

Chapter 8

MoU System in CPSEs

MoU is a mutually negotiated agreement between the management of the CPSE and the Government of India/Holding Company. Under this agreement, the CPSE undertakes to achieve the targets set out in the agreement at the beginning of the year and submits itself to evaluation on the basis of its achievements at the end of the year. MoU system is essentially a system of management audit. MoU system in India was first introduced in 1986 on the basis of the recommendations of the Arjun Sen Gupta Committee Report (1984).

8.1 Aims and Objectives of MoU system in CPSEs

The aims and objectives of the MoU system broadly encompass the following :

- To improve the performance of public sector enterprises by increasing autonomy of the management of the Company.
- To remove the fuzziness in goals and objectives of public sector enterprises.
- To evaluate the performance of management through objective criteria.
- To provide incentive for better performance in future.

8.2. Institutional Arrangements

The oversight of the MoU System is done by the High Power Committee (HPC) on MoU. This is

an Apex Committee of Secretaries (COS) set up by the Government to assess the performance of MoU signing CPSEs with reference to the commitments made by them in the MoU and also to assess how far the Administrative Ministries/Departments have been able to give the necessary support as committed by them in the MoU. HPC is headed by the Cabinet Secretary. Secretary, Department of Public Enterprises is the Member-Secretary of this Committee. The other members comprise of Finance Secretary, Secretary (Expenditure), Secretary (Planning Commission), Secretary (Statistics & Programme Implementation), Chairman Public Enterprises Selection Board, Chief Economic Advisor, Department of Economic Affairs, Chairman, Tariff Commission and Secretary (Performance Management). The HPC on MoU has been, from time to time, giving directions in regard to the determination of the principles and parameters for evaluating the performance of CPSEs.

8.3 Coverage of CPSEs under the MoU system

The MoU system that was started with four CPSEs signing MoU in the year 1986-87 has now increased its cover to 197 CPSEs in the year 2013-14. The Table below provides the coverage of CPSEs over the years under the MOU system.

Table 8.1
Coverage of MoU over time

Year	No. of MOUs signed	Year	No. of MOUs signed
1987-88	4	2007-08	144
1991-92	72	2008-09	147
2001-02	104	2009-10	197
2002-03	100	2010-11	198
2003-04	96	2011-12	197

Year	No. of MOUs signed	Year	No. of MOUs signed
2004-05	99	2012-13	196
2005-06	102	2013-14	197
2006-07	113		

** Until 2008-09, only Independent/Holding (Companies) CPSEs were signing MoUs with their respective Ministries. However, from 2009-10, the Subsidiary Companies of CPSEs have been signing MoUs with their Holding CPSEs..*

8.4 MoU System: Process

The MoU process starts with the issue of detailed Guidelines by the Department of Public Enterprises (DPE) on the basis of which the CPSEs submit their draft MoUs after approval by their respective Boards and the Administrative Ministries. The draft MoUs indicate various performance targets on a five point scale for the ensuing financial year. These draft MoUs are then discussed, improved and finalized during the MoU negotiation meetings. The Task Force on MoU, a neutral and independent body of experts constituted by DPE assists the Department in the process of MoU negotiations. The MoU Task Force comprises of former Civil Servants, ex-CMDs of the Public Enterprises, finance professionals, domain experts and academicians. In 2013-14, the Task Force was divided into 13 Syndicate Groups covering different sectors. Each Syndicate normally consists of 5 members, with one of the members being the Convener. The rich experience and knowledge of the TF members in different fields provides the necessary technical input and enables in fixation of realistic targets.

The MoU negotiations meetings are attended by the Chief Executives of the CPSEs, Senior Officers from the administrative Ministries and the representatives of the nodal Government agencies such as Planning Commission and Ministry of Statistics & Programme Implementation. DPE issues the Minutes of MoU negotiation meetings to the CPSEs (and the Ministry/ Department concerned) for finalizing the MoUs which are then authenticated by DPE to ensure MoUs are in accordance with the decisions on targets as agreed upon during the MoU negotiation meetings. Subsequently, all MoUs have to be signed before 31st March for

implementation during the succeeding financial year.

8.5 MoU Methodology

The MoU system was revamped in 1989 and was modelled on ‘the signaling system’ using the five-point scale of performance measurement, that is, ‘excellent’, ‘very good’, ‘good’, ‘average’ and ‘poor’. This was further refined in 2004-05 utilising ‘the balanced score card’ methodology. Under the MoU Guidelines for the year 2013-14, ‘financial’ and ‘non-financial’ parameters were assigned equal weightage (50%) for all CPSEs except section 25 CPSEs and sick & Loss making CPSEs where they were assigned weightages of 40% and 60% respectively. The ‘financial’ parameters are both in the form of absolute values, such as gross margins (profits) and turnover as well as in terms of financial efficiency ratios. It is stipulated that financial parameters should be consistent with the proposed Annual Plan/Annual Budget and Corporate Plan of the CPSE. The ‘non-financial’ parameters (dynamic parameters) are of three kinds, namely, dynamic parameters, sector specific mandatory parameters and enterprise specific parameters. The dynamic parameters include project implementation, quality of products and services, customer satisfaction, Human Resource management, Research & Development, Capital Expenditure (CAPEX), Corporate Social Responsibility (CSR) & Sustainable Development (SD), extent of globalization, adoption of innovative practices etc. The ‘sector-specific’ parameters refer to macroeconomic factors like change in demand and supply, price fluctuations, variation in interest rates etc, while the ‘enterprise-specific’ parameters relate to issues such as safety and pollution etc. For MoU

2013-14, Corporate Social Responsibility & Sustainable Development (8% weightage), R& D (5%weightage), were mandatory parameters. In the MoU 2013-14 negative marking was introduced to penalise non-compliance with DPE guidelines including those on Corporate Governance. The MoU guidelines 2013-14 emphasized inclusion of project implementation, listing by CPSEs and CAPEX.

The rating of performance of a CPSE is done on the basis of a Composite Score which is an index of

the performance of the enterprises. The rating of the 'composite score' is done in the following manner:

MoU Composite Score	Rating
1.00-1.50	Excellent
1.51-2.50	Very Good
2.51-3.50	Good
3.51-4.50	Fair
4.51-5.00	Poor

8.6 MoU ratings of CPSEs

MoU rating of CPSEs during the last five years is shown in the Table 8.2 below:

Table 8.2
MoU Ratings

Rating	2007-08	2009-10	2010-11	2011-12	2012-13
Excellent	47	74	67	76	75
Very Good	34	30	44	39	39
Good	25	20	24	33	37 + 1 *
Fair	17	20	24	25	36
Poor	01	01	02	02	02
Total	124	145	161	175	190

* Provisional

8.7 Incentives through the MoU system

8.7.1 Linkage with PRP (financial):

MoU performance evaluation is one of the basic criteria for Performance Related Pay (PRP). The signing of MoU by the CPSEs with their parent Ministries/ Departments/ Holding Companies has been made mandatory for making them eligible for performance related pay/variable pay. The MoU rating forms one of the basis of PRP, with all the key result areas identified in the MoU. The PRP is payable at 100% eligibility levels in case the CPSE achieves the MoU rating as "Excellent". In respect of "Very Good", "Good" and "Fair" MoU ratings, the eligibility levels for PRP would be 80 %, 60% and 40% respectively. If the MoU performance of a CPSE is rated as 'Poor', it is not eligible for PRP irrespective of the profitability of the CPSE

8.7.2 Excellence Awards under MoU system (non financial)

CPSEs are eligible for non-monetary incentives in the form of MoU Excellence Awards. The total number of MoU Excellence Awards are 12 (one from each of the 10 Syndicate groups, one from the best listed CPSEs, one from amongst the sick and loss making enterprises on way to turnaround). All other 'Excellent' performing CPSEs get MoU Excellence certificates.

The basic principles followed for selection of CPSEs for MoU Excellence Awards and Certificates from amongst the Syndicate groups are:

- The profit of the CPSE in the year should be higher compared to the previous year.

- (ii) It should not be a loss-making enterprise.
- (iii) The composite score of the CPSE should not be more than 1.5 (Excellent rating).

Award is given to the CPSE which has shown exceptional performance on MoU and has the lowest MoU composite score in the respective Syndicate Group. In case two or more CPSEs score the same MoU composite score in a Syndicate Group, the CPSE recording the highest growth rate of net profit over the previous year is eligible for the excellence award.

For the category of Excellence Awards for Listed CPSEs, the condition is that the percentage

growth in the market capitalization exceeds the percentage growth in Sensex of the Bombay Stock Exchange. The listed CPSE with the highest percentage growth in market capitalization is eligible for this award.

For Excellence Awards for Sick and Loss making CPSEs on way to turnaround, the conditions are that the CPSEs should have earned profit before tax for the year of the MoU under consideration as well as during the immediately preceding financial year, to ensure that the turnaround is on firm ground. The CPSE having the lowest composite score is eligible for the excellence award.

Chapter 9

Research & Development

The competitive and challenging business environment demands continuous up-gradation and development of products, processes and services for sustained growth. Research and Development (R&D) contribute substantially towards achieving these goals. In the face of rapid technological advancements, various products and services have a very short product life cycle.

R&D, in this respect, helps phase out products (& services) through introduction of new designs and technologies and improvement in quality.

While a number of CPSEs have in-house R&D facilities, the others have gone for sponsored research through collaboration with Universities and reputed R&D institutions. Sponsored research is cost effective proposition for CPSEs which cannot afford to incur expenditure on in-house research. There is also a greater awareness of Intellectual Property Rights (IPR) and ‘patenting’ of new knowledge gained and discoveries made in the process of R&D.

The National Research Development Corporation (NRDC), a CPSE, is actively engaged in promoting, developing and commercializing technologies, knowhow, patent and processes generated through national R&D institutions, thus helping individual enterprises and institutions acquire IPR/ Patents for commercial use.

Technological collaboration with leading companies of the world has been another approach adopted by CPSEs for upgrading their technological know-how.

The other important aspects of R&D relate to execution of development projects which among others involve end user involvement in commercialization of indigenously developed product / technology, suitable empowerment / incentivisation / funding specially for capital intensive R&D in infrastructure like power sector, strengthening R&D infrastructure including prototype development, engaging experts

at considerations other than price in knowledge/ competency gap areas etc.

9. Research & Development activities in CPSEs

The different R&D activities being carried out by various CPSEs in the different groups of manufacturing and services sectors are explained briefly in the following paragraph.

9.1 COAL

9.1.1 Central Mine Planning & Design Institute Ltd. (CMPDI)

Central Mine Planning and Design Institute (CMPDI) is the nodal agency for coordination and monitoring of S&T and R&D projects. Coal research related to the following broad areas are generally being carried out:

- (i) Production, Productivity and Safety
- (ii) Coal Beneficiation and Utilization
- (iii) Environment and Ecology

A total of twelve R&D and S&T projects were completed during 2013-14. These projects are related to underground mine communication (Integrated communication system to communicate and locate trapped underground miners), Development of tribo-electrostatic separator (for beneficiation of high ash Indian coking coals), estimation of Green House Gas (GHG) emissions in mine fire areas, effective utilization of low rank and low volatile high rank Indian coking coal, analysis of in-situ stress for CBM exploration in Jharia coalfield, Feasibility study of High Angle Conveying(HAC) system in opencast coal mines and development of a notch cutting machine to facilitate construction of stoppings in underground coal mines, etc.

9.1.2 Coal India Limited (CIL)

A multi institutional funded (UNDP/GEF, CIL and MoC) demonstration research project on “Coal

Bed Methane Recovery and Commercial Utilization” has successfully concluded at Moonidih underground project, BCCL with encouraging results. The gas recovered under this project is almost 98% pure methane, which is being utilized to run gas based generators to supply electricity to Moonidih mine residential colony.

Significant improvement has been achieved in both “coking and non-coking coal washing” and “recovery of fine coals”. Encouraging results have also been obtained from research related to “combustion techniques” for effective utilization of high-ash coals. Major R&D projects on fine coal beneficiation are under implementation through CIL R&D funding.

While some research projects have produced tangible impact on the industry directly, there are others, which have strengthened mine planning, design and technical services required by both operating mines and future mining projects.

A number of research projects has been taken up in the area of environment and ecology to integrate coal mining activities with ecological conservation and hazards due to mining. The findings of these research projects have made a significant impact on the industry resulting in the adoption of proper environment control. Efforts to delineate unstable working below Howara Dhanbad Railway line (Eastern Railway Main Line), stability analysis by numerical modeling and possible remedial measures for stabilization of railway line have been made successfully with CIL R&D funds. Programmable Logic Control(PLC) based monitoring & control system has been successfully designed, developed and introduced in an underground mine of CIL duly approved by DGMS through another research project funded by CIL R&D Board.

New areas, like application of robotics and latest two-way communication systems for rescuing miners trapped in underground mines, Coal Bed Methane (CBM) / Coal Mine Methane(CMM) / Abandoned Mine

Methane (AMM) recovery and utilization, utilization of low rank low volatile high rank Indian coking coals, numerical models to address strata control problems for appropriate solution, safe dragline dump profiles for varying geo-mining conditions, Green House Gas(GHG) emissions in mine fire areas, treatment of acid mine water generated in Indian coal mines, roof fall prediction in underground coal mines, dry coal beneficiation, development of integrated dumper collision avoidance system for opencast mines, assessment of shale gas Gondwana basin with special reference to CIL areas are being addressed through on-going research projects with CIL R&D fund.

An indigenous tool for carrying out the job of random sampling and testing of explosives and accessories for mines of CIL has been developed by CMPDI in association with IIT, Kharagpur through CIL R&D project.

A research project under S&T grant of Ministry of Coal regarding delineation of barrier thickness against waterlogged workings in underground mines has been completed. In this project, a Ground Penetrating Radar (GPR) was developed. After making field trials it was observed that the GPR developed is capable of detecting anomaly in barrier thickness up to a distance of 60m.

A research project under S&T grant of Ministry of Coal related to mine communication has been completed at one of the underground mine of CCL. This consists of Through-The-Earth (TTE) one way messaging system and two way voice communication and tracking system. The integrated system is now being used with digital wireless telephones in Bhurkunda mine of CCL.

9.1.3 Neyveli Lignite Corporation Limited

Centre for Applied Research & Development (CARD), the in-house R&D centre of NLC has successfully completed five R&D project activities.

A Memorandum of Understanding (MoU) was signed on 28th Mar'14 with Indian Institute of Technology, Madras for a joint research consultancy project "Delineating of buried sub-surface objects, hard bands in open-cast mines". The study aims to find buried objects in mines using Ground Penetration Radar technology.

CARD has been granted accreditation for chemical and mechanical testing by National Accreditation Board for Testing and Calibration Laboratories (NABL). The Accreditation has been granted for a period of two years from 17th December, 2013 for projects on Clean Coal Technologies.

NLC has identified the potential of fly ash as a pozzolanic material and ways and means for gainful utilisation of fly ash. It has also identified the potential use of bottom ash in construction activities as a substitute for sand by 50% and has entered into an MOU with VIT University to undertake a study. The joint research has yielded positive results, proving that bottom ash can replace sand in cement mortar and cement blocks. Based on research experimental building has been constructed in Neyveli using bottom ash.

9.2 ELECTRICITY

9.2.1 NHPC Limited

R&D activities carried out by NHPC in FY 2013-14 are as follows:

- i. **Development of material having high abrasive strength for Spillway, Glacis etc.** - This research work was conducted with the help of National Council for Cement and Building materials (NCB) Ballabgarh for the development of new concrete that offers high abrasion resistance due to high velocity flow of silts and boulders on hydraulic structures like spillways and glacis.
- ii. **Development of procedure for onsite repair of EHV transformer (up to 400kV) at power station:** - In present practice the EHV transformer have to be carried to the factory manufacturers

for repair which is time consuming. A complete procedure in detail has been formulated for onsite repair of EHV transformer at Teesta-V power Station.

- iii. **Development of Shaft seal for Silty Water for machines.-** A shaft seal assembly has been fabricated and installed at Chamera-II power station. This modified shaft seal of hard resin material with four segments of wearing and movable rings of stainless steel having an increased life shall decrease downtime, increase efficiency, ease of maintenance with reduction of maintenance cost and savings on spares of shaft seals.
- iv. **TLDP-III Power Station: Modification in Shaft Seal arrangement and cooling water system**

Originally, the shaft seal of TLDP-III power station was made from "Phenolic resin with fine wave cotton fabric". The shaft seal made of this material was not adequate for use in prevailing high silt condition as the shaft seal cooling water was being taken from river. The shaft seal used to erode in only a few days of operation which lead to repeated outages of machines and consequent loss of generation.

After modification in shaft seal design, use of better material for shaft seal and provision of clean water for cooling of shaft seal system, no breakdown due to erosion of shaft seal has occurred till date. The modifications carried out in shaft seal have enhanced the life of shaft seal and prevented frequent failure of the same.

Chamera-II Power Station: Modification in Shaft Seal arrangement and cooling water system

The shaft seal of new design has been installed in Annual Maintenance 2013-14 and operating since then smoothly. The new shaft seal is expected to have lower rate of wear and hence enhance the life of seal.

9.2.2 NTPC Limited

NTPC Energy Technology Research Alliance (NETRA), the research & development wing of

NTPC focuses on areas of efficiency & availability improvement; cost reduction; renewable and alternative energy source; climate change & environment protection; and providing scientific support to utilities.

Research Advisory Council (RAC) of NETRA comprising eminent scientists and experts from India and abroad is in place to steer research. Scientific Advisory Council (SAC) with Executive Directors as its members provides directions for undertaking specific applied research projects aimed to develop techniques in power plant for efficient, reliable and environment friendly operation with emphasis on reducing cost of generation. The meetings for both these Advisory Councils were held periodically.

To enable efficient operations, many projects/activities have been undertaken like waste Flue gas based air conditioning system for control rooms at Ramagundam, Computational Fluid Dynamics (CFD) modeling based plant improvement in boiler and CW system for increasing efficiency and reducing auxiliary power consumption, robotic inspection of boiler pressure parts, PDC-RVM based expert system for transformer condition monitoring etc. Development of many in-house products/technologies is in advance stage like NETRA e Power Plant Solution (NePPS) based on Artificial Intelligence Software for real time plant performance monitoring, optimization & diagnostic, Flue gas utilization for pH reduction of re-circulating ash pond water at Ramagundam etc.

Some state-of-the-art facilities established for condition monitoring and diagnostic techniques include frequency scanning eddy current system for evaluation of coating on gas turbine blades; portable automated ball indentation for evaluation of in-situ mechanical properties; eddy current array, Time of Flight Diffraction technology for rapid, reliable, accurate inspection of weldments of high pressure and high temperature pipeline and headers, Energy Dispersive X-Ray Fluoresce, Frequency Domain Spectroscopy, Simultaneous Thermal Analyzer, Particle Counter (NAS Value) etc.

NTPC has inked an umbrella MOU with Indian Institute of Science, Bangalore to promote research in

CFD, renewable, water chemistry, ash utilization etc. An agreement has been signed with KFW, Germany for setting up of (i) Advanced Test and Qualification Centre for Concentrating Solar Thermal Technologies with DLR Germany (ii) Advance pilot test setup for 91kwpc concentrating solar PV and PV characterization test lab with ISE-Fraunhofer, Germany.

NETRA laboratories are accredited as per ISO 17025 and its NDT laboratory has also been recognized as “Well known Remnant Life Assessment Organization” under the Boiler Regulations, 1950.

Phase-II NETRA infrastructure is under construction with approx 21,000 sq m floor area and is expected to be completed in FY 2014-15. Phase II will have 30 laboratories, workshop, pilot plant bay and an auditorium with seating capacity of 400 persons.

9.2.3 Power Grid Corporation of India Limited (PGCIL)

PGCIL, since inception, has given special emphasis on integration of new technological products/services for enhancing performance of transmission system as well as improving the quality of power supply while optimizing the cost of transmission.

POWER GRID has been at the forefront in adoption of state-of-the art technologies for improving the efficiency in power transmission and for overcoming the challenges associated with establishment of high capacity power transmission corridors and the National Grid.

POWER GRID has an R&D advisory board comprising of eminent experts in power sector from India and abroad. The board gives directions and advises on the new technological areas to be taken up for application research.

A few of Ongoing Initiatives are:

- i. **1200 KV Ultra High Voltage AC** - Presently one of the key focus areas of R&D is in the adoption of higher voltage levels for power transmission. The 1200kV UHVAC technology,

the highest voltage level in the world, has been developed indigenously in collaboration with 35 Indian manufacturers under Public Private Partnership (PPP) and 1200kV UHVAC National Test Station at Bina, Madhya Pradesh has been established for the same. In the test station, 1200kV Single Circuit (S/c) and Double Circuit (D/c) test lines was successfully test charged along with one 1200kV bay, which includes one 1200kV/400kV 1000MVA auto transformer bank.

- ii. **Designing and developing transmission line towers:** These are being used in transmission systems of various voltage levels. The optimized design of towers has resulted in reduction in right-of-way requirement and cost of constructing towers. 1200kV tower designs were also carried out in house and patent application has been filed for the 1200kV Single circuit tower (Type-A).
- iii. **Super Conductor Technology-** A demonstration project on High Temperature Superconductor (HTS) cable system, for assessing the feasibility and operational issues has been initiated recently.

9.2.4 SJVN Limited

The specific areas in which R&D was carried out during 2013-14 are as follows:

- i. **Scheme-1: Study of Wind Power Potential and appropriate technology for setting up of wind Power Project in SJVN project location through MNRE designated institutes.**
The work assigned to CWET (Centre for Wind Energy Technology, an autonomous Research & Development institution under Ministry of New and Renewable Energy, Govt. of India) was completed and the report submitted. C-WET concluded that based on meso-scale derived results the proposed sites are not good for utility scale wind turbines due to minimum wind potential around the proposed locations.
- ii. **Scheme-2: Analysis of bubble formation phenomenon in outfall structure of NJHPS**

for causes of occurrence, type of gas and its effects on the structure.

The findings were considered by the Committee and found logical for the phenomena of bubble formation observed in outfall pond of Nathpa Jhakri Project.

- iii. **Scheme-3: Study of installation of suitable monitoring/inspection equipment inside lined water conducting system to monitor the performance of lining without dewatering.**

The work was awarded to NCCBM, Ballabgarh and final report has been submitted to SJVN. The report contains information regarding instruments which are available for monitoring and inspection of the performance of the lining of water conductor systems during O&M stage without dewatering.

- iv. **Scheme-4: Identification, testing and subsequent Field trial for Tungsten Carbide powders for HVOF hard coating**

Scheme-5: Monitoring of Glacial Lakes and Water Bodies in Satluj Catchment

vi. Scheme-6: Continuation of study on High Strength and Self Compacting Concrete

vii. Scheme-7: Study the efficacy of expansion system type accumulators to counter pulsations in secondary cooling water system of the generating units in NJHPS.

To evaluate the R&D initiatives taken during FY 2013-14, SJVN constituted a Research Advisory Committee (RAC) to assess the implementation of R&D works. The committee was engaged round the year and reviewed the quarterly progress on R&D works being undertaken by SJVN. At the close of FY-2013-14, Committee evaluated the achievement of various targets and concluded that all the projects were successfully completed under “Excellent” category in collaboration with renowned research Institutes like CWET, NCCBM, and SIIR etc.

9.2.5 Nuclear Power Corporation of India Limited (NPCIL)

NPCIL has a Directorate of Technology Development (DTD) working on four verticals of (i) R&D Facilities (ii) Remote Tooling (iii) Indigenization (iv) Construction time minimization.

During the year 2013-14 following activities were carried out by DTD:

- i. **R&D Facilities:** Post-Fukushima related safety enhancement and 700 MWe PHWR safety systems development and studies related to Containment Spray System, Containment Filtered Venting System and dry environment testing of catalytic Hydrogen Recombiner units took place. PARTH facility for BARC executed by NPCIL was inaugurated by Nov 2013.
- ii. **Remote Tooling Related:** (i) Triangular Block Cutting Laser tool for RAPS-3 developed & tested at R&D Centre mock up facility. (ii) Laser based technique for window cutting & slitting developed for steam generator inspection / ease of tubes removal. (iv) BARCIS channel inspection training and coordination done for TAPS-3 and K-04 at Kaiga-1. (v) Various types of steam Generator inspections/debris removal procedures carried out for a total of 17 SGs at 5 operating units.
- iii. **Indigenization:** Critical heavy Steam Generator forging successfully developed first time in the country at NPCIL under JV with LTSSHE. Electrical Penetration Assemblies, Platinum clad Self Powered Neutron Detectors, Dummy Cobalt Absorbers and heavy duty roller bearings have successfully developed.
- iv. **Construction time Minimization:** Pump Room Floor and Implementation of Preformed Ring Liner (50m dia by 5 m height) modules developed and implemented at KAPP-3,4 700MW project as part of Modular Construction.

9.3 CRUDE OIL & GAS

9.3.1 Oil and Natural Gas Commission (ONGC)

Specific major areas in which R&D was carried out are:

A. In area of Exploration

- Understanding structural controls of accumulations in Cachar-Tripura-Mizoram Fold Belt through 'move' and 'TrapTester' based analysis.
- High Characterizing source rock organofacies of a few key exploratory wells of Krishna Godavari Basin by detailed pyrolysis, maceral and kinetic studies.
- Studies on Quantum Resonance Interferometry (QRI) with M/s Vialogy, USA.
- Multi Component 3D-3C API Project for assimilation of technology.
- J-function based saturation height modelling for Bassein Pay of Northern part of Heera field.
- Field implementation of technology of Bioremediation of oil effluent of 4 pits of # KSAC, 4 of # KPAD and 16.3 MT of 1 oil contaminated soil site of #ELAA of A & AA Basin.
- Reactivation & preservation of microbial consortia for field implementation.

B. In area of Offshore Production

- Gas hydrates :Studies of heat flow characteristics of gas hydrate bearing sediments; Studies of the physical properties of gas hydrates & cost influencing factors with respect to the production of gas from gas hydrated reservoirs.
- Structural Engineering :Ultimate strength analysis & Structural integrity analysis of offshore platforms were carried out.
- Materials & Corrosion Section :Analysis and optimization of cathodic protection of jacket of offshore platform.
- Geotechnical Studies :Analysis & Design of Foundation systems for offshore wind farms

C. In area of Onshore Production

- In Mehsana Asset, open hole GP (Gravel Pack) completions in 8 ½” and 12 ¼” holes was done in Lanwa (1 well), Bechraji (3 wells) and Santhal (5 wells) fields which has resulted in oil gain. This reduces drawdown and restrict preferential movement of water due to adverse mobility in heavy oil fields.
- Sandface chemical dozing is being done for improved flow assurance in Mehsana Asset to produce heavy viscous crude oil from heavy fields with encouraging results.
- Switched over lift mode from Sucker Rod Pumps (SRP) to Progressive Cavity Pumps(PCP) for lifting of viscous and heavy oil effectively from wellbore in Mehsana Asset.
- Plunger lift commissioned successfully in 5 wells in Kalol field, Ahmedabad Asset for improving productivity of intermittent gas lift wells.
- Microbial Enhanced Oil Recovery (MEOR) job was implemented in 2 wells each Rig-less and With rig in Lanwa field under joint co-operation with IRS and OTBL.
- Rational deployment of CHFR logs (Cased Hole Formation Resistivity) and RMT logs (Reservoir Monitoring Tool) for exploitation of un-drained and by-passed oil from wells in matured fields of Mehsana Asset has paid rich dividends. During the last 3 years, 97 such jobs were carried out with substantial oil gain.
- Pilot project of Bi-fuel technology was implemented in Rajahmundry Asset, for utilization of associated gas from the cluster well to run drilling rig power packs (in other cluster well) thereby also avoiding gas flaring.

D. In area of Drilling

- Formulation of drilling fluid for HPHT application with different weighing material for enhancement of reservoir productivity due to non -damaging characteristics of drilling fluid.
- Feasibility study of using oil field effluent for preparation of mud and brine.

- Evaluation of mud chemicals in clay free mud system.
- Optimization of KCl percentage in KCl-PHPA-Polymer-Polyol mud system for reduction in complications like stuck up and bit balling and thus enhancement in drilling performance and saving rig time.
- Devising a suitable mud system with lower mud weight to drill the depleted formation of Gandhar Field to avoid formation damage as much as possible.
- One dimensional geo mechanical model and well bore stability for C-24 and B-12 cluster fields.
- Borehole analysis of problematic wells in Tapti-Daman area, CK and B-170 areas.
- Designing of cementing system for In-Situ Combustion wells of Mehsana to provide effective isolation of shallow aquifers.
- Field Implementation of Rapid Setting Material to meet the challenges of water shut off as well as severe mud losses in two wells (Viz. N-12#32 & HG#6H) of Mumbai Asset
- Field implementation of Weighted Spacer in oil well cementation with indigenous chemicals in two wells (#RODJ and #SDAE) of Agartala Asset.
- Baryte free non-damaging drilling fluid for drilling of fractured/Low permeability Rohtas limestone of Vindhyan basin (Sone valley) in well RDMA #6.

E. MoUs, Alliances & Collaborations

- Collaboration with M/s Shell Global Solution Ltd. was done for designing, installing and commissioning of Acid Gas Removal Unit (AGRU) & Acid Gas Disposal Unit (AGDU) in B-193 process platform; gas being from super sour cluster of fields.
- ONGC's Institute of Engineering & Ocean Technology (IEOT), Panvel has signed an agreement for two collaborative research projects with IIT- Bombay on evaluation of sea floor stability and reservoir parameters of the hydrate bearing sediments from deep KG offshore areas.

9.3.2 Oil India Limited (OIL)

Oil India Limited (OIL) has set its R&D vision to provide knowledge based techno-economically feasible solutions in the areas of Exploration, Drilling, Production, Transportation of Crude Oil & Natural gas and Pollution Control by adopting state-of-the-art technology and caring for the environment.

During 2013-14, OIL pursued and completed the following specific R&D projects:

- Geochemical Studies of the Tertiary Formations in Murkongselek area, North Bank.
- Geochemical Studies of the produced oils from Langpar formation of Barekuri Area
- Reservoir Fluid Identification Through Geochemical Analysis of Sidewall Cores
- Biodegradation Pattern Of Oils from Makum and Hapjan Fields in Assam
- Surface Geochemical Exploration Using Adsorbed Soil Gas Method
- Downhole Chemical Injection Through Gas Lift Lines To Mitigate Wax
- Deposition Problems In The Production Tubings And Flow Lines
- Investigation on dissolution of tank bottom sludge using environment friendly ionic liquids (collaborative project with IIT-M, Chennai)
- Novel method for remediation of wax deposition in oil wells
- Development of bactericides and field monitoring for effective SRB control
- Study and control of scale formation at various field locations
- Screening of entophytic fungi having biofuel generation potential from biodiesel plants of Assam
- Studies on Interfacial Properties, Wettability Alteration and Rheological Behaviour of Nano-particle Stabilized Micro-emulsions for its use in Enhanced Oil Recovery
- Laboratory and Simulation Study for Feasibility of Alkaline Surfactant Polymer (ASP) / Surfactant

Polymer (SP) / Alkali Surfactant (AS) Flooding in OIL's Reservoirs

- Petroleum system modeling of Upper Assam Basin.
- Modelling of East Godavari sub-basin, KG Basin
- Completed unconventional hydrocarbons prospects study of Upper Assam Basin and identified the shale horizons with encouraging potential for shale oil.

R&D efforts of OIL have resulted in operational advantages in many critical areas of its day to day operations. During the year 2013-14, three patents applications were filed.

9.3.3 Gas Authority of India Limited (GAIL)

GAIL recognizes that R&D shall play an important role in the company's quest to remain competitive. The R&D activities are divided into identified thrust areas with focus on developing high-impact innovative technologies that unlock new energy sources, improve efficiency of existing operations, and value-addition of products. In addition, few projects are also being pursued on CO₂ utilization to reduce carbon footprint.

GAIL pursued over 25 projects during 2013-14 in collaboration with reputed Engineering Institutes and CSIR Laboratories. GAIL filed 03 Patent applications in FY 2013-14.

Some of the Projects that were completed during the year are:

- i. Land Fill Gas Project : A unique first-of-its-kind Project in India on capturing Land Fill Gas (LFG) from an active Landfill Site at Ghazipur, Delhi, was completed in May'2013 and about 125 M³/Hr of LFG is being extracted with about 25% methane content. The LFG is being flared which leads to conversion of methane to CO₂. As methane is 25 times more harmful than CO₂ in causing Global warming, therefore flaring causes reduction in GHG emissions thus making this Project eligible for carbon credits under the Clean Development Mechanism (CDM). The

Project has been registered with UNFCCC and has been successfully Validated by UNFCCC accredited Designated Operational Entity (DOE). GAIL shall get Carbon Emission Reduction (CER) Units based upon the actual quantity of Methane destruction in the 1 year period ending Apr'15 thereby making this as the 1st Project in GAIL to get carbon credits.

