.
- Further, EVRC booked Rs.2.47 crore under the head – 'land and building' in the financial year 2002-03 in its accounts and capitalised it without obtaining the legal possession of land and treated it as an asset and irregularly charged depreciation on non-existent land since 2004-05 onwards.

Thus, EVRC made an avoidable expenditure on payment of annual rent of Rs.17.08 lakh during the years 1994 to 2008 and provisional lease rent of Rs.11.48 lakh for the period 1985 -1992. Further, an amount of Rs.2.47 crore paid to Maharashtra Government was blocked as it did not have possession of land till date.

Accepting the facts, ICMR stated in January 2009 that it erroneously booked the expenditure of Rs.2.47 crore under the head 'Land and Buildings' and capitalised it in the accounts of the year 2002-03 which would be corrected in the current financial year 2008-09. Further, ICMR also stated that it was making sincere efforts to take possession of the land.

(ii) Animal House Facilities

ICMR accorded administrative approval/expenditure sanction of Rs.6.29 crore in March 2007 for extension of existing Animal House facilities at ICPO and released Rs.1 crore to ICPO for the said work to be executed through HSCC, NOIDA. Similarly, for construction of Press-cum library building at ICPO, ICMR accorded administrative approval/expenditure sanction of Rs.5.72 crore and released Rs.1.06 crore to ICPO in March 2007 which ICPO deposited with HSCC. However, it was seen in audit that despite approval of drawings and release of funds by ICMR, the construction work on the animal house and press-cum-library building was yet to commence as of January 2009, resulting in blockade of Rs.2.06 crore.

ICMR stated in January 2009 that due to need for increased space, construction of basement plus five floors was decided as against three floors proposed in the earlier design. Comments received from NOIDA authorities on the revised design have been passed on to HSCC for doing the needful. The reply of ICMR may be viewed in light of the fact that it did not assess its requirement and scope of work timely which led to delay in construction and blockade Rs.2.06 crore.

(iii) Construction of Auditorium

ICMR awarded the work of consultancy for construction of auditorium and animal house etc., of National Institute for Malaria Research (NIMR) in March 1999 to HSCC. Without signing the agreement with HSCC, ICMR released

Rs.2.50 crore to NIMR which was deposited with HSCC in March 1999. In the absence of any agreement, HSCC did not start the construction activity. ICMR further released Rs.5 crore in March 2007 to NIMR which it did not release to HSCC. Since the agreement with HSCC was yet to be signed, it did not begin construction as of January 2009. After being pointed out in audit, ICMR signed the agreement with HSCC on 5 December 2008.

Thus, failure of ICMR to sign agreements with HSCC for above construction activities resulted in blockade of Rs.7.50 crore, besides non-construction of facilities of NIMR.

While accepting the fact, ICMR stated in January 2009 that interest earned on the amount released to HSCC shall be credited to ICMR/NIMR.

(iv) Vector Control Research Institute, Pondicherry and National Institute of Virology, Pune

Vector Control Research Institute, Pondicherry and National Institute of Virology, Pune deposited Rs.0.15 crore and Rs.1.83 crore for twelve works with CPWD and State PWD respectively during the period 2005-08. The works were yet to start due to non-completion of other related works, revision of proposals and involvement of other agencies etc.

ICMR, while accepting the fact, stated in January 2009 that in future, ICMR shall have a mechanism to ensure that works are executed at the earliest through e-governance to avoid blockade of funds.

Thus, funds amounting to Rs.1.98 crore remained blocked with CPWD and State PWD resulting in idling of funds and loss of interest to ICMR.

Recommendation

48. ICMR may ensure that agreements with the executing agencies are signed at the earliest so that the works are commenced and completed within the scheduled time to avoid blockade of funds.

10.1.3.5 Wasteful/avoidable expenditure

Audit observed that in two cases, ICMR incurred avoidable expenditure of Rs.2.19 crore due to delay in taking up construction activity and non-construction of electric sub-station, as detailed below:

(i) Non-construction of office building

NIMR has been functioning from rented buildings since inception. To overcome this problem, NIMR acquired a plot of land of seven acres from Delhi Development Authority (DDA) at Papankalan at total cost of Rs.1.27 crore in September 1990 for construction of MRC (now renamed as NIMR) Building Complex. Since funds were not forthcoming from ICMR, NIMR, during 1995-97, explored the possibility of getting external assistance for construction work. After detailed discussions, World Bank agreed to provide

financial support for the construction of research block only through National Anti Malaria Programme (NAMP) under the supervision of World Bank.

However, as of January 2009, the office building has not yet been constructed as detailed below:

- World Bank appointed M/s Gherji Eastern Ltd., New Delhi (consultant) as the architect cum executing agency for the construction of research block at total cost of Rs.12 crore. After obtaining approval for site plan/drawings from local authorities, the consultant submitted drawings to DDA in July 2002 for approval. DDA, in July 2002, demanded composition fee of Rs.69.85 lakh for non-construction of building. ICMR requested DDA for condoning the delay and allowing extension of time upto September 2004 for completion of building. However, DDA revised the composition fee to Rs.61.57 lakh and the same was deposited by ICMR in two instalments in March and September 2003. But, as ICMR took about 14 months in payment of composition fee, DDA also charged penalty of Rs.0.39 lakh in February 2004. In the meantime, the World Bank funded project closed in March 2003 and work could not be initiated.
- After withdrawal by World Bank, NIMR approached ICMR in June 2003 to allow M/s Gherji Eastern Ltd. to execute the work on the same terms and conditions as finalised by NAMP. ICMR did not agree to this and decided to award the work to HSCC, using drawings prepared by M/s Gherji Eastern Ltd. Meanwhile, M/s Gherji intimated ICMR in May 2004 that in case the work was awarded to another agency, M/s Gherji would end the contract and ICMR would have to pay for the work done as well as construction management services and that it reserved the right of legal action. Therefore, in September 2004, ICMR appointed M/s Gherji as consultant for construction of research block of NIMR and signed an agreement in December 2004.
- In February 2005, ICMR issued administrative approval for the estimates and the construction was awarded to M/s Rajasthan State Road Development and Construction Corporation Ltd at a tendered cost of Rs.14.17 crore in January 2006 through M/s Gherji. The work was to be completed in June 2007.
- ICMR released Rs.14 crore up to March 2007 and accorded administrative approval of Rs.3.01 crore for additional works in July 2007 on the suggestions of the consultant, without approval of Executive Committee of ICMR.
- Despite granting extension time and again, the contractor failed to complete the work as of January 2009 and NIMR continues to operate from rented buildings. Further, even though the building committee of NIMR, in February 2008, was of the opinion that compensation for delay be levied as per the agreement, NIMR did not levy any penalty.

ICMR stated in January 2009 that due to administrative delay, payment of ground rent took time. Regarding delay in construction and levy of penalty, ICMR stated that the issue would be taken up in the next NIMR building advisory committee meeting. It further stated that the building was under the

process of taking over since December 2008 which was expected to be completed by January 2009.

The reply of ICMR needs to be viewed in light of the fact that ICMR had not constructed the building until July 2002 as a result of which DDA demanded the composition fee in July 2002 which was paid by ICMR. It also paid penalty due to delay in payment of composition fee.

Thus, due to delay in commencement of construction, NIMR had incurred avoidable expenditure of Rs.1.89 crore on payment of 'non-construction charges' and payment of rent as of March 2008. NIMR was also deprived of the World Bank assistance of Rs.12 crore. Further, the rented buildings are at a distance ranging from six to 22 kms from each other, leading to considerable inconvenience, adversely affecting efficiency and performance of the Institute.

(ii) Non-construction of sub-station

ICMR had approached NDMC in 2000 for the supply of additional load of 500 kVA in addition to its existing sanctioned load of electricity of 368 kW at its headquarters. NDMC advised ICMR in May 2001 to construct its own electric sub-station with necessary High Tension/Low Tension switch gear modifications for the additional load. Despite making provisions of Rs.50 lakh in Tenth Plan for construction of the sub-station, ICMR did not construct the sub-station as of August 2008. Meanwhile, ICMR got constructed six Porta cabin (temporary structures) through M/s NPCC in September 2007 at total cost of Rs.0.92 crore. Due to non-installation of sub-station for additional load, ICMR purchased two generators of 100 kVA and 50 kVA at a cost of Rs.9.84 lakh through the contractor in violation of purchase procedure laid down under GFR and incurred an avoidable expenditure of Rs.29.56 lakh from August 2006 onwards on supply of diesel through contractor, maintenance, servicing etc., of generators. Further, Audit observed that ICMR awarded the work of Annual Maintenance Contract (AMC) in August 2006 to M/s NPCC before completion of work as it was completed in September 2007 and irregularly released Rs.23.93 lakh as AMC charges from August 2006 onwards and further Rs.20.81 lakh in December 2007 for the period December 2007 to November 2008.

Diesel Generators at ICMR

Thus, ICMR installed six number of Porta cabins without ensuring availability of electricity and incurred an avoidable expenditure of Rs.29.56[4] lakh upto March 2008.

ICMR replied in January 2009 that installation of DG set was inevitable to supply electricity to Porta cabins as spare electricity load was not available in

[4] Rs.9.84 lakh (on purchase of generators) + Rs.12.79 lakh (AMC2006-07) + Rs.6.93 lakh (2007-08) upto March 2008

the existing sanctioned NDMC electricity connections. ICMR also stated that the actual expenditure on maintenance contract was only Rs.12.79 lakh and the balance of Rs.11.14 lakh was refunded by NPCC in March 2008. The reply may be viewed in light of the fact that NDMC, in May 2001, had advised ICMR for construction of its own electric substation. Despite making provision of Rs.50 lakh in Tenth Plan, it did not construct the sub-station and continued to incur expenditure on maintenance and operation of diesel generator sets. Further, the contention of ICMR that the AMC was awarded from December 2006 is also not acceptable as the AMC for the porta cabins was awarded in August 2006 though the works of Porta Cabins were finally completed in September 2007. Audit observed that when the previous year's AMC had cost only Rs.12.79 lakh, ICMR had released, in December 2007, Rs.20.81 lakh without adjusting the balance and the interest accrued available with the agency for the period August 2006 to March 2008 giving undue benefit to the agency.

10.1.4 Financial management

10.1.4.1 Budget and Expenditure

(i) ICMR receives funds for capital works from the Ministry as a part of its total budget. In this regard, it was observed in audit that ICMR could not furnish copy of the EFC approval of total budget allocation and budget for capital works during Tenth Plan period. From the information gathered by Audit from various supplementary records, it was observed that out of the total Tenth Plan grant of Rs.960 crore, Rs.260.75 crore was allocated by ICMR for capital works up to March 2007. For the year 2007-08, Ministry allocated Rs.33.92 crore for capital works. Thus, against the total available funds of Rs.294.67 crore in capital works for the period 2002-08, ICMR released Rs.345.19 crore. The source for the excess funds of Rs.50.52 crore was not available on record.

ICMR replied in January 2009 that it receives lump sum grant from the Ministry and the allocation under different budget heads is done by ICMR with the approval of Director General (DG). ICMR further stated that against the total budget outlay of Rs.970 crore for the Tenth Plan, actual expenditure of ICMR was Rs.1124 crore, of which expenditure on capital was Rs.310.59 crore.

ICMR could, however, not furnish any supporting records to reconcile the actual expenditure incurred on capital works during the period 2002-08. In the absence of the Tenth Plan EFC, the actual head-wise budget allocation could not be verified by Audit. Moreover, ICMR did not furnish the source of release of excess funds of Rs.50.52 crore for capital works.

(ii) ICMR released capital funds ranging between 44 to 87 *per cent* during the last quarter of the financial year and 31 to 76 *per cent* in the month of March during 2002-08 to its Institute/Centres. This indicated rush of expenditure which was in violation of Rule 56 (3) of General Financial Rules

and as a result, funds could not be utilised timely and effectively as seen in the succeeding paragraphs.

ICMR stated in its reply of January 2009 that higher expenditure in the last quarter was due to release of large portion of ICMR's grant by the Government in last quarter. The reply of ICMR may be viewed in light of the fact that except in the year 2006-07, releases by the Ministry was only in the range of 16 to 44 *per cent* in the last quarter.

Recommendation

49. ICMR may ensure an effective mechanism for exercising periodical review of flow of expenditure to its Institutes.

10.1.4.2 Non depiction of unspent grant

ICMR released capital grants to its Institutes for deposit with the works executing agencies. However, ICMR did not maintain any records indicating the amount deposited by its Institutes with various executing agencies and amount available with its Institutes. Based on the information received from 12 Institutes when called for by Audit, it was seen that capital grant aggregating Rs.82.92 crore was lying with these Institutes as on 31 March 2008, as detailed in ***Appendix IX***. Although it was a lapsable grant, ICMR neither refunded it to the Ministry nor showed it as refundable in Schedule '4' of current liabilities in the Annual Accounts. Further, an amount of Rs.14.54 lakh refunded to ICMR by HSCC on completion of work at its Headquarters was not depicted as refundable in the annual accounts. An amount of Rs.1.46 crore refunded by TRC Chennai for the year 2007-08 to ICMR in July 2007 was also neither refunded to the Ministry nor depicted as refundable in Schedule '4' of current liabilities in the annual accounts by ICMR. Thus, ICMR did not depict the unspent grant of Rs.84.53 crore in its annual accounts.

ICMR, while accepting the facts, stated in January 2009 that it would ensure progressive capitalisation of advances by its Institutes and that a faithful reflection of unspent grant would be made in the annual account of ICMR.

Recommendation

50. ICMR may ensure an effective mechanism for ensuring effective utilisation and better financial reporting of funds.

10.1.4.3 Non-submission of quarterly bank statement

(i) ICMR signed a Memorandum of Understanding (MoU) in September 2005 with HSCC, NOIDA for providing consultancy services for architectural design, engineering, project management etc., for capital and renovation works. As per the MoU, HSCC was required to submit quarterly bank statement of the account stating the utilisation of funds and balances available, duly certified by the bank. The interest earned on deposits made by ICMR

with HSCC was to be credited to ICMR. During 1999 to 2008, ICMR deposited Rs.76.77 crore with HSCC for various construction works. However, HSCC did not submit any quarterly bank statement of accounts during the period and ICMR also did not insist upon HSCC to submit the same.

On the basis of information gathered by Audit, it was seen that HSCC earned an interest of Rs.4.94 crore[5] on deposits made by ICMR, which was not intimated to ICMR. As a result, ICMR could not adjust the amount of interest earned in its further releases to HSCC. Moreover, this indicated undue benefit to HSCC.