- ii. A novel hybrid nano-composite material which exhibits 6.7 wt% hydrogen storage successfully surpassing the 6 wt% target set by Department of Energy (DOE), USA was developed (As per DOE, a storage capacity of over 6 wt% is required for successful commercialization of Hydrogen usage). The next phase of the Project for demonstration of the Hydrogen storage for use in PEM Fuel Cell is now being pursued.
- iii. A new Polymer grade (T50A010) suitable for making Tarpaulin, Mosquito-net, Fishing-net was developed. This Polymer grade was launched in June'13 and has been well received in the market.
- iv. Other important projects pursued during FY 2013-14 are as follows:
 - Development of Adsorbent for storing natural gas at low pressure.
 - Development of novel Nano-Composite materials for Hydrogen storage.
 - Development of a Pipeline Health monitoring Robot.
 - Preparation of Basic Design & Engineering Package for setting-up of a "Pilot plant for conversion of Waste Plastics to Hydrocarbons" for validating the results obtained on bench-scale.

- Development of Wireless Sensor Network to transmit Pipeline data to improve the reliability in monitoring of spur lines.
- Use of Remote Sensing & GIS Technology for monitoring Pipeline RoU
- Development of low cost sensor for Natural Gas.

9.4 PETROLEUM

9.4.1 Bharat Petroleum Corporation Limited (BPCL)

Research and development (R&D) is an integral part of BPCL's strategy for achieving sustainable growth and profitability. To enhance R&D capabilities, BPCL is continuously strengthening the infrastructure and manpower resources at its Corporate R&D Centre, Greater Noida, UP as well as at its Product & Application Development Centre, Sewree, Mumbai and the R&D centre at Kochi Refinery, Kochi. All these in-house R&D Centers are recognized by the Department of Scientific & Industrial Research (DSIR), Ministry of Science and Technology, Govt. of India.

During 2013-14, BPCL has taken the initiative to commercialize products developed in-house and implement R&D inputs for process improvement. Other steps taken for promotion for R&D are as follows:

- i. Continuous monitoring of R&D projects by a research council comprising of Director (Refineries), Director (Marketing), Academic expert and all the business heads and headed by Independent Director of the Board.
- ii Continued Research Collaborations with a number of premier research institutes, and universities. Some major collaborations and related projects are given below:

Research Collaborations by BPCL

S.No.	Collaborator(s)	Project
1	IISc, Bangalore	Development of Cutting Fluid "Tribology of Oil in Water Emulsion"
2	EIL, New Delhi Partly funded by CHT/OIDB	Coal/petroleum residue to clean liquid fuels

3	Tamil Nadu Agricultural University (TNAU), Coimbatore	Production of Biodiesel from micro algae
4	Funded by Department of Biotechnology	Development of process for bio-butanol from cellulosic biomass
5	IIP Dehradun	Development of Kero-Merox catalyst Feasibility studies on Bio-ATF production

- iii. Filed 8 patents in India and abroad for protection of IPR for the novel products/ processes developed at R&D as a part of ongoing R&D efforts, 3 patents have been granted during 2013-14.
- iv. Initiated steps to demonstrate and commercialize in-house developed R&D product and processes e.g. bio-fuel processes on biodiesel, bio-butanol, co-processing of vegetable oil in DHDS unit and corrosion inhibitor used in CDU overhead columns
- v. Initiated process feasibility study in association with IIP Dehradun for the production of Bio ATF from vegetable oils at Kochi Refinery.
- vi. Joined collaborative research program with Royal Melbourne Institute of Technology, RMIT, University of Melbourne, CSIRO Australia, IIP-Dehradun, IIT-Roorkee on Mini-DME project sponsored by DST, Govt. of India under Australian India Strategic Research Fund program
- vii. Joined international consortium led by Norwegian University of Science and Technology (NTNU), Norway on studies on Environmental due diligence on CO₂ capture and utilization technologies.

9.4.2 Chennai Petroleum Corporation Limited (CPCL)

The major R&D projects undertaken in 2013-14 include:

1. Extraction studies on the effect of co solvents with NMP for production of LOBS
2. Pilot plant studies for the production of Food Grade Hexane by hydrotreating route
3. Performance evaluation of Co catalysts for FCC unit

CPCL R&D has also initiated a collaborative research program on “Algae to Biofuels” with Aban Infrastructure Pvt. Ltd. Initial studies were carried out with Microalgae from Saline and Fresh water sources. The Biocrude obtained from Hydrothermal Liquefaction from Algae was blended with Narimanam crude for carrying out TBP Distillation and characterization of the products from Biocrude blend. A patent application has been filed for the biocrude production from Microalgae.

CPCL R&D has initiated a Research Fellowship at National Centre for Catalysis Research, IIT Madras for Development of Catalyst for Isomerisation process.

9.4.3 Hindustan Petroleum Corporation Limited (HPCL)

HPCL Research & Development is envisaged to provide support to the Refineries and Marketing divisions for potential improvement, absorption of new technologies, developing innovative & path breaking technologies, license technologies and support external organizations and develop over long term into a knowledge hub.

To realize this objective HPCL is putting up a R&D centre at Bengaluru with an investment of ₹ 312 Crore and this centre will be involved in carrying out Research & Development activities in refinery technologies, nanotechnology applications and also bio-fuels. The project is being executed in a phased manner.

HPCL R&D has also undertaken collaborative R&D projects with various premier institutes like IIT-Delhi, IIT-Bombay, IIT-Madras, IIT-Kanpur, IISc-Bangalore, TERI-New Delhi, CIMFR Dhanbad, GITAM University-Visakhapatnam, Jawaharlal Nehru Centre for Advance Scientific Research (JNCASR)-Bangalore,

Poorna Prajna Institute of Scientific Research (PPISR) and Thapar University, Punjab. The areas of research undertaken are related to Process intensification, Nano Catalysts, CO₂ Capture & Utilization, Hydrogen production, purification & storage, Residue up gradation, improved Lubricants, Bio Fuels development and Development of catalysts for Refinery processes. HPCL is also the industrial partner in the Indo-US Joint Clean Energy Development Centre Consortia Projects on Bio Fuels and Solar Energy.

The highlights of various activities carried out by HPCL's Marketing R&D during the year 2013-14 are given below:

- Engine oil meeting MB 229.5 specifications
- HP no 1 – meeting latest international standards (CJ 4)
- Engine oil 5w 50 for defence Arjun Tanks, gear oil 75W 90 & 80 W
- Mast lubricant (hydraulic oil) for defence
- Long life gear oils for TATA motors
- Synthetic gear, compressor, hydraulic oils for core sector
- JASO MB oils for scooters
- Low vis oils for modern cars (0W, 5W)
- Rolling oil for blade steel rolling mill
- Lithoplex & Limaplex HTX-high temperature greases for core sector-process improvement
- Lithon LL – long life grease for automotive bearing application & traction motor bearings of Indian Railways
- Chain compound
- Rock breaker copper paste grease for HEMM
- Engine oil CH-4, CH-4 in 10W 30 and 10W 40 viscometrics for army
- Ecofriendly component process oils

9.4.4 Indian Oil Corporation Limited (IOC)

During the year 2013-14 IOC - R&D made significant progress in the demonstration and commercialization of some of the technologies developed in-house. The IndMax technology developed in-house

is being actively considered by refineries of other Oil Companies besides the 4.17 million tonnes per annum IndMax unit at its own upcoming Paradip Refinery.

IOC's R&D Centre developed a process "OCTAMAX" for up-gradation of C₄ hydrocarbons from refinery LPG stream to high-octane gasoline blending stock.

IOC R&D's Bio-Energy Research Centre signed an agreement with M/s Lanzatech, USA to develop a micro-algae technology that entails development of CO₂ to acetate to lipid pathway.

IOC's continuous research efforts in Lubricant technology lead to development of new formulations of low-viscosity and energy-efficient lubricants which in turn helped in expanding its OEM approval. IOC developed 130 new lubricant formulations during the year and obtained 48 product approvals from Original Equipment Manufacturers (OEM)/Customers /Defense.

During the year 54 patent applications were filed (25 Indian and 29 Foreign) and 11 patents (1 Indian and 10 foreign) granted. With this, IOC has 292 active patents in its name as on 1st April 2014 including 65 registered in US.

9.5 OTHER MINERALS, METALS and MATERIALS

9.5.1 MOIL Limited (formerly Manganese Ore India Limited)

The company has carried out R&D activities to improve the safety and productivity in the mines by introducing modern technology with support of national and international reputed academic and research institutions such as :

- (a) Indian School of Mines (ISM), Dhanbad has been engaged for designing of mechanized stopping method at Ukwa Mine for safety and productivity improvements.
- (b) Single boomer electro-hydraulic crawler mounted drill machine has been introduced at Balaghat

mine for heading development and blasting studies are conducted by Indian Institute of Technology (IIT), Kharagpur for safe blasting parameters.

- (c) National Geophysical Research Institute (NGRI), Hyderabad has been engaged for Geo-physical prospecting by Gravity-Magnetic method for exploration of manganese ore reserves / resources in 11 granted prospecting license areas in Maharashtra State.
- (d) National Institute of Technology (NIT), Rourkela is carrying out R&D studies for slope stability and monitoring by rock mechanics instruments at DongriBuzurg mine for improvement in safety.
- (e) For alternative fuel against Diesel in ANFO, blasting studies has been conducted at Dongri Buzurg mine with CSIR-CIMFR, Dhanbad.
- (f) In house R&D effort on experimental basis for alternative source against the sand as a fill material was conducted by technical department for use of bottom ash as a filling material for consolidated hydraulic stowing at Ukwa mine.

9.5.2 National Aluminium Company Limited (NALCO):

The detail of the in-house R&D Activities are as under:

A. Alumina Plant

- 1. Studies to establish suitable source and optimum parameters for extraction of Vanadium sludge from various Bayer Liquors. Lab scale studies completed. A pilot trial using the existing facilities available in zeolite Plant is underway.
- 2. Laboratory scale flocculant trials were carried out with various sources of supply to find out an alternate synthetic flocculants to replace Wheat Bran, the natural flocculant, presently in use in the conventional Washers.
- 3. Laboratory scale studies were carried out along with the suppliers of various flocculants for use in High Rate thickeners and Deep cone

washers of new stream (Taken up as and when required).

B. Smelter Plant

- 1. Studies for improvement of quality of raw materials to carbon plant
- 2. Anode bench scale studies for anode quality improvement
- 3. Metallographic studies of cast products and inclusion analysis of liquid metal ,for quality improvement
- 4. Fully fledged use of Slotted anodes and anodes with higher stub hole depth in pot line
- 5. Trials undertaken for reduction of dross generation by application of flux
- 6. First phase trials undertaken for production of cookware from rolled aluminum sheets.
- 7. Mathematical model developed for estimation of Anode to cathode distance in electrolysis cells
- 8. Laboratory scale and plant scale studies undertaken to modify the properties of c.p.coke at supplier's end to improve anode quality. Patent filed on the process.
- 9. Project initiated for implementation of siphon system of liquid metal transfer in cast house to reduce melt loss.
- 10. Liquidus temperature measurement commenced in potlines.
- 11. Simulation studies carried out for newly designed wedges implemented in potlines.
- 12. A project titled 'Assessment of 6063 billet quality' completed.

The detail some of the collaborative R&D Activities are as follows:

- 1. Development of Heat Treatment Process for Destruction of Toxic Cyanide and Recovery of Valuables (Sodium, Fluorides, etc. from Spent Pot-Linings Materias (SPL).
- 2. Development of metal matrix composites.

3. Technique and Tools for Perfluorocarbons(PFC) Measurements in Aluminium Electrolysis Cells.
4. Development of Probe for liquidus temperature determination of Electrolytic bath.
5. Detailed study in melt loss generation and derive solution for reduction of melt loss-completed.
6. Study of Effect on Alumina quality on solubility of Electrolytic bath.
7. Assessment of billet quality in DC cast AA6063 alloys.
8. Development of High speed extrusion alloy for the Indian Aluminium industry.

9.5.3 Indian Rare Earths Limited (IREL)

Specific areas in which R&D was carried out by IREL are as under:

1. **Electrostatic separation of minerals:** Modification of high tension roll separators and electrostatic plate separators were carried out and put into use for production of monazite, thereby eliminating the need for air-tabling and froth flotation operations. Also, sillimanite was successfully trial produced without froth flotation operation. Two international patents were filed.
2. **Rare Earth separation:** Solvent extraction operation using PC88A solvent was optimized on pilot plant scale and process flowsheet was developed to increase the plant capacity and to decrease the number stages required to produce high purity separated rare earths.
3. **Rare Earth metal production:** Process for Neodymium (Nd) metal production using induction furnace and Samarium (Sm) metal production using reduction diffusion furnace was undertaken in BARC with high purity Nd fluoride and Sm oxide powders produced at RED, Alwaye.
4. **Value addition of ilmenite and zircon to produce high pure TiO_2 and ZrO_2 :** Solvent extraction process using long chain primary amines was developed and a pilot plant was set up at OSCOM to produce high pure TiO_2

and ZrO_2 . Based on this experience, technology demonstration plant is being set-up.

5. **Monazite processing:** R&D studies conducted at pilot plant level for processing monazite through the sulphuric acid digestion process in tonnage scale batches undertaken successfully. This process has the advantage of being economical over the conventional caustic attack process.
6. **High pure neodymium oxide:** Ion exchange process was developed for the production of Nd_2O_3 having 99.99% purity.
7. **Recovery of heavy minerals from raw sand:** Optimized flowsheet for increasing the recovery of heavy minerals including sillimanite and garnet from raw sand in the wet up-gradation plant at OSCOM was developed for implementation in the upcoming expansion project.

9.5.4 National Mineral Development Corporation Limited (NMDC Limited)

The R&D Centre functions in the following thrust areas: -

- (a) Upgradation of processing Technology of existing process plants for better productivity and meet the customer requirement.
- (b) Development of Technology for utilization of mine wastes by and convert mineral and metallurgical wastes into value added products.
- (c) To extend its expertise to in-house projects of NMDC and other domestic & foreign organizations, in the field of Mineral processing, Hydrometallurgy, Agglomeration, Bulk solids handling, Mineralogy and Chemical analysis.
- (d) Collaboration with reputed Laboratories and Research institutes (CSIR, DRDL, DMRL, MISA etc.).

The details of the works undertaken during the year are follows:

- (a) Characterization, Beneficiation, Physical and Metallurgical studies for 150 iron ore samples and detailed mineralogical and chemical studies for 42 iron ore samples of the existing projects.

- (b) Analysis of 7 samples for improvement in the processing of the iron ore at existing mines.
- (c) Complete in of the analysis of 17 sponsored works for other reputed companies.

The patents filed by the Company during the year are as under:

- Development of process for extraction of Tio₂ from Kimberlite waste (4792/CHE/2013)
- Formulation of making binder for iron ore pellets from Kimberlite waste (2405/CHE/2013)
- Process for preparation of Nano structured iron ore powder from Blue dust (5355/CHE/2013)

9.5.5 Mishra Dhatu Nigam Limited (MIDHANI)

- (i) R&D activities in MIDHANI in the year 2013-14 centered around the following:
- (ii) Commercial Scale Indigenous Development and production of various types of special metals and alloys such as low alloy steels, stainless steels, superalloys, titanium alloys as well as soft magnetic and controlled expansion alloys used for strategic purposes in defence, aerospace, power generation and other critical engineering applications.
- (iii) Implement suitable process modifications with a view to improve yield, cost reduction and minimize production time.
- (iv) Product / component development as per customers requirements
- (v) Strategic component as well as equipment indigenization for self reliance in manufacturing of critical products.

9.5.6 Hindustan Fluorocarbons Limited

- R & D Activities for the FY 2013-14 are as follows:
- HFL Polytetrafluoroethylene (PTFE) technology is very old. Hence, conversion ratio of Chlorodifluoromethane (CFM-22) to PTFE is low as compared to prevailing international standards.

- Company is continuously carrying out R&D Work to improve conversion ratio by changing various parameters in the pyrolysis section. With this development work, ratio has been improved by 5% and further study is being carried out to enhance this ratio.
- There is competition in the market for existing grades of PTFE. Hence, company has initiated the action for development of superior grades of PTFE in the existing set-up.

9.6 STEEL

9.6.1 Steel Authority of India Ltd.(SAIL)

Research & Development Centre for Iron and Steel (RDCIS) is the corporate R&D unit of SAIL. RDCIS, set up in 1972, has ISO 9001 Quality Management System Certification to its credit since 1995. It undertakes R&D projects in diverse realms of Iron & Steel Technology under the categories of Basic Research, Product Development, Plant Performance Improvement, Scientific Investigation & Design and Technical Services. RDCIS has more than 200 dedicated and competent scientists and engineers. The Centre is recognised by Department of Scientific and Industrial Research (DSIR), Govt of India as in-house R&D of SAIL.

The salient achievements during 2013-2014 are follows:

- (i) Research & Development Centre for Iron & Steel (RDCIS) has completed 50 projects. These projects provide technological inputs to SAIL plants / units with thrust on cost reduction, value addition, quality improvement and development of new products.
- (ii) The Centre filed 36 patents and 35 copyrights. As many as 93 technical papers were published and 169 papers were presented. In addition, RDCIS undertook contract research work and provided significant consultancy services and know-how to organisations outside SAIL.

In recognition of the contributions made by the Centre, RDCIS has bagged several prestigious awards

like Metallurgist of the Year, Young Metallurgist, SAIL Award, Dr M Visvesveraya Award etc.

Significant achievements of some of major completed projects, in different technology areas, are summarized below:

Cost Competitiveness / Quality Improvement

Improvement in coke quality through optimization of coal blend composition, Bokaro Steel Plant

- Optimisation of MgO in sinter operation at Sinter Plant, Bokaro Steel Plant
- Performance improvement of SMS-I, Rourkela Steel Plant
- Improvement in performance of converter by modification in lance tip design at SMS-I, Bokaro Steel Plant
- Improvement in mould material for enhanced performance of caster mould, Bhilai Steel Plant
- Development of suitable quality roof bricks for Rotary Hearth Furnace of Wheel & Axle Plant, Durgapur Steel Plant
- Improvement in lining life of soaking pit cover using new generation monolithic refractories, Bhilai Steel Plant
- Improvement in performance of Reheating Furnaces by enhancing life of discharge end slots and skid pipe insulation in Plate Mill, Bhilai Steel Plant
- Improvement in productivity & quality at Pickling Lines by modifying bath heating system at CRM, Rourkela Steel Plant
- Development of Roll Bite Lubrication system for Finishing Stands of HSM, Bokaro Steel Plant
- Improvement in productivity and quality of AP Line, Silicon Steel Mill, Rourkela Steel Plant

Automation

- Development of an expert system based temperature control system for Decarb Annealing

and Tandem Annealing Lines of Silicon Steel Mill, Rourkela Steel Plant

- Development of an automatic cut to length system for the improvement of productivity at Shearing Line-1, HRCF, Bokaro Steel Plant
- Automation of stacking conveyor network using wireless signals in old areas of RMHP, Durgapur Steel Plant

Energy Conservation

- Improvement in the operation of combustion system for Rotary Kilns of RMP, Bokaro Steel Plant
- To optimize preheating of steel ladles by modification of heating stands and on-line monitoring of shell temperature in SMS – II, Bokaro Steel Plant
- Improvement of Ignition Furnace life in all three machines of Sinter Plant, Bokaro Steel Plant
- Reduction in power consumption of Secondary Refining Units, Alloy Steels Plant

Environment Management

- Studies on control of ionic, surface and particulate properties for generic attenuation of water quality impact
- Investigative study on utilization of waste materials of SAIL Plants as an alternate material for heavy media
- Study the effectiveness of Alkaline Chlorination in cyanide attenuation of coke oven effluent, Durgapur Steel Plant

Collaborations

RDCIS has entered into collaborative agreements with different organisations for taking up joint research work in specific areas. In 2013-14, the collaborating organisations include BARC Mumbai, IIT Delhi, ARAI Pune, IOC Faridabad, CSIR- CRRI, New Delhi, Jadavpur University Kolkata, Centro Sviluppo Materiali (CSM) Italy, Deakin University Australia, IISc Bangalore etc.

9.6.2 Rashtriya Ispat Nigam Limited

Some of the salient activities undertaken are as under:

- A collaborative research project “Preparation of metallisednuggests using Iron ore fines (-5mm) & metallurgical wastes” with Jadavpur University, Kolkata is under progress.
- ‘Mathematical modeling of sintering cum pelletisation process’ is another collaborative research project taken up with IISc., Bangalore.
- Another project has been taken up with CGCRI, Kolkata on ‘Feasibility studies of enrichment of BF gas for enhancement of calorific value’.
- A collaborative project ‘Studies and development of Carbon Dioxide(CO₂) sequestration using LD Converter slag (Steel Slag) to control the Green House Effect of Carbon Dioxide’ taken up with NIOT, Chennai.
- An MoUs was signed between RINL and **McMaster University, Ontario, Canada** to collaborate and strengthen research and development cooperation between the respective institutions and partners.
- A statement of Cooperation was signed between RINL and **IC-IMPACTS, Vancouver, Canada** which is a networks of centres of excellence hosted at the University of British Columbia in order to strengthen cooperation between the corporations in the areas of infrastructure and water.
- Four applications were submitted to Patent attorney for filing.
- In addition to the studies and projects taken up internally, RINL-R&D has joined hands with premier educational institutes / research laboratories and research organizations for joint research initiatives. Collaborative projects taken up with external partners include Jadavpur University, Kolkata, Indian Institute of Science Bangalore, Central Electro Chemical Research Institute, Karaikudi, Indian Institute of Technology, Kanpur, Central Glass and Ceramic Research Institute, Kolkata, Indian Institute of

Technology, Kharagpur, Institute of Minerals and Materials Technology, Bhubaneswar and National Institute of Ocean Technology (NIOT), Chennai. These projects are at various stages of completion.

9.6.3 Ferro Scrap Nigam Limited

Fe-enrichment of Steel Scrap Fines below 10mm size has been undertaken as R&D Project in three phases. The lab studies have been completed. The final phase i.e. Experimental study on Pilot Plant for enhancing Fe content in scrap fines below 10mm size has been planned for the year 2014-15.

9.7 FERTILIZER

9.7.1 Rashtriya Chemicals and Fertilizers Limited (RCF)

Research and development is a key driver of innovation, competitiveness and economic performance. A list of the some of the R&D projects undertaken by the company during the last financial year i.e. 2013-14 are as follows:

i. Production of External Wall Plaster at Rapid Wall Plant:

RCF in collaboration with the premier institute i.e. “Institute of Chemical Technology, Mumbai” has developed External Wall Plaster from Calcined Gypsum. Calcined Gypsum is intermediate product from Rapid Wall Plant. This plaster is better than normal plaster with respect to strength, water permeability & erosion.

ii. Development of Liquid Biofertilizer for Potassium Mobilization:

New Biofertilizer with bacteria for potassium mobilization has been developed and field trials have been conducted on Rice in combination with other Complex NPK fertilizers. The product developed is named as “BIOLA-K” and is in liquid form. It can be applied through Drip as well as by Foliar Spray. Depending upon the business scenario it is likely to be commercialized by Company.

iii. Micro-propagation of Stevia Plant through Tissue Culture Technique:

Stevia is a medicinal herb which possesses the rebaudiside sugar (natural sweetener) and is low on calorie content. The protocol of multiplication of Stevia from laboratory to land has been developed. It is to standardize the propagation method for Stevia plants and make the tissue cultured saplings. These tissue culture samplings are expected to be disease free, healthy and with synchronized growth. Field trails are to be undertaken and based on the result there will be further commercialization.

iv. Development & Commercialization of “BOTANICAL PESTICIDES”:

RCF has undertaken work on development of “BOTANICAL PESTICIDES” formulation, isolation, identification and characterization of active compounds from selective plants such as Karanj, Nirgudi and Garvel has been completed.

9.7.2 National Fertilizers Limited (NFL)

NFL has undertaken the following R&D activities in the financial year 2013-14:

A project on balanced fertilization undertaken in Farmers Fields at 25 locations wherein optimum use of primary, secondary & micronutrients using chemical fertilizers, organic manure and bio-fertilizers was tested and demonstrated based on deficient soil nutrients established by soil testing carried out by NFL. The results of this project were found very encouraging as average yield increase was found to be 14.31% more in recommended practice over Farmer’s practice. The outcome of this exercise can save the cost of fertilizers as well as increase the yield of the crop.

NFL is Exploring development of manufacturing facility to produce Sulphate / Murate of Potash using the bitterns (leftover after recovery of salt which is a rich source of marine chemicals) available in the Little Rann of Kutch (Kharaghoda region) in collaboration with CSIR- CSMCRI, Bhav Nagar. Presently, entire requirement of potash in the country is being met through imports

9.7.3 Fertilizers And Chemicals Travancore Limited (FACT)

The Research and Development Centre functioned with the aim of carrying out in-depth research in new fertilizer formulations, innovation in the fertilizer production for cost control and value addition of by-products, existing product lines and waste utilization in the Organization. R&D has carried out the specialized services such as the monitoring and controlling the quality of the finished products before they are dispatched to the market and periodical collection of product samples from the field godowns, distributors, dealers for the evaluation of post dispatch quality as a part of three tier quality control system practiced in the company. R&D has also produced biofertilisers and dispatched directly to marketing area of the company in all the four southern states. Apart from the above activities, R&D has focused on developing Organic fertilizer from farm yard waste and cost reduction in biofertilisers production.

Details of R&D Activities:

1. Development of Coir pith based formulation for Agri / Horti End-use: An MOU has been entered into between FACT and Coir Board for carrying out a research work on composting of coir pith for end use in horticultural-agricultural areas. The cost of the project is 172.02 lakh.
2. Optimization of Electrical Conductivity on composting of Coir pith an MOU project of the company, which envisaged through the experiment that conductivity is high in initial stages due to mineralization, soluble salt content etc. Higher the conductivity, higher will be the salt index of the soil which affects the plant growth. Thus R&D experiments avoided the use of inorganic chemicals and promoted organic additives to enhance the microbial activities. The results were promising. In this work, the influence of the composting process with regard to physicochemical characteristics like pH and electrical conductivity on the kinetics of stabilization of organic matter in composting of coir pith were studied.

3. Studies on the use of Bone meal as an alternate ingredient for culture Growth is another MOU project of the company. Biofertilisers are produced by mass multiplication of microorganisms using specific nutrient solution (Growth Medium), at a predetermined pH, time and aeration.
4. In connection with the Technical audit of SSP Manufacturing units by FEDO, on behalf of Dept. of Fertilizers, GOI, in all southern states and Maharashtra, R&D has certified the quality of the sample collected from various units as per FCO 1985.

9.8 HEAVY ENGINEERING

9.8.1 Bharat Heavy Electricals Limited (BHEL)

The salient achievements in R&D & Technology for 2013-14 are as follows :

- i. 434 patents and copyrights were filed during the year 2013-14, enhancing the company's intellectual capital to 2,589, which are in productive use
- ii. A Turnover from in house developed products amounted to ₹ 8110 Cr which is 20 % of the company Turnover.
- iii. To address the requirement of boiler feed pump drives in 800 MW supercritical power plants, BHEL has developed its largest 20,500 kW, 4 Pole, 11 kV asynchronous cage induction motor with a specially designed ventilation circuit.
- iv. Development of a new variant of single cylinder reheat turbine up to 160 MW rating with improved efficiency.
- v. To address the shortage of water for power plants, BHEL has developed Air Cooled Condenser (ACC) with modular (capable of handling heat duty of 10 MW) design of subsystems like heat exchanger bundles for a typical 80 MW thermal power plant.
- vi. To address the requirement of Indian Railways, BHEL has developed an Electric Multiple Unit (EMU) transformer suitable for IGBT based 3 phase 25 kV drive with provision of separate hotel load winding to cater to the coach air conditioning load.
- vii. A 30 kW Permanent Magnet Alternator, along with IGBT based DC voltage controller has been developed by BHEL for charging batteries for operation of air conditioners in AC coaches.
- viii. In a bid to offer technologically excelled and environmentally compliant product , BHEL developed and tested successfully at international laboratory a 420 kV, 40 kA Single Break Gas Insulated Substation (GIS) Circuit Breaker (CB) using spring hydro drive.
- ix. With a view to provide clean power source for telecom applications, BHEL has developed a 1 kW High Temperature Air-Hydrogen Proton Exchange Membrane (PEM) Fuel Cell stack utilizing commercial grade hydrogen and air as reactant feed gases thus reducing the operating costs. This is being up scaled to 5 kW.
- x. As a part of development of high pressure turbine for Advanced Ultra Supercritical Parameters (AUSC). CFD & structural analysis of 3D blade profiles has been completed.
- xi. Under the new & renewable energy initiative, testing of 0.5 Nm³/hr system in simulated gas mixture has been completed successfully for production of H₂ from Coal Gas (membrane based technology)
- xii. Development of Phasor measurement unit for wide area measurement including integrated testing with open PDC (Phasor data concentrator) has been successfully completed.
- xiii. As a part of process development initiative, studies on characterization, corrosion and strength behavior of dissimilar weldments of Nickel base alloys and 10% Cr steels have been carried out successfully and test result have been evaluated.
- xiv. To meet strategic applications, BHEL has developed & tested successfully lighter (with 25% lower weight) and compact 1250 kW

Permanent Magnet Generator (PMG) with key features like reduction in number of rotating parts and noise level less than 80 dB.

- xv. Development of a large capacity propylene refrigerant gas compressor capable of meeting higher flow requirements and suitable for dry gas seal system (to minimize emissions).
- xvi. A light weight and compact 220 kV Capacitor Voltage Divider (CVD) in a single porcelain housing having 170 mm bore, leading to a compact, light and cost effective Capacitor Voltage Transformer (CVT) has been developed.
- xvii. To address requirement of customers for small roof top and car parking applications, a 500 W Photovoltaic Module with 15.9% efficiency which uses 12X10 configuration of 156 mm mono crystalline solar cells has been developed.
- xviii. A very fast, accurate, and reliable state-of-the-art non destructive ultrasound infrared thermography technique for identifying and characterizing defects in Induction Pressure Weld (IPW) joints of boiler tubes by introducing high power ultrasound energy and capturing infrared signatures through infrared camera has been developed.
- xix. A state-of-the-art 5 axis programming and scoop milling technology to manufacture 3D impellers of centrifugal compressors leading to reduction in manufacturing cycle time and cost has been established.

9.8.2 Hindustan Aeronautics Limited (HAL)

Hindustan Aeronautics Limited's Research & Development continues to play a vital role in the Design & Development and upgradation of products and indigenisation activity. During the year 2013-14, various development projects viz. Intermediate Jet Trainer(IJT) Light Combat Aircraft (LCA),Light Combat Helicopter(LCH), Light Utility Helicopter(LUH),Fifth Generation Fighter Aircraft(FGFA), Multirole Transport Aircraft(MTA), Unmanned Aerial Vehicle(UAV) etc. have progressed satisfactorily.

The Company is collaborating with Academic Institutions of repute viz. IITs, IISc, NAL, DRDO labs etc. for collaborative, R&D and product development.

9.9 MEDIUM & LIGHT ENGINEERING

9.9.3 Bharat Electronics Limited (BEL)

Research and Development has been the core strength of BEL and BEL continues to focus on development of technology modules and products. Apart from in-house efforts, BEL R&D Engineers closely work with DRDO for Joint Development Projects and other National Research and Development agencies including Academic institutes like IITs. R&D activities have been carried out in all the business segments namely Radars, Military Communication, Naval Systems, Missile Systems, Electronic Warfare, Avionics, C⁴I systems, Electro-optics, Tank Electronics, Gun up-grades, Civilian equipments& Systems and Components during the year 2013-14.

Following are some of the new initiatives undertaken by BEL in the areas of R&D and Technology development during the year 2013-14:

- Establishment of Product **Development & Innovation Centre for development of critical Sub systems in all the business verticals of BEL's operation have been initiated.**
- The Process of Collaborative R&D, with various foreign and Indian design houses including Academic Institutions, has been initiated to hasten the development process.
- During this year different R&D divisions of the company completed several development projects some of the New projects are:
Bharani- Surveillance Radar (Joint Development Project with DRDO)
Electro Optics System- Coastal Surveillance (Joint Development Project with DRDO)
Electronic Warfare Systems
Sonar System HMS
Radio For LIC EW

Voice Communication and Switching System

- Action has been initiated for development of some critical subsystems needed for weaponization, through joint development with DRDO.
- Nine patents in the areas of Radar, Communication ,EW have been filed.

9.9.2 Electronics Corporation of India Limited (ECIL)

ECIL's activities span the nuclear, defence, aerospace, security, telecom and e-governance domains and the R&D activities are centred around technologies in these domains. The primary focus of R&D at ECIL is on developing indigenous technology solutions to strategic and allied sectors and is driven by the need to retain technology independence, self-reliance, security and combat technology denial regimes. However, enhancing localization and improving value addition are also key drivers for R&D. During the year, the company has mainly developed technologies and products for nuclear and defence applications. These include ultrastable power convertors for Facility for Antiproton and Ion Research (FAIR), Germany, International Thermonuclear Experimental Reactor (ITER), Italy, High Temperature Boron Coated Counters for Fast Breeder Reactor program, Smart Area Gamma Monitor for use in nuclear plants and a Wideband Digital Recorder for defence applications.

Among the technologies developed for other applications are a secure manufacturing software package for use in a trusted facility for manufacturing strategic equipment and encryption systems for secure communication. The features of the in house developed SCADA software have also been enhanced to enable it to seamlessly interface with any other SCADA systems.

9.9.3 BEL Optronics Devices Limited (BELOP)

The Company's in-house R&D Unit recognized by Department of Scientific & Industrial Research (DSIR) is driving and executing the product & process related developments.

Specific Areas in which R&D was carried out by the Company are as under

- Development of Intensified Camera Unit with Image Processor.
- Development of alternate Vendor for a critical imported item, viz., Metalised Ceramic Ring.
- Design of Special purpose Chemical Working Station with Scrubber, to enhance effectiveness of Chemical Treatment of parts

9.10. TRANSPORT EQUIPMENT

9.10.1 Cochin Shipyard Limited

Company has undertaken R&D initiatives in the areas of welding and mechanization for productivity improvement. Details of activities are as follows:

1. Development of mechanized elbow cutter for cutting non standard elbows which has reduced pipe fit up cycle time and thereby increased the productivity of Pipe shop
2. Submerged Arc Weld (SAW) procedure developed for low thickness which has reduced the fatigue of the welders and improved the weld quality and productivity.
3. Circular welding work station developed with Submerged arc welding (SAW). This has helped to cater to the requirement of circular weld joints in ships and this will also result in reducing the weld time of circular joints by about 40% compared to the conventional semi automatic Metal Inert Gas/Metal Active Gas (MIG/MAG) process used hitherto.

9.10.2 Mazagon Dock Limited (MDL)

MDL has taken the following steps for institutionalising R&D efforts of the company:

- a) **R&D Policy:** The R&D policy of the company was approved by the Board of Directors on 24 Jun 13 and the same has been promulgated.
- b) **R&D Plan:** R&D Plan in accordance with the policy has been drawn-up for five (05) years from 2014-15 to 2018-19 depicting the R&D activities that the yard intends to take up during the period.

The following specific actions has been initiated:

- a) **MoU with IIT Kharagpur** :MoU between MDL and IIT, Kharagpur has been signed on 31 Dec 13 and a seed money has been released to the Institute for commencement of the MoU on 22 May 14. Discussions are in progress with IIT Kharagpur for taking up projects as per the R&D plan.
- b) **In-house projects** :In-house projects is being taken up by R&D teams at MDL for different verticals (Eight specialists groups) that are functioning in the Design Dept under General Manager(Design).

9.10.3 Goa Shipyard Limited (GSL)

As part of R&D Initiatives GSL has indigenously developed several designs of cost effective patrol vessels for Indian Navy and Coast Guard which includes 50M Fast Patrol Vessels, 90M Offshore Patrol Vessels, 105M Advanced Offshore Patrol Vessels, and 105M Naval Offshore Patrol Vessels.

The R&D Center at Goa Shipyard Limited has been recognized by Department of Science and Industrial Research as 'In-hose R&D Unit'. GSL is the only shipyard to have been accorded this recognition. The following in house design work is in progress for immediate as well as future requirement of the Indian Navy and Coast Guard.

- 1) 29M 40 Knots Interceptor Boat
- 2) 72M Shallow Water Platform for Anti Submarine Warfare application
- 3) 75M Patrol Vessel
- 4) 105 to110M Multi Mission Missile Capable OPV
- 5) Improvisation of 105M OPV design for improving fuel efficiency and additions of more features.

9.10.4 Bharat Earth Movers Limited (BEML)

R&D of the Company has designed and developed number of high technology products and aggregates for Mining & Construction, Defence and Rail & Metro segments as per customer requirements and the same have been manufactured and launched for customer

trials. Depending on the sectoral needs for the year 2013-14, the following major products / projects have been launched:

A. Mining & Construction:

- BD50-1 Bulldozer - upgraded version of BD50 with hydro shift transmission, Wet type steering clutches and straight tilt Dozer.
- BD155-1 Bulldozer - with Electronic Engine, Electronic Transmission, Hexagonal ROPS-FOPS integrated Cabin and contemporary aesthetics.
- BD155 / BD355 class Bulldozers - CAN based single 7" LCD display instrumentation.
- 100 ton Dump truck - Modular Rear drive Axle with integral parking brake, ABS (Anti-skid Brake System) and ASR (Anti Spin Regulator).
- BH100A Dump Truck - with 1200HP engine, Electronic Transmission, Wet multiple disc brakes, ABS, ASR & Centralized LCD display.
- BG605I Motor Grader - Upgraded version of BG605 Motor Grader with BS III emission compliant, BEML make electronic engine, power shift transmission and contemporary aesthetics.
- BD155-2 Dozer - 140 series Electronic engine (EG / CRDI)
- BL9H Back-Hoe loader & BG605I Motor Grader - BS-III Compliant BEML make 105 & 125 series engines.

B. Defence:

- HMTV 8x8 GS 8x8, Euro III with Material Handling Crane
- Indigenisation of BEML TATRA Backbone Tubes & Differentials
- HMTV 6x6 with Flatbed for Super High Altitude Application

C. Rail & Metro:

- Design and development of 8W Overhead Equipment Maintenance Vehicle (OMV) for Hyderabad and Chennai Metro.

9.10.5. Konkan Railways Corporation Limited (KRCL)

- 1) Operation and Train Control(OT)
- 2) Financial Accounting (FA)
- 3) Stores & Inventory (SI)
- 4) Personnel Module(PM)
- 5) Security Administration (SA)
- 6) Health Management (HM)
- 7) Airlines (AL)
- 8) Commercial Coaching (CC)
- 9) Claims & Compensation (CL)
- 10) Rolling Stock C & W (RC)
- 11) Stock Locomotive (RL) 12) Signal & Telecom. Maintenance (SM)
- 13) Track & Structure Maintenance (TM)
- 14) Electrical Maintenance (EM)
- 15) Inspection Module (IM)
- 16) File Tracking (FT)
- 17) Expenditure Authorization (EA)
- 18) Annual Accounts (AA)
- 19) Traffic Account (TA)
- 20) Quota Reservation/Town Booking (QRS/TBA)
- 21) RollOn - RollOff (RO-RO)
- 22) Halt Ticketing (HT)

Recently JRAP has been enhanced by adding following –

- 1) Employee Service Register report in Personnel Module is enhanced to include 25 new items like seniority, promotion, transfers, training, allowances, Discipline & appeal rules (DAR), awards etc. expediting processing of staff grievances, Pay fixation, Promotions etc.
- 2) 17 Nos of New functions/Reports and 11 Enhancements are done in Personnel Module(PM), Financial Accounting(FA), Stores & Inventory(SI), Commercial Coaching (CC), Operation and Train Control (OT) and Track &Structure Maintenance (TM).
- 3) Appraisal and Performance Reporting System (Total 10 Functions): Achievements-Reduction

in time for tracking of appraisal, grading of individuals while promotions etc.

- 4) Personnel Module(PM), Financial Accounting(FA) interface provided with 28 Functions, resulting in productivity improvements in accounts dept, saving 45 man-days per month for various activities after pay sheet.
- 5) Visitor Management System – Providing facilities and keeping track of visitors to CO/BLP.
- 6) Town Booking Agent (TBA) Module access through Internet (over VPN) - Providing reliable facility to remote passengers to buy tickets and releasing old servers.
- 7) Track & Structure Maintenance (TM) Weld failure, LWR, SEJ and Curve assets sub-modules are developed covering inspection details, compliance of defects and related reports.
- 8) Operation and Train Control(OT) - Daily unusual details report for control office is implemented.
- 9) **Enterprise Collaboration Suite (ECS):** Modern Web-based Enterprise Collaboration Suite(ECS) provides for continuous communication with email, knowledge sharing on KRCL intranet -Disha, improved office productivity and instant information availability for entire organisation. The system is web- enabled, and provides remote access from anywhere, anytime, for instant information availability. KRCL has undertaken this upgradation on a lease model spanning a period of 5 years support and maintenance. This system has changed the entire organisational working by enabling progress towards a paperless office, information streamlining and delay-less work culture. System comprises of productivity tools for 3,000 plus users based at multi-locations across LAN and WAN.

Conclusion:

The IT Technology Upgradation has helped to establish a platform that can help for smooth handling of operations of Railway. It can be only possible by having real-time visibility of monitoring freight,

passenger trains, human resources and administrative operations. This is achieved through good governance by defining work flows, policy, procedures adopted by the management in JRAP application. Main benefits include:

- Increasing transparency, capturing information at source and accountability,
- Facilitating accurate decision making and
- Enhancing the efficient delivery of public goods and services.

CONCOR

CONCOR is in the service sector and its main assets are the rolling stock is procured from Railway workshops as per prescribed railway standards & design and modifications made from time to time. Given the above linkage, most expenditure on R&D incurred by comparing is by way of payment of design loan charges to Indian Railways.

CONCOR has been instituting standalone studies for gauging effect of policies relevant to logistics sector. In year 2013-14, CONCOR carried out following activities in R&D area:

1. Assessing Potential for movement of High rated commodities in containers in Domestic Stream including design of special purpose containers.
2. Assessing Potential for carrying RO-RO traffic and automobiles by rail for exploiting full potential of DFCs.
3. Assessment of demand of services post introduction of policies like GST and FDI in retail and the services which CONCOR should gear up to provide.

9.11 CONSUMER GOODS, AGRICULTURE & OTHERS

HLL Lifecare Ltd. (formerly Hindustan Latex Limited)

HLL Lifecare Ltd is one of the world leaders in manufacturing and marketing a wide range of contraceptive products such as Condoms, Copper

IUDs, Hormonal IUDs, Vaginal rings, Steroidal and non Steroidal contraceptive pills etc. HLL Lifecare Ltd, Corporate R&D Centre is focussed on innovating in the field of reproductive health.

During 2013-14, HLL R&D Centre received three international project funding's from **Bill and Melinda Gates Foundation (BMGF)**:

- Project on "Development of coated Copper T"
- Project on "Development of Green Condom"
- Project on "Development of Graphene Condoms"

Apart from this HLL initiated several national projects which includes "Development of a novel pathogen mimicking biodegradable polymer based nanoparticle vaccine technology" with a funding of ₹18.84 lakh and "Synthetic Microbicidal vaginal spermicides: Design, Synthesis and Biological evaluation" with a funding of ₹20.74 lakh, from Department of Science and Technology (DST).

In addition to these external funded projects HLL have initiated a collaborative project with Population Council, USA and HRA Pharma, France for developing a novel IUS with a funding of USD 160,289.

During 2013-14, The HLL R&D Centre entered into MOU with renowned institutions like Rajiv Gandhi Centre for Biotechnology, (RGCB) Trivandrum, Pushpagiri Institute of Medical Sciences and Research Centre (PIMS & RC) Thiruvalla, National Institute of Immunology (NII) New Delhi, National Institute for Interdisciplinary Science and Technology (NIIST) Trivandrum and Centre for Biopolymer Science and Technology, (CBPST) Kochi for collaborative research.

9.11.2 National Seeds Corporation Ltd.(NSC)

The vision and mission of the Corporation and fundamental mandate requires it to work in multiplication of seeds researched and developed under the National Agriculture Research system (NARS) through the Indian Council of Agricultural Research (ICAR).

As a part of its Applied Research activities NSC has taken the following activities in the year 2013-14.

1. Study on the efficacy of newer seed treatment chemicals on viability and vigour in Maize and Moong seeds.
2. Identification of superior hybrids of Maize, Bajra and Paddy through field demonstrations.
3. Equipping the QCL with advance equipments for Seed Health Test.

9.11.3 Artificial Limbs Manufacturing Corporation of India (ALIMCO)

R & D has always been one of the core areas of concern at ALIMCO in order to upgrade the technology in the field of Assistive Devices for the benefit of persons with disabilities. ALIMCO has undertaken R&D initiatives in the field of orthopedically, visually & hearing impaired persons through in house as well as Technology Transfer during the year as follows:

ALIMCO has successfully developed following products:

(a) JOYSTICK OPERATED WHEEL CHAIR :

ALIMCO has developed cost effective Joystick Operated Wheel Chair which is very useful for the Persons with Disabilities. The wheelchair can travel a distance of 12 to 15 km. in a single charge

(b) SOLAR POWERED BATTERY DRIVEN TRICYCLE :

ALIMCO has developed Solar Powered Battery Driven Tricycle in Collaboration with HBTI, Kanpur. This Tricycle is extremely user friendly with all controls on handle. Especially its dual charging provision enhances its serviceability time. High power of the tricycle permits it to negotiate even steep slopes with full load on it. In a single charge it can go up to 40 to 45Kms.

(c) BATTERY OPERATED MOTORIZED TRICYCLE :

ALIMCO has successfully modified its existing Battery Operated Tricycle to increase the distance travelled in a single charge. The tricycle can now travel a distance of 45 to 50 Kms.in place of 15-20 kms earlier.

(d) CP (CEREBRAL PALSY) CHAIR WITH COMMODE SYSTEM :

ALIMCO has come out with Wheel Chair with Commode system, which is very useful for CP Patients. Its frame is made of Stainless Steel square tubes & Stainless Steel sheets making the wheel chair strong ,besides preventing it from rust etc.

9.12 PROJECT CONSULTANCY

9.12.1 Engineers India Limited (EIL)

Technology development projects initiated

- Development of high level oxygen enrichment process to enhance SRU capacity by 200%.
- Development of generic mathematical model of fluidized bed gasifier for processing coal, high ash coal and mixture of coal and petcoke for the purpose of validation of data to be generated in the pilot gasifier being setup at EIL-R&D.
- Development of high capacity trays for enhancing capacity of existing column and aiming at reduced down time incorporating innovative construction features.
- Development of advanced versions of PARLPACK structured packing for improved performance. Three versions of packings are being tested.
- Development of Desalter design technology in association with BPCL (R&D). The project is funded by Centre for High Technology (CHT)
- Development of improved hardware and process design for CFC based LPG treating units. The design will lead to increased throughput, better distribution and easy maintenance.
- Development of Gas Membrane Technology for H₂ recovery from refinery off-gases.
- Installation of gasifier pilot plant and operation of HPTGA and development of coal combustion kinetics under Coal To Liquid (CTL) Project
- User interface development for in-house developed software ARUSIM used for BTX extraction

- CFD modelling services extended to Nuclear Power sector through a simulation for client NFC, Hyderabad. CFD modelling used in troubleshooting assignments for M/s NALCO & HPCL Vizag as also in the development of Feed Inlet Device jointly with M/s Kevin.

Based on innovative work done, the EIL's R&D Division has filed one patent entitled "High level capacity enhancement of Sulphur recovery plant" while Three other patents listed below were filed earlier have been granted

- Device for measurement of flow rate of overflash liquid in crude distillation columns
- An Adsorbent composition, a process for the preparation thereof and a process for removal of Hydrogen Sulphide impurities from a gaseous feed stock.
- Fluid Interface level measurement device

The following activities in respect of R&D Projects sponsored by Department of Fertilizers (DoF), Govt. of India have been taken up by PDIL in the financial year 2013-14.

1. Development of Chlorine Guard Catalyst for the Protection of Low Temperature Shift (LTS) Catalyst

This R&D work has been carried out for Development of Indigenous Process of Manufacturing Chlorine Guard Catalyst, a new addition to the existing range of catalyst manufactured by PDIL. This catalyst is vital for the longevity of Low Temperature Shift Catalyst widely used in Fertilizer Industries and Oil Refineries. The said R&D Project has been completed successfully.

2. Use of Spent Low Temperature shift (LTS) catalyst as Raw Material for Preparation of Fresh LTS Catalyst

This R&D work has been carried out for environmentally safe disposal of Spent LTS and effective use of spent catalyst which may lead to development of a process to use alternate source of raw material for the production of LTS catalyst at a competitive cost. The progress of the said R&D Project is in last stage and results so far obtained are very encouraging.

3. Use of Spent Nickel Catalyst as Raw Material for Preparation of Fresh Nickel Catalyst

This R&D work has been carried out keeping in mind the benefits like environmentally safe disposal of Spent Nickel Catalyst generated in huge quantity from various Fertilizer Industries and Oil Refineries and development of environmentally friendly process to recover Nickel "a costly and hazardous metal" from the spent Nickel catalyst and its use in the manufacturing of fresh Nickel catalyst like Reforming Catalyst, Methanation Catalyst etc. The Project is in progress.

4. Patenting of Developed Process for Utilization of Spent High Temperature shift (HTS) catalyst as Raw Material for Preparation of Fresh HTS Catalyst

R&D works of the above Project were carried out keeping in mind the benefits like environmentally safe and effective disposal of Spent HTS Catalyst and Development of Process for Indigenous Production of HTS Catalyst at cost competitive price. The said R&D Project Work has been completed successfully.

* * *

Chapter 10

Mega and Major Projects under Implementation

As on 31.3.2014, there were altogether 749 projects under implementation in the central sector, out of which 243 projects were Mega projects (each costing ₹ 1,000 crore and above) and 506 were Major projects (each costing between ₹ 150 crore and ₹ 1000 crore). The total anticipated cost of these 749 projects is ₹ 1128566.37 crore and the total expenditure incurred on them till 31.03.2014 stands at ₹ 523939.14 crore, which is 46.43% of the total anticipated cost of these projects.

Out of these 749 projects in the central sector, 185 projects (costing ₹ 500 crore and above) belonged to Central Public Sector Enterprises (CPSEs), of which 135 were Mega projects (costing ₹ 1000 crore and above) and 50 were Major projects (costing ₹ 500 crore and above but less than ₹ 1000 crore). The total original cost in respect of these 185 projects of CPSEs stood at ₹ 582901.44 crore, while the revised/anticipated completion cost is ₹ 643232.95 crore, indicating a cost overrun of around 10.35%.

Sector wise status of these Mega and Major projects of CPSEs indicating the names of projects, their location, capacity, date of approval, physical progress, date of commissioning together with anticipated date of completion and cost of the project (original and anticipated) as per 'Project Implementation Status Report of Central Sector Projects Costing ₹150 crore & above' published quarterly by of Ministry of Statistics and Programme Implementation, are summarised in the paragraphs below.

10.1 Atomic Energy

The total original cost of the 4 projects in the Atomic energy sector stood at ₹ 40,442 crore and the anticipated completion cost at ₹ 46,726 crore, indicating a cost overrun of 15.54%. The expenditure incurred on these projects till March, 2014 is ₹ 17,198 crore, which is 42.5% of the original cost. These projects belonged to the BHAVINI Limited and Nuclear Power Corporation of India Limited, details of which are as under:-

10.1.1 Bhavini Limited

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Prototype Fast Breeder Reactor, Kalpakkam, Tamil Nadu	MWe 500	9/2003	9/2010 (03/2015)	3492.00 (5677.00)	97.00

10.1.2 Nuclear Power Corporation of India Limited (NPCL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Kudankulam Atomic Power Project, Tamil Nadu	MW 2 x 2000	12/2001	12/2008 (12/2014)	13171.00 (17270.00)	98.73
2	Kakrapar Atomic Power Project - 3 & 4, Gujarat	MW 2 x 700	10/2009	12/2015 (11/2016)	11459.00 (11459.00)	0.00
3	Rajasthan Atomic Power Project-7 & 8 , Rajasthan	MW 2 x 700	10/2009	12/2016 (03/2017)	12320.00 (12320.00)	37.47

10.2 Civil Aviation

8 projects in the Civil aviation sector were under implementation as on 31.3.2014. The total original cost of implementation of these projects stood at ₹ 6035.46 crore and the anticipated completion cost at ₹ 6946.00 crore, indicating a cost overrun of 15.09%. The expenditure incurred on these projects till March, 2014 is ₹ 5738.35 crore which is 95.1% of the original cost. These projects belonged to the Airport Authority of India Limited. Details of the 3 projects costing above ₹ 500 crore are as under:

10.2.1 Airport Authority of India Limited

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Dev. of Kamaraj Domestic Term. Ph-II & Exp. Anna Int. Term. Bldg (KI), Tamil Nadu	1 x 16.84 ML	08/2008	01/2011 (02/2012)	1808.00 (2015.00)	100
2	Constn. of Integrated Passenger Term. Bldg. NSCBI Airport, West Bengal	20 Million Passenger p.a.	08/2008	05/2011 (03/2013)	1942.51 (2593.13)	100
3	Gagan Project, Multi State	Satellite Navigations	09/2008	06/2013 (06/2013)	626.00 (626.00)	98.20

10.3 Coal

The total original cost of implementation of the 56 projects stood at ₹ 38737.38 crore and the anticipated completion cost at ₹ 48559.52 crore, which is 25.36% more than the original cost. The expenditure incurred on these projects till March, 2014 is ₹ 17818.73 crore which is 46% of the original cost. These projects belonged to the Bharat Coking Coal Limited, Central Coal Fields Limited, Neyveli Lignite Corporation, Northern Coal Fields Limited, and South-Eastern Coal Fields Limited. Details of the 15 projects costing above ₹ 500 crore are given as under:

10.3.1 Bharat Coking Coal Limited (BCCL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Moonidih XV Seam UG, Dhanbad, Jharkhand	1.5 MTY	08/2011	04/2015 (04/2015)	1230.27 (1230.27)	0.00

10.3.2 Central Coalfields Limited (CCL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Magadh OC (CCL), Jharkhand	20 MTY	08/2008	07/2012 (03/2016)	469.78 (706.40)	0.00
2	Rajrappa RCE OCP Jharkhand	3 MTY	12/2009	03/2016 (03/2016)	510.85 (510.85)	0.00
3	Amrapali OC, Ranchi, Jharkhand	12 MTY	02/2012	03/2020 (03/2020)	858.11 (858.11)	0.00

10.3.3 Neyveli Lignite Corporation (NLC)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	TPS-II Expansion Cuddalore, Tamil Nadu	MW 2 x 250	10/2004	06/2009 (06/2014)	2030.78 (3027.59)	94.65
2	Tuticorin Thermal Power Project, Tamil Nadu	MW 2 x 500	05/2008	03/2012 (08/2014)	4904.54 (6602.74)	83.20
3	Neyveli New Thermal Power Project, Tamil Nadu	MW 2 x 500	06/2011	12/2015 (04/2018)	5907.11 (5907.11)	0.00

10.3.4 Northern Coalfields Limited (NCL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Amlohri EPR (NCL), Madhya Pradesh	6 MTY	12/2009	3/2016 (03/2016)	1352.04 (1143.54)	0.00
2	Khadia Expansion OCP, Uttar Pradesh	6 MTPA	06/2011	03/2018 (03/2018)	1131.28 (1131.28)	0.00
3	Krishnashila (NCL), Uttar Pradesh	4 MTY	06/2011	03/2013 (03/2014)	789.88 (741.62)	0.00
4	Block-B OCP NCL, Madhya Pradesh	3.5 MTY	06/2011	03/2015 (03/2015)	746.04 (535.10)	0.00

10.3.5 South-Eastern Coal Fields Limited (SECL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Kusmunda Expansion OCP Chhattisgarh	50 MTY	06/2008	03/2013 (03/2023)	1188.31 (7612.33)	50.00
2	Dipka Expansion OCP Korba, Chhattisgarh	25 MTY	12/2009	03/2014 (03/2016)	1943.66 (1943.66)	58.33
3	Gevra Expansion OCP Korba, Chhattisgarh	35 MTY	06/2010	03/2014 (03/2016)	2675.67 (2675.67)	66.67
4	Chhal OC SEAM-III Bilaspur, Chhattisgarh	6 MTY	12/2013	03/2022 (03/2022)	610.33 (610.33)	0.00

10.4 Steel

There were 20 projects in the Steel sector under implementation by NMDC, RINL and SAIL as on 31.3.2014. The total original cost of implementation of these projects stood at ₹ 65959.26 crore and the anticipated completion cost at ₹ 72188.55 crore which is 9.44% more than the original cost due to cost overrun. The expenditure incurred on these projects till March 2014 is ₹ 59215.71 crore which is 89.8% of the original cost. The details of the 9 projects costing above ₹ 500 crore are given below:

10.4.1 National Mineral Development Corporation (NMDC)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Bailadila Iron Ore Project Deposit-11(B) Chhattisgarh	7.0 MTPA	01/2007	12/2011 (01/2015)	295.89 (607.17)	0.00
2	7.0MTPA Kumaraswamy Iron Ore Mine Project, Bellary, Karnataka	7.0 MTPA	02/2011	05/2013 (01/2015)	898.55 (898.55)	0.00
3	1.2 MTPA Pellet Plant Project, Donimalai, Bellary, Karnataka	1.2 MTPA	04/2011	04/2013 (09/2014)	572.00 (572.00)	70.00

10.4.2 Rashtriya Ispat Nigam Limited (RINL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Expansion of Liquid Steel Capacity from 3 MT to 6.3 MT Visakhapatnam Andhra Pradesh	3.3 MTPA	10/2005	10/2009 (07/2014)	8692.00 (12291.00)	0.00

10.4.3 Steel Authority of India (SAIL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Expansion of IISCO Steel Plant, West Bengal	2.50 MTPA	06/2008	12/2011 (06/2014)	14443.00 (16408.00)	0.00
2	Expansion of Bokaro Steel Plant, Jharkhand	4.61 MTPA	05/2010	12/2011 (03/2014)	6325.00 (6325.00)	0.00
3	Expansion of Durgapur Steel Plant, West Bengal	2.20 MTPA	08/2010	12/2012 (12/2014)	2875.00 (2875.00)	0.00
4	Expansion of Bhilai Steel Plant, Chhattisgarh	7.00 MTPA	08/2010	03/2013 (03/2015)	17265.00 (17265.00)	0.00
5	Expansion of Rourkela Steel Plant, Orissa	4.2 MTPA	08/2010	03/2013 (09/2014)	11812.00 (11812.00)	0.00

10.5 Petrochemicals

There was 1 project in the Petrochemicals sector under implementation as on 31.3.2014. The total original cost of implementation of this project stood at ₹ 5460.61 crore and the anticipated completion

cost at ₹ 8920.00 crore which is 63.35% more than the original cost. The expenditure incurred on this project till March 2014 is ₹ 7671.12 crore which is 140.5% of the original cost. This project belonged to Brahmaputra Cracker & Polymer Limited, details of which are as under:

10.5.1 Brahmaputra Cracker & Polymer Limited

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Assam Gas Cracker Project, Assam	220 Kilo TPA	04/2006	04/2012 (N/A)	5460.61 (8920.00)	96.35

10.6 Petroleum

There were 85 projects in the Petroleum sector being implemented by BPCL, GAIL, HPCL, IOCL, MRPL, NRL, ONGC and OIL as on 31.3.2014. The total original cost of these projects stood at ₹ 188165.13 crore and the anticipated completion cost is ₹ 204662.28 crore which is 8.77% more than the original cost. The expenditure incurred on these projects till March 2014 is ₹ 107749.39 crore which is 57.3% of the original cost. The details of the 54 projects costing above ₹ 500 crore are given as under:

10.6.1 Bharat Petroleum Corporation Limited (BPCL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Replacement of CDU/VDU at Mumbai Refinery, Maharashtra	6.00 MTPA	01/1999	12/2014 (03/2015)	1419.00 (1419.00)	65.39

2	Integrated Refinery Expansion Project, Kerala	6.00 MMTPA	01/1999	12/2015 (05/2016)	14225.00 (14225.00)	35.37
3	Hydrocracker Revamp & Setting up a new CCR at Mumbai Refinery, Maharashtra	1.20 MMTPA	04/2008	04/2013 (03/2014)	825.00 (1827.00)	100

10.6.2 Gas Authority of India Limited (GAIL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Kochi Kootanad Bangalore Mangalore Pipeline PH II, Multi State	1112 KM	06/2009	12/2012 (N.A.)	2915.00 (2300.00)	82.62
2	Jagdishpur-Haldia Pipeline Project Phase-I Multi State	944 KM	07/2009	01/2013 (12/2015)	7596.18 (7596.18)	0.00
3	BNPL SPURLINE (Uttarakhand & Punjab), Multi State	279 KM	12/2009	07/2012 (N.A.)	540.92 (540.92)	0.00
4	Petrochemical Complex-II at Vijaipur and Pata, Multi State	410 KTA	08/2010	02/2014 (06/2014)	8140.00 (8140.00)	97.00
5	Surat Paradip Pipeline Project, Multistate	54 MMSCMD	10/2012	N.A. (04/2015)	10281.00 (10281.00)	0.00

10.6.3 Hindustan Petroleum Corporation Limited (HPCL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Diesel Hydrotreater Project at Visakh Refinery, Andhra Pradesh	Quality up-gradation	03/2009	09/2011 (07/2014)	3597.00 (2730.00)	99.84
2	Diesel Hydrotreater Project at Mumbai Refinery, Maharashtra	Quality up-gradation	03/2009	09/2011 (12/2014)	3284.00 (2174.00)	99.60
3	Rewari Kanpur Pipeline Project, Multistate	7.98 MMTPA	02/2012	11/2015 (11/2015)	1210.64 (1210.64)	55.30
4	Mangalore Hassan Mysore Solur LPG Pipeline (MHMSLPL), Karnataka	397 KMs	11/2012	11/2015 (11/2015)	666.00 (701.00)	49.27

10.6.4 Indian Oil Corporation Limited (IOCL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Paradip Refinery Project, Orissa	15 MMTPA	02/2009	11/2012 (12/2014)	29777.00 (32710.00)	96.10
2	Paradip-Raipur-Ranchi Pipeline, Multi State	1108 KM	08/2009	09/2012 (08/2015)	1793.00 (1793.00)	79.68

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
3	De-Bottlenecking of SMPL, Maharashtra	4 MMTPA enhancement	12/2009	N.A. (N.A.)	1584.00 (1584.00)	62.46
4	Paradip Haldia Durgapur LPG Pipeline, Multistate	710 KM	02/2011	07/2015 (07/2015)	913.00 (913.00)	42.24
5	Augmentation of Paradip Haldia Barauni Pipeline, Multistate	4.2 MMTPA enhancement	08/2011	08/2015 (08/2015)	586.00 (586.00)	45.22
6	LPG Terminal Kochi, Kerala	-	12/2012	01/2016 (12/2015)	607.06 (607.06)	7.60
7	Ennore-Trichy-Madurai LPG Pipeline, Tamil Nadu	615 KM	05/2013	N.A. (N.A.)	711.00 (711.00)	5.50

10.6.5 Mangalore Refinery and Petrochemicals Limited (MRPL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	MRPL Phase-III Expansion Karnataka	3 MMTPA	08/2008	01/2012 (06/2014)	12412.00 (12160.26)	99.62
2	Polypropylene Unit, Karnataka	440 KTPA	05/2009	07/2012 (06/2014)	1803.78 (1803.78)	94.70
3	Single Point Mooring Facility (SMP) Project, Karnataka	-	07/2010	04/2012 (12/2013)	1043.57 (957.10)	98.50

10.6.6 Numaligarh Refinery Limited (NRL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Wax Project Assam	43.3 TMTPA (paraffin Wax) 4.5 TMTPA (Micro crystalline wax)	06/2010	12/2013 (03/2014)	576.60 (676.05)	92.20

10.6.7 Oil & Natural Gas Corporation Limited (ONGC)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	IOR Lakwa-Lakhmani, Assam	3.06 MMT Oil 0.36 BCM gas	09/2001	03/2007 (03/2014)	345.10 (750.00)	100