While accepting the facts, ICMR stated in January 2009 that a thorough review of all capital work contracts would be done to ensure full depiction of money earned as interest on advances deposited for capital works and progressive reporting. Further, it is now incorporating a provision in capital works contracts for retention of advance in a flexi-bank account by the executing agency.

(ii) ICMR signed an agreement in March 2003 with M/s National Building Construction Corporation (NBCC) Ltd. for design and construction of Regional Occupational Health Centre, South (ROHC), Bangalore, a centre of National Institute of Occupational Health, at consultancy fee of 4.9 *per cent* of total cost. The agreement provided that the amount released to NBCC was to be deposited in a separate bank account and the interest earned on this amount would be credited to ROHC/ICMR. Although required, NBCC did not submit the quarterly statement of expenditure of amount of Rs.14.86 crore deposited with it. ICMR too did not insist for submission of quarterly statement of expenditure. In the absence of the statement, interest earned could not be taken into the account by ROHC.

ICMR stated in January 2009 that the amount was deposited by NBCC in a current account and as such no interest was earned. It further stated that directions had now been issued to ensure that advances are deposited in interest bearing accounts and that ICMR/Institutes receives quarterly bank statements timely to monitor the utilisation of the deposited amount by the construction firms.

Recommendation

51. ICMR may ensure that it receives quarterly bank statements timely to monitor the utilisation of deposited amounts by construction firms, so that it can adjust the interest earned in its future releases for works to the firms.

10.1.4.4 Excess release of funds

As per the provisions of Central Public Works Department (CPWD) Manual, up to a maximum of 33.3 *per cent* of the total estimated cost of the work may

[5] Provisional, as it was not the bank certified figure.

be given as advance to the executing agencies as deposit and the balance amount should be released to the contractor in accordance with the work completed. Audit observed that ICMR had released advances ranging between 76 to 100 *per cent* of the total estimated cost of the work as deposit to various agencies for 15 out of the 21 works of ICMR HQ during the period 2002-2008 as detailed in ***Appendix X***. This resulted in blockade of funds of ICMR which could have been utilised fruitfully for other works. Further, this indicated idling of funds with the firms who earned interest on the same and did not intimate to ICMR as seen in paragraph No.10.1.4.3.

ICMR may ensure that not more than 33.3 *per cent* of estimated cost of works is advanced to executing agencies to avoid idling of funds and ensure effective utilisation of funds.

ICMR stated in January 2009 that in future, advance for capital works would be released in accordance with the manner prescribed in the CPWD Manual.

10.1.5 Inadequate documentation and monitoring

(i) During 2002-08, ICMR released Rs.345.19 crore to its Institutes/Centres for capital, petty, special repair and maintenance works to be deposited with various executing agencies. ICMR-HQ did not maintain any records to watch the adjustment of advances paid to various executing agencies as deposit works. The information furnished by 18 out of 30 Institutes revealed that in case of 10 Institutes, executing agencies did not submit the adjustment account for advance of Rs.21.88 crore of 70 works completed during 2002-08 as detailed in ***Appendix XI***. Thus, monitoring mechanism to watch the adjustment of advances paid to various executing agencies was inadequate at ICMR-HQ as well as at Institutes' level and needed to be strengthened for effective monitoring and better utilisation of funds.

(ii) ICMR also did not maintain systematic records of individual works so as to be able to watch their progress. In the absence of this, it failed to furnish the information relating to total number of works ongoing, taken-up, to be completed, actually completed and actual completion cost. The register of works maintained did not disclose the scheduled date of completion, actual date of completion and final expenditure. There was no system of periodic reporting in ICMR to enable it to monitor the progress of work. Institutes did not submit completion reports and inventory reports to ICMR-HQ.

Thus, ICMR did not have any mechanism to ensure that works were completed timely and within scheduled cost, which resulted in time overrun and cost overrun in several cases. Further, ICMR did not have updated information on the inventory and assets created out of the funds it released to institutes.

While accepting the facts, ICMR stated in January 2009, that monitoring mechanism would be strengthened through e-governance model adopted by CPWD.

10.1.6 Conclusion

During 2002-08, ICMR released Rs.345.19 crore to its various institutes for capital, petty and special works, of which Audit test checked 20 capital works costing Rs.160.48 crore. Audit observed that ICMR transferred land irregularly to a private Housing Society at a loss of Rs.22.82 crore without approval of the Ministry, thus pointing to the possibility of fraud. ICMR procured land in excess of requirement resulting in payment of non-construction charges of Rs.3.01 crore in three plots of land. Delay in timely approval and release of funds by ICMR resulted in non-commencement of works for upto 13 years and cost overrun of Rs.30.94 crore besides non-achievement of objectives. Blockade and wasteful expenditure of funds of Rs.21.82 crore were observed in nine works as a result of delayed decisions in commencement of works and payment of penalty. ICMR did not have adequate budgetary and financial control mechanism in place for exercising periodical review of flow of expenditure by its Institutes. ICMR also did not have a mechanism to watch progress of works and adjustment of advances to its Institutes and ensure thereby, timely completion of works within the scheduled cost.

Thus, in view of the huge amount of funds being released to its various institutes for creation of buildings and other related infrastructure, ICMR needs to strengthen its works management to ensure timely utilisation of funds, completion of works and achievement of objectives.

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

New Delhi
Dated: 01 June 2009

Countersigned

(VINOD RAI)
Comptroller and Auditor General of India

New Delhi
Dated: 11 June 2009

Appendix I (Refer to Paragraph1.1)

Brief profile of the Scientific Ministries/Departments/Autonomous bodies

1. Department of Atomic Energy (DAE)

DAE aims to harness energy of the atom for a variety of applications, which contribute to development and welfare programmes of the country with emphasis on self-reliance. The main mandate of DAE is the production of safe and economical nuclear power, using indigenous uranium and thorium resources. The expenditure incurred by DAE during 2007-08 was Rs.6010.98 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 & Research, Tata Memorial Centre, Tata Institute of Fundamental Research, Institute for Plasma Research etc.

2. Department of Space (DOS)

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 also deals with matters relating to space science, space technology and space applications. The expenditure incurred by DOS during 2007-08 was Rs.3278 crore. The activities of DOS are executed through its agencies like Vikram Sarabhai Space Centre, Satish Dhawan Space Centre, Liquid Propulsion System Centre, National Remote Sensing Agency, Physical Research Laboratory etc.

3. Ministry of Environment and Forests (MoEF)

MoEF is the nodal agency for the planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programmes. The principal activities undertaken by MoEF consist of conservation & survey of flora, fauna, forests and wildlife, prevention & control of pollution and afforestation & regeneration of degraded areas. The expenditure incurred by MoEF during 2007-08 was Rs.1583.24 crore. The activities of MoEF are carried 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 & Education, Central Zoo Authority etc.

4. Ministry of Science and Technology

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

4.1 Department of Science and Technology (DST)

DST plays a pivotal role in promotion of science and technology in the country. DST has wide ranging activities ranging from promoting high end basic research and development of cutting edge technologies on one hand to servicing the technological requirements of the common man through development of appropriate skills and technologies on the other. The expenditure incurred by DST during 2007-08 was Rs.1514.93 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.

4.2 Department of Scientific and Industrial Research (DSIR)

The primary endeavor of DSIR is to promote Research & Development 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. It also provides a link between scientific laboratories and industrial establishments for transfer of technologies. The expenditure incurred by DSIR during 2007-08 was Rs.1892.55 crore. The Council of Scientific & Industrial Research, a major autonomous body being funded by DSIR comprises of 38 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.

4.3 Department of Biotechnology (DBT)

Biotechnology is a frontline area of science with immense potential for the benefit of the human kind. DBT provides services in the areas of research, popularisation of biotechnology, promotion of industries etc. Bioinformatics, which is a major mission of DBT, seeks to establish an information network for the scientific community, nationally and internationally. The expenditure incurred by DBT during 2007-08 was Rs.636.62 crore. The activities of DBT are carried through agencies like National Institute of Immunology, National Centre for Cell Science, National Brain Research Centre etc.

5. Ministry of Earth Sciences (MoES)

MoES is mandated to provide the nation with best possible services in forecasting the monsoons and other weather/climate parameters, ocean state, earthquakes, tsunamis and other phenomena related to earth systems through well 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 2007-08 was Rs.562.84 crore. The activities of MoES are carried through agencies like India Meteorological Department, Indian National Centre for Ocean Information Services, National Centre for Antarctic & Ocean Research, National Institute of Ocean Technology, National Centre for Medium Range Weather Forecasting etc.

6. Ministry of New and Renewable Energy (MNRE)

The objectives of MNRE are to attain energy security by having lesser dependence on oil imports through development and deployment of alternate fuels like hydrogen, biofuels and synthetic fuels. MNRE also seeks to increase the share of clean power through renewable energy (bio, wind, hydro, solar, geothermal & tidal) to supplement fossil fuel based electricity generation. It also aims to supplement energy needs of cooking, heating, motive power and captive generation in rural, urban, industrial and commercial sectors and attain per-capita energy consumption at par with the global average level by 2050. The expenditure incurred by MNRE during 2007-08 was Rs.485.15 crore. The activities of MNRE are carried through agencies like Solar Energy Centre, Centre for Wind Energy Technology etc.

7. Department of Information Technology (DIT)

DIT is committed to making India a global information technology super power and a front-runner in the age of information revolution. It also seeks to bring the benefits of electronics to every walk of life and to develop the Indian electronics industry as a global player. The

expenditure incurred by DIT during 2007-08 was Rs.1295.26 crore. The activities of DIT are carried through agencies like National Informatics Centre, Standardisation, Testing & Quality Certification Directorate, Controller of Certifying Authority, Centre for Development of Advanced Computing, Society for Applied Microwave Electronics Engineering Research etc.

8. Geological Survey of India (GSI)

GSI is a subordinate office under the Ministry of Mines. The objectives of GSI are to prepare/update geological, geophysical and geochemical maps to explore/assess mineral & energy resources of the country and its offshore areas. GSI also conducts research in earth sciences and promotes application of the new knowledge for effecting management of the earth system and its resources with an aim to reduce risk to life and property from geological hazards. The expenditure incurred by GSI during 2007-08 was Rs.308.91 crore.

9. Indian Council of Agricultural Research (ICAR)

ICAR is an autonomous organisation under the Department of Agricultural Research and Education, Ministry of Agriculture. ICAR acts as a repository of information and provides consultancy on agriculture, horticulture, resource management, animal sciences, agricultural engineering, fisheries, agricultural extensions etc. It has the mandate to coordinate agricultural research & development programmes and develop linkages at national & international level with related organisations to enhance the quality of life of the farming community. The expenditure incurred by ICAR during 2007-08 was Rs.2209.88 crore. The activities of ICAR are carried through agencies like Indian Agricultural Research Institute, Indian Veterinary Research Institute, National Dairy Research Institute, Indian Institute of Vegetable Research etc.

10. Indian Council of Medical Research (ICMR)

ICMR is an autonomous organisation under the Department of Health Research, Ministry of Health & Family Welfare. ICMR's research priorities coincide with the national health priorities such as control & management of communicable diseases, fertility control, maternal & child health and control of nutritional disorders. ICMR also conducts research on major non-communicable diseases like cancer, cardiovascular diseases, blindness, diabetes & other metabolic/hematological disorders. The expenditure incurred by ICMR during 2007-08 was Rs.311.65 crore. The activities of ICMR are carried through agencies like National Institute of Malaria Research, Institute of Cytology and Preventive Oncology, National Aids Research Institute, Tuberculosis Research Centre, National Institute of Nutrition etc.

11. Centre for Development of Telematics (C-DOT)

C-DOT is an autonomous body under Department of Telecommunication. The objectives of C-DOT are to work on telecom technology products & services and to provide solutions for current & future requirements of telecommunication/converged networks including those required for rural applications. C-DOT also seeks to provide market orientation to R&D activities, sustain itself as a centre of excellence and build partnerships/joint alliances with industry, solution providers, telecommunication companies and other development organisations. The expenditure incurred by C-DOT during 2007-08 was Rs.131.89 crore.

Appendix IA (Refer to Paragraph1.6.4)

Theme-wise specific audit findings emerging from the audit of Scientific Ministries/Departments

Theme	Report No CA 16 of 2009 – Para(Dept)	Report No CA 3 of 2008 – Para(Dept)	Report No PA 2 of 2008 – Para(Dept)	Report No 2 of 2007 –Para(Dept)	Report No 2 of 2007 PA – Para(Dept)	Report No 2 & 3 of 2006 – Para(Dept)	Report No 5 of 2005 –Para(Dept)
Inefficient project management, failure to achieve objectives and low success in comercialisation of technologies developed	2.5,2.6 (DAE) 3.1,3.2 (DIT) 4.4,4.5,4.6 (DSIR) 5.3 (DST) 6.1,6.3 (MoEF)	2.1, 2.5 (DAE) 4.1 (DSIR) 4.3 (DSIR) 7.1, 7.3 (MoES) 8.1 (MNRE) 9.1, 9.4, 9.5 (ICAR)	1 (DSIR) 3 (ICAR)	1.1 (ICAR) 2.11 (DIT)	1 (C-DOT) 2 (ICMR)		2.1 (ICAR) 3.5 (DAE)
Weaknesses in the procurement systems	8.1 (GSI) 9.1 (ICAR)	2.2 (DAE) 2.3 (DAE) 4.2 (DSIR) 5.1 (DST)	2 (DOS)	5.1 (MoES)	3 (DSIR)	1.1 (DAE) 11.1 (DSIR) 11.2 (DSIR)	3.4 (DAE) 10.1,10.2 (DSIR)
Deficiencies in execution of works and asset management	2.2 (DAE) 3.3 (DIT) 4.2(DSIR) 7.1 MoES 10.1 (ICMR)	2.4 (DAE) 3.1 (DIT) 7.2 (MoES) 6.1 (MoEF)		2 (DOS)			9.1 (ICMR)
Payments to staff without requisite approvals	2.1 (DAE) 5.2(DST) 6.2 (MoEF)	5.2 (DST) 9.2 (ICAR)					7.1 (DOS)
Others: Extra /unfruitful/wasteful expenditure and non-recovery of dues/ recoveries at the instance of audit	2.3, 2.4 (DAE) 4.1,4.2,4.3 (DSIR) 5.1 (DST) 7.2 (MoES) 9.2 (ICAR)	9.3 (ICAR)		6.1 (MoEF) 13.1 (DSIR)		3.1 (C-DOT)	3.1, 3.2,3.3 (DAE) 4.1 (DIT) 5.1,5.2 (DST) 6.1 (DSIR) 8.1 (ICAR)