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
2	IOR Geleki (ONGCL) Geleki, Assam	4.761 MMT Oil 1.589 BCM gas	09/2001	03/2007 (03/2017)	390.09 (1674.11)	100
3	DEV of G1 and GS 15 (ONGCL) – Multi State	0.98 MMT Oil, 5.92 BCM Gas	04/2003	04/2006 (06/2016)	429.82 (2735.65)	96.40
4	Development of C-Series Fields, Maharashtra	2.166 MMcu mt. condensate 10.771 BCM Gas	08/2006	12/2008 (09/2014)	3195.16 (3690.37)	98.23
5	Development of B-22 Cluster Fields, Mumbai, Maharashtra	2.46 MMT Oil, 6.56 BCM Gas	01/2007	09/2010 (12/2015)	2323.40 (2920.82)	86.05
6	Offshore Grid Interconnectivity Project in Mumbai High Mumbai, Maharashtra	Installation of 81 ESP for augmenting liquid withdrawal	01/2007	03/2010 (02/2014)	740.02 (740.02)	99.32
7	Development of B-46 Cluster Field Maharashtra	4.48 BCM Gas	06/2007	07/2010 (05/2014)	1436.21 (1456.96)	93.62
8	Construction of 12 Off –Shore Supply Vessels (OSV), Multi State	Replacement of old supply vessels with new vessels-12 Nos.	06/2007	09/2011 (12/2014)	736.65 (736.65)	81.52
9	Development of B-193 Cluster Fields, Maharashtra	5.57 MMT Oil, 0.75 MMT condensate 5.12 BCM Gas	06/2007	08/2010 (05/2014)	3248.78 (5633.44)	91.54
10	Mumbai High South Redevelopment Ph-2, Maharashtra	18.31 MMT Oil, 2.70 BCM Gas	10/2007	05/2010 (05/2014)	5713.03 (8813.41)	98.60
11	Additional Gas Processing Units at URAN, Maharashtra	Setting up of additional processing facilities	10/2008	12/2011 (12/2013)	1797.35 (977.00)	100.00
12	Mumbai High North Development Phase-II, Maharashtra	17.35 MMT Oil, 2.98 BCM Gas	01/2009	09/2012 (05/2014)	7133.39 (7133.39)	99.29
13	Assam Renewal Project for Group A, Assam	Revamping of old facilities of Lakwa & Lakhmani fields and Moran CTF	03/2009	03/2013 (03/2015)	2465.15 (2378.86)	87.97
14	Additional Development of D-1 Field, Multi State	8.29 MMT Oil	01/2010	06/2012 (05/2014)	2163.64 (2331.62)	97.22
15	Construction of one Multipurpose Support Vessel, Multi State	Construction of one Multipurpose Support Vessel to assist operations	01/2010	03/2013 (06/2016)	723.64 (723.64)	0.00
16	Development of Cluster-7 Fields, Multi State	9.73 MMT Oil & conden., 4.52 BCM Gas	03/2010	03/2013 (11/2014)	3241.03 (6638.94)	91.25
17	Development of WO-16 Cluster Fields, Multi State	2.83 MMT Oil & conden., 8.58 BCM Gas	06/2010	01/2014 (12/2015)	2523.00 (2523.00)	63.55
18	102 MW Wind Power Project, Rajasthan	102 MW of wind power	07/2010	06/2012 (07/2014)	1106.00 (678.02)	47.87
19	Ahmedabad Redevelopment, Gujarat	5.855 MMT Oil, 0.858 BCM Gas	11/2010	12/2014 (12/2016)	1916.10 (1916.10)	51.35
20	Ankleshwar Redevelopment, Gujarat	2.483 MMT Oil, 6.034 BCM Gas	11/2010	12/2014 (12/2016)	2189.63 (2189.63)	47.76

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
21	Mehsana Redevelopment, Gujarat	19.793 MMT Oil	11/2010	04/2015 (03/2017)	3823.00 (3823.00)	43.46
22	Conversion of RIG Sagar Samrat to Mobile Offshore Production Unit (MOPS), Maharashtra	To deploy as a mobile processing unit at WO-16 Project	03/2011	05/2013 (06/2014)	861.79 (861.79)	64.90
23	Integrated Development of B-127 Fields, Maharashtra	1.836 MMT Oil, 2.093 BCM gas	12/2011	03/2015 (03/2015)	2059.63 (2665.65)	25.47
24	Development Of C-26 Cluster Fields, Maharashtra	0.644 MMT conden. and 5.94 BCM gas	03/2012	05/2014 (05/2015)	2592.17 (2592.17)	13.38
25	Heera And South Heera Redevelopment, Ph-II, Maharashtra	13.36 MMT Oil 1.665 BCM gas	03/2012	05/2015 (05/2015)	5608.40 (5608.40)	52.84
26	Development Of Western Periphery Of MH South Field, Multistate	1.031 MMT Oil 0.214 BCM gas	04/2012	12/2014 (12/2014)	600.17 (600.17)	42.83
27	Pipeline Replacement Project-3, Multistate	Laying of 31 Pipeline segment under Mumbai High	04/2012	05/2014 (05/2014)	2547.26 (2547.26)	86.29
28	Integrated Development of Bassein Field, Maharashtra	14.41 BCM Gas	12/2012	02/2016 (02/2016)	3513.07 (3513.07)	0.00
29	Reconstruction of BPA and BPB Platforms, Maharashtra	-	03/2013	04/2015 (04/2015)	1138.50 (1138.50)	13.05
30	Integrated Development of Vashista and S-I Fields, Multistate	-	05/2013	04/2016 (04/2016)	4124.35 (4124.35)	-

10.6.8 Oil India Limited (OIL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Upgradation of Crude Oil Pump Stations of Naharkatiya-Barauni Crude Oil Trunk Pipeline, Assam	-	09/2012	03/2015 (03/2015)	871.35 (871.35)	18.90

10.7 Power

104 projects of NHPC, NTPC, NEEPCO, PGCIL, SJVNL and THDC were under implementation as on 31.3.2014 whose total original cost of implementation stood at ₹ 251025.22 crore. The anticipated completion cost is ₹ 270400.17 crore which is 7.72% more than the original cost. The expenditure incurred on these projects till March 2014 is ₹ 116486.35 crore which is 46.4% of the original cost. The details of the 83 projects costing above ₹ 500 crore are given as under:

10.7.1 National Hydro-Electric Power Corporation

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Parbati HEP Himachal Pradesh	4 x 200 MW	09/2002	09/2009 (07/2018)	3919.59 (5366.00)	0.00
2	Subansiri Lower HEP Arunachal Pradesh	8 x 250 MW	09/2003	09/2010 (07/2018)	6285.33 (10667.00)	-
3	URI HEP Stage-II, Jammu & Kashmir	240 MW	08/2005	11/2009 (02/2014)	1729.29 (2081.00)	-
4	Tessta Low Dam HEP Stage-IV West Bengal	4 x 40 MW	09/2005	09/2009 (07/2015)	1061.38 (1501.75)	-
5	Parbati HEP Stage-III Himachal Pradesh	520 MW	10/2005	10/2010 (08/2014)	2304.56 (2716.00)	-
6	Kishanganga, Jammu & Kashmir	3 x 110 MW	07/2007	01/2016 (11/2016)	2238.67 (3642.00)	-

10.7.2 National Thermal Power Corporation (NTPC)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Koldam HEP Bilaspur, Himachal Pradesh	4 x 200 MW	10/2002	04/2009 (05/2015)	4527.15 (7220.00)	-
2	BARH STPP NTPC, Bihar	3 x 660 MW	12/2003	12/2009 (03/2017)	8692.97 (8693.00)	-
3	Tapovan-Vishnugad HEP Uttaranchal	4 x 130 MW	11/2006	03/2013 (03/2017)	2978.48 (3846.30)	-
4	Bongaigaon Thermal Power Project, Assam	3 x 250 MW	01/2008	07/2011 (08/2016)	4375.35 (4375.35)	-
5	Barh STPP Stage-II, Bihar	2 x 660 MW	02/2008	08/2013 (03/2015)	7341.04 (7341.04)	-
6	Mouda STPP, Maharashtra	2 x 500 MW	11/2008	08/2012 (03/2013)	5459.28 (6010.89)	-
7	Rihand STTP Stage-III, Uttar Pradesh	2 x 500 MW	01/2009	10/2012 (10/2013)	6230.81 (6230.81)	-
8	Vindhyachal STTP Stage-IV, Madhya Pradesh	2 x 500 MW	01/2009	10/2012 (03/2013)	5915.00 (5915.00)	-
9	Vindhyachal STPP Stage-V, Madhya Pradesh	-	12/2011	08/2015 (08/2015)	3180.40 (3180.40)	-
10	Kudgi STPP Stage 1, Karnataka	3 x 800 MW	12/2011	12/2016 (12/2016)	15166.19 (15166.19)	-

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
11	Solapur STPP, Maharashtra	2 x 660 MW	03/2012	11/2016 (11/2016)	9395.18 (9395.18)	-
12	Mouda STPP Stage 2, Maharashtra	2 x 660 MW	03/2012	09/2016 (09/2016)	7921.47 (7921.47)	-
13	Lata-Tapovan Hydro Electric Power Project Uttarakhand	3 x 57 MW	07/2012	08/2017 (08/2017)	1527.00 (1527.00)	-
14	Lara Super Thermal Power Project Stage-I (2 X 800 Mw), Raigarh, Chhattisgarh	2 x 800 MW	11/2012	05/2017 (05/2017)	11846.00 (11846.00)	-
15	Gadarwara Super Thermal Power Project Stage-I, Madhya Pradesh	2 x 800 MW	02/2013	09/2017 (09/2017)	11638.55 (11638.55)	-

10.7.3 North East Electric Power Corporation

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Kameng Hydroelectric Project, West Kameng, Arunachal Pradesh	4 x 600 MW	12/2004	12/2009 (03/2017)	2496.90 (2496.90)	-
2	Pare Hydro Electric Project Papum Pare, Arunachal Pradesh	2 x 110 MW	12/2008	08/2013 (09/2015)	573.99 (1128.38)	-
3	Tripura Gas Based Power Project, Tripura	101 MW	07/2009	07/2013 (11/2014)	421.01 (951.48)	-
4	Tuirial Hydro Electric Project, Mizoram	60 MW	01/2011	07/2006 (12/2015)	368.72 (913.63)	-

10.7.4 Power Grid Corporation of India Limited

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Kaiga 3 and 4 Transmission system, Karnataka	759 CKM	03/2005	12/2007 (N.A.)	596.45 (1007.16)	90.00
2	Kudankulam - APP Trans System (PGCIL) Tamil Nadu	1836 CKM	05/2005	09/2008 (03/2013)	1779.29 (2159.07)	98.00
3	Eastern Region Strengthening Scheme-I, Multi State	1552 CKM	10/2006	10/2009 (N.A.)	975.96 (975.96)	99.00
4	Transmission System Associated with Parbati-III HEP, Himachal Pradesh	508 CKM	07/2006	01/2010 (04/2013)	557.24 (758.75)	95.00

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
5	Supplementary Transmission Associated with DVC and Maithon RBC Multi State	2152 CKM	08/2008	08/2012 (03/2014)	2360.95 (2580.90)	-
6	765 KV Pooling Station & Network with DVC and Maithon RBC Multi State	2050 CKM	08/2008	08/2012 (03/2014)	7075.33 (7075.33)	-
7	Tr. System Associated with Mundra Ultra Mega Project Multi State	3694 CKM	10/2008	10/2012 (03/2015)	4824.12 (4824.12)	89.00
8	Northern Region System Strengthening Scheme-XVIII, Multi State	-	02/2009	11/2011 (N.A.)	509.66 (509.66)	76.00
9	North-East North Western Interconnector I Project, Multi State	5073 CKM	02/2009	08/2013 (06/2015)	11130.19 (11130.19)	77.00
10	Northern Region System Strengthening Scheme-XV Multi State	246 CKM	02/2009	11/2011 (07/2014)	520.48 (520.48)	90.00
11	765 KV System for Central Part of Northern Region Grid Part-III Multi State	456 CKM	11/2009	05/2012 (12/2013)	1075.12 (1075.12)	Completed
12	System Strengthening in NR for Sasan & Mundra, Multi State	1378 CKM	12/2009	08/2012 (12/2014)	1216.83 (1216.83)	83.00
13	Trans. System Associated with Pallatana GBPP & BPTS, Multi State	1405 CKM	02/2010	12/2012 (06/2015)	2144.00 (2144.00)	72.00
14	Transmission System of Vindhyachal-IV and Rihand-III Gen. Project, Multi State	1665 CKM	03/2010	11/2012 (03/2015)	4672.99 (4672.99)	67.00
15	Northern Region Transmission Strengthening Scheme, Multi State	468 CKM	03/2010	11/2012 (04/2014)	965.58 (965.58)	65.00
16	Trans. System for Development of Pooling Stn. in NR Part of West Bengal and Transfer of Power from B, West Bengal	454 CKM	04/2010	01/2015 (12/2015)	4404.57 (4404.57)	16.00
17	Northern Region System Strengthening Scheme XVI, Multi State	404 CKM	07/2010	07/2013 (03/2014)	752.64 (752.64)	-
18	Eastern Region Strengthening Scheme -III, Multi State	754 CKM	07/2010	11/2012 (06/2015)	1272.80 (1272.80)	62.00
19	Northern Region System Strengthening Scheme XXI, Multi State	837 CKM	08/2010	04/2013 (12/2014)	1677.57 (1677.57)	59.00
20	Transmission System for Phase-I Gen Project In Orissa-Part A, Orissa	693 CKM	09/2010	03/2013 (03/2014)	2074.86 (2074.86)	75.00
21	Establishment of Pooling Stations at Rajgarh and Raipur for IPP Generation Projects in Chhattisgarh Chhattisgarh	527 CKM	12/2010	08/2013 (12/2013)	1719.52 (1719.52)	Completed
22	Transmission System for Phase-I Gen. Project in Orissa-Part B Orissa	1118 CKM	12/2010	12/2013 (03/2014)	2743.19 (2743.19)	-
23	Transmission system for Transfer of Power from Gen. Project in Sikkim to NR/WR Part-B, Multi State	799 CKM	03/2011	11/2013 (06/2015)	1585.12 (1585.12)	66.00
24	Trans System For Phase-I Gen. Project In Orissa-Part C, Multi State	1248 CKM	03/2011	03/2014 (03/2014)	2569.25 (2569.25)	84.00
25	Establishment of Pooling Stations at Champa and Raigarh for IPP Generation Project in Chhattisgarh, Chhattisgarh	547 CKM	05/2011	05/2014 (05/2014)	1961.87 (1961.87)	65.00
26	Common System Associated with ISGS Projects in Krishnapatnam, Andhra Pradesh	749 CKM	08/2011	08/2014 (08/2014)	1637.34 (1637.34)	70.00

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
27	Integration of Pooling Station in Chhattisgarh with Central Part of WR for IPP Generation Projects , Multi State	740 CKM	08/2011	12/2013 (N.A.)	1391.97 (1391.97)	-
28	Transmission system for IPP Generation Projects in MP and Chhattisgarh, Multi State	557 CKM	09/2011	12/2013 (06/2014)	1366.34 (1366.34)	75.00
29	Common System Associated with Coastal Energen Private Limited and Ind-Barath Power (Madras) Limited, Tuticorin, Tamil Nadu	1188 CKM	09/2011	09/2014 (12/2014)	1940.13 (1940.13)	58.00
30	Transmission System for Phase-I Generation Projects in Jharkhand and West Bengal, Part-A, Jharkhand	396 CKM	10/2011	11/2013 (03/2015)	558.26 (558.26)	36.00
31	Northern Region System Strengthening Scheme-XXIV, Multi State	-	11/2011	11/2014 (11/2014)	723.63 (723.63)	37.00
32	Transmission System Strengthening in Western Part of WR for IPPS Generation Projects in Chhattisgarh, Chhattisgarh	1337 CKM	11/2011	07/2014 (07/2014)	2127.51 (2127.51)	-
33	Immediate Evacuation System With Barh-II TPS, Bihar	-	12/2011	08/2014 (08/2014)	901.77 (901.77)	61.00
34	Transmission System for Connectivity of ESSAR Power Gujarat Ltd., Gujarat	500 CKM	12/2011	02/2014 (06/2014)	552.44 (552.44)	70.00
35	System Strengthening In North/West Part of WR for IPP Projects In Chhattisgarh, Chhattisgarh	-	12/2011	08/2014 (05/2015)	1746.65 (1746.65)	25.00
36	Tr. System for Phase-I Generation Projects in Jharkhand and West Bengal-Part-A2., Multi State	695 CKM	12/2011	08/2014 (06/2015)	2422.66 (2422.66)	34.00
37	System Strengthening in Raipur-Wardha Corridor for IPP Projects in Chhattisgarh, Chhattisgarh	760 CKM	01/2012	01/2015 (01/2015)	1422.85 (1422.85)	39.00
38	System Strengthening in Wardha-Aurangabad Corridor for IPP Projects in Chhattisgarh, Chhattisgarh	712 CKM	02/2012	02/2015 (02/2015)	1310.85 (1310.85)	44.00
39	Transmission system Associated with Krishnapatnam UMPP-Part-B, Andhra Pradesh	609 CKM	02/2012	10/2014 (10/2014)	1927.16 (1927.16)	47.00
40	Tran. Sys. for Phase-I Project in Jharkhand and West Bengal Part-B, Multi State	-	02/2012	10/2014 (06/2015)	3201.44 (3201.44)	36.00
41	WR-NR HVDC Interconnector for IPP Projects in Chhattisgarh, Chhattisgarh	2001 CKM	03/2012	06/2015 (12/2015)	9569.76 (9569.76)	25.00
42	Common Sys. Associated With East Coast Energy Pvt. Ltd. & NCC Power Projects Ltd, LTOA Generation, Srikakulam, Multi State	-	06/2012	06/2015 (06/2015)	1909.24 (1909.24)	21
43	System Strengthening-XVIII in Southern Region Grid, Multi State	-	06/2012	11/2014 (11/2014)	1263.26 (1263.26)	37.00
44	System Strengthening -XIX in Southern Regional Grid[, Multi State	-	09/2012	12/2014 (12/2014)	1935.35 (1935.35)	29
45	System Strengthening - XVII in Southern Regional Grid, Multi State	-	09/2012	06/2016 (12/2015)	1508.74 (1508.74)	18.00
46	Northern Region System Strengthening Scheme-XXVI, Multi State	-	09/2012	03/2015 (03/2015)	803.34 (803.34)	19.00
47	Northern Region System Strengthening Scheme -XXVIII, Multi State	-	09/2012	04/2015 (05/2015)	524.40 (524.40)	-

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
48	Common Tr. Sys. Associated With East Coast & NCC Power Projects in Srikakulam Area A.P. Part-C, Multi State	-	03/2013	06/2015 (06/2015)	514.20 (514.20)	-
49	Common Sys. Associated with East Coast Energy Pvt. Ltd. and NCC Power Projects Ltd. LTOA Gen Part-B. Multistate	-	03/2013	12/2015 (12/2015)	2514.88 (2514.88)	-
50	Transmission System Associated with Mouda Stage-II Multistate	-	09/2013	05/2016 (05/2016)	1575.30 (1575.30)	-
51	Northern Region System Strengthening Scheme-XXV Multi State	-	09/2013	03/2016 (03/2016)	680.69 (680.69)	-
52	Eastern Region Strengthening Scheme-V, Multi State	-	10/2013	05/2016 (05/2016)	1364.52 (1364.52)	-
53	Inter-Regional System Strengthening Scheme in WR and NR (Part-A) Maharashtra	-	10/2013	11/2016 (11/2016)	1315.90 (1315.90)	-
54	Northern Region System Strengthening Scheme-XXXII Multi State	-	02/2014	06/2016 (06/2016)	908.08 (908.08)	-
55	Northern Region System Strengthening Scheme-XXX Multi State	-	02/2014	06/2016 (06/2016)	539.82 (539.82)	-

10.7.5 Satluj Jal Vidyut Nigam Limited (SJVN)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Rampur HEP Simla, Himachal Pradesh	6 x 412 MW	1/2007	1/2012 (N.A.)	2047.03 (2047.03)	-

10.7.6 Tehri Hydro Development Corporation Limited (THDC)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Tehri Pumped Storage Plant, Uttarakhand	4 x 250 MW	07/2006	07/2010 (02/2017)	1657.00 (2978.86)	-
2	Vishnugad Pipalkoti Hydroelectric Project, Uttarakhand	4 x 111 MW	08/2008	07/2014 (07/2018)	2491.58 (3745.08)	-

10.8 Railways

There were 284 projects in the Railways sector under implementation as on 31.3.2014. The total original cost of implementation of these projects stood at ₹ 148717.49 crore and the anticipated completion cost at ₹ 257761.89 crore which is 73.32% more than the original cost due to cost overrun. The expenditure incurred on these projects till March 2014 is ₹ 78,336.55 crore which is 52.7% of the original cost. Out

of the 284 projects in the Railways sector, only 13 projects are being implemented by CPSE namely Rail Vikas Nigam Ltd. (RVNL). The details of 9 projects costing above ₹ 500 crore are given as under.

10.8.1 Rail Vikas Nigam Ltd. (RVNL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Dalli-Rajhara- Raoghat (Part of Dalli-Rajhara-Jagdarpur), NL, RVNL, SECR, Chhattisgarh	235 KM	04/1995	12/2012 (N.A.)	304.00 (968.60)	6.50
2	Haridaspur-Paradeep (NL), ECR, Odisha	82 KM	04/1996	N.A. (N.A.)	301.64 (1185.64)	4.25
3	Sukinda Road-Angul (NL) (ECR), Odisha	99 KM	04/1998	02/2015 (02/2015)	183.23 (818.29)	10.00
4	Obulavaripalle-Krishnapatnam (RVNL), Andhra Pradesh	113 KM	07/2006	03/2008 (N.A.)	743.00 (1117.11)	-
5	Bhopal-Bina 3D Line Doubling, Madhya Pradesh	138 KM	09/2007	03/2010 (12/2015)	687.20 (800.00)	-
6	New Work For Construction of Metro Railway from Noapara-Barasat via Bimanbandar (MTP), West Bengal	18 KM	04/2010	03/2016 (06/2016)	2397.72 (2397.72)	10.00
7	New Work for Construction of Metro Railway from Baranagar to Barrackpore and Dakshineswar (MTP), West Bengal	14.5 KM	04/2010	03/2014 (03/2016)	2298.42 (2298.42)	6.00
8	New Work for Construction of Metro Railway from NSCB Airport To New Garia via Rajarhat (MTP), West Bengal	32 KM	04/2010	03/2016 (03/2016)	3951.98 (3951.98)	10.00
9	New Work for Construction Of Metro Railway From Joka To Binoy Badal Dinesh Bagh, West Bengal	16.72 KM	04/2010	03/2016 (03/2016)	2913.51 (2913.51)	23.00

10.9 Shipping & Ports

There were 19 projects in the Shipping and Ports sector under implementation as on 31.3.2014. The total original cost of implementation of these projects stood at ₹ 15617.12 crore and the anticipated completion cost is ₹ 18600.58 crore which is 19.10% more than the original cost due to cost overrun. The expenditure incurred on these projects till March 2014 is Rs.

8807.06 crore which is 56.4% of the original cost. These projects are being implemented by RVNL, SCI and other non-CPSEs i.e. Mumbai Port Trust and Port Trust. The details of the 4 projects of more than ₹ 500 crore of Shipping Corporation of India are as under:

10.9.1 Shipping Corporation of India (SCI)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Acquisition of 4 Nos. of 82000 DWT Kamsarmax Bulk Carriers from M/s. Jiangsu Eastern Heavy Industries, Maharashtra	4 x 82000 DWT	08/2010	12/2012 (11/2013)	612.72 (532.83)	0.00
2	Acquisition of Two(2) Nos. of 317000 DWT Very Large Crude Carriers from M/s. Jiangsu Rongsheng Heavy Industries, Maharashtra	2 x 317000 DWT	10/2010	02/2014 (04/2014)	966.46 (994.82)	0.00
3	Acquisition of Three (3) Nos. of 6500 TEU Cellular Container Vessels from M/s. STX Ship Building Co. Ltd. Maharashtra	3 x 6500 TEU	10/2010	12/2013 (11/2013)	1028.10 (1012.23)	0.00
4	Acquisition of Six (6) Nos. of Anchor Handling Tug Cum Supply, Multi State	-	01/2012	03/2014 (08/2014)	511.87 (511.87)	0.00

10.10 Telecommunication

There were 10 projects in the Telecommunication sector under implementation as on 31.3.2014. The total original cost of implementation of these projects stood at ₹ 5079.29 crore and the anticipated completion cost is ₹ 4982.94 crore which is 19.10% less than the original cost. The expenditure incurred on these projects till March' 2014 is ₹ 1767.57 crore which is 34.8% of the original cost. The details of the 3 projects of more than ₹ 500 cWWrore of Bharat Sanchar Nigam limited is as under:

10.10.1 Bharat Sanchar Nigam Limited (BSNL)

S. No.	Project/Location	Capacity	Date of approval	Date of commissioning – Original / (Anticipated)	Cost (₹ in crore) Original / (Anticipated)	Physical Progress (%)
1	Implementation of FTTH, The State of The Art Access Network, Procurement of GPON Equipment Multi State	GPON Equipment	12/2007	03/2010 (N.A.)	952.88 (952.88)	0.00
2	GSM Equipment of 1625000 Lines (2G) 325000 Lines (3G) MP Phase V.1 Telecom Circle Madhya Pradesh	1625000 Lines (2G) 325000 Lines (3G)	11/2009	11/2010 (09/2013)	916.70 (930.60)	0.00
3	Supply Installation Testing and Commissioning of Rural Wimax Network Phase II, Multi State	-	07/2010	05/2011 (05/2014)	1148.19 (964.37)	58.68

Chapter 11

CPSEs UNDER-CONSTRUCTION CPSEs

11.1 There are some Central Public Sector Enterprises (CPSEs) which have yet to start regular production on a commercial scale as they are in the construction stage. Many of these are subsidiary companies set up by (Holding) CPSEs and some of these subsidiary companies are 'shell companies' which have been set up to facilitate the establishment of Ultra Mega

Power Projects (UMPP) or similar other Projects.

11.2 As on 31.03.2014, there were 56 'under construction' CPSEs, as against 48 as on 31.03.2013. Four 'under construction' CPSEs existing in 2012-13 have become operational and four CPSEs were closed down during the year. The details of these 8 CPSEs are given in Table 11.1 below:

Table 11.1

S. No.	Name of The Enterprise	Reason for Exclusion as on 31.3.2014
1	Darbhangha Motihari Transmission Company Limited (DMTCL)	Closed in 2013-14
2	Purulia Kharagpur Transmission Company Limited (PKTCL)	Closed in 2013-14
3	RAPP Transmission Company Limited (RTCL)	Closed in 2013-14
4	Patran Transmission Company Limited (PTCL)	Closed in 2013-14
5	Bharat Broadband Network Limited	Became operational in 2013-14
6	Biotechnology Industry Research Assistance Council	Became operational in 2013-14
7	CONCOR Air Limited	Became operational in 2013-14
8	BITES Infrastructure Services Ltd.	Became operational in 2013-14

11.3 While the total 'Authorised Capital' of these 56 CPSEs stood at ₹ 30644.71 crore, the Paid-up Capital stood at ₹ 12955.73 crore, as on 31.03.2014.

Brief details of these enterprises showing their status, year of incorporation, Authorised Capital and Paid-up Capital are given in the Table 11.2 below:

Table 11.2

(₹ in Crore)

S.No.	CPSEs	Status	Year of Incorporation	Authorised Capital	Paid-up Capital
1	Air India Engineering Services Limited (AIESL).	Subsidiary	2004	10.00	0.05
2	Anushakti Vidhyut Nigam Limited (AVNL).	Independent Company	2011	5.00	0.10
3	Ballabgarh-GN Transmission Co. Ltd.	Subsidiary	2013	0.05	0.05
4	Bharat PetroResources - JPDA Limited.	Subsidiary	2006	60.00	60.00
5	Bharatiya Nabhihiya Vidyut Nigam Limited.	Independent Company	2003	5000.00	4187.57

S.No.	CPSEs	Status	Year of Incorporation	Authorised Capital	Paid-up Capital
6	Bhartiya Rail Bijlee Company Limited.	Subsidiary	2007	1606.00	1046.15
7	Brahmaputra Cracker and Polymer Limited.	Subsidiary	2007	2000.00	1132.87
8	Cheyur Infra Ltd.	Subsidiary	2014	0.05	0.05
9	Chhattisgarh Surguja Power Limited.	Subsidiary	2006	0.05	0.05
10	Coastal Karnataka Power Limited.	Subsidiary	2006	0.05	0.05
11	Coastal Maharashtra Mega Power Limited.	Subsidiary	2006	0.05	0.05
12	Coastal Tamil Nadu Power Limited.	Subsidiary	2007	0.05	0.05
13	Dedicated Freight Corridor Corpn. of India Ltd.	Independent Company	2006	8000.00	2707.74
14	Deoghar Mega Power Limited (DMPL).	Subsidiary	2012	0.05	0.05
15	DGEN Transmission Co. Ltd.	Subsidiary	2011	0.05	0.05
16	Ghogarpalli Integrated Power Company Limited.	Subsidiary	2008	0.05	0.05
17	High Speed Rail Corporation of India Limited	Subsidiary	2012	5.00	0.05
18	HLL Biotech Limited.	Subsidiary	2012	180.00	178.01
19	HPCL Rajasthan Refinery Ltd.	Subsidiary	2012	4000.00	0.05
20	Indian Railway Stations Development Corpn. Ltd..	Subsidiary	2012	100.00	40.00
21.	Indo Cat Private Ltd.	Subsidiary	2006	1500	1401
22	Jagdishpur Paper Mills Ltd.	Subsidiary	2008	5.00	0.05
23	Jharkhand National Mineral Development Corpn.	Subsidiary	2012	0.01	0.01
24	Kolkata Metro Rail Corporation Ltd.	Independent	2010	1400.00	480.50
25	Loktak Downstream Hydroelectric Corporation Ltd.	Subsidiary	2009	230.00	117.69
26	Mahanadi Basin Power Limited	Subsidiary	2011	0.05	0.05
27.	MAMC Ltd	Subsidiary	2010	1250.00	0.05
28	MJSJ Coal India Limited	Subsidiary	2008	200.00	95.10
29	MNH Shakti Limited	Subsidiary	2008	100.00	85.10
30	Neyveli Uttar Pradesh Power Limited (NUPPL).	Subsidiary	2012	500.00	0.10
31	NLC Tamil Nadu Power Limited/Tuticorin	Subsidiary	2005	2500.00	1472.00
32	NMDC-CMDC Limited	Subsidiary	2008	4.00	3.05
33	NMDC Power Ltd.	Subsidiary	2011	0.05	0.05
34	NPCIL-NALCO Power Company Ltd.	Subsidiary	2012	1.00	0.10
35	NPCIL-Indian Oil Nuclear Energy Corporation Ltd. Subsidiary	2012	10.00	0.10	
36	Odisha Infrapower Ltd.	Subsidiary	2014	0.05	0.05
37	OIL India International Ltd.	Subsidiary	2013	500.00	100.00
38	Orissa Integrated Power Limited	Subsidiary	2006	0.05	0.05
39	Power Equity Capital Advisors Private Limited.	Subsidiary	2008	0.10	0.05
40	Powergrid N M Transmission Limited	Subsidiary	2011	0.05	0.05
41	Powergrid Vemagiri Transmission Limited (PVTI)	Subsidiary	2011	0.05	0.05
42	Punjab Ashok Hotel Corporation Ltd.	Subsidiary	1998	3.00	2.50
43	Punjab Logistic Infrastructure Ltd.	Subsidiary	2013	2.00	0.10
44	Railway Energy Management Company Ltd.	Subsidiary	2013	50.00	10.00
45	SAIL Jagadishpur Power Plant Ltd	Subsidiary	2011	0.05	0.05
46	SAIL Sindri Projects Limited	Subsidiary	2011	0.05	0.05

S.No.	CPSEs	Status	Year of Incorporation	Authorised Capital	Paid-up Capital
47	Sakhigopal Integrated Power Company Limited	Subsidiary	2008	0.05	0.05
48	Sethusamudram Corporation Limited	Independent Company	2004	1000.00	745.00
49	SJVN Thermal Pvt. Ltd.	Subsidiary	2007	3000.00	0.01
50	SIDCUL CONCOR Infra Limited	Subsidiary	2013	100.00	100.00
51	Tanda Transmission Company Ltd.	Subsidiary	2013	0.05	0.05
52	Tatiya Andhra Mega Power Limited	Subsidiary	2009	0.05	0.05
53	TCIL Bina Toll Road Limited	Subsidiary	2012	20.00	19.57
54	TCIL Lakhnadone Toll Road Limited (TLTRL)	Subsidiary	2013	25.00	14.05
55	UNCHAHAR Transmission Ltd.	Subsidiary	2012	0.05	0.05
56	Vizag Transmission Ltd.	Subsidiary	2011	0.05	0.05

11.4 The status of each enterprise and projects being executed by them are discussed below:

11.4.1 Air India Engineering Services Limited (AIESL)

Air India Engineering Service Limited (AIESL), a wholly owned subsidiary company of the erstwhile Air India Ltd, was incorporated on 11th March 2004. The Authorised Capital and Paid-up Capital of the company as on 31.03.2014 were ₹ 10 crore and ₹ 0.05 crore, respectively. The main objectives of the company are to i) carry on the business activities of providing engineering services to aircraft and the services of repairing, maintaining, servicing and refurbishing of aircrafts and all components and parts thereof, (ii) carry on the business activities of providing engineering services of aircraft engines, auxiliary power units and the services of repairing, maintaining, servicing and refurbishing of aircraft engines, auxiliary power units and all parts and all components thereof and (iii) carry on the business of providing engineering services, repairing and maintaining services of any nature for aircraft, flying machines, helicopters, dirigibles, balloons, aerial conveyances and their engines, auxiliary power units and all components and parts of any of the foregoing in any part of the world. (iv) undertake, render and provide, whether by itself or in association with other carriers or entities, all services and facilities as are necessary or desirable for the operation of air transport services in any part

of the world including but not limited to engineering services, maintenances, servicing and repairing of aircraft, flying machines, aerial conveyances and any engines, auxiliary power units, components, parts, all kinds of vehicles, machinery and equipment; and (v) undertake, render and provide training of personnel, technical or otherwise. After receipt of the Government approval, the Company is under the process of being operationalized and no business transactions took place during the year.