Appendix IB (Refer to Paragraph1.6.4)

List of projects/schemes commented upon in this Audit Report

Sl No	Name of project/scheme	Ministry/ Departm-ent	Paragraph No.
1.	Gamma-Ray Astrophysics Cerencov Experiments	DAE	2.5.2.1
2.	SUB-TeV Light Experiments	DAE	2.5.2.2
3.	Design and Development of Radiation Equipment and Test Facility	DAE	2.6.2.2(a)
4.	Augmentation of Cobalt Handling Facility	DAE	2.6.2.2(a)
5.	Augmentation of Radiochemical Laboratories at BARC Campus by BRIT	DAE	2.6.2.2(a)
6.	DAE Medical Cyclotron Project at Kolkata	DAE	2.6.2.2(b)(i)
7.	Integrated Facility for Radiation Technology	DAE	2.6.2.2(b)(ii)
8.	Revamping and Augmentation of Infrastructure Facilities	DAE	2.6.2.2(b)(iii)
9.	Extension of nuclear medicine facilities	DAE	2.6.2.3(b)
10.	Private Practice Scheme at Tata Memorial Center	DAE	2.1
11.	Design and Implementation of Set Top Box for internet access on Television	DIT	3.1
12.	Development of Orthogonal Frequency Division Multiplexing based broadband access system for rural communication	DIT	3.2
13.	Development of 32 Channel Digital Voice Logger	DIT	4.1
14.	Smelting reduction of chromite for manufacture of Ferro Chrome/charge Chrome	DSIR	4.4.2.4(b)(i)
15.	Preparation of Nickel Hydroxide Suitable for Nickel Cadmium and Nickel Metal Hydride Batteries	DSIR	4.4.2.4(b)(ii)
16.	Recovery of Gallium from Bayer Liquors using Ion-exchange/chelating Resin (Part-II)	DSIR	4.4.2.4(b)(iii)
17.	Development/up-gradation of technology on manufacture of cold setting fly ash bricks/products with ash content around 80 *per cent*	DSIR	4.4.2.4(b)(iv)
18.	Development of High Energy Density Nickel-Metal Hydride Batteries for electric vehicles	DSIR	4.5.2.1(i)
19.	Electrolytic regeneration of acidic and ammonical cupric chloride etchants with simultaneous recovery of copper	DSIR	4.5.2.1(ii)
20.	Development of 400 watt capacity Hydrogen Generator	DSIR	4.5.2.1(iii)
21.	Electrochemical Technology for the removal of arsenic from drinking water	DSIR	4.5.2.1(iv)
22.	Recycling of chromium from metal finishing waste-water using electrochemical ion exchange	DSIR	4.5.2.1(v)
23.	Development of a process for Electro-refining of aluminum metal	DSIR	4.5.2.2(i)
24.	Development of conducting polymer based super capacitors	DSIR	4.5.2.2(ii)
25.	Recovery of Tungsten from Tungsten Alloy Swarf	DSIR	4.5.2.2(iii)
26.	Development of Nitride Ceramics for Aerospace Applications	DSIR	4.6.2.6(a)(i)
27.	Design and development of prototype (1000L capacity) for treatment of tannery effluent using ceramic membranes	DSIR	4.6.2.6(a)(ii)
28.	Pollutant specific chemo-sensors: Development of solid state sulphur dioxide sensors	DSIR	4.6.2.6(a)(iii)
29.	Membrane based systems for waste-water treatment	DSIR	4.6.2.6(a)(iv)
30.	Development of new building construction materials and	DSIR	4.6.2.6(a)(v)

Sl No	Name of project/scheme	Ministry/ Departm-ent	Paragraph No.
	technologies		
31.	Establishment of a national facility for development of process technology and supply of ultra-low expansion transparent glass ceramic	DSIR	4.6.2.6(b)(i)
32.	Development of economic viable technology for making of Sulphur Glass Frits (SGF) and also to explore the possibilities of NPK glass fertiliser for optimisation of agricultural yield of oilseeds and pulses (chick pea and pigeon pea)	DSIR	4.6.2.6(b)(ii)
33.	Development of rare earth based glass and glass ceramic phosphorous for use in compact fluorescent lamps and CRT display screens	DSIR	4.6.2.6(c)
34.	Development of high damage resistant sol-gel coatings for High Power Laser'	DSIR	4.6.2.6(c)
35.	Development of technology for the manufacture of mononitrotoluenes with high selectivity for para-isomer	DST	5.1
36.	National Centre for Global Geosphere/Biosphere change research	DST	5.3.2.1
37.	Radiocarbon dating of deposits relating to Quaternary geological and archaeobotanical investigations and chemical analysis of sediments for palaeoenvironmental and palaeoclimatic studies	DST	5.3.2.1(a)
38.	Accretionary evolution, tectonics and palaeoclimate in Lahaul-Spiti, Ladakh & eastern Karakoram regions'--'Palynological, geochemical and magnetic studies in Lahaul-Spiti and Ladakh regions: implications to palaeoclimate and neotectonics	DST	5.3.2.1(b)
39.	Terrestrial Megafloral change during Mesozoic in Rajmahal Basin	DST	5.3.2.1(c)
40.	Neogene Microfloristics of Andaman & Nicobar islands and their stratigraphic significance	DST	5.3.2.2
41.	Pollen analytical studies in Rajasthan Lake sediments to reconstruct vegetational history and climatic changes during LGM	DST	5.3.2.2
42.	Sedimentary organic matter characterisation of Indian lignite and possible DNA sequencing' and New project titled 'Floral diversity and ecology of Mahuadanr beds, Palamau, Jharkhand	DST	5.3.2.2
43.	Tree-ring based Millennium-long climatic reconstructions for the Himalayan region	DST	5.3.2.2
44.	Tertiary floristics of north-western peninsular India i.e. Rajasthan and Gujarat	DST	5.3.2.3
45.	Analysis of climatic changes in North-East India during last several thousand years using pollen and tree-ring data	DST	5.3.2.6(a)
46.	Glacier morphology and Quaternary glacial history of Durung Drung glacier, Zanskar, Ladakh	DST	5.3.2.6(b)
47.	Swarna Jayanti Kunj	MoEF	6.1

Appendix II (Refer to Paragraph1.8)

Grants released to Autonomous Bodies auditable under Sections 19(2) and 20(1) of Comptroller and Auditor General's (Duties, Powers & Conditions of Service) Act, 1971

Sl. No.	Name of the Autonomous Body	Amount of grants released in 2007-08 *(Rs. in crore)*
1.	Indian Council of Agricultural Research, New Delhi	2230.43
2.	Council of Scientific and Industrial Research, New Delhi	1863.70
3.	Indian Council of Medical Research, New Delhi	311.65
4.	Tea Board, Kolkata	144.17
5.	Sree Chitra Tirunal Institute of Medical Sciences & Technology, Thiruvananthapuram	78.98
6.	Central Zoo Authority, New Delhi	17.00
7.	Wild Life Institute of India, Dehradun	12.00
8.	Technology Development Board, New Delhi	19.00
9.	National Biodiversity Authority, Chennai	1.46
	Total	**4678.39**

Appendix III (Refer to Paragraph1.8)

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

Sl. No.	Ministry/Department Name of the Autonomous Body	Amount of grants released in 2007-08 *(Rs. in crore)*
DEPARTMENT OF ATOMIC ENERGY		
1.	Tata Memorial Centre, Mumbai	138.29
2.	Saha Institute of Nuclear Physics, Kolkata	49.30
3.	Institute of Physics, Bhubaneswar	33.83
4.	Atomic Energy Education Society, Mumbai	31.97
5.	Tata Institute of Fundamental Research, Mumbai	188.28
6.	Harish Chandra Research Institute, Allahabad	18.40
7.	Institute for Plasma Research, Gandhi Nagar	125.60
8.	Institute of Mathematical Sciences, Chennai	16.83
	Total	**602.50**
DEPARTMENT OF BIOTECHNOLOGY		
9.	National Institute of Immunology, New Delhi	36.62
10.	National Centre for Cell Sciences, Pune	29.82
11.	Centre for DNA Finger Printing and Diagnostics, Hyderabad	15.06
12.	National Institute for Plant Genome Research, New Delhi	13.60
13.	National Brain Research Centre, Gurgaon	17.10
14.	Institute of Bio-resources and Sustainable Development, Imphal	3.00
15.	Institute of Life Sciences, Bhubaneswar	9.68
	Total	**124.88**
DEPARTMENT OF INFORMATION TECHNOLOGY		
16.	Centre for Development of Advanced Computing, Pune	78.00
17.	Society for Applied Microwave Electronics Engineering Research, Mumbai	28.00
18.	Education & Research Network, New Delhi	Nil
19.	Electronics and Computer Software Export Promotion Council, New Delhi	Nil
20.	Software Technology Park of India, New Delhi	1.52
21.	Centre for Material for Electronics Technology, Pune	5.60
22.	Department of Electronics – Accredited Computer Courses, New Delhi	2.20
	Total	**115.32**
MINISTRY OF ENVIRONMENT AND FORESTS		
23.	Central Pollution Control Board, New Delhi	47.96
24.	Indian Institute of Forest Management, Bhopal	8.43
25.	Indian Council of Forestry Research & Education,	78.24

Sl. No.	Ministry/Department Name of the Autonomous Body	Amount of grants released in 2007-08 *(Rs. in crore)*
	Dehradun	
26.	Indian Plywood Industries Research and Training Institute, Bangalore	6.50
27.	Govind Ballabh Pant Institute of Himalayan Environment and Development, Almora	8.49
	Total	**149.62**
DEPARTMENT OF SCIENCE & TECHNOLOGY		
28.	Raman Research Institute, Bangalore	25.23
29.	Bose Institute, Kolkata	26.23
30.	Aryabhatta Research Institute for Observational Sciences, Nainital	23.00
31.	Indian Association for the Cultivation of Science, Kolkata	44.25
32.	Indian Institute of Astrophysics, Bangalore	39.08
33.	Indian Institute of Geo-magnetism, Mumbai	22.55
34.	Indian National Science Academy, New Delhi	8.86
35.	Indian National Academy of Engineering, New Delhi	2.00
36.	Indian Science Congress Association, Kolkata	2.27
37.	Birbal Sahni Institute of Palaeobotany, Lucknow	6.30
38.	Wadia Institute of Himalayan Geology, Dehradun	14.11
39.	S.N.Bose National Centre for Basic Sciences, Kolkata	14.37
40.	Indian Academy of Sciences, Bangalore	4.51
41.	J.N. Centre for Advanced Scientific Research, Bangalore	35.00
42.	National Academy of Sciences, Allahabad	2.98
43.	Technology Information Forecasting and Assessment Council, New Delhi	4.09
44.	Vigyan Prasar, Noida	8.00
45.	Agarkar Research Institute, Pune	9.93
46.	International Advanced Research Centre for Powder Metallurgy & New Materials, Hyderabad	45.00
47.	National Accreditation Board for Testing & Calibration Laboratories, New Delhi	Nil
48.	Centre for Liquid Crystal Research, Bangalore	4.00
49.	Indo-French Centre for Promotion of Advance Research, New Delhi	8.50
50.	Indo-US S&T Forum, New Delhi	3.45
	Total	**353.71**
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH		
51.	Consultancy Development Centre, New Delhi	2.00
	Total	**2.00**
DEPARTMENT OF SPACE		
52.	National Remote Sensing Agency, Hyderabad	30.00
53.	Physical Research Laboratory, Ahmedabad	51.87
54.	National Atmospheric Research Laboratory, Gadanki	7.95
55.	North Eastern Space Applications Centre, Shillong	5.00

Sl. No.	Ministry/Department Name of the Autonomous Body	Amount of grants released in 2007-08 *(Rs. in crore)*
56.	Semi Conductor Laboratory, S.A.S Nagar	39.50
	Total	**134.32**
MINISTRY OF EARTH SCIENCES		
57.	Indian National Centre for Ocean Information Services, Hyderabad	74.98
58.	National Centre for Antarctic & Ocean Research, Goa	56.79
59.	National Institute of Ocean Technology, Chennai	131.68
60.	Indian Institute of Tropical Meteorology, Pune	14.50
	Total	**277.95**
MINISTRY OF NEW AND RENEWABLE ENERGY		
61.	Sardar Swaran Singh- National Institute of Renewable Energy, Kapurthala	3.67
62.	Centre for Wind Energy Technology, Chennai	10.75
	Total	**14.42**
	GRAND TOTAL	**1774.72**

Appendix IV (Refer to Paragraph1.9)

Outstanding Utilisation Certificates

Ministry/Department	Period to which grant relates	Number of utilisation certificates outstanding at the end of March 2007	Amount *(Rs. in lakh)*
Department of Atomic Energy	1991-92	1	2.51
	1996-97	4	4.12
	1997-98	3	3.38
	1998-99	4	3.12
	1999-2000	7	16.56
	2000-01	7	17.24
	2001-02	5	4.85
	2002-03	1	0.80
	2003-04	12	9.06
	2004-05	26	223.25
	2005-06	48	95.05
	2006-07	195	814.87
Total		**313**	**1194.81**
Department of Space	1976-77	1	0.05
	1979-80	1	0.05
	1980-81	1	0.38
	1981-82	1	0.03
	1982-83	5	0.69
	1983-84	1	0.02
	1984-85	3	0.97
	1985-86	1	0.05
	1986-87	6	1.35
	1987-88	4	4.88
	1989-90	2	0.07
	1990-91	1	5.24
	1991-92	1	1.24
	1993-94	2	1.28
	1998-99	1	0.20
	1999-2000	2	1.30
	2000-01	7	64.19
	2001-02	18	451.06
	2002-03	21	176.75
	2003-04	45	294.21
	2004-05	65	562.23
	2005-06	101	536.57
	2006-07	121	984.32
Total		**411**	**3087.13**
Ministry of New and Renewable Energy	2003-04	2	1000.96
	2004-05	3	209.91
	2005-06	95	1069.28
	2006-07	96	3920.00
Total		**196**	**6200.15**