11.4.2 Anushakti Vidhyut Nigam Limited (AVNL)

AVNL is a Public Limited Company incorporated on 27th January, 2011 having an Authorised share Capital of ₹ 5 crore and Paid up Capital of Rs 0.1 crore..The business of the company involves development of nuclear power, manufacture of nuclear components and trade of electricity. The company is yet to commence its business activities.

11.4.3 Ballabgarh-GN Transmission Co. Ltd.

Ballabgarh-GN Transmission Co. Ltd. was incorporated on 9th September, 2013 as a wholly owned subsidiary of PFC Consulting Limited, with its corporate office at New Delhi. The Authorised Capital and Paid-up Capital

of the company, as on 31.3.2014, are ₹ 0.05 crore. The Company has been incorporated for transmission of electricity in the state of Haryana and to undertake necessary activities for selection of the transmission service provider(s).

11.4.4 Bharat Petro Resources JPDA Ltd.

Bharat Petro Resources JPDA Ltd was incorporated on 28th October, 2006, as a wholly owned subsidiary company of Bharat Petro Resources Ltd (BPRL). This company was formed as a Special Purpose Vehicle (SPV) as required under the terms on which the Block JPDA 06-103-East Timor in Joint Petroleum Development Area (JPDA) between East Timor and Australia, was awarded to the consortium led by Oilex Ltd in which BRPL was a partner, to carry out exploration activities relating to the said block. The main activity of the company is exploration of Oil and Gas in JPDA between East Timor and Australia. The Company has Participating Interest (PI) of 20% in the block JPDA 06-103. The other consortium members are Videocon Industries Ltd & GSPC holding PI of 20% each, Pan Pacific & Japan Energy holding PI of 15% each and Oilex holding PI of 10% in the said block.

The Authorised share capital and paid up share capital of the Company stood at ₹ 60.00 crore each as on 31.03.2014.

11.4.5 Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI)

Bharatiya Nabhikiya Vidyut Nigam Ltd. (BHAVINI) is a wholly owned enterprise of the Government of India under the administrative control of Department of Atomic Energy. BHAVINI was incorporated on 22nd October, 2003. The company is responsible for construction, commissioning and operation of 500 MWe Prototype Fast Breeder Reactor Project at Kalpakkam, Tamil Nadu as well as future Fast Breeder Reactors (FBR) for generating electrical power from Nuclear Energy in pursuance of the schemes and programmes of the Government of India under the provisions of the

Atomic Energy Act, 1962. The company is currently building a 500MWe Fast Breeder Reactor (FBR) at Kalpakkam, 70 KMs away from Chennai. The FBR is the forerunner of the future fast breeder power reactors and is expected to provide energy security to the country.

The Authorised Capital of the company, as on 31.3.2014, is ₹ 5000 crore and total Paid-up Capital is ₹ 4529.57 crore.

11.4.6 Bhartiya Rail Bijlee Company Limited (BRBCL)

Bhartiya Rail Bijlee Company Limited (BRBCL) has been formed as a Joint Venture company between Indian Railways and NTPC Ltd with the objective of generating electric power and taking up necessary development, construction and erection for power projects. The company was incorporated on 22nd November, 2007 with Authorised Capital of ₹ 1606 crore. Total equity Capital as on 31.03.2014 is ₹ 1046.15 crore. The equity participation of NTPC and Indian Railway in this company is in the ratio of 74:26.

11.4.7 Brahmaputra Cracker and Polymer Limited (BCPL)

Brahmaputra Cracker and Polymer Limited (BCPL), was incorporated on 8th January 2007 with its registered office at Guwahati and project office at Dibrugarh in Assam. It is a subsidiary of GAIL with equity participation from GAIL (70%), OIL (10%), Govt. of Assam (10%) and NRL (10%), for setting up 2,80,000 MT Gas Cracker Project at Lepetkata, District Dibrugarh, Assam. The Authorised Capital of the company as on 31.03.2014 is ₹ 2000 crore and paid-up capital has been increased from ₹ 1057.95 crore to ₹ 1132.87 crore during the financial year 2013-14. The land required for the project has been acquired, and handed over by the Government of Assam. Necessary environmental and pollution clearances, both from the State and Ministry of Environment & Forests have also been obtained for the project.

11.4.8 Cheyyur Infra Ltd.

Cheyyur Infra Ltd. was incorporated on 21st January, 2014 and its corporate office is at New Delhi. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore. The company was incorporated as a wholly owned subsidiary of Powergrid Corporation of India Ltd. The Company has been incorporated for an Ultra Mega Power Project in Cheyyur

11.4.9 Chhattisgarh Surguja Power Limited (CSPL)

Chhattisgarh Surguja Power Ltd. (CSPL) was established on 10th February, 2006 as a wholly owned subsidiary (and a shell company) of Power Finance Corporation Ltd. for the development of Ultra Mega Power Project (UMPP) in Chhattisgarh. The Authorised Capital and Paid-up Capital of the company as on 31.3.2014 are ₹ 0.05 crore each. On behalf of the proposed UMPP, CSPL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearance.

11.4.10 Coastal Karnataka Power Limited (CKPL)

Coastal Karnataka Power Limited was incorporated on 10th February, 2006 under the Companies Act, 1956 as a wholly owned subsidiary (and a shell company) of Power Finance Corporation Limited for the development of Tadri UMPP in Karnataka. The Authorised Capital and Paid-up Capital of the Company, as on 31.3.2014, are ₹ 0.05 crore each. On behalf of the proposed Ultra Mega Power Project, CKPL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearance before transfer of company.

11.4.11 Coastal Maharashtra Mega Power Limited (CMMPL)

Coastal Maharashtra Mega Power Ltd. (CMMPL), was incorporated on 1st March, 2006 under the

Companies Act, 1956 as a wholly owned subsidiary (and a shell company) of Power Finance Corporation Ltd. to facilitate the development of Ultra Mega Power Project (UMPP) in Maharashtra. The Authorised Capital and Paid-up Capital of the company as on 31.3.2014 are ₹ 0.05 crore each. On behalf of the proposed UMPP, CMMPL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearance.

11.4.12 Coastal Tamil Nadu Power Limited (CTNPL)

Coastal Tamil Nadu Power Limited (CTNPL) was incorporated on 9th January, 2007 under the Companies Act, 1956 as a wholly owned subsidiary (and a shell company) of Power Finance Corporation Limited for the development of Cheyyur Ultra Mega Power Project (UMPP) in the state of Tamil Nadu. The Authorised Capital and Paid-up Capital of the company as on 31.3.2014 are ₹ 0.05 crore each. On behalf of the proposed UMPP, CTNPL is to undertake preliminary studies and to obtain necessary clearances and tie up inputs including water, land and power selling arrangements etc. for the proposed power project.

11.4.13 Dedicated Freight Corridor Corporation of India Limited (DFCCIL)

DFCCIL was incorporated on 30th October, 2006 with 100% shareholding held by the Government of India. DFCCIL is a Schedule-‘A’ CPSE under the administrative control of Ministry of Railways. It is a Special Purpose Vehicle created to undertake planning and development, mobilization of financial resources, construction, maintenance and operation of dedicated freight lines covering about 3338 route KMs on the Eastern and Western Corridors of Indian Railways. In the first phase, DFCCIL will be constructing two corridors - Western DFC and Eastern DFC. The Eastern Corridor, starting from Ludhiana in Punjab will pass through the states of Haryana, Uttar Pradesh, Bihar, and Jharkhand and terminate at Dankuni in West Bengal.

The Western Corridor will traverse the distance from Dadri to Mumbai, passing through the states Delhi, Haryana, Rajasthan, Gujarat and Maharashtra.

As on 31.03.2014, the Authorised share Capital of the company is ₹ 8000 crore and the paid up share Capital of the company is ₹ 2707.74 crore.

11.4.14 Deoghar Mega Power Limited (DMPL)

Deoghar Mega Power Ltd. (DMPL) is one of the various SPVs and a wholly owned subsidiary of Power Finance Corporation Limited. It was incorporated on 26th April 2012 for the development of Ultra Mega Power Project in the state of Jharkhand. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore each. DMPL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearances.

11.4.15 DGEN Transmission Co. Limited

DGEN Transmission Company Limited (formerly known as DGEN and Uttarakhand Transmission Company Limited) was incorporated on 15th November, 2011 as a wholly owned subsidiary of PFC Consulting Limited for the development of the Transmission Project Associated with DGEN TPS (1200 MW) of Torrent Power Ltd. and interconnection between Srinagar and Tehri. The Authorised Capital and Paid-up Capital of the company as on 31.3.2014 are ₹ 0.05 crore each. DGEN Transmission Company Ltd is one of the Special Purpose Vehicle (SPV) created for development of Transmission Project.

11.4.16 Ghogarpalli Integrated Power Company Limited (GIPCL)

Ghogarpalli Integrated Power Company Limited (GIPCL) was incorporated on 22nd May, 2008 as a wholly owned subsidiary of Power Finance Corporation Ltd. to facilitate the development of Ultra Mega Power Project (UMPP) in the state of Orissa. The Authorised

Capital and Paid-up Capital of the company are ₹ 0.05 crore each, as on 31.3.2014. GIPCL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearances.

11.4.17 High Speed Rail Corporation of India Limited (HSRC)

High Speed Rail Corporation of India Ltd. (HSRC), a wholly owned subsidiary of Rail Vikas Nigam Ltd. (RVNL) was incorporated on 25th July, 2012. The company has its registered office at New Delhi. The main objects of the company are to cater to and carry on all business related to planning, designing, development, construction, manufacturing, assembling, fabricating, processing, installing, maintenance, operation and financing of railway infrastructure and related logistic support systems, as may be approved by the Government of India. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 5 crore and ₹ 0.05 crore, respectively.

11.4.18 HLL Biotech Limited

HLL Biotech Limited is a subsidiary of HLL Lifecare Limited incorporated on 12th March, 2012 with its registered office at HLL Bhawan, Trivandrum, Kerala. The main objectives of the company are to carry on the business of manufacture and sale of all biological preparations including prophylactic and therapeutic vaccines, pharmaceutical products, preparations and services, Anti-Sera, and Plasma and Hormonal products.

The Authorised Share Capital and paid up equity share capital of the company as on 31.03.2014 are Rs 180 crore and ₹ 178.01 crore, respectively.

11.4.19 HPCL Rajasthan Refinery Ltd.

In the year 2013-14, HPCL Rajasthan Refinery Ltd. has had an Authorised Capital of ₹ 4000 crore and total Paid-up Capital of ₹ 0.05 crore.

11.4.20 Indian Railway Stations Development Corporation Limited (IRSDC)

Indian Railway Stations Development Corporation (IRSDC) was incorporated on 12th April, 2012 with an Authorised Capital of ₹ 100 crore. It is a Joint Venture company of Ircon International Ltd. (IRCON) and Rail Land Development Authority (RLDA). Equity participation of IRCON and RLDA is in the ratio of 51:49. The main objectives of IRSDC are to develop the railway stations across India and augmenting and maintaining passenger amenities at stations in a holistic manner. IRSDC, in addition to redevelopment/remodeling/up gradation of passenger amenities, is responsible to maintain station premises for a period of 45 years. The Paid-up Capital of the company, as on 31.3.2014, is ₹ 40 crore.

11.4.21 Indo Cat Pvt. Ltd.

Indo Cat Pvt. Ltd. was incorporated on 1st June, 2006, as a wholly owned subsidiary company of Indian Oil Corporation Ltd. This company was formed for Manufacturing of FCC catalyst/additives under the Ministry of Petroleum & Natural Gas. The Registered Office of the company is P. O. Jawahar Nagar, Vadodara (Gujarat).

The Authorised share capital and paid up share capital of the Company as on 31.03.2014 stood at ₹ 15.00 crore and 14.01 crore respectively.

11.4.22 Jagdishpur Paper Mills Limited (JPML)

Jagdishpur Paper Mills Limited was incorporated on 8th May, 2008 and its registered office is at Lucknow. It is a subsidiary of Hindustan Paper Corporation Ltd. (HPC) which has an equity holding of 99.99%. The Authorised Capital and Paid-up Capital of the company as on 31.3.2014 are ₹ 5 crore and ₹ 0.05 crore, respectively.

11.4.23 Jharkhand National Mineral Development Corporation (JNMDC)

Jharkhand National Mineral Development Corporation Limited was incorporated on 6th August, 2012. It is Joint venture between NMDC and Jharkhand State Mineral Development Corporation Limited with NMDC holding 60% equity. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.01 crore each.

11.4.24 Kolkata Metro Rail Corporation Ltd.

In the year 2013-14, Kolkata Metro Rail Corporation Ltd. has had an Authorised Capital of ₹ 1400 crore and total Paid-up Capital of ₹ 480.50 crore.

11.4.25 Loktak Downstream Hydroelectric Corporation Limited (LDHCL)

Loktak Downstream Hydroelectric Corporation Ltd (LDHCL) was incorporated as a Joint Venture (JVC) company of NHPC Ltd. (74% shareholding) and Government of Manipur (26% shareholding) on 23rd October, 2009 with an Authorised share capital of ₹230 crore. The paid-up capital of the company as on 31.03.2014 is ₹ 117.69 crore. Its registered office is at Loktak Power Station, Komkeirap, Manipur. The objective of the company is to plan, promote and develop hydroelectric power generation in Manipur.

11.4.26 Mahanadi Basin Power Limited (MBPL)

Mahanadi Basin Power Limited (MBPL) is a wholly owned subsidiary of Mahanadi Coalfields Limited (MCL). MBPL was incorporated as a Public Limited Company on 2nd December, 2011 having its registered office at BJB Nagar, Bhubaneswar-751017. The Authorised Capital and initial Paid-up Capital of MBPL as on 31.03.2014 is ₹ 0.05 crore each.

The company will invite proposal on behalf of MBPL to develop, operate and maintain the proposed power project of 2 x 800 MW Pit Head Super Critical Thermal Power Plant at District Sundargarh, Odisha.

11.4.27 MAMC industries Ltd.

MAMC industries Ltd. was incorporated on 25th August, 2010, as a wholly owned subsidiary company of BEMIL Ltd. This company was formed and incorporated by the company for the intended purpose of JV formation under the Ministry of Defence, Department of Defence Production. The Registered Office of the company is Taratala Road, Kolkata (West Bengal).

The Authorised share capital and paid up share capital of the Company as on 31.03.2014 stood at ₹ 12.50 crore and 0.05 crore respectively.

11.4.28 MJSJ Coal Limited

MJSJ Coal Ltd. was incorporated on 13th August, 2008 as a Joint Venture (JV) company between Mahanadi Coalfields Ltd. (60% share), JSW Steel Ltd. (11% share), JSW Energy Ltd. (11% share), Shyam Metalics & Energy Ltd. (9% share) and Jindal Stainless Ltd. (9% share). The company has been formed to operate Gopalprasad OCP and Utkal-A of Talcher coalfields. The normative capacity of the project has been estimated as 15.00 MTY and peak capacity is 20.00 MTY. The Authorised share capital is ₹ 200 crore whereas its paid up share capital stood at ₹ 95.10 crore during the year 2013-14.

11.4.29 MNH Shakti Limited

MNH Shakti Limited is a subsidiary company of Mahanadi Coalfields Limited, which was incorporated on 16th July, 2008. It is a JV with 70% stake of Mahanadi Coalfields Limited (MCL), 15% stake of Neyveli Lignite Corporation Limited (NLC) and 15% stake of Hindalco Limited (HIL).

11.4.30 Neyveli Uttar Pradesh Power Limited (NUPPL)

Neyveli Uttar Pradesh Power Ltd. was incorporated on 9th November, 2012. It is a joint venture between Neyveli Lignite Corporation (NLC) and Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (UPRVUNL) with the objective of setting up of 1980 MW coal based

Thermal Power Plant at Ghatampur, Uttar Pradesh at an estimated cost of about ₹ 14,375 crore. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 500 crore and 0.10 crore, respectively.

11.4.31 NLC Tamil Nadu Power Limited

NLC Tamil Nadu Power Limited (NTPL) was incorporated on 18th November, 2005. It is a joint venture company of Neyveli Lignite Corporation Ltd. (NLC Ltd.) and Tamil Nadu Generation and Distribution Corporation (TANGEDCO) with a share of 89% and 11%, respectively, for establishing a 2 x 500 MW power plant at Tuticorin, Tamil Nadu at an estimated cost of ₹ 4909.54 crore. It has its corporate office at Kilpauk, Chennai. The project of setting up power plants is under way. Unit-I and Unit-II of the project were to be commissioned by March' 2012 and August' 2012, respectively, but due to time overrun it is anticipated that the commissioning of these projects will be completed by the end of September' 2014 and October' 2014, respectively. The land for the project (and colony) measuring 127.465 ha. has been allotted by V.O. Chidambaranar Port Trust (VOCPT) and long term Lease Agreement for 30 years has been entered into between the Company and VOCPT. Government of Tamil Nadu has accorded administrative sanction on 23.12.2011 to acquire land to the extent of 286.21 acres for ash dyke requirement for this project. The contract for the main plant package of Steam Generator, Turbo Generator and Electrostatic Precipitator, has been awarded to BHEL. Civil construction, structural fabrication and mechanical erection works are in progress. The overall physical progress of the project as on 31.03.2014 stood at 83.36% as against the target of 99.83%. The Ministry of Coal has given coal linkage to this project from Mahanadi Coalfields Limited (MCL) and MCL has issued Letter of Assurance to supply 3 million ton of 'F' grade coal per annum for this project. The Authorised Capital and Paid up share Capital of the company as on 31.03.2014, stood at ₹ 2500 crore and ₹ 1472 crore, respectively.

11.4.32 NMDC-CMDC Limited

NMDC-CMDC Limited was incorporated on 19th June, 2008 with its registered office at Raipur, Chhattisgarh. It is a Joint Venture Company of NMDC and Chhattisgarh Mineral Development Corporation Limited (CMDC) with equity participation in the ratio of 51:49 respectively. The object of the company is to develop Bailadila Iron Ore Deposits No. 4 & 13 at Bailadila in Dantewada District in Chhattisgarh State. The Authorised Capital and Paid-up Capital of the company as on 31.03.2014 stood at ₹ 4 crore and 3.05 crore, respectively.

11.4.33 NMDC Power Ltd.

NMDC Power Ltd. was incorporated as a Special Purposes Vehicle (SPV) on December, 12, 2011 and is a wholly owned subsidiary company of NMDC. The Company was set up for the purpose of captive power supply to the 3-MTPA integrated steel plant being constructed at Nagamar at Chattisgarh.

During the financial year 2013-14, the authorized capital of the company stood at Ra. 0.05 crore and paid up share capital at ₹ 0.05 crore.

11.4.34 NPCIL-NALCO Power Company Ltd.

In the financial year 2013-14, NPCIL-NALCO Power Company Ltd. had a total Authorised Capital of ₹ 1 crore and total Paid-up Capital of ₹ 0.10 crore.

11.4.35 NPCIL-Indian Oil Nuclear Energy Corporation Ltd.

In the financial year 2013-14, NPCIL-Indian Oil Nuclear Energy Corporation Ltd. had a total Authorised Capital of ₹ 10 crore and total Paid-up Capital of ₹ 0.10 crore.

11.4.36 Odisha Infrapower Ltd.

Odisha Infrapower Ltd. was incorporated on 23rd January, 2014 and its corporate office is at New Delhi. The Authorised Capital and Paid-up Capital of the

company, as on 31.3.2014, are ₹ 0.05 crore each. The company was incorporated as a wholly owned subsidiary of Power Finance Corporation of India Ltd. The Company has been incorporated to hold Coal Blocks License, Coal Blocks Land, Power Plant Land and Land for Corridors for the construction, operation and maintenance of electricity system and integrated fuel system and to act as a nodal agency in this regard.

11.4.37 OIL India International Ltd.

In the financial year 2013-14, OIL India International Ltd. has had a total Authorised Capital of ₹ 500 crore and total Paid-up Capital of ₹ 100 crore.

11.4.368 Orissa Integrated Power Limited (OIPL)

Orissa Integrated Power Limited (OIPL) is one of the SPVs of Power Finance Corporation Ltd. It is a wholly owned subsidiary of Power Finance Corporation Limited for the development of Sundargarh UMPP in Orissa. It was incorporated on 24th August, 2006. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, stood at ₹ 0.05 crore each. OIPL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearances.

11.4.39 Power Equity Capital Advisors Private Limited (PECAP)

Power Equity Capital Advisors Private Limited (PECAP) has been set up as Company under the Companies Act, 1956 on March 25, 2008 to provide advisory services related to equity investments in Indian power sector, where PFC held 30% of the total issued and paid up equity share Capital. Consequent upon transfer of 70% stake in PECAP to PFC, PECAP has become wholly owned subsidiary of PFC on 11th October, 2011.

During end of the financial year 2013-14, Authorised share Capital of the company was ₹ 0.10 crore and Paid up share Capital was ₹ 0.05 crore.

11.4.40 Powergrid NM Transmission Limited

Powergrid NM Transmission Limited was registered on 20th May, 2011 and its corporate office is at New Delhi. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore each.

11.4.41 Powergrid Vemagiri Transmission Limited (PVTL).

Powergrid Vemagiri Transmission Ltd. (PVTL) was registered on 21st April, 2011 with its corporate office at New Delhi. The Authorised Capital and Paid-up Capital of the Company, as on 31.3.2014, are ₹ 0.05 crore each.

11.4.42 Punjab Ashok Hotel Company Limited

Punjab Ashok Hotel Co. Ltd. is a Joint Venture (JV) between India Tourism Development Corporation Limited and Punjab Tourism Development Corporation Ltd. It was incorporated on 11th November, 1998. The company had planned to construct a 50 room hotel at Anandpur Sahib, Punjab but due to cost escalation and shortage of funds, it was decided to construct only a 20-room 3 star hotel. The construction of Hotel Anandpur Ashok has been at a standstill since December, 2000 due to paucity of funds. The JVC board in its meeting held on 16th March, 2012 agreed in-principle to revive the project by exploring the possibilities to commence the Hotel as Yatri Niwas/ Budget Hotel, through public private partnership. The Authorised and Paid-up Capital as on 31.3.2014 were ₹ 3.00 crore and ₹ 2.50 crore, respectively. The registered office is located in Chandigarh. The main objectives of the company are to own, manage, construct-purchase and operate hotels, restaurants, motels etc. and to establish, manage transport unit etc. to develop tourism in Punjab.

11.4.43 Punjab Logistic Infrastructure Ltd.

In the financial year 2013-14, Punjab Logistic Infrastructure Limited has had a total Authorised

Capital of ₹ 2 crore and total Paid-up Capital of ₹ 0.10 crore.

11.4.44 Railway Energy Management Company Ltd.

Railway Energy Management Company Ltd. was incorporated on 16th August, 2013 as a joint venture company of Ministry of Railways (49%) and RITES Ltd. (51%) with its corporate office at New Delhi. As on 31.3.2014, the Authorised Capital for the company is ₹ 50 crore and Paid-up Capital is ₹ 10 crore. The main objective of the company is to take up various assignments/tasks to develop potential business avenues in the field of power sector including Green Energy, Power Trading, etc. Company has got its Commencement of Business Certificate on 01.10.2013.

11.4.45 Sail Jagadishpur Power Plant Limited (SJPL)

SAIL Jagadishpur Power Plant Limited (SJPL) is a wholly owned subsidiary of Steel Authority of India Limited (SAIL) and was incorporated in May, 2011 with its registered office at Ispat Bhawan, New Delhi. The company was created as a Special Purpose Vehicle (SPV) for installation of about 1050 MW capacity gas based combined cycle power plant at Jagdishpur in District Sultanpur of U.P. At present, the company has submitted application for allocation of 5 MMSCMD natural gas from domestic sources for the proposed power project. It has also submitted an application for allocation of 2000 cubic meter/hr cooling water to Department of Irrigation, Government of Uttar Pradesh. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore each.

11.4.46 SAIL Sindri Projects Limited (SSPL)

SAIL Sindri Projects Limited (SSPL) is a wholly owned subsidiary of Steel Authority of India Limited (SAIL) incorporated on 8th November, 2011 with its registered office at Chasnala, Jharkhand. The company

has been created as a Special Purpose Vehicle (SPV) for setting up of a Fertilizer plant (1.15 MTPA Urea), Steel Plant (5.6 MTPA), Power plant of suitable size, as well as management of township and common facilities as part of the revival scheme of the Sindri unit of Fertilizer Corporation of India Limited. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore each and the company is yet to start its business.

11.4.47 Sakhigopal Integrated Power Company Limited (SIPCL)

Sakhigopal Integrated Power Company Limited (SIPCL) is an SPV and a wholly owned subsidiary of Power Finance Corporation Limited. It was incorporated on 21st May, 2008 for the development of UMPP in Orissa. The Authorised Capital and Paid-up Capital of the company as on 31.3.2014 are ₹ 0.05 crore each. SIPCL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearances.

11.4.48 Sethusamudram Corporation Limited (SCL)

Sethusamudram Corporation Limited (SCL) was incorporated on 6th December, 2004 to develop and operate a navigation channel along the territorial waters of India for connecting Gulf of Mannar with Palk Bay, named as Sethusamudram Channel to connect East and Western Coast of India, helping better movement of ships within the territorial waters of India. The prestigious Sethusamudram Ship Channel project was sanctioned by Government of India on 01.06.2005. Corporation has its registered office at Indian Maritime University, Uthandi, Chennai. Consequent to the interim stay by the Honorable Supreme Court of India, all the dredging work has been suspended and the company has not commenced its commercial operations. Company is handling legal issues and exploring alternatives to achieve the vision/mission of SCL.

The company has an Authorised Capital of ₹ 1000 crore, and total Paid-up Capital of ₹ 745 crore as on 31.03.2014.

11.4.49 SJVN Thermal Pvt. Ltd.

SJVN Thermal Pvt. Ltd. was incorporated as a wholly owned subsidiary of Satluj Jal Vidyut Nigam (SJVN) Limited, Shimla on 7th May, 2007 for developing, operating and maintaining Thermal Power Projects in a cost effective and socio-environment friendly manner.

At the end of the financial year 2013-14, the Authorised share capital of the company stood at ₹ 3000 crore and paid up share capital at ₹ 0.01 crore.

11.4.50 SIDCUL CONCOR Infra Limited (SCIL)

M/s. SIDCUL CONCOR Infra Company Limited was incorporated on 21st March, 2013 for development of Multi Modal Logistics Parks (MMLPs). It is a Joint Venture Company (JVC) with shareholding of 74% and 26% of Container Corporation of India Ltd. (CONCOR) and State Infrastructure and Industrial Development Corporation of Uttarakhand Limited (SIIDCUL), respectively. Its registered office is at Pantnagar. The objective of the company is to do business of designing developing, setting up and maintenance of Multi Modal Logistics Parks inclusive of rail yards, container yards, etc. The company being in its project development stage is yet to start with its business operations.

11.4.51 Tanda Transmission Company Ltd.

In the financial year 2013-14, Tanda Transmission Company Ltd. has had a total Authorised Capital of ₹ 0.05 crore and total Paid-up Capital of ₹ 0.05 crore.

11.4.52 Tatiya Andhra Mega Power Limited (TAMPL)

Tatiya Andhra Mega Power Limited (TAMPL) is one of the SPVs and a wholly owned subsidiary of Power

Finance Corporation Limited. It was incorporated on 17th April, 2009 for the development of UMPP in Andhra Pradesh. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore each. TAMPL has been established to undertake preliminary studies and to facilitate tie-ups of inputs, linkages and clearances for the projects such as water, land and environment clearances.

11.4.53 TCIL BINA Toll Road Limited (TBTRL)

TCIL Bina Toll Road Ltd. is one of the SPVs and a wholly owned subsidiary of Telecommunications Consultants India Limited (TCIL). It was incorporated on 11th July, 2012 with its registered office at New Delhi. Main activities of this company are to execute infrastructural projects on design, built, finance, operate and transfer (DBFOT) basis. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 20.00 and ₹ 19.57 crore, respectively.

11.4.54 TCIL Lakhnadone Toll Road Limited (TLTRL)

TCIL Lakhnadone Toll Road Ltd. is another one of the SPVs and a wholly owned subsidiary of Telecommunications Consultants India Limited (TCIL). It was incorporated on 21st August, 2013 with its registered office at New Delhi. Main activities of

this company are to design, built, finance, operate and transfer (DBFOT), the Lakhnadon-Ghansore Toll Road Project. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 25 and ₹ 14.05 crore, respectively.

11.4.55 Unchahar Transmission Ltd.

Unchahar Transmission Ltd. (PVTL) was incorporated on 17th December, 2012 with its corporate office at New Delhi. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore each. The company was acquired/taken over by Powergrid Corporation of India Ltd. on 24th March, 2014 under Tariff based competitive bidding for established Transmission System for ATS of Unchahar TPS.

11.4.56 Vizag Transmission Ltd.

Vizag Transmission Ltd. (PVTL) was incorporated on 30th November, 2011 and its corporate office is located at New Delhi. The Authorised Capital and Paid-up Capital of the company, as on 31.3.2014, are ₹ 0.05 crore each. The company was acquired/taken over by Powergrid Corporation of India Ltd. on 30th August, 2013 under Tariff based competitive bidding for established Transmission System for 'System Strengthening' in Southern Region for import of power from Eastern Region.

Chapter 12

Revival and Restructuring of Sick / loss making CPSEs

As the Central Public Sector Enterprises (CPSEs) operate under dynamic market conditions, it is quite natural to see ups-and-downs in their performance. Some CPSEs have, however, been incurring losses continuously for the last several years. The accumulated loss in many of these cases has exceeded their net worth. Under the provisions of Sick Industrial Companies (Special Provision) Act 1985, the CPSEs

have to be referred to Board for Industrial and Financial Reconstruction (BIFR) on their becoming sick/insolvent.

The Government, furthermore, constituted the Board for Reconstruction of Public Sector Enterprises (BRPSE) in 2004 as an advisory body for the revival and restructuring of sick and loss making CPSE's. Since 2004, there has been improvement in the overall condition of these enterprises.(Table 12.1).