Ministry/Department	Period to which grant relates	Number of utilisation certificates outstanding at the end of March 2007	Amount *(Rs. in lakh)*
Ministry of Environment & Forests	1981-82	15	5.79
	1982-83	21	41.00
	1983-84	90	58.50
	1984-85	143	229.80
	1985-86	121	495.40
	1986-87	74	533.77
	1987-88	278	6531.00
	1988-89	359	2543.18
	1989-90	545	192.00
	1990-91	70	123.30
	1991-92	81	1439.00
	1992-93	216	736.00
	1993-94	64	74.18
	1994-95	131	85.00
	1995-96	10	21.00
	1996-97	418	13658.77
	1997-98	592	8824.68
	1998-99	300	14.00
	1999-2000	492	2356.64
	2000-01	518	3739.07
	2001-02	556	4069.84
	2002-03	556	857.67
	2003-04	770	4247.44
	2004-05	563	766.69
	2005-06	810	10698.87
	2006-07	1050	39037.04
Total		**8843**	**101379.63**
Department of Biotechnology	1993-94	5	0.70
	1994-95	4	1.60
	1995-96	5	1.35
	1996-97	5	1.15
	1997-98	10	3.80
	1998-99	5	2.40
	1999-2000	3	0.45
	2000-01	3	1.20
	2001-02	3	1.40
	2002-03	3	1.90
	2004-05	21	7.32
	2006-07	42	30.41
Total		**109**	**53.68**
Geological Survey of India	2002-03	1	0.20
	2003-04	3	0.50
	2004-05	1	0.20
	2005-06	1	0.10
	2006-07	4	0.50
Total		**10**	**1.50**

Ministry/Department	Period to which grant relates	Number of utilisation certificates outstanding at the end of March 2007	Amount *(Rs. in lakh)*
Department of Information Technology	2001-02	2	11.00
	2002-03	69	6147.00
	2003-04	61	3246.00
	2004-05	75	13904.00
	2005-06	138	20095.00
	2006-07	165	43724.00
Total		**510**	**87127.00**
Ministry of Earth Sciences	1983-84	08	13.16
	1984-85	22	22.66
	1985-86	32	32.61
	1986-87	22	25.78
	1987-88	40	52.83
	1988-89	45	58.00
	1989-90	61	60.39
	1990-91	17	227.46
	1991-92	13	114.60
	1992-93	08	3.00
	1993-94	16	40.20
	1994-95	07	36.50
	1995-96	22	46.74
	1996-97	51	105.06
	1997-98	57	276.81
	1998-99	41	432.28
	1999-2000	34	435.69
	2000-01	50	422.71
	2001-02	39	2821.40
	2002-03	26	2533.69
	2003-04	112	2219.62
	2004-05	74	7051.41
	2005-06	107	9442.08
	2006-07	75	13989.60
Total		**979**	**40464.28**
Grand Total		**11371**	**239508.18**

Appendix V (Refer to Paragraph1.10)

Summarised financial results of Departmentally Managed Government Undertakings

(Rupees in lakh)

Sl. No.	Name of the Undertaking	Period of Accounts	Govern-ment Capital	Block Assets (Net)	Depreci-ation to date	Profit(+) Loss(-)	Interest on Govern-ment Capital	Total return	percentage of total return to mean Capital	Remarks
	MINISTRY OF NEW AND RENEWABLE ENERGY									
1.	Indian Renewable Energy Development Agency Ltd.	2007-08	49000.00	3916.52	975.03	4796.42	960.00	960.00	2.06	Profit after tax
	DEPARTMENT OF ATOMIC ENERGY									
2.	Nuclear Fuel Complex, Hyderabad	2006-07	48643.18	30971.34	19406.72	3111.95	6103.01	9214.96	19.56	Figures are provisional
3.	Heavy Water Plant, Mumbai	2004-05	-	-	-	-	-	-	-	Format of proforma account is yet to be approved

Appendix VI (Refer to Paragraph1.11)

Statement of losses and irrecoverable dues written off/waived during 2007-2008

(Rupees 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 Payment	
	No. of cases	Amount	No. of cases	Amount	No. of cases	Amount	No. of cases	Amount	No. of cases	Amount
Indian Council of Agricultural Research	-	-	-	-	3	0.71	-	-	-	-
Department of Atomic Energy	-	-	-	-	3	5.09	-	-	-	-
Department of Information Technology	-	-	-	-	3	0.33	-	-	-	-
Department of Space	-	-	-	-	5	1.88	-	-	-	-
Indian Council of Medical Research	-	-	-	-	1	181.32	-	-	-	-
Geological Survey of India	-	-	-	-	3	0.11	-	-	-	-
Department of Science and Technology	-	-	2	0.56	-	-	-	-	-	-
Total	**-**	**-**	**2**	**0.56**	**18**	**189.44**	**-**	**-**	**-**	**-**

Appendix VII (Refer to Paragraph1.13)

Summarised position of the Action Taken Notes awaited from various ministries/departments up to the year ended March 2008 as of December 2008

Sl. No.	Report No. and year	Paragraph No./ Chapter	Pertains to	Title	Delay in submission of ATNs (in months)
1	5 of 2004	10.1	Centre for Development of Telematics	Unnecessary procurement of components	49
2	18 of 2006 (PA)	Standalone	Ministry of Environment and Forests	Conservation and Protection of Tigers in Tiger Reserves	24
3	9 of 2006 (PA)	5	Department of Space	Non Tax Receipts	20
4	2 of 2007 (TA)	6.1	Ministry of Environment and Forests	Excess expenditure on power consumption	15
5	13 of 2007 (PA)	3	Department of Science and Technology	Internal controls in DST	15
6	CA 3 of 2008	3.1	Department of Information Technology	Avoidable expenditure of Rs.1.21 core on hiring of office space	6
7	CA 3 of 2008	5.1	Department of Science and Technology	Unfruitful expenditure	6
8	CA 3 of 2008	5.2	Department of Science and Technology	Irregular extension of service	6
9	CA 3 of 2008	6.1	Ministry of Environment and Forests	Injudicious decision of construction of Scholar Transit Hostel	6
10	CA 3 of 2008	7.1	Ministry of Earth Sciences	Non-achievement of the objectives of modernising the Accounting and Personnel Management functions	6
11	CA 3 of 2008	7.2	Ministry of Earth Sciences	Avoidable expenditure on interest	6

Sl. No.	Report No. and year	Paragraph No./ Chapter	Pertains to	Title	Delay in submission of ATNs (in months)
12	CA 3 of 2008	7.3	Ministry of Earth Sciences	Unfruitful expenditure on in-house projects in National Institute of Ocean Technology	6
13	CA 3 of 2008	8.1	Ministry of New and Renewable Energy	Activities of Solar Energy Centre	6
14	CA 3 of 2008	9.2	Indian Council of Agricultural Research	Irregular payment of Island Special Allowance	6
15	CA 3 of 2008	9.5	Indian Council of Agricultural Research	Non-operationalisation of Quarantine Building	6

Appendix VIII (Refer to Paragraph2.6.2.2)