Table 12.1
Sick & Loss making CPSEs
(2004-05 to 2013-14)

Year	No. of sick CPSEs*	Accumulated losses of sick CPSEs* (₹ in crore)	No. of sick CPSEs**	No. of Loss making CPSEs, during the year	Loss of loss making CPSEs (₹ in crore)
(1)	(2)	(3)	(4)	(5)	(6)
2004-05	90	82352	81	73	9003
2005-06	81	83554	75	63	6845
2006-07	74	89064	83	61	8526
2007-08	46	72820	78	54	10303
2008-09	46	68577	73	55	14621
2009-10	46	62828	69	60	16231
2010-11	45	65146	63	62	21816
2011-12	45	65642	63	64	27683
2012-13	45	70918	61	78	28562
2013-14	45	56845	58	71	20055

Note: *Operating CPSEs as registered with BIFR ** CPSEs as per the definition of BRPSE

12.1 Reasons for Losses and Sickness in CPSEs

The reason for losses and sickness in CPSEs varies from enterprise to enterprise. In some cases, the cause of sickness is historical; textile companies which were taken over from the private sector on socio-economic considerations like protecting employment of workers in early seventies could not face competition with private

sector. British India Corporation, Bird Jute & Exports and National Textile Corporation (NTC) belonged to this group. Besides these (textile) companies, there have been other enterprises that were taken over from the private sector. These include engineering and refractory enterprises like Bharat Wagons & Engineering, Burn Standard, Braithwaith & Co., Richardsan and Crudass Ltd; pharmaceutical companies like Bengal Chemicals & Pharmaceuticals Ltd., transportation

/ shipping companies like Central Inland Water Transport Corporation and Hooghly Dock & Port Engineering Ltd. and consumer goods companies like Tyre Corporation of India and Hooghly Printing Co. Ltd.

The other group of sick companies (other than those taken over) are green-field companies. These became sick over the years on account of unviability due to high man power cost and lack of effective management on finance, marketing, competition from private sector and imports. These included companies like Heavy Engineering Corporation, Fertilizer Corporation of India and Hindustan Antibiotics Ltd. Some of the loss making companies, such as, Jute Corporation of India and Cotton Corporation of India have had macro-economic objectives to serve like procuring agricultural goods from farmers at minimum support prices (MSP) etc.

The above factors put CPSEs into vicious circles of sickness and led to technological obsolescence, shortage of working capital, low capacity utilization, low productivity, poor debt-equity structure, heavy interest burden, inadequate and unfocused marketing, loss of customer confidence due to delayed delivery schedules, dependence on Govt. orders, lack of business plan, insignificant market share to face competition, high overheads, high input cost and operational inefficiencies, lack of accountability. With liberalization and opening up of the economy, many CPSEs that did not evolve fast lost ground to private companies. Attempts have, therefore, been made to overcome "sickness" in these CPSEs through various revival packages.

12.2 Sick Industrial Companies (Special Provisions) Act, 1985 (SICA)

The Sick Industrial Companies (Special Provisions) Act, 1985 (SICA) brought the CPSEs under its purview in 1991 (made effective from 1992). Under the provisions of SICA, the CPSEs (with at least five years of registration) whose accumulated losses are equal to or have exceeded their net worth are referred to the BIFR. Reference to BIFR grants immunity from legal sanctions to the company arising

from proceedings from execution of decree against property, suit for recovery of money and suit for enforcement of guarantor in respect of loans etc. The BIFR, on examination, may either sanction suitable revival/ rehabilitation schemes (in case of enterprises which are viable) or recommend closure (in respect of enterprises considered unviable). Since 1992 to 2007, 63 CPSEs have been referred to BIFR (Table 12.2). There were no references made to BIFR between 2008 to 2014. Year-wise registration of CPSEs with BIFR is given below:

Table 12.2
Registration of CPSEs with BIFR

Year	No. of CPSEs	Year	No. of CPSEs
1992	30*	2004	4*
1993	2*	2005	2
1994	4*	2006	1
1995	1	2007	1
1996	2	2008	0
1997	3	2009	0
1998	3	2010	0
1999	3	2011	0
2000	3	2012	0
2001	2	2013	0
2002	3	2014	0
2003	2	Total	63 #

Note: *This includes the subsidiaries of NTC, which have been merged into one company and registered again in 2008 after merger.

Since Mandya National Paper Mills Limited has been wound up, Jessop & Co. Ltd. has been privatized, U.P. Drugs and Pharmaceuticals Limited has been transferred to the U.P. Government, all the nine subsidiaries of NTC (Holding) Ltd. merged with NTC (Holding), Indian Iron and Steel Co. Limited, Bharat Refractories Limited (BRL) and Maharashtra Elektros melt Limited have merged with SAIL, and Praga Tools Ltd. merged with HMT Ltd, these CPSEs have not been included in the list of BIFR referred CPSEs.

Although a total number of 63 CPSEs have been referred to BIFR, there are only 45 CPSEs that are

in operation. The Details of CPSEs registered with BIFR as on 31.3.2014 is as follows:

- a) BIFR has a disposed of 51 cases of CPSEs either through sanctioning revival schemes (15 cases) or declaring 'no longer sick' (5 cases) or dropping due to net worth becoming positive (7 cases) or dismissing the cases as non-maintainable (4 cases) or deregistered with BIFR / Others (2 cases) or recommending winding up (19 cases) (Annex-12.1).
- b) BIFR is yet to take a view in regard to 11 cases of CPSEs. The process of sanctioning of revival /rehabilitation schemes as well as the process of appointment of Official Liquidator (OL) for winding up of CPSEs by BIFR have, however, been slow on account of involvement of multiple agencies.
- c) 6 CPSEs namely Vignyan Industries Limited, North Eastern Regional Agricultural Marketing Corporation Limited, Bharat Coking Coal Ltd. Braithwaite & Co. Ltd, and National Instrument Ltd have since been declared 'No Longer Sick'.
- d) 7 CPSEs namely Bharat Immunologicals and Biologicals Corporation Limited, Hindustan Salts Limited, Projects and Development India Ltd., Hindustan Insecticides Limited, Hindustan Organic Chemicals Limited, Tyre Corporation Ltd. and Fertilizers Corp. of India Ltd have been dropped by the Board from the list of 'sick industrial CPSEs' on their net worth becoming positive.
- e) The Draft Revival scheme awaited in respect of 10 CPSEs, namely, Indian Drugs and Pharmaceuticals Ltd, Scooters India Ltd, Richardson & Crudass (1972) Ltd, Hindustan Fertilizers Corp. Ltd, Burn Standard Co. Ltd, Bharat Wagon & Engg. Co. Ltd, Hindustan Cable Ltd, Tungabhadra Steel Products Ltd, HMT Bearings Ltd, and Madras Fertilizers Ltd

Table 12.3 below shows the status of the 63 sick industrial CPSEs, registered with BIFR.

Table 12.3
Status of CPSEs registered with BIFR
(as on 31.03.2014)

Sl. No.	Particulars	Number
1.	Revival Scheme sanctioned by BIFR	14
2.	Revival Scheme sanctioned by AAIFR	1
3.	Declared no longer sick	5
4.	Dropped on net worth becoming positive	7
5.	Dismissed as non-maintainable	4
6.	Deregistered with BIFR / Others	2
7.	Winding up recommended and closed	14
8.	Winding up recommended	5
10.	Draft Rehabilitation Scheme (DRS) awaited	10
11.	Remanded by AAIFR	1
	Total	63

12.3 Strategies for revival / restructuring of sick CPSEs

Some of the strategies adopted for restructuring / revival of sick CPSEs are mentioned below:

1. Revival as a CPSE: The common character of the company is intact and it may be any or mix of the following methods:
 - (i) Financial restructuring: Financial restructuring involves investment in CPSEs by the Government in the form of equity participation, providing loan (plan/non-plan) / grants and/ or write-off of past losses as well as changing the debt equity ratio. Measures such as waiver of loan/ interest/ penal interest, conversion of loan into equity, conversion of interest including penal interest into loan, moratorium on payment of loan / interest, Government guarantee, sale of fixed assets including excess land, sacrifices by State Government, one-time settlement (OTS) with banks/financial institutions, etc.
 - (ii) **Business restructuring:** Business restructuring involves change of management, hiving off viable units from CPSEs for formation of separate company, closure of unviable units,

formation of joint ventures by induction of partners capable of providing technical, financial and marketing inputs, change in product mix, improving marketing strategy, etc. on case to case basis.

(iii) Manpower rationalization: Salaries and wages are often a major component of cost for an enterprise. In order to shed excess manpower, CPSEs have often resorted to Voluntary Retirement Scheme (VRS) from time to time. In case of CPSEs found unviable and where a decision has been taken to close the unit, it is the Voluntary Separation Scheme (VSS) that is introduced. Retrenchment of employees is adopted only as the last resort and in exceptional circumstances.

(iv) Modernization: Funds are investment in CPSEs in the form of equity/loan/debt in modernization of plant and machinery and acquisition/up-gradation of technology.

(2) Merger/Takeover: Merger/takeover is a strategy where the sick company is taken over /merged with healthy companies where there is synergy between them. The synergy may be in operations, products, markets, etc. The sick unit can play an important role in the takeover company.

(3) Disinvestment /joint venture /outright sale/ sale of assets/lease out facilities: If the revival of the company on its own is not possible, other options like disinvestment /joint venture /outright sale/ sale of assets/lease out facilities are considered.

(4) Closure: If all options for revival/restructuring of sick CPSEs have not been found practicable/ fails, closure of the enterprise is considered as the last option after payment of all legitimate dues of workers.

12.4 Board for Reconstruction of Public Sector Enterprises (BRPSE)

The Government constituted Board for Reconstruction of Public Sector Enterprises (BRPSE)

vide Resolution dated 6th December, 2004 as an advisory body to address the task of strengthening, modernizing, reviving, and restructuring of Central Public Sector Enterprises (CPSEs) and to advise the Government on strategies, measures and schemes related to them.

Terms of reference of BRPSE are as follows:-

- a) To advise the Government on ways and means for strengthening public sector enterprises in general and making them more autonomous and professional;
- b) To consider restructuring – financial, organizational and business (including diversification, joint ventures, seeking strategic partners, merger and acquisition) – of CPSEs and suggest ways and means for funding such schemes;
- c) To examine the proposals of the administrative Ministries for revival/restructuring of sick/loss making CPSEs for their turnaround;
- d) To advise the Government on disinvestments/ closure/sale in full or part, in respect of chronically sick/loss making companies, which cannot be revived. In respect of such unviable companies the Board would also advise the Government about sources of fund including sale of surplus assets of the enterprise for the payment of all legitimate dues and compensation to workers and other costs of closure;
- e) To monitor incipient sickness in CPSEs; and
- f) To advise the Government on such other matters as may be assigned to it.

12.4.1 Revival Package of CPSEs

Up to 31.3. 2014 since inception in 2004, proposals of 68 sick CPSEs have been referred to BRPSE. Out of which, the Board has made recommendations in respect of 64 cases. In addition, the Board has also recommended to the Government to accord “in principle” approval for rescinding of its earlier decision to close the units of Fertilizers Corporation of India (FCIL) and Hindustan Fertilizers Corporation Ltd. (HFCL) and to explore various options

for their revival. 4 cases of CPSEs (Nagaland Pulp & Paper Co., Hindustan Fertilizer Corporation Ltd. (HFCL), Fertilizer Corporation of India Ltd. (FCIL), and Birds Jute & Exports Ltd.) have been returned to the concerned Administrative Ministries/Departments for further information. Out of these, revival proposal for 3 CPSEs- Nagaland Pulp & Paper Co., HFCL & FCIL have been approved directly by CCEA on the basis of proposals of the concerned Administrative Ministries.

The Board during the period from April, 2013 to March, 2014 recommended revival package to HMT Bearings Ltd., ITI Ltd., Brahmaputra Valley Fertilizer Corporation Limited. and Fertilizers and Chemicals (Travancore) Ltd. and closure of Hindustan Photo Films Manufacturing Company Ltd. and STCL Ltd. The Board during this period reviewed the status of implementation of revival package sanctioned by Government to 12 CPSEs as mentioned below:

- (i) HMT Machine Tools Ltd.
- (ii) Cement Corporation of India Ltd.
- (iii) Instrumentation Ltd., Kota
- (iv) Bharat Pumps & Compressors Ltd.
- (v) Hindustan Organic Chemicals Ltd
- (vi) Heavy Engineering Corporation Ltd.
- (vii) National Film Development Corporation Ltd.
- (viii) Hindustan Insecticides Ltd.
- (ix) NEPA Ltd
- (x) Central Electronics Ltd
- (xi) Hindustan Prefab Ltd
- (xii) Hindustan Salts Ltd.

The Board also reviewed the status of its recommendations in respect of Madras Fertilizers Ltd. In addition, the Board also reviewed, on suo moto, the performance of sick CPSE namely Sambhar Salts Ltd.

BRPSE has recommended extension of superannuation age from 58 to 60 years in National Projects Construction Corporation Ltd. and National Textiles Corporation Ltd.

Out of these 64 cases, proposals of 48 CPSEs have been approved for revival by the Government/Holding Companies, till March, 2014, envisaging total fund/non-fund based assistance of ₹40937 crores (cash assistance of ₹10940 crores and non-cash assistance of ₹29997 crores) and winding up of four (4) CPSEs namely Bharat Ophthalmic Glass Ltd., Bharat Yantra Nigam Ltd., STCL Ltd. and Hindustan Photo Films Manufacturing Co. Ltd. The CPSE wise details of cash and non-cash assistance in respect of approved proposals are given in **Annex-12.3**. The broad categories of the approval of the Government/Holding CPSEs in respect of the aforesaid 52 CPSEs are given in **Annex 12.4**.

Besides, based on the recommendations of BRPSE, the Government has also approved a scheme for attracting Top Managerial Talent to sick/loss making CPSEs.

Sick CPSEs:

For the purpose of making a reference to BRPSE, a company is considered 'sick' if it has accumulated losses in any financial year equal to 50% or more of its average net worth during 4 years immediately preceding such financial year, and/or is a company within the meaning of Sick Industrial Companies (Special Provisions) Act, 1985 (SICA). There are 58 sick CPSEs as on 31.3.2014 (Annex-12.2).

12.6 Performance of sick CPSEs

Out of the 48 CPSEs approved for revival till March, 2014, 19 sick CPSEs have been declared turnaround as on 31.3.2013 as they have posted profits consecutively for 3 or more years after the assistance by the Government. 2 turnaround CPSEs namely State Farms Corporation of India Ltd. and Bharat Refractories Ltd. (renamed as SAIL Refractory Unit) were merged in National Seeds Corporation Ltd. and Steel Authority of India Ltd. respectively. Out of 19 turn around CPSEs, 3 CPSEs namely, Bharat Pumps & Compressors Ltd., Heavy Engineering Corporation Ltd. and National Film Development Corporation Ltd.

again incurred loss after showing profit consecutively for 3 years. Excluding the above 19 turnaround CPSEs, 4 CPSEs have shown profit during Financial Year 2013-14. Remaining are incurring losses. Performance of 48 CPSEs is given in Annex-12.5.

12.6.1 Turnaround Sick CPSEs

The Government has issued guidelines for declaring a sick CPSE as “turnaround CPSE”. These guidelines, inter alia, define a turnaround CPSE as one which was in the list of sick CPSEs of BRPSE which has shown profit in each of the three preceding

accounting years and has a positive net worth after implementation of the revival package. 19 such CPSEs (Annex-12.6) have been declared “turnaround CPSEs”.

12.7 Incipient Sick CPSEs

A CPSE is considered “incipient sick”, if it has incurred losses for two consecutive years. There are 17 incipient sick CPSEs as on 31.3.2014.(Annex-12.7).The turnover of these CPSEs during 2013-14 is ₹92742 crores. These CPSEs have incurred aggregate losses of ₹11243 crores in 2013-14. The aggregate networth of these CPSEs as on 31.3.2014 is ₹74423 crores and 287059 employees were on role as on 31.3.2014.

Details on the CPSEs Registered with BIFR (on 31.03.2014)

S. No.	Case No. and year of reference	CPSEs	Date of Orders
(1)	(2)	(3)	(4)
I. Declared 'No Longer Sick'			
1.	512/1992	Vignyan Industries Ltd., Tarkere (Karnataka)	27.5.2003
2.	503/1997	North Eastern Regional Agri. Marktg. Corp., Guwahati (Assam)	20.8.2001
3.	504/1995 / 502/2001	Bharat Coking Coal Ltd., Dhanbad (Jharkhand)	11.2.2004 / 18.05.2009 / 28.10.2009 / 3.1.2013
4.	528/1992	Braithwaite & Co. Ltd., Kolkata (West Bengal) @	17.10.1995 / 29.6.2006/21.07.2006
5.	531/1992	National Instruments Ltd., Kolkata (West Bengal) %	1.10.2002 / 13.5.2008 / 04.08.2008/17.01.2011
II. Dropped (Positive Networth)			
6.	502 / 1997 / 503/1998	Bharat Immunologicals&Biologicals Corporation Limited, BulandSahar (Uttar Pradesh)	1.8.2002
7.	502/2000	Hindustan Salts Limited, Jaipur (Rajasthan)	22.8.2005 / 15.12.2008
8.	521/1992	Projects and Development India Ltd., Dhanbad (Jharkhand)	26.3.2004 / 19.4.2006
9.	501/2004	Hindustan Insecticides Ltd., New Delhi (Delhi)	18.9.2007
10.	501/2005	Hindustan Organic Chemicals Limited, Rasayani, Raigad (Maharashtra)	21.11.2005 / 28.05.2008
11.	523/1992	Tyre Corporation of India Ltd., Kolkata (West Bengal) @	20.2.1997 / 10.3.2008 / 19.05.2009 / 21.12.2009 / 03.03.2010 / 21.12.2011
12.	515/1992	Fertilizers Corp. of India Ltd., New Delhi (Delhi)	2.4.2004/12.11.2010 / 27.06.2013
III. Dismissed as 'Non-maintainable'			
13.	502/1992 / 601/1998	Nagaland Pulp & Paper Co. Ltd., Mokochung, (Nagaland)	13.11.1995 / 25.5.2007
14.	504/1997	Manipur State Drugs & Pharmaceuticals Ltd., Imphal (Manipur) \$\$	17.11.1997
15.	502/2002	Central Coalfields Ltd., Ranchi (Jharkhand)	29.11.2002
16.	517 / 1992 / 504/2002	BieccoLawrie Limited, Kolkata (West Bengal) @	27.3.2003
IV. Scheme Sanctioned by AAIFR			
17.	502/1999	Hindustan Vegetable Oils Corp. Ltd., New Delhi (Delhi) @	7.12.2001 / 23.07.2008
V. Revival Scheme sanctioned			
18.	518/1992	The British IndiaCorp. Ltd., Kanpur, (Uttar Pradesh) @	17.12.2002/ 29.11.2007/29.01.2014
19.	506/1993	National Jute Manufactures Corporation Ltd. Kolkata (West Bengal)	8.7.2004 / 24.11.2008 / 05.03.2009 / 31.3.2011/30.01.2013
20.	509/1993	Instrumentation Ltd., Kota (Rajasthan)	23.12.1998 / 24.05.2006 / 01.10.2009/17.01.2014
21.	507/1994	Hindustan Fluorocarbons Ltd., Hyderabad (Andhra Pradesh) @	24.7.2003 /27.01.2014
22.	501/1996	Cement Corporation of India Ltd., New Delhi (Delhi)	05.12.2005 / 21.3.2006 / 17.06.2008/ 31.10.2013
23.	501/1997	Hindustan Antibiotics Limited, Pune (Maharashtra)	5.6.2007 / 14.10.2008/18.02.2014
24.	501/1998 / 501/2000	Eastern Coalfields Limited, Burdwan (West Bengal) @	01.06.1998/ 2.11.2004 / 12.6.2007 /19.09.2013
25.	501/2003	Andrew Yule and Company Ltd., Kolkata (West Bengal) @	20.8.2007/ 30.10.2007/01.07.2010
26.	503/2004	Bharat Heavy Plates and Vessels Limited, Visakhapatnam (Andhra Pradesh)	6.10.2005 / 29.08.2008 / 25.03.2009 / 21.10.2010 /29.08.2013
27.	501/2006	HMT Machine Tools Limited, Bangalore (Karnataka)	2.11.2006 / 12.6.2008 / 25.07.2012 /10.03.2014
28.	501/1999	Birds Jute and Exports Ltd., Kolkata (West Bengal) @	24.6.2004 / 07.08.2008 / 2.8.2012 /22.01.2014

29.	504/2004	ITI Limited, Bangalore (Karnataka)	3.10.2005 / 27.11.2008 / 23.02.2009 / 30.12.2009 / 27.11.2012
30.	502/1998	NEPA Ltd., Nepanagar (Madhya Pradesh)	29.5.2007 / 15.05.2008 / 26.02.2009 / 11.09.2009 / 21.6.2010 /23.01.2014
31.	533/1992	Bengal Chemicals & Pharmaceuticals Ltd., Kolkata (West Bengal) @	31.3.1995 / 03.02.2009 /27.01.2014
VI.	Winding up Recommended		
32.	507/1992	TriveniStructurals Ltd. , Allahabad (Uttar Pradesh)	5.6.2003
33.	511/1992	Heavy Engineering Corpn. Ltd., Ranchi (Jharkhand)	6.7.2004
34.	514/1992	Orissa Drugs & Chemicals Ltd., Bhubaneswar (Orissa)	8.4.2003
35.	503/1995	Hindustan Photofilms Mfg. Co. Ltd., Ootacamund (Tamilnadu)	30.1.2003
36.	502/1996	Maharashtra Antibiotics & Pharma. Ltd., Nagpur (Maharashtra) \$\$	4.7.2000 / 16.12.2008 / 17.06.2010
VII.	CPSEs recommended for winding up and have been 'closed' \$\$		
37.	505/1992	Bharat Gold Mines Ltd., Kolar Gold Fields (Karnataka)	12.6.2000
38.	506/1992	Tannery and Footwear Corporation of India Ltd., Kanpur (Uttar Pradesh)	14.2.1995
39.	508/1992	Cycle Corporation of India Limited, Kolkata (West Bengal) @	10.7.2000
40.	510/1992	Mining and Allied Machinery Corporation Ltd. , Durgapur (West Bengal)	29.6.2001
41.	513/1992	National Bicycle Corporation of India Ltd., Mumbai (Maharashtra) @	20.12.1993
42.	520/1992	Bharat Process and Mechanical Engineers Ltd., Kolkata (West Bengal) @	22.7.1996
43.	524/1992	Weighbird India Limited, Kolkata (West Bengal) @	17.2.1997
44.	526/1992	Bharat Brakes & Valves Ltd., Kolkata (West Bengal) @	27.9.2002
45.	527/1992	Cawnpore Textiles Ltd., Kanpur (Uttar Pradesh) @	19.1.1995
46.	529/1992	Smith Stanistreet & Pharmaceuticals Ltd., Kolkata (West Bengal) @	3.12.2001
47.	532/1992	Bharat Ophthalmic Glass Ltd., Durgapur (West Bengal)	19.6.2003
48.	504/1994	Southern Pesticides Corporation Limited, Hyderabad (Andhra Pradesh)	1.11.2001
49.	506/1994	Rayrolle Burn Ltd., Kolkata (West Bengal) @	13.7.2001
50.	503/1999	Pyrites, Phosphates & Chemicals Ltd., Rohtash (Bihar)	20.11.2002
VIII.	Others / Abated / Deregistered from BIFR		
51.	501/1992	Bharat Pumps & Compressors Ltd., Allahabad (Uttar Pradesh)	6.2.2007
52.	519/1992	The Elgin Mills Co. Ltd., Kanpur (Uttar Pradesh) @ \$\$	13.3.2007
IX.	Draft Revival Scheme (DRS) Awaited		
53.	503/1992	Indian Drugs and Pharmaceuticals Limited, Gurgaon (Haryana)	28.3.2006 / 29.9.2008
54.	504/1992	Scooters India Ltd., Lucknow (Uttar Pradesh)	1.7.2000 / 17.06.2010 / 16.01.2013
55.	509/1992	Richardson &Crudass (1972) Ltd., Mumbai (Maharashtra) @	24.9.2007 / 04.09.2008 / 27.05.2009 / 10.09.2009
56.	516/1992	Hindustan Fertilizer Corpn. Ltd., New Delhi (Delhi)	1.2.2007 / 05.12.2008 / 26.03.2009 / 19.10.2009 /27.11.2013
57.	588/1994	Burn Standard Co. Ltd., Kolkata (West Bengal) @	16.4.2007 / 30.9.2008 / 12.11.2009 /30.09.2013
58.	501/2001	Bharat Wagon &Engg. Co. Limited , Patna (Bihar) @	11.2.2004 / 25.11.2008 / 24.06.2009 / 16.11.2009 /10.12.2013
59.	503/505/2002	Hindustan Cables Ltd., Kolkata (West Bengal)	21.03.2003/ 25.07.2008 / 13.2.2013
60.	505/2004	Tungabhadra Steel Products Limited, Tungabhadra Dam (Karnataka)	4.8.2005 / 11.12.2006 / 09.03.2009 / 24.08.2009 / 14.02.2013 /27.11.2013
61.	502/2005	HMT Bearings Limited, Hyderabad (Andhra Pradesh)	13.2.2006 / 23.04.2009 / 12.11.2009 / 24.1.13
62.	501/2007	Madras Fertilizer Ltd., Chennai (Tamilnadu)	02.04.2009 / 15.10.2009 / 26.2.2013 /18.09.2013
X	Remanded by AAIFR		
63.	538/1992	Bengal Immunity Limited, Kolkata (West Bengal) @ \$\$	25.2.2003 / 31.1.2011/11.04.2011

@ Taken over PSEs (23) \$\$ since closed (18) % No More a CPSE (1)

List of Sick CPSEs as Per BRPSE as on 31.3.2014

S. No.	Name of the Ministry/ Department /CPSE	City/State in which the Registered Office of the CPSE is located
	Department of Heavy Industry	
1	Tyre Corporation of India Ltd.	Kolkata (West Bengal)
2	HMT Bearings Ltd.	Hyderabad(Telengana)
3	Tungabhadra Steel Products Ltd.	Bellary (Karnataka)
4	Nagaland Pulp & Paper Co. Ltd.	Tuli (Nagaland)
5	NEPA Ltd.	Nepanagar(Madhya Pradesh)
6	Richardson & Cruddas Ltd.	Mumbai (Maharashtra)
7	HMT Machine Tools Ltd.	Bangalore (Karnataka)
8	TriveniStructurals Ltd.	Allahabad (Uttar Pradesh)
9	Hindustan Cables Ltd.	Kolkata (West Bengal)
10	HMT Watches Ltd.	Bangalore (Karnataka)
11	Instrumentation Ltd.	Kota (Rajasthan)
12	HMT Ltd.	Bangalore (Karnataka)
13	HMT Chinar Watches Ltd.	Jammu(Jammu & Kashmir)
14	Hindustan Photo Films Manufacturing Corpn. Ltd.	Ootacamund (Tamilnadu)
15	Sambhar Salts Ltd.	Jaipur (Rajasthan)
16	Scooters India Ltd.	Lucknow (Uttar Pradesh)
	Ministry of Textiles	
17	Birds, Jute &Exports Ltd.	Kolkata (West Bengal)
18	British India Corporation Ltd.	Kanpur (Uttar Pradesh)
19	National Textiles Corporation Ltd.	New Delhi
20	National Jute Manufactures Corporation Ltd.	Kolkata (West Bengal)
21	Elgin Mills Co. Ltd.	Kanpur(Uttar Pradesh)
	Department of Fertilizers	
22	Madras Fertilizers Ltd.	Manali (Tamilnadu)
23	Fertilizers & Chemicals Travancore Ltd.	Kochi (Kerala)
24	Fertilizer Corporation of India Ltd.	New Delhi
25	Hindustan Fertilizer Corporation Ltd.	New Delhi
26	Brahmaputra Valley Fertilizer Corpn. Ltd.	Namrup (Assam)
	Department of Pharmaceuticals	
27	Hindustan Antibiotics Ltd.	Pune (Maharashtra)
28	Bengal Chemicals & Pharmaceuticals Ltd.	Kolkata (West Bengal)
29	Indian Drugs & Pharmaceuticals Ltd.	Gurgaon (Haryana)
30	Orissa Drugs & Chemicals Ltd.	Bhubaneswar (Orissa)
31	IDPL (Tamilnadu) Ltd.	Chennai (Tamilnadu)
32	Bihar Drugs & Organic Chemicals Ltd.	Muzaffarpur (Bihar)
	Department of Chemicals & Petrochemicals	
33	Hindustan Organic Chemicals Ltd.	Mumbai (Maharashtra)
34	Hindustan Fluorocarbons Ltd.	Hyderabad (Telengana)
	Ministry of Steel	
35	Hindustan Steelworks Construction Ltd.	Kolkata (West Bengal)
36	J&K Mineral Development Corporation Ltd.	Jammu & Kashmir

	Ministry of Shipping	
37	Central Inland Water Transport Corporation Ltd.	Kolkata (West Bengal)
38	Hooghly Dock & Port Engineers Ltd.	Kolkata (West Bengal)
	Department of Defence Production	
39	Hindustan Shipyard Ltd.	New Delhi
	Ministry of Petroleum & Natural Gas	
40	BieccoLawrie Ltd.	Kolkata (West Bengal)
	Department of Food & Public Distribution	
41	Hindustan Vegetable Oils Corporation Ltd.	New Delhi
	Ministry of Railways	
42	Fresh and Healthy Enterprises Ltd.	New Delhi(Delhi)
43	Bharat Wagons & EngineeringCo. Ltd.	Patna (Bihar)
44	Burn Standard Company Ltd.	Kolkata (West Bengal)
	Ministry of Civil Aviation	
45	Air India Charters Ltd.	Mumbai (Maharashtra)
46	Airline Allied Services Ltd.	New Delhi
47	Air India Air Transport Services Ltd.	New Delhi
48	Air India Ltd.	New Delhi
49	Hotel Corporation of India Ltd.	Mumbai (Maharashtra)
	Department of Telecommunications	
50	ITI Ltd.	Bangalore (Karnataka)
	Ministry of Development of North Eastern Region	
51	North Eastern Handicrafts & Handloom Dev. Corp. Ltd.	Shillong (Meghalaya)
52	North Eastern Regional Agrl.MarketingCorp.Ltd.	Guwahati
	Ministry of Environment & Forests	
53	Andaman & Nicobar Isl. Forest & Plant. Dev. Corp. Ltd	Port Blair(Andaman & Nicobar)
	Ministry of Tourism	
54	Assam Ashok Hotel Corp. Ltd.	Guwahati (Assam)
55	Madhya Pradesh Ashok Hotel Corp. Ltd.	Bhopal(Madhya Pradesh)
56	Ranchi Ashok Bihar Hotel Corp. Ltd.	Ranchi (Jharkhand)
57	Utkal Ashok Hotel Corp. Ltd.	Puri (Orissa)
	Department of Commerce	
58	STCL Ltd.	Bangalore(Karnataka)

Cash and non-cash assistance approved in respect of Board for Reconstruction of Public Sector Enterprises recommended proposals

S. No.	Name of the CPSE	Assistance (₹ in Crore)		
		Cash ^a	Non-Cash ^b	Total
A	Approved for Revival			
	Department of Heavy Industry			
1	Hindustan Salts Ltd.	4.28	73.30	77.58
2	Bridge & Roof Co. (India) Ltd.	60.00	42.92	102.92
3	BBJ Construction Co. Ltd.	--	54.61	54.61
4	HMT Bearings Ltd.	7.40	43.97	51.37
5	Praga Tools Ltd.	5.00	209.71	214.71
6	Heavy Engineering Corporation Ltd.	102.00	1116.30	1218.30
7	Cement Corporation of India Ltd.	184.29	1267.95	1452.24
8	Richardson & Cruddas(1972) Ltd.	-	-	-
9	Tungabhadra Steel Products Ltd.	-	-	-
10	Bharat Pumps and Compressors Ltd. ^c	3.37	153.15	156.52
11	HMT Machine Tools Ltd.	859.04	196.38	1055.42
12	Bharat Heavy Plate Vessels Ltd.	34.00	665.61	699.61
13	Andrew Yule & Co. Ltd.	87.06	458.14	545.20
14	Instrumentation Ltd. ^c	48.36	549.36	597.72
15	Tyre Corporation of India Ltd.	--	815.59	815.59
16	NEPA Ltd.	234.18	634.94	869.12
17	Scooters India Ltd.	90.38	111.58	201.96
18	HMT Ltd.	447.92	635.56	1083.48
	Ministry of Mines			
19	Hindustan Copper Ltd.	--	612.94	612.94
20	Mineral Exploration Corporation Ltd.	-	104.64	104.64
	Ministry of Shipping			
21	Central Inland Water Transport Corporation Ltd.	73.60	280.00	353.60
22	Hooghly Dock & Port Engineers Ltd.	286.81	631.30	918.11
	Department of Defence Production			
23	Hindustan Shipyard Ltd.	452.68	372.22	824.90
	Ministry of Steel			
24	MECON Ltd.	93.00 ^d	23.08	116.08
25	Bharat Refractories Ltd.	--	479.16	479.16
	Ministry of Textiles			
26	National Textile Corporation Ltd.	39.23	-	39.23
27	British India Corporation Ltd.	338.04	108.93	446.97
28	National Jute Manufactures Corporation Ltd.	517.33	6815.06	7332.39
	Department of Pharmaceuticals			
29	Hindustan Antibiotics Ltd.	137.59	267.57	405.16
30	Bengal Chemicals & Pharmaceuticals Ltd.	207.19	233.41	440.60
	Department of Chemicals & Petrochemicals			
31	Hindustan Organic Chemicals Ltd.	250.00	110.46	360.46
32	Hindustan Insecticides Ltd.	-	267.29	267.29
	Department of Fertilizers			
33	Fertilizers & Chemicals (Travancore) Ltd.	-	670.37	670.37
	D/o Scientific & Industrial Research			

34	Central Electronics Ltd.	-	16.28	16.28
	Department of Agriculture & Co-operation			
35	State Forms Corporation of India Ltd.	21.21	124.42	145.63
	Ministry of Railways			
36	Konkan Railway Corporation Ltd.	857.05	3222.46	4079.51
37	Bharat Wagon & Engineering Company Ltd.	59.45	136.08	195.53
38	Braithwaite & Company Ltd.	4.00	280.21	284.21
39	Burn Standard Company Ltd.	75.43	1139.16	1214.59
	Ministry of Water Resources			
40	National Projects Construction Corporation Ltd.	--	646.89	646.89
	Ministry of Housing & urban Poverty Alleviation			
41	Hindustan Prefab Ltd.	--	128.00	128.00
	Ministry of Information & Broadcasting			
42	National Film Development Corporation Ltd.	3.00	28.40	31.40
	Ministry of Petroleum & Natural Gas			
43	BieccoLawrie Ltd.	--	59.60	59.60
	Ministry of Development of North Eastern Region			
44	North Eastern Handicrafts and Handlooms Development Corporation Ltd.	8.50	83.06	91.56
	Department of Telecommunications			
45	ITI Ltd.	3986.00	170.79	4156.79
	Total	9577.39	24040.85	33618.24
B	Implemented by Holding Companies			
	Department of Chemicals & Petrochemicals			
46	Hindustan Fluorocarbons Ltd.	12.53	56.52	69.05
	Ministry of Coal			
47	Eastern Coal Fields Ltd.	--	2470.77	2470.77
48	Bharat Coking Coal Ltd.	1350.00	3428.55	4778.55
	Total	1362.53	5955.84	7318.37
	Total for revival (A+B)	10939.92	29996.69	40936.61
C	Approved for closure			
	Department of Heavy Industry			
1	Bharat Ophthalmic Glass Ltd.	9.80	--	9.80
2	Bharat Yantra Nigam Ltd.	3.82	7.55	11.37
3	Hindustan Photo Films Manufacturing Company Ltd.	181.54	--	181.54
	Department of Commerce			
4	STCL Ltd.	--	--	--
	Sub total	195.16	7.55	202.71
	Grand Total(A+B+C)	11135.08	30004.24	41139.32

- Cash Assistance involve budgetary support through equity/loan/grants
- Non-cash Assistance involve waiver of interest, penal interest, GOI loan, Guarantee fee, conversion of loan into equity/debentures etc.
- In addition ONGC and BHEL would extend cash support to the extent of ₹ 150 crore and ₹ 20 crore respectively.
- Excludes continuation of 50% interest subsidy not exceeding ₹6.50 crore per annum on VRS loans
- Interest free mobilization advance of ₹30 crore from BHEL for technological up-gradation and diversification which would be repaid through supplies to be made to BHEL against their orders. Interest free advance of ₹ 25 crore from BHEL to ILK at the beginning of each year for the next three years from 2008-09 which will be adjusted against supplies to BHEL in the same year.

Broad Categories of Approval

Sl. No.	Name of the CPSE	Name of the Ministry /Department
	Revival as a CPSE	
1	Hindustan Salts Ltd., Jaipur, Rajasthan	D/o Heavy Industry
2	Bridge & Roof Co. (India) Ltd., Kolkata	-do-
3	BBJ Construction Co. Ltd., Kolkata	-do-
4	NEPA Ltd., Nepa Nagar, MP	-do-
5	Bharat Pumps & Compressors Ltd., Allahabad, UP	-do-
6	Cement Corporation of India Ltd., Delhi	-do-
7	Heavy Engineering Corporation Ltd., Ranchi, Jharkhand	-do-
8	Andrew Yule & Co. Ltd., Kolkata	-do-
9	Instrumentation Ltd., Kota, Rajasthan	-do-
10	HMT Ltd., Bangalore	-do-
11	Scooters India Ltd., Lucknow, UP	-do-
12	British India Corporation Ltd., Kanpur, UP	M/o Textiles
13	National Textiles Corporation Ltd., Delhi	-do-
14	National Jute Manufactures Corporation Ltd., Kolkata	-do-
15	Fertilizers & Chemicals Travancore Ltd., Kochi, Kerala	D/o Fertilizers
16	Hindustan Organic Chemicals Ltd., Mumbai	D/o Chemicals & Petrochemicals
17	Hindustan Insecticides Ltd., Delhi	-do-
18	Hindustan Antibiotics Ltd., Pune, Maharashtra	D/o Pharmaceuticals
19	Bengal Chemicals & Pharmaceuticals Ltd., Kolkata	-do-
20	Mineral Exploration Corporation Ltd., Nagpur, Maharashtra	M/o Mines
21	Hindustan Copper Ltd., Kolkata	-do-
22	Central Electronics Ltd., Delhi	D/o Scientific & Industrial Research
23	National Projects Construction Corporation Ltd., Delhi	M/o Water resources
24	MECON Ltd., Ranchi, Jharkhand	M/o Steel
25	State Farms Corporation of India Ltd., Delhi	D/o Agriculture & Co-operation
26	BieccoLawrie Ltd., Kolkata	M/o Petroleum & Natural Gas
27	Konkan Railway Corporation Ltd., Delhi	M/o Railways
28	Hindustan Prefab Ltd., Delhi	M/o Housing & Urban Poverty Alleviation
29	North Eastern Handicrafts and Handlooms Development Corporation Ltd., Shillong	M/o Development of North Eastern Region
30	National Film Development Corporation Ltd., Mumbai	M/o Information & Broadcasting
31	ITI Ltd., Bangalore	D/o Telecommunications
	Revival through Joint Venture/disinvestment	
32	Tungabhadra Steel Products Ltd., Bellary, Karnataka	D/o Heavy Industry
33	Richardson & Cruddas Ltd., Mumbai	-do-
34	Tyre Corporation of India Ltd., Kolkata	-do-
35	HMT Bearings Ltd., Hyderabad, Telangana	-do-
36	HMT Machine Tools Ltd., Bangalore, Karnataka	-do-
37	Central Inland Water Transport Corporation Ltd., Kolkata	M/o Shipping
38	Hooghly Dock & Port Engineers Ltd., Kolkata	-do-
	Revival through merger	D/o Heavy Industry

39	Praga Tools Ltd.,Hyderabad,Telengana	-do-
40	Bharat Heavy Plate Vessels Ltd, Visakhapatnam, Andhra Pradesh	-do-
41	Bharat Refractories Ltd.	M/o Steel
	Revival through takeover	
42	Hindustan Shipyard Ltd., Delhi	D/o Defence Production
43	Burn Standard Company Ltd.,Kolkata	M/o Railways
44	Braithwaite and Company Ltd.,Kolkata	-do-
45	Bharat Wagon & Engineering Company Ltd.	-do-
	Revival through holding company	
46	Hindustan Fluorocarbons Ltd., Hyderabad, Telengana	D/o Chemicals &Petrochemicals
47	Eastern Coal Fields Ltd., Kolkata	M/o Coal
48	Bharat Coking Coal Ltd., Dhanbad, Jharkhand	-do-
	Closure	
49	Bharat Ophthalmic Glass Ltd. ,Durgapur	D/o Heavy Industry
50	Bharat Yantra Nigam Ltd. , Naini, Allahabad	-do-
51	Hindustan Photofilms Manufacturing Co. Ltd.,, Ootacamund, Tamilnadu	-do-
52	STCL Ltd., Bangalore	D/o Commerce

Performance of 48 CPSEs Approved for Revival by Government/Holding Companies

(₹ in Crore)

S. No.	Name of the Ministry/ Department/ CPSE	Date of recommendation of BRPSE	Date of approval of Govt.	Net profit								Net worth as on
				06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	
	Department of Heavy Industry											
1	Hindustan Salts Ltd.	6.1.2005	4.5.2005	-0.43	0.03	0.64	0.03	-0.49	0.22	0.74	0.11	26.63
2	Tyre Corporation of India Ltd.	29.11.05/ 9.12.2005	19.4.07/ 6.11.2008	-47.93	-49.22	541.15*	-14.66	-13.23	-20.86	-16.36	-16.36	-8.55
3	HMT Bearings Ltd.	17.3.2005	3.11.2005	-7.16	-20.72	-11.07	-15.31	-21.32	-10.12	-2.07	-15.98	-92.90
4	Praga Tools Ltd.**	17.3.2005	20.10.2005	91.92	--	--	--	--	--	--	--	--
5	Bharat Pumps & Compressors Ltd.	22.7.2005	7.12.2006	19.11	30.47	18.56	25.65	9.53	-0.91	-27.91	-5.24	107.17
6	Tungabhadra Steel Products Ltd.	24.6.2005	2.6.2006	-37.5	-20.45	-18.44	-25.76	-26.12	-28.75	-31.15	-31.91	-402.87
7	NEPA Ltd.	28.9.2011	6.9.2012	-44.47	-37.67	-46.08	-55.32	-70.40	-72.90	-84.08	-51.23##	-16.32
8	Richardson & Cruddas Ltd.	10.6.2005	9.3.2006	-30.72	-59.6	-30.3	-27.38	-21.55	-16.26	-29.49	-3.83	-392.09
9	Cement Corporation of India Ltd.	2.9.2005	9.3.2006	166.61*	40.89	52.55	52.74	27.13	19.43	8.11	16.20	-125.95
10	HMT Machine Tools Ltd.	9.9.2005	1.2.2007, 2014	-149.78	-40.5	-37.17	-45.80	-93.06	-46.14	-43.65	-52.66	-254.32
11	Heavy Engineering Corporation Ltd.	7.10.2005	15.12.2005	2.86	7.01	18.37	44.03	38.14	8.58	20.38	-151.73##	140.58
12	Bharat Heavy Plate & Vessels Ltd.	2.7.2007	26.11.2007	-34.7	-26.73	96.36	-8.60	8.78	10.44	35.04	35.04	-150.28
13	Instrumentation Ltd.	26.5.2006	11.2.2009	-27.8	-33.37	282.59*	333.62*	-36.56	-67.69	-54.09	-68.61	-153.90
14	Andrew Yule & Co. Ltd.	9.5.2006	22.2.2007	-89.57	5.33	29.36	75.38	41.32	11.85	11.35	22.29	211.41
15	BBJ Construction Co. Ltd.	3.2.2005	16.6.2005	1.22	1.62	2.53	2.76	3.60	4.77	42.08	44.12	106.84
16	Bridge & Roof Co. (India) Ltd.	20.1.2005/ 11.5.2005	25.8.2005	4.47	6.18	21.68	42.00	57.68	45.80	38.40	10.61	299.78
17	Scooters India Ltd.	28.7.2010	19.5.2011/ 31.1.2013		-22.47	-27.65	-28.01	-17.11	-19.94	-6.00	13.60	83.05
18	HMT Ltd.	29.3.2012	18.4.2013		-44.67	-70.79	-52.91	-79.24	-82.20	-145.37	-169.18##	1138.38
	Ministry of Textiles											
19	British India Corporation Ltd.	28.7.2010	9.6.2011	-13.4	31.27*	-44.02	-42.63	-50.82	-58.34	-75.05	-82.78	-412.45
20	National Textiles Corporation Ltd.	3.3.2005	2.5.2005	-530.05	-510.19	4179.45*	103.13*	1304.24*	130.14*	85.12*	-175.71	1769.76
21	National Jute Manufactures Corporation Ltd.	19.12.2007	19.3.2010/ 25.11.2010		-505.17	-583.67	6784.31*	-129.44	-38.21	-16.00	-6.55	-244.19
	Department of Fertilizers											
22	Fertilizers & Chemicals Travancore Ltd.	9.12.2005	30.3.2006	-124.73	8.97	42.95	-103.84	-49.33	19.80	-353.96	-264.95	-456.73
	Department of Pharmaceuticals											
23	Hindustan Antibiotics Ltd.	22.7.2005	9.3.2006	200.49*	-20.71	-22.09	-44.68	-42.42	-72.10	-69.37	-84.23	-363.45
24	Bengal Chemicals & Pharmaceuticals Ltd.	25.8.2006	21.12.2006	-4.69	-10.69	-3.52	-10.54	-9.16	-15.92	-17.94	-29.03	-48.76
	Department of Chemicals & Petrochemicals											
25	Hindustan Organic Chemicals Ltd.	18.10.2005	9.3.2006	17.04	13.61	-25.28	-72.58	25.72	-78.07	-137.99	-176.85	-293.10
26	Hindustan Insecticides Ltd.	16.11.2005	27.7.2006	5.66	6.52	2.71	3.06	1.58	1.60	2.92	1.85	91.80
27	Hindustan Fluorocarbons Ltd., Hyderabad, A.P	13.6.2008	2008-09		39.96	0.56	-52.91	2.23	2.52	0.95	-24.82	-48.51
	Ministry of Coal											
28	Eastern Coalfields Ltd.	29.8.2005	5.10.2006	110.6	-1029	-2109	333.40	106.57	962.13	1655.54	872.23	-1586.37

29	Bharat Coking Coal Ltd.	22.2.2008	25.2.2010		86.61	-1380.47	794.19	1093	822	1498.80	1714.35	2265.32
	Ministry of Steel											
30	MECON Ltd.	16.3.2006	8.2.2007	20.38	33.32	65.89	82.62	93.68	136.36	101.02	49.48	439.48
31	Bharat Refractories Ltd.#	14.12.2006	24.4.2008	-15.32	4.43	7.37	-10.88	20.67	11.41	9.76	--	--
	Ministry of Shipping											
32	Central Inland Water Transport Corporation Ltd.	16.6.2005	1.12.2005	263.07*	1.18	-114.81	-1.82	-4.68	-13.09	-23.93	-18.99@	25.52
33	Hoogly Dock & Port Engineers Ltd.	22.6.2007	13.10.2011		-51.89	-52.72	-54.42	-10.50	452.93*	-39.84	-69.33##	-138.19
	Department of Defence Production											
34	Hindustan Shipyard Ltd.	12.1.2006	24.12.2009/ 23.3.2011	300.93*	11.34	-140.01	2.32	55.00*	-85.98	-55.17	-46.21	-815.38
	Department of Agriculture & Cooperation											
35	State Farms Corporation of India Ltd.@@	21.4.2006/25.8.2006	3.1.2008	0.3	12.29	9.77	21.53	29.87	38.96	42.58	--	--
	Ministry of Mines											
36	Mineral Exploration Corporation Ltd.	29.11.2005	27.7.2006	59.57*	6.11	1.24	14.46	11.95	17.32	20.66	25.46	189.74
37	Hindustan Copper Ltd.	14.12.2006	26.6.2007	313.94	246.46	-10.31	154.68	224.10	323.44	355.64	286.42	1829.27
	Ministry of Water Resources											
38	National Projects Construction Corporation Ltd.	10.2.2006	26.12.2008	-76.56	-36.62	-24.34	31.29	29.70	42.18	50.97	47.06	94.20
	Ministry of Railways											
39	Konkan Railway Corporation Ltd.	26.10.2007	4.12.2008	-233.28	-145.79	-80.1	11.63	1.83	18.74	-235.41	13.11	1353.30
40	Braithwaite and Co. Ltd.	31.3.2005	29.12.2005	0.57	0.55	1.5	1.75	6.18	6.89	7.15	10.43	47.31
41	Bharat Wagons & Engineering Co. Ltd.	24.6.2005	26.6.2008/ 7.2.2008/ 2.7.2009	-24.14	-13.62	-8.63	-9.04	-9.99	-8.67	-7.59	-6.67	-39.18
42	Burn Standard Company Ltd.	26.6.2009	10.6.2010	-151.86	-151.29	-157.59	-136.36	*1165.68	-76.10	-19.66	-8.28	404.78
	Department of Scientific & Industrial Research											
43	Central Electronics Ltd.	23.1.2006	3.8.2006	2.85	1.02	1.29	0.12	-17.25	-15.91	-2.41	1.94	12.56
	Ministry of Housing & Urban Poverty Alleviation											
44	Hindustan Prefab Ltd.	24.2.2009	20.8.2009	-14.63	-13.75	7.75	2.47	4.61	2.47	-3.70	0.47	9.49
	Ministry of Petroleum & Natural Gas											
45	BieccoLawrie Ltd.	29.8.2007	25.4.2011	2.31	3.22	2.23	1.73	3.75	-20.13	-11.95	-14.39	-16.27
	Ministry of Information & Broadcasting											
46	National Film Development Corporation Ltd.	6.4.2010	16.9.2010	-5.27	-2.76	-11.13	-7.13	1.69	4.08	6.35	-3.21	19.57
	Ministry of Development of North Eastern Region											
47	North Eastern Handicrafts and Handlooms Development Corporation Ltd.	29.6.2012	21.2.2013		-2.46	-2.01	-1.82	-1.74	-1.51	-1.50	-2.32	-28.18
	Department of Telecommunications											
48	ITI Ltd.	19.7.2013	12.2.2014		-358.38	-668.18	-458.76	-357.75	-369.80	-182.06	-344.26	818.79

*Includes extra-ordinary income, with drawl of provisions, etc.; **merged with HMT Machine Tools Ltd.# merged in SAIL ;## Profit Before extraordinary, exceptional items and Tax.'@ Profit Before extraordinary, exceptional items and Tax and other non -operating income;@@ Merged in National Seeds Corporation Ltd.

List of 19 Turnaround Sick CPSEs

(₹ in Crore)

S. No.	Name of the Ministry/ Department/ CPSE	Net profit					
		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
	Department of Heavy Industry						
1	Bharat Pumps & Compressors Ltd.	18.56	25.65	9.53	-0.91	-27.91	-5.24
2	Cement Corporation of India Ltd.	52.55	52.74	27.13	19.43	8.11	16.20
3	Heavy Engineering Corporation Ltd.	18.37	44.03	38.14	8.58	20.38	-151.74@
4	Andrew Yule & Co. Ltd.	29.36	75.38	41.32	11.85	11.35	22.29
5	BBJ Construction Co. Ltd.	2.53	2.76	3.60	4.77	42.08	44.12
6	Bridge & Roof Co. (India) Ltd.	21.68	42.00	57.68	45.80	38.40	10.61
	D/o Chemicals & Petrochemicals						
7	Hindustan Insecticides Ltd.	2.71	3.06	1.58	1.60	2.92	1.85
	Ministry of Steel						
8	MECON Ltd.	65.89	82.62	93.68	136.36	101.02	49.48
	D/o Agriculture & Cooperation						
9	State Farms Corporation of India Ltd.*	9.77	21.53	29.87	38.96	42.58	--
	Ministry of Mines						
10	Mineral Exploration Corporation Ltd.	1.24	14.46	11.95	17.32	20.66	25.46
11	Hindustan Copper Ltd.	-10	155	224	323.44	355.64	286.42
	Ministry of Railways						
12	Braithwaite and Co. Ltd.	1.5	1.75	6.18	6.89	7.15	10.43
13	Konkan Railway Corporation Ltd.	-80.10	11.63	1.83	18.74	-235.41	13.11
	D/o Scientific & Industrial Research						
14	Central Electronics Ltd.	1.29	0.12	-17.25	-15.91	-2.41	1.94
	M/o Housing & Urban Poverty Alleviation						
15	Hindustan Prefab Ltd.	7.75	2.47	4.61	2.47	-3.70	0.47
	M/o Water Resources						
16	National Projects Construction Corporation Ltd.	-24.34	31.29	29.70	42.18	50.97	47.06
	M/o Steel						
17	Bharat Refractories Ltd.(Renamed as SAIL Refractory Unit)**	7.37	-10.88	20.67	11.41	9.76	--
	M/o Information & Broadcasting						
18	National Film Development Corporation Ltd.	-11.13	-7.13	1.69	4.08	6.35	-3.21
	M/o Coal						
19	Bharat Coking Coal Ltd.	-1380.47	794.19	1093	822	1498.80	1714.35

* Merged in National Seeds Corporation Ltd.

** Merged in SAIL

@ Profit Before Exceptional items, Extraordinary items and Tax.

Status of Incipient Sick CPSEs

		(₹ in crore)					
S. No.	CPSEs	Turnover	Profit/Loss (-)*			Networth	No of Employees
		2013-14	2011-12	2012-13	2013-14	as on 31.03.2014	
	Ministry of Shipping						
1	Shipping Corporation of India Ltd. (Navratna CPSE)	4231.8	-340.02	-368.19	-221.39	6339.82	836
	Department of Telecommunications						
2	Bharat Sanchar Nigam Ltd.**	26153.26	-8820.93	-7955.36	-6933.25	57533.32	238277
3	Mahanagar Telephone Nigam Ltd. (Navratna CPSE)**	3475.66	-4109.78	-5321.12	-3303.03	5042.74	36523
4	Millenium Telecom Ltd.(Subsidiary of MTNL)	0	0.1	0.03	0.06	4.62	0
	Department of Heavy Industry						
5	Bharat Pumps &Compressors Ltd.\$	134.37	1.57	-26.76	-15.68	107.17	780
6	BHEL Electrical Machines Ltd. (Subsidiary of BHEL)	34.52	-0.38	-1.3	-1.14	8.51	178
7	Hindustan Paper Corporation Ltd.	633.52	-138.9	-235.6	-118.5	511.84	2061
8	Hindustan Newsprint Ltd.(Subsidiary of HPC)	345.62	4.04	-18.17	-8.96	172.07	702
	Ministry of Petroleum &Natural Gas						
9	Chennai Petroleum Corporation Ltd. (Subsidiary of Indian Oil Corporation Ltd.)	49342.63	-158.22	-1697.69	-330.96	1722.43	1688
10	HPCL Biofuels Ltd. (Subsidiary of Hindustan Petroleum Corpn.Ltd.)	133.34	-51.41	-147.22	-112.74	308.6	394
11	Prize Petroleum Company Ltd. (Subsidiary of Hindustan Petroleum Corporation Ltd,)	8.59	-3.95	-1.13	-13.54	62.03	23
	Ministry of Power						
12	Kanti Bijlee Utpadan Nigam Ltd. (Subsidiary of NTPC)	161.49	7.73	-14.15	-0.66	1147.68	195
	Department of Scientific and Industrial Research						
13	National Research Development Corpn.	6.66	-0.84	-2.47	-1.7	5.96	86
	Department of Fertilizers						
14	National Fertilizers Ltd.	8017.03	184.2	-173.21	-161.16	1493.99	4068

	Ministry of Steel						
15	Bisra Stone Lime Company Ltd. (Subsidiary of Rashtriya Ispat Nigam Ltd.)	28.53	-6.86	-17.85	-18.76	-43.54	981
	Ministry of Defence						
16	Vignyan Industries Ltd.	32.72	0.65	-2.28	-1.45	4.45	247
	Ministry of Tourism						
17	Pondicherry Ashok Hotel Corpn. Ltd.(Subsidiary of Indian Tourism Development Corpn.Ltd.)	2.05	-0.39	-0.21	-0.24	1.4	20
	Total	92741.79	-13433.4	-15982.7	-11243.1	74423.09	287059

* Profit /loss is before Exceptional Items, Extra-ordinary items and provision for Tax

** a. Cabinet in February 2014 approved waiver of ₹7500 crore given as notional loan at the time of formation of BSNL along with interest.

b. Cabinet in January 2014 approved refund of one time upfront charges on surrender of BWA amounting to ₹6724.51 crore to BSNL and ₹4533.97 crore to MTNL.

c. Cabinet approved payment of pension to Government employees absorbed in MTNL on the same lines as in the case of employees of BSNL from Government account.

\$ On recommendation of BRPSE, a revival package was approved in respect of Bharat Pumps & Compressors Ltd. amounting to ₹156.52 crores (Cash assistance of ₹3.37 crores and non-cash assistance of ₹153.15 crores) on 7.12.2006. The package also, inter alia, provided extension of financial support of ₹150 crores by ONGC, Rs, 20 crores by BHEL, management support by BHEL, knowledge support by Engineers India Ltd., etc. The company was declared turnaround in the year 2010 as the company had earned profit consecutively for three years. It earned marginal profit of ₹1.57 crores in 2011-12 and incurred losses of ₹26.76 crores in 2012-13 and ₹15.68 crores in 2013-14.

Chapter 13

Disinvestment and Listing on Stock Exchanges

The policy of 'disinvestment' in Central Public Sector Enterprises (CPSEs) has evolved over the years. Disinvestment of government equity in CPSEs began in 1991-92. The Industrial Policy Statement of 1991 stated that the Government would divest part of its holdings in select CPSEs. Broadly, the objectives of divestment have been to raise resources, encourage wider public participation and bring in greater market accountability.

13.1 Disinvestment Commission

From 1991-92 to 1996-97, disinvestment in CPSEs was handled by the Department of Public Enterprises (DPE). DPE vide its resolution dated 23.8.1996, constituted a Public Sector Disinvestment Commission for a period of three years with Mr. G.V. Ramakrishna as its full time Chairman. The term of the Commission was further extended till 30.11.1999. The Commission submitted its report on 58 CPSEs. The Commission was reconstituted in July, 2001 for a period of two years with Dr. R.M. Patil as its (part time) Chairman. The term of this Commission was subsequently extended till October, 2004. The reconstituted Commission submitted its reports on 41 CPSEs, including review cases of earlier Commission's recommendations on 4 CPSEs. The term of the commission expired on 31.10. 2004 and the Commission was wound up.

13.2 Department of Disinvestment

During 1997-98, the subject matter of 'disinvestment in CPSEs' was brought under Department of Economic Affairs (Ministry of Finance). Subsequently, the Department of Disinvestment was constituted in the Ministry of Finance in December, 1999 with the following functions assigned to it:

- a. (i) All matters relating to disinvestment of Central Government equity from Central Public Sector Undertakings,

- (ii) All matters relating to sale of Central Government equity through offer for sale or private placement in the erstwhile Central Public Sector Undertakings (All other post disinvestment matters, including those relating to and arising out of the exercise of Call option by the Strategic partner in the erstwhile Central Public Sector Undertakings, shall continue to be handled by the administrative Ministry or Department concerned, where necessary, in consultation with the Department of Disinvestment).

- b. Decisions on the recommendations of the Disinvestment Commission on the modalities of disinvestment, including restructuring.
- c. Implementation of disinvestment decisions, including appointment of advisers, pricing of shares, and other terms and conditions of disinvestment.
- d. Disinvestment Commission.
- e. Central Public Sector Undertakings for purposes of disinvestment of Government equity only.
- f. Financial Policy in regard to the utilization of the proceeds of disinvestment channelized into the National Investment Fund.

13.3. Evolution of Disinvestment Policy

The policy of disinvestment has largely evolved through the policy statements of Finance Ministers in their Budget Speeches. Disinvestment may be construed to be an integral part of the reforms triggered post-1990s economic crisis. In brief, the policy on disinvestment can be divided into three phases, viz.

- (i) **1991 to 1999:** The focus was on disinvestment of minority shareholding in favour of financial institutions.
- (ii) **1999-2000 to 2003-04:** In the period, the focus was on disinvestment through strategic sale.

- (iii) **Since 2004-05:** The focus is on disinvestment of minority stakes in the domestic market to the general public in conjunction with issue of fresh equity by the company.

The policy on disinvestment envisages development of people's ownership of Central Public Sector Enterprises to share in their wealth and prosperity, keeping in view the objective of disinvestment policy, the following approach to disinvestment has been adopted.

- (i) Already listed profitable CPSEs (not meeting mandatory shareholding of 10%) are to be made compliant by 'Offer for Sale' by Government or by the CPSEs through issue of fresh shares or a combination of both.
- (ii) Unlisted CPSEs with no accumulated losses and having earned net profit in three preceding consecutive years are to be listed.
- (iii) Follow-on public offers would be considered in respect of profitable CPSEs having 10 per cent or higher public ownership, taking into consideration the needs for capital investment of CPSE, on a case by case basis and Government could simultaneously or independently offer a portion of its equity shareholding.
Each CPSE has different equity structure, financial strength, fund requirement, sector of operation etc. These factors do not permit a uniform pattern of disinvestment. Therefore, disinvestment is considered on merits and on a case-by-case basis.
- (v) CPSEs have been permitted to use their surplus cash to buyback their shares. A CPSE may also buy the shares of other CPSEs from the Government.

13.6 Advantages of Listing

There are inherent advantages in the listing of shares of profitable CPSEs on the stock exchanges as it triggers multilayered oversight mechanism which enhances corporate governance as well as provides for level playing field to CPSEs vis-à-vis private companies in regard to accessing the resources through

the capital market. The process enhances shareholder value in the listed CPSEs.

- (a) The listed companies are mandated by Company Law/SEBI/ Stock Exchanges to comply with higher level of disclosures. This will bring greater transparency and credibility;
- (b) With the induction of independent directors, management accountability, competencies and performance are enhanced.
- (c) Investor centric research provides on a regular basis a third party professional assessment of risks as well as future prospects to management to help it benchmark its business model with the industry.
- (d) Expectations of investors (shareholders) will bring productive pressure upon the management to perform more efficiently to unlock the true value of the enterprise.

Listing of profitable CPSEs on the stock exchanges with a mandatory public ownership of at least 10% shareholding has been observed to increase significantly the value of the Enterprise and Government's residual shareholding as well as that held by the public post-listing. Listing also provides development of people-ownership of CPSEs, thus encouraging participation and sharing in the prosperity of CPSEs.

13.7 Constitution of National Investment Fund

The Government of India constituted the National Investment Fund (NIF) on 3rd November, 2005, into which the proceeds from disinvestment of Central Public Sector Enterprises were to be channelized. The corpus of the fund was to be of permanent nature and the same was to be professionally managed in order to provide sustainable returns to the Government, without depleting the corpus. NIF was to be maintained outside the Consolidated Fund of India.

13.8 Restructuring of The NIF

In view of the difficult situation caused by the global slowdown of 2008-09 and a severe drought in 2009-10, the, CCEA on 5th November, 2009, approved

a change in the policy on utilization of disinvestment proceeds. A one-time exemption was accorded to disinvestment proceeds being deposited into NIF for investment; this exemption was to be operational for period April 2009-March 2012. All disinvestment proceeds obtained during the three year period were to be used for selected Social Sector Schemes allocated for by Planning Commission/Department of Expenditure. The utilization of disinvestment proceeds were continued for funding of Social Sector Schemes till 31st March, 2013. During the period 2009-12, disinvestment receipts to the tune of ₹ 82,798.55 crore were allocated and spent on plan expenditure of Social Sector Schemes. The income from the NIF during the period 2009-13 of Rs 716.19 crore was also utilized on plan expenditure of Social Sector Schemes.

The Government on 17th January, 2013 has approved restructuring of the National Investment Fund (NIF) and decided that the disinvestment proceeds with effect from the fiscal year 2013-14 will be credited to the existing 'Public Account' under the head NIF and they would remain there until withdrawn /invested for the approved purpose.

It was decided that the NIF would be utilized for the following purposes:

- (a) Subscribing to the shares being issued by the CPSEs including PSBs and Public Sector Insurance Companies, on rights basis so as to ensure 51% ownership of the Government in those CPSEs/PSBs/Insurance Companies, is not diluted.
- (b) Preferential allotment of shares of the CPSE to promoters as per SEBI (Issue of Capital and Disclosure Requirements) Regulations, 2009 so that Government shareholding does not go down below 51% in all cases where the CPSE is going to raise fresh equity to meet its capital expenditure program.
- (c) Recapitalization of public sector banks and public sector insurance companies.
- (d) Investment by Government in RRBs/IIFCL/

NABARD/Exim Bank;

- (e) Equity infusion in various Metro projects;
- (f) Investment in Bhartiya Nabhikiya Vidyut Nigam Limited and Uranium Corporation of India Ltd.
- (g) Investment in Indian Railways towards capital expenditure.

For financial year 2013-14 Government has approved allocations from the NIF towards spending on recapitalization of Public Sector Banks and capital expenditure of Indian Railways.