Details of Ninth Plan projects of BRIT that spilled over to the Tenth Plan

Name of Project	Original cost/date of completion	Actual expenditure /date of completion	Reasons for time and cost overruns/reply of BRIT & DAE
(i) 'Design and Development of Radiation Equipment and Test Facility'	8.50 crore / March 2002		
(a) Design and Development of Radiation Technology Equipment	March 2002	May 2006	Out of the four new products contemplated, BRIT developed only Blood Irradiator and could complete the fabrication of 30 Blood Irradiators. BRIT stated in May 2008 that it was making all possible efforts to publicise the availability of the units indigenously through BRIT. DAE in February 2009 stated that it was expected that sale of BIs would gradually increase in future with acceptability of technology.
(b) Design and Construction of a Test Facility	2001	January 2006	The facility worth Rs.2.30 crore largely remained under-utilised as it was used only nine times over a period of 31 months as of July 2008. BRIT stated in July 2008 that utilisation of the facility would increase in the years to come. DAE stated in February 2009 that this facility was an essential requirement to meet national and international norms and could not be viewed solely from the commercial angle or as a revenue collection source. Further, DAE stated that it was presently meeting the needs of DAE and 26 tests had been carried out till date. **The fact remains that due to improper planning, availability of this important facility was delayed for five years and DAE had not made any headway in attracting non-DAE units for utilisation of the testing facility.**
(ii) 'Augmentation of Cobalt Handling Facility'	Rs.17 crore/ March 2001	Rs.17.99 crore/March 2006	Expected revenue of Rs.10 crore per annum from export of cobalt 60 could not be achieved. Consent of Safety Review Committee for Operating Plant of AERB was received only after May 2008. BRIT, in May/July 2008, attributed the delay to inability of Architectural and Civil Engineering Division to take up the design work because of other projects and various clearances to be obtained from AERB. BRIT further admitted that demand for cobalt had not yet increased to the anticipated levels. DAE stated in February 2009 that 22 MOUs had been signed with the private entrepreneurs for setting up such radiation process plants, of which seven had been commissioned. It further stated that demand for Cobalt-60 would be increased and BRIT would be in position to process Cobalt-60 and make sealed sources for export.

Name of Project	Original cost/date of completion	Actual expenditure /date of completion	Reasons for time and cost overruns/reply of BRIT & DAE
			Despite delay, the stated objectives of the project of revenue generation through export were yet to be achieved.
(iii) Augmentation of Radiochemical Laboratories at BARC campus	Rs.4.60 crore revised to Rs.6.23 crore/ March 2002	Rs.5.77 crore (as of March 2003)/December 2007	(i) Project was completed after a time overrun of more than five years. BRIT attributed the time overrun to non-availability of sufficient number of skilled technical persons to set up the plants and stated that testing and validation was underway and production was being taken up. DAE stated in February 2009 that the delay in completion of the project was due to the need to carry out the work without any interruption to the regular processing of radioisotopes in the same area as these products were required to be supplied to hospitals by BRIT. Also, the facility had since been commissioned and was being used extensively. **The reply of DAE was silent on details of utilisation of facility and the extent to which the cost on operating personnel was minimised as a result of taking up the project.** (ii) BARC/BRIT in 1998 had projected that by 2010, the requirement of radioisotopes was likely to increase manifold. However, there was hardly any increase in production of isotopes MO^{99}, I^{131}, and P^{32} during the last 30 years and the production of other four isotopes. Ir ^{192} (HSA for radiography and brachytherapy), Co^{160} HSA>300 Ci/g and Re ^{188} had not yet begun. BRIT admitted in July 2008 that since the New High Flux Reactor at Vizag had not yet been built, all the objectives which were dependent on the reactor had not been achieved. DAE stated in February 2009 that requirement of medical products was demand driven and BRIT was presently in a position to process the target quantities.

Appendix IX (Refer to Paragraph10.1.4.2)

Advances lying with the Institutes of ICMR as on 31-03-2008 (Released during 2002 to 2008)

(Rs. in lakh)

S.No.	Institute	Opening balance	Addition (released advances)	Advances with executing agencies	Advances lying with the institutes
1.	Institute Of Pathology, New Delhi	300	13.64	169.55	144.09
2.	Tuberculosis Research Centre, Chennai	519.23	946.63	946.63	519.23
3.	Desert Medicine Research Centre, Jodhpur	6.71	1100.00	6.31	1100.4
4.	National Institute of Cholera and Enteric Diseases, Kolkata	0	765.20	758.94	6.26
5.	National Institute of Virology, Pune	0	641.20	560.37	80.83
6.	National Institute of Nutrition, Hyderabad	0	513.78	468.51	45.27
7.	National Institute of Immunohaemotology, Mumbai	15.68	19.29	25.67	9.30
8.	Regional Medical Research Centre, Jabalpur	600.97	902.83	906.17	597.63
9.	National Centre for Laboratory Animal Science, Hyderabad	0	567.50	543.7	23.80
10.	Microbial Containment Complex, Pune	4.03	2451.41	2272.09	183.35
11.	National Institute for Research in Reproductive Health, Mumbai	141.03	5606.13	168.26	5578.90
12.	Entero-Virus Research Centre, Mumbai	0	110.00	107.42	2.58
	TOTAL	**1587.65**	**13637.61**	**6933.62**	**8291.64**

Appendix X (Refer to Paragraph10.1.4.4)

Excess releases to agencies by ICMR

(Rs. in lakh)

Sr.No.	Name of the work	Name of agency	Estimated cost	Amount of advance released	*Per cent*
1	Repair & renovation of ICMR-HQ	HSCC	67.77	60.00	88.53
2	Structural repair, installation of Porta Cabins	NPCC	114.42	86.92	75.97
3	DG office Modular Furniture through HSCC	HSCC	1.20	1.20	100
4	DG office flooring	HSCC	7.44	7.44	100
5	Special repair/ renovation & development of bore well	HSCC	83. 48	68.63	82.21
6	Special Repair and renovation of external facet of main building and annexe	NPCC	129.49	65.00	50.20
7	Renovation of Library	NPCC	12.67	12. 67	100
8	Renovation of Computer room, Room of Chief (RMN), wooden cabinet	NPCC	11.13	11.13	100
9	Rain water harvesting and sewer laying	NPCC	22.64	22.64	100
10	Development of existing bore well	NPCC	7.33	6.60	90
11	Renovation of conference hall	NPCC	159.05	159.05	100
12	Construction of connecting corridor between main building and guest house building	NPCC	8.25	8.25	100
13	Renovating Room No 204	NPCC	1.10	1.10	100
14	Additional Porta Cabins at Guest House	NPCC	18. 42	18.42	100
15	Supply, installation, testing, commissioning of Reverse Osmosis Plant	NPCC	11. 44	11. 44	100

Appendix XI (Refer to Paragraph10.1.5)

Unadjusted advances released by institutes of ICMR as on 31 March 2008

Sl No.	Name of the Institute	No. of works completed	Amount not yet adjusted *(Rs. in lakh)*
1.	Tuberculosis Research Centre, Chennai	4	92.62
2.	Microbial Containment Complex, Pune	4	335.34
3.	National Institute of Virology, Pune	7	67.64
4.	National Jalma Institute for Leprosy & Other Mycobacterial Diseases, Agra	18	415.14
5.	Regional Medical Research Centre for Tribals, Jabalpur	7	614.64
6.	Regional Medical Research Centre, Andaman & Nicobar Islands	1	4.74
7.	Indian Council of Medical Research, New Delhi	14	227.24
8.	National Institute of Cholera & Enteric Diseases, Kolkota	7	92.72
9.	National Institute of Occupational Health, Ahmedabad	6	335.38
10.	National Institute For Research in Reproductive Health, Mumbai	2	2.87
		70	**2188.33**