13.9 Disinvestment in CPSEs in 2013-14

Disinvestment in the year 2013-14 has been shaped by Minimum Public Shareholding Norms introduced by the government through amendment in 2010 Securities Contracts (Regulation) Rules, introduction of instrument of Offer for Sale as a mode of share transaction by SEBI, Constitution of CPSE Exchange Traded Fund (ETF) Scheme approved by the Government and creation of Special National Investment Fund.

(i) Minimum Public Shareholding Norms

One single market having large number of participants representing various classes of buyers and sellers generally leads to higher liquidity and better price discovery. It adds to the depth of the market and also helps avoid manipulation or misconduct and thereby serves to protect the interest of investors – especially smaller investors. From corporate governance point of view a minimum percentage of shareholding in listed companies must be owned by public so as to protect the interest of minority shareholders and to ensure better price discovery. Government amended in 2010 Securities Contracts (Regulation) Rules to stipulate that within a time frame of 3 years ending in mid-2013 all listed companies must have at least 25% (private sector companies) or 10% (public sector companies) by June 2013 and August 2013, respectively. In August 2014, minimum public shareholding norms have been amended for every listed CPSE to be 25%. After this amendment, every

listed CPSE has to increase its public shareholding to at least twenty five per cent, within a period of three years, in the manner, as may be specified, by the Securities and Exchange Board of India.

(ii) Offer for Sale (OFS)

Offer for Sale (OFS) of Shares by Promoters through the Stock Exchange Mechanism is an additional disinvestment method notified by SEBI in 2012. When SEBI began to seriously implement minimum shareholding time frame, representations were received that the avenues available for divestment by promoters were very limited and hence needed to be increased. Keeping this in mind SEBI introduced new avenues like Institutional Placement Plan and Offer for Sale (OFS). The sale of shares through OFS mechanism is akin to secondary market sale transactions with the difference that in OFS, the sale is conducted through auction mechanism to determine the price and quantity traded. OFS mechanism has been found to be useful for disinvestment by market participants and is popular for offloading shares of promoters in listed companies. In addition, promoters find OFS mechanism to be economical and efficient in terms of cost and process time involved. Since the entire process from giving notice to the market to credit of shares to buyers takes three days.

OFS method is economical and does not require filing of a prospectus as in the case of a Follow on Public Offer. The problem of delays in disinvestment of CPSEs is minimized in an OFS as the OFS can be launched on one day notice. The entire bidding process is online on stock exchanges and is over in a day. Hence, the OFS method has been extensively used by the Department of Disinvestment for disinvestment of CPSEs in the last two years.

The number of companies eligible to sell shares using the offer-for-sale (OFS) mechanism through the stock exchanges has been increased from the top 100 to 200 by market capitalisation in any of the last four completed quarters. This has been done to encourage retail participation. Retail investors (bid size of not more than ₹ 2 lakh across exchanges)

have been earmarked a minimum of 10 per cent in a non-promoter OFS. Individual retail investors have been given the option to bid in the retail category and the general category with their bids under retail category becoming ineligible if the cumulative bid value exceeds ₹ 2 lakh.

(iii) Special National Investment Fund (SNIF)

Among the listed CPSEs in 2013-14, there were a few CPSEs that were loss making and whose shares were difficult to be offloaded in the market. These CPSEs were not able to conform to minimum public shareholding norms of 10% provided in the Securities Contracts (Regulation) Rules.

To ensure conformity Government created, on August 2, 2013, Special National Investment Fund (SNIF) to transfer the shares of certain listed yet loss making CPSEs. The number of shares that is required to make the non-compliant companies compliant with the minimum public shareholding limit are transferred to the Special National Investment Fund out of Government of India shareholding on irrevocable basis without any consideration. The shares so transferred to the fund are to be sold in the capital market gradually over a period of 5 years by the fund managers. The modalities of the sale and price is decided by the Government. Accordingly, 10% shareholding of the enterprises listed below were transferred to SNIF.

1. Andrew Yule & Company Limited
2. Fertilizers and Chemicals (Travancore) Ltd.
3. Hindustan Photo Films Manufacturing Company Ltd.
4. HMT Limited
5. ITI Ltd
6. Scooters India Ltd

SNIF is maintained outside the Consolidated Fund of India. In its structure, the Fund mimics the original concept of National Investment Fund created for receiving the disinvestment proceeds of central public sector enterprises. The difference stems from the fact that only shares are transferred here and not receipts from the sale of shares of CPSEs. Further special NIF is aimed only at loss making CPSEs. The

Special NIF is managed by independent professional fund managers as was originally the case with NIF.

(iv) CPSE Exchange Traded Fund (ETF) Scheme

The Cabinet Committee on Economic Affairs (CCEA) in its meeting held on 2nd May, 2013 approved proposal for creation and launch of a Central Public Sector Enterprise (CPSE) Exchange Traded Fund (ETF) comprising shares of listed CPSEs. The approval was to disinvest maximum of 3% GoI equity from CPSEs. An ETF is a security that tracks an index like an index fund but trades like a stock on an exchange. Constituent stocks are listed and actively traded, and may have representation from various sectors to provide ETF unit holders adequate diversification. The CPSE ETF is an additional mechanism for the GoI to monetize its shareholding in those CPSEs that eventually form part of the CPSE ETF basket, in a stock-neutral, time-efficient and non-disruptive manner.

The composition of the basket of shares comprise of eleven CPSE ETF scrips viz. ONGC, CIL, GAIL, PFC, REC, OIL, CONCOR, IOL, BEL & EIL.

New Fund Offer (NFO) of CPSE and ETF Scheme was opened on 18th March, 2014 for Anchor investors and on 19th March, 2014 for other investors. The NFO closed on 21st March, 2014. Government realised ₹ 3000 crore through successful completion of CPSE ETF NFO. The New Fund Offer (NFO) was oversubscribed by 1.4 times. The listing and trading of CPSE ETF units began on 4th April, 2014. CPSE ETF units were allotted to investors at a price of ₹ 17.45 per unit. Government can raise additional resources and meet additional demand of CPSE ETF units in future remaining within the limit of 3% disinvestment by divesting through the Tap mechanism to the CPSE ETF as approved by the CCEA.

13.10 Realization From Disinvestment in 2013-14

During the financial year 2013-14, Government realized an amount of ₹15,819.45 crore against the

target of ₹40,000 crore. The detail of the transactions in 2013-14 are stated below:

- (i) **MMTC Limited:** Government divested 9.33% paid-up equity capital of the company by way of Offer for Sale of Shares by Promoters through Stock Exchange Mechanism (OFS) and realized an amount of ₹571.71 crore.
- (ii) **Hindustan Copper Limited:** Government divested 4.01% paid-up equity capital of the company by way of Offer for Sale of Shares by Promoters through Stock Exchange Mechanism (OFS) and realized an amount of ₹259.56 crore.
- (iii) **National Fertilisers Limited:** Government divested 7.64% paid-up equity capital of the company by way of Offer for Sale of Shares by Promoters through Stock Exchange Mechanism (OFS) and realized an amount of ₹101.08 crore.
- (iv) **India Tourism Development Corporation Limited:** Government divested 5% paid-up equity capital of the company by way of Offer for Sale of Shares by Promoters through Stock Exchange Mechanism (OFS) and realized an amount of ₹30.17 crore.
- (v) **State Trading Corporation of India Limited:** Government divested 1.02% paid-up equity capital of the company by way of Offer for Sale of Shares by Promoters through Stock Exchange Mechanism (OFS) and realized an amount of ₹4.54 crore.
- (vi) **Neyveli Lignite Corporation Limited:** Government divested 3.56% paid-up equity capital of the company by way of Institutional Placement Programme (IPP) and realized an amount of ₹358.21 crore.
- (vii) **NHPC Limited:** Government divested 10.42% paid-up equity capital of the company by way of buy back and realized an amount of ₹2131.28 crore.
- (viii) **Power Grid Corporation of India Limited:** Government divested 3.54% paid-up equity capital of the company by way of Follow-on Public Offer (FPO) and realized an amount of ₹1637.32 crore.

- (ix) **Engineers India Limited:** Government divested 10% paid-up equity capital of the company by way of Follow-on Public Offer (FPO) and realized an amount of ₹497.32 crore.
- (x) **Bharat Heavy Electricals Limited:** Government divested 4.66% paid-up equity capital of the company by way of Block deal and realized an amount of ₹1886.78 crore.
- (xi) **Indian Oil Corporation Limited:** Government divested 10% paid-up equity capital of the company by way of CPSE to CPSE sale of shares and realized an amount of ₹5341.49 crore.
- (xii) **CPSE Exchange Traded Fund (CPSE-ETF):** CPSE-ETF was launched in March 2014 and the Government realized an amount of ₹ 3000 crore through the scheme. CPSE-ETF is composite of basket of securities and provides diversification like mutual funds. The constituents of CPSE-ETF are: ONGC, CIL, GAIL, REC, OIL, CONCOR, PFC, IOL, BEL, and EIL.

The disinvestment target for the year 2014-15 has been kept at ₹ 51,925 crore in the Budget, comprising ₹ 36,925 crore by way of disinvestment

of CPSEs and ₹ 15,000 crore through disinvestment of Government stake in non-Government Companies.

The summary of disinvestment receipts since 1991-92 till 2013-14 is at Annexure-13.1

13.2 Disinvestments through Public Offers-Highlights

- CPSEs constitute 14.9% and 15.15% of the total market capitalisation of companies listed at BSE and NSE respectively (as on 31 October 2014)
- The CPSE with the highest market capitalisation is Oil & Natural Gas Corp.Ltd. at ₹ 3,46,540 crore (BSE) and ₹ 3,46,626 crore (NSE) (as on 31 October 2014)
- VSNL was the first CPSE to be divested by way of a Public Offer in 1999-00
- ONGC Public Offer in 2003-04 has been the largest CPSE FPO, raising ₹ 10,542 crore
- Coal India Public Offer in 2010-11 has been the largest CPSE IPO, raising ₹ 15,199 crore
- The maximum number of applications received in a PSU IPO/FPO since 2003-04 was in CIL (15.96 lakhs)

Summary of Receipts from Disinvestment : 1991-92 to 2013-14

Year	Budgeted receipt (Rs.crore)	Receipts through sale of minority shareholding in CPSEs (Rs. crore)	Receipts through sale of majority shareholding of one CPSE to another CPSE (Rs. crore)	Receipts through Strategic sale (Rs.crore)	Receipts from other related transactions (Rs. crore)	Receipts from sale of residual shareholding in disinvested companies / CPSEs (Rs. crore)	Total receipts (Rs. crore)	Transactions
1991-92	2,500.00	3,037.74	-	-	-	-	3,037.74	Minority shares sold in Dec, 1991 and Feb, 1992 by auction method in bundles of "very good", "good" and "average" companies
1992-93	2,500.00	1,912.51	-	-	-	-	1,912.51	Shares sold separately for each company by auction method.
1993-94	3,500.00	-	-	-	-	-	-	Equity of 6 companies sold by auction method but proceeds received in 94-95.
1994-95	4,000.00	4,843.10	-	-	-	-	4,843.10	Shares sold by auction method.
1995-96	7,000.00	168.48	-	-	-	-	168.48	Shares sold by auction method.
1996-97	5,000.00	379.67	-	-	-	-	379.67	GDR -VSNL
1997-98	4,800.00	910.00	-	-	-	-	910.00	GDR -MTNL
1998-99	5,000.00	* 5,371.11	-	-	-	-	5,371.11	GDR-VSNL; Domestic offerings of CONCOR and GAIL; Cross purchase by 3 Oil sector companies i.e. GAIL, ONGC and IOC.
1999-00	10,000.00	** 1,479.27	-	105.45	275.42	-	1,860.14	GDR-GAIL; Domestic offering of VSNL; capital reduction and dividend from BALCO; Strategic sale of MFIL.
2000-01	10,000.00	-	1,317.23	554.03	-	-	1,871.26	Sale of KRL, CPCL and BRPL to CPSEs; Strategic sale of BALCO and LJM.
2001-02	12,000.00	-	-	3,090.09	2,567.60	-	5,657.69	Strategic sale of CMC, HTL, VSNL, IBP, PPL, hotel properties of ITDC and HCI, slump sale of Hotel Centaur Juhu Beach, Mumbai and leasing of Ashok Bangalore; Special dividend from VSNL, STC and MMTC; sale of shares to VSNL employees.
2002-03	12,000.00	-	-	2,252.72	1,095.26	-	3,347.98	Strategic sale of HZL, IPCL, hotel properties of ITDC, slump sale of Centaur Hotel Mumbai Airport, Mumbai; Premium for renunciation of rights issue in favour of SMC; Put Option of MFIL; Sale of shares to employees of HZL and CMC.
2003-04	14,500.00	12,741.62	-	342.06	-	2,463.73	15,547.41	Strategic sale of JCL, Call Option of HZL, Offer for Sale of MUL, IBP, IPCL, CMC, DCI, GAIL and ONGC; Sale of shares of ICI Ltd.
2004-05	4,000.00	2,700.06	-	-	64.81	-	2,764.87	Offer for Sale of NTPC and spill over of ONGC; sale of shares to IPCL employees.

2005-06	No target fixed	-	-	-	2.08	1,567.60	1,569.68	Sale of MUL shares to Indian public sector financial institutions & banks and employees
2006-07	No target fixed	-	-	-	-	-	-	
2007-08	No target fixed	1,814.45	-	-	-	2,366.94	4,181.39	Sale of MUL (Rs.2366.94 cr) shares to public sector financial institutions, public sector banks and Indian mutual funds and sale of PGCIL (Rs.994.82 cr) and REC (Rs.819.63 cr) shares through Offer for Sale.
2008-09	No target fixed	-	-	-	-	-	-	
2009-10	No target fixed	23,552.93	-	-	-	-	23,552.93	Rs.2012.85 cr - NHPC, Rs.2247.05 cr OIL, Rs. 8480.098 cr NTPC, Rs.882.52 cr REC, Rs.9330.42 cr NMDC
2010-11	40,000.00	22,144.21	-	-	-	-	22,144.21	Rs.1062.74 cr SJVN, Rs. 959.65 cr EIL, Rs. 15199.44 cr COAL INDIA, Rs. 3721.17 cr PGCIL, Rs. 618.75 cr MOIL, Rs. 582.45 cr SCI
2011-12	40,000.00	13,894.05	-	-	-	-	13,894.05	Rs.1144.55 cr PFC, Rs. 12749.5 cr ONGC
2012-13	30,000.00	23,956.06	-	-	-	-	23,956.06	Rs. 124.97 cr NBCC, Rs. 807.03 cr HCL, Rs. 5973.27 cr NMDC, Rs. 3141 cr OIL, Rs. 11456.78 cr NTPC, Rs.310.15 cr RCF, Rs.627.84 cr NALCO, Rs. 1514.50 cr SAIL
2013-14	40,000.00	15,819.45	-	-	-	-	15,819.45	Rs.571.71 cr from MMTC, Rs.259.56 cr from HCL, Rs.101.08 cr from NFL, Rs.30.17 cr from ITDC, Rs.4.54 cr from STC, Rs.358.21 cr from NLC, Rs.2131.28 cr from NHPC, Rs. 1637.32 cr from PGCIL, Rs.497.32 cr from EIL, Rs. 1886.77 cr from BHEL, Rs. 5341.49 cr from IOCL, Rs. 3000 cr from CPSE-ETF
Grand Total		1,34,724.70	1,317.23	6,344.35	4,005.17	6,398.27	1,52,789.72	

* Out of Rs.5371.11, Rs. 4184 crore constitute receipts from cross purchase of shares of ONGC, GAIL and IOC.

** Out of Rs.1479.27, Rs.459.27 crore constitute receipts from cross purchase of shares of ONGC, GAIL and IOC.

Chapter 14

Performance of Public Sector Insurance Companies

Overview of the Insurance Sector The insurance sector was opened for private participation with the enactment of the Insurance Regulatory and Development Authority Act, 1999. Since opening up of the sector, the number of participants in the industry has gone up from seven insurers (including Life Insurance Corporation of India, four public sector general insurers, one specialized insurer viz. Export Credit Guarantee Corporation and General Insurance Corporation as the National Re-insurer) in the year 2000 to 53 insurers as on 31st March, 2014 operating in the life, non-life and re-insurance segments including specialized insurers, viz. Export Credit Guarantee Corporation and Agriculture Insurance Company of India Limited (AICIL).

There are currently eight (8) insurance companies (life and non-life insurance) functioning in the public sector. These enterprises are Life Insurance Corporation of India, National Insurance Company Limited, New India Assurance Company Limited, Oriental Insurance Company Limited, United India Insurance Company Limited, General Insurance Corporation of India, Agriculture Insurance Company of India Limited and Export Credit Guarantee Corporation of India. These public sector insurers are offering a variety of insurance policies ranging from Life Insurance to Crop Insurance.

Of the twenty three private life insurance companies which have set up operations in the life segment post opening up of the sector, twenty one are in joint venture with foreign partners. Of the twenty two private companies which have commenced operations in the non-life segment, seventeen have been set up in collaboration with foreign partners. Thus, thirty eight insurance companies in the private sector are operating in the country in collaboration with established foreign insurance companies from across the globe as on 31st March, 2014. Five of the general insurance companies viz. Star Health and Alliance

Insurance Company, Apollo MUNICH Health Insurance Company, Max BUPA Health Insurance Company, Religare Health Insurance Company and Cigna TTK Health Insurance Company function as standalone health insurance companies. The performance of the 8 public sector insurance Companies are discussed below:

14.1 Life Insurance Corporation of India (LIC)

Life Insurance Corporation of India (LIC) was established in the year 1956 as a Statutory Corporation under Section 3 of the Life Insurance Corporation Act, 1956 to carry out life insurance business in India. The objective of establishing the Corporation was spreading life insurance much more widely and in particular to the rural areas, with a view to reach all insurable persons in the country and providing them with adequate financial cover at a reasonable cost. LIC has 8 Zonal Offices, 113 Divisional Offices, 2048 Branch Offices and 1346 Satellite offices and 1242 Mini Offices throughout the length and breadth of the country as on 31.03.2014. The staff strength of LIC is 1.20 lakh and it had an agency force of 11.96 lakh.

LIC offers a wide range of products to fulfill the needs of different segments of the society. As at the end of the year 2013-14, LIC had 12 Individual Products and 7 Group Products for sale. One of the main objectives of LIC is to reach all insurable persons in the country and to provide them with adequate financial cover. During the year 2013-14, LIC completed 344.80 lakh policies out of which 291.77 lakh policies for Sum Assured of ₹ 4,87,076.75 crore were under first insurance category. The ratio of first insurance to the total business completed for the year comes to 84.62% and 86.67% in respect of number of policies and Sum Assured respectively.

Life Insurance Corporation of India is present in 13 countries through its Branch Offices, Joint Venture

Companies and Wholly Owned Subsidiary. LIC has Branch Offices in U.K., Mauritius and Fiji. It has Joint Venture Companies in Bahrain (operating in Bahrain, Qatar, Kuwait, Oman & U.A.E. (Dubai and Abu Dhabi)), Kenya, Saudi Arabia, Nepal and Sri Lanka and a Wholly Owned Subsidiary in Singapore. LIC has decided to enter Bangladesh through JV route for which necessary application has been filed. The Total New Business First Premium Income of LIC's

foreign units during the period from 01.04.2013 to 31.03.2014 was INR 888.05 crore under 1,22,316 policies. The Life Fund as at 31.03.2014 stood at ₹ 16,07,024.98 crore. The Corporation made payments of ₹ 10,289.25 crore under Death Claim cases, ₹ 81,112.89 crore under Maturity Claims and ₹ 8,465.18 crore under annuities. In addition to above, performance in other significant parameters in the Financial Year 2013-14 are given below:-

Table 14.1
Performance of LIC during the year 2013-14 and 2012-13

Sl No.	Parameters	Performance	
		2012-13*	2013-14
1	Individual Policies Sold (Nos. in crore)	3.67	3.45
2	Market Share in terms of number of Policy	83.24%	84.44%
3	Total Premium Income(₹ in crore)	208589.72	236798.07
4	Total Income(₹ in crore)	326341.87	380042.44
5	Total No. of Death Claims settled(in Lacs)	9.78	10.13
6	Total No. of Maturity Claims settled(in Lacs)	173.85	248.87

* Data published in PE Survey 2012-13

14.1.1 Aam Admi Bima Yojana

The Aam Admi Bima Yojana(AABY) has come into effect from 01.01.2013, as per Ministry of Finance letter F.No.I-3011/6/2009 by merger of erstwhile Janashree Bima Yojana (JBY) and Aam Admi Bima Yojana(AABY).The premium for the scheme is ₹ 200/- per member per annum, 50% of which is contributed by the member and/or State Government and /or Nodal Agency and remaining 50% is drawn as subsidy from the Social Security Fund constituted by Government of India and maintained by LIC of

India. In case of Rural Landless Householders (RLH) the entire premium is borne in the ratio of 50:50 by State Government and LIC maintained Social Security Fund. This kind of 100% financing is also there in Rajasthan's Panna Dhay scheme, in Uttarakhand's and Madhya Pradesh's AABY scheme. Persons between age 18 years and 59 years and those who are members of the identified 48 occupational groups are eligible to be covered under this scheme.

Table 14.2
Benefits under Aam Admi Bima Yojana:

Sl No.		Amount (in ₹)
1.	Natural Death	30,000/-
2.	On death or total permanent disability due to accident	75,000/-
3.	On partial permanent disability due to accident	37,500/-

Scholarship as a free add-on benefit is also provided to a maximum of two children of the beneficiary studying between 9th to 12th standards (including ITI courses) at the rate of ₹ 100/- per

month for each child payable half yearly on 1st July and 1st January each year. During the financial year 2013-2014 total number of scholarships disbursed were 45,07,719 amounting to ₹ 281.80 crore.

Table 14.3
LIVES COVERED & CLAIMS SETTLED IN AABY ARE AS FOLLOWS:

Year	Lives Covered	No. of Claims settled	Amount of Claims settled (₹ In Crore)
2007-2008	42,61,156	-	-
2008-2009	71,71,556	20,680	64.79
2009-2010	1,30,45,666	38,493	125.52
2010-2011	1,77,47,480	40,780	131.53
2011-2012	2,02,58,390	61,056	197.85
2012-2013	4,29,00,000	1,39,776	430.84
2013-2014	4,54,15,082	1,31,863	435.61

14.2 Non-Life Insurance Companies

The General insurance industry was nationalized in 1972 and 107 insurers were amalgamated and grouped into four Companies – National Insurance Co. Ltd., The New India Assurance Co. Ltd., The Oriental Insurance Co. Ltd. and United India Insurance Co. Ltd. The four entities were set up as subsidiaries of General Insurance Corporation of India (GIC) which also played the role of Re-insurer. As a part of liberalization process, with the enactment of IRDA Act, 1999, it became necessary to nominate Indian Re-Insurer under Insurance Act, 1938. GIC was, therefore, notified as Indian Re-Insurer on 3rd November, 2000 under Section 35 of GIBNA Act, 1972. Through enactment of the General Insurance Business (Nationalization) Amendment Act, 2002, the four Public Sector General Insurance Companies (PSGICs) were delinked from GIC and the holdings of GIC in the four Public Sector General Insurance Companies (PSGICs) were transferred to the Government. Presently, all the four Public Sector General Insurance Companies are Board run Companies.

The detailed particulars of the four Public Sector General Insurance Companies are as follows:-

14.2.1 National Insurance Company Limited:

- Incorporated in 1906
- Headquartered in Kolkata
- 21 Foreign & 11 Indian companies amalgamated at the time of nationalization in 1972
- Paid-up share capital is ₹100 Crores
- Gross Direct Premium Income (GDPI) in 2013-14 was ₹ 10,260.97 Crores against GDPI of ₹ ₹9194.62 Crores in 2012-13 showing a growth of 11.60% against a growth of 17.64% in the previous year
- Incurred claim Ratio is 81.18 % for the year against 85.57 % in 2012-13
- Profit After Tax was ₹823.29 Crores in 2013-14 against ₹695.70 Crores in 2012-13
- 1972 offices including Micro offices
- 15,429 employees
- Dividend proposed for 2013-14 is ₹164.66crs
- Foreign operations in Nepal
- “AAA/STABLE” rating by CRISIL and “B++ (Good)” rating by A.M.Best Company.

14.2.2 The New India Assurance Company Limited:

- Incorporated in 1919
- Headquarters at Mumbai
- 21 Indian companies amalgamated at the time of nationalization in 1972
- Paid-up share capital is ₹200 Crores
- Gross Direct Premium Income (GDPI) in 2013-14 is ₹ 14,303.85 Crores globally against GDPI of ₹12,504.58 Crores in 2012-13 showing a growth of 12.04% against a growth of 17.60% in the previous year.
- Incurred claim Ratio is 83.52 % for the year 2013-14 against 85.49 % in 2012-13
- Profit After Tax is Rs 1088.96 Crores in 2013-14 against ₹ 843.66 Crores in 2012-13.
- 2,097 offices.
- 18,714 employees.
- The Company operates through a network of 19 Branches, 7 Agencies, 3 Subsidiary Companies in 22 countries
- “A-”(excellent) rating from AM Best & Co.(Europe)

14.2.3 The Oriental Insurance Company Limited:

- Incorporated in 1947
- Headquarters at New Delhi
- 10 Indian & 12 Foreign companies merged at the time of nationalization in 1972
- Paid-up share capital is ₹150 Crores
- Gross Direct Premium Income (GDPI) in 2013-14 was ₹ 7282.54 Crores against GDPI of ₹ 6737 Crores in 2012-13 showing a growth of 8.08 % against a growth of 8.77 % in the previous year
- Incurred claim Ratio is 85.84 % for the year 2013 -14 against 79% in 2012-13
- Profit After Tax was ₹ 460.29 Crores in 2013 -14 against ₹ 534 Crores in 2012-13
- 1885 offices

- 14878 employees
- Foreign operations in Nepal, Dubai & Kuwait
- ‘B++’(very good) rating from AM Best & Co.(Europe)

14.2.4 United India Insurance Company Limited:

- Incorporated in 1938
- Headquarters at Chennai
- 12 Indian companies, 4 cooperative societies & Indian operations of 5 foreign companies merged at the time of nationalization in 1972
- Paid-up share capital is ₹150 Crores
- Gross Direct Premium Income (GDPI) in 2013-14 is ₹9708.93 Crores against GDPI of ₹9,266.04 Crores in 2012-13 showing a growth of 4.78 % against a growth of 13.29 % in the previous year
- Incurred claim Ratio for the year 2013-14 is 75.71% against 81.92 % in 2012-13.
- Profit After Tax was ₹527.60 Crores in 2013-14 against 527.33 Crores in 2012-13.
- Dividend for the year 2013 -14 is ₹106 Crores against ₹124Crores in 2012-13
- 2,223 offices
- 16,902 employees
- Rated iAAA by ICRA

The above Public Sector General Insurance Companies provide coverage for insurance other than Life such as, Fire, Marine (Cargo & Hull), Motor, Workmen’s Compensation, Personal Accident, Aviation, Engineering, Liability, Health, etc. Amidst the challenging economic environment, Indian General Insurance Sector has displayed tremendous resilience by growing at 12.23% during the fiscal 2012-13. As per data published by Insurance Regulatory and Development Authority (IRDA) during the year 2013 -14, General Insurance Gross Direct Premium Income stood at ₹ 77,541.50 Crs in comparison to ₹ 69,080.71 Crs as at 31st March 2013.

The market share of the Public Sector General Insurance Companies stood approximately at 55.83% in 2013-14 as against 57.07% in 2012-13.

Table 14.4
Declining Market Share of Public Sector General Insurance Companies

Year	2011-12	2012-13	2013-14
Market Share	58.74%	57.07%	55.83%

Motor and Health Insurance have been the major drivers of growth in General Insurance Industry. Strategic Alliances spearhead the retail focus of the companies through tie-up arrangements with automobile manufacturers, banks and other entities with large distribution network. Besides providing cover through traditional policies, the PSGICs are continually evolving themselves to provide tailor made policies to suit the changing / emerging needs of the customers.

Under Financial Inclusion initiative the Public Sector General Insurance Companies (PSGIC), with a view to increase growth and spread, have started expansion of their network of offices in unrepresented areas of the country and targeted engagement of Banking Correspondents (BC) and Banking Correspondent Associates (BCA) as their agents in this endeavor.

Some of the covers specially designed for the benefit of rural and social sector are:-

- Insurance of fishermen
- Plantation Insurance
- Calf rearing Insurance Scheme
- Insurance of Drip Irrigation – Multi periled lift Insurance Policy
- Emu bird Insurance
- Elephant Insurance
- Farmers Package Insurance
- Ganna Kamgar Bima Yojana
- Gopal Raksha Scheme

The Public Sector General Insurance Companies (PSGICs) have various policies to provide insurance cover to the poor for reconstruction of their houses in case of natural calamities like fire, flood, cyclone, earthquake etc. Policies like Gramin Suraksha Micro Policy, Farmers Package Policy, Hut Insurance Policy, Tribal Package Policy, Uni-Micro Policy. Long Term

House Policy to cover houses constructed under Weaker Section Housing Scheme for a period of 10 years is also available.

14.3 General Insurance Corporation of India (GIC)

The General Insurance Corporation of India (GIC) was set up as a Government company under the General Insurance Business (Nationalisation) Act, 1972 for the purpose of superintending, controlling and carrying on the business of 'General Insurance'. The GIC was authorized to carry out the general insurance business through its four subsidiaries viz. National Insurance Company Ltd., New India Assurance Company Ltd., Oriental Insurance Company Ltd. and United India Insurance Company Ltd. With the notification of the General Insurance Business (Nationalisation) Amendment Act, 2002, the GIC was designated as the 'Indian Reinsurer' on 3rd November, 2000 and its supervisory role over its subsidiaries ended. The ownership of these subsidiaries companies now rests with the Government of India.

General Insurance Corporation of India (GIC Re) is a leading global reinsurance and risk solution provider with its Registered Office of the Corporation in Mumbai and liaison offices in New Delhi, Kolkata and Chennai to cater to the needs of clients in these metro cities. As the 'Indian Reinsurer with a global footprint', GIC Re provides reinsurance support for all the general insurance companies (non-life) in India. Internationally, GIC Re leads the reinsurance programmers of insurance companies in SAARC region, African countries and in the Middle East. Apart from reinsurance business, GIC Re continues to participate in the share capital of Kenindia Assurance Company Ltd. (Kenya), India International Insurance Pte Ltd., Singapore, East Africa Re and Asian Reinsurance

Corporation, Bangkok. It also holds 35% share in Agriculture Insurance Company of India Ltd.

GIC Re is expanding its global presence. During 2013-14, international business contributed 47 % of its revenue. GIC Re has 4 overseas offices with branch Offices in London, Dubai and Malaysia and a Representative Office in Moscow. GIC Re has an 'Eventual Reinsurer' status in Brazil. The Corporation has also entered in to a JV in Bhutan to set up the first reinsurance company of Bhutan, GIC Bhutan Re Ltd. This is in operation from September 2013. GIC Re has also acquired a composite reinsurance company Saxum Re in South Africa in April 2014. This is the first acquisition, a 100 per cent subsidiary of GIC Re, the Indian Reinsurer.

GIC Re also manages Marine Hull Pool, Indian Terrorism Insurance Pool and the Indian Motor Third Party Declined Risk Insurance Pool. GIC Re has been selected as the Manager for Nat Cat Pool promoted by the Federation of Afro-Asian Insurers & Reinsurers (FAIR)

GIC Re is financially strong as reflected by its high grade ratings from credit rating agencies. It is rated A- (Excellent) by A M Best & AAA (In)

by CARE. GIC Re is also the 5th largest aviation reinsurer globally. During the year 2013-14, the net premium of the GIC Re was ₹ 13213 crores as against ₹ 13771 crore in the previous year. The net incurred claims were at ₹12107 crores i.e., 89 % as against ₹10942 crores in the previous year i.e., 82%. GIC Re's Profit after tax amounted to ₹ 2253.18 crores as on 31st March 2014 compared to Profit after tax of ₹2345 crores as on 31st March 2013. The total assets and net worth as on 31st March 2014 were ₹ 66992 crores and ₹10969 crores, respectively. The present paid up capital of the Corporation is ₹ 430 crores.

14.4 Agriculture Insurance Company of India Limited (AICIL)

'AGRICULTURE INSURANCE COMPANY OF INDIA LIMITED' (AIC) was incorporated to exclusively cater to the insurance needs of the persons engaged in agriculture and allied activities in India under the Companies Act, 1956 on 20th December 2002. The Authorized Share Capital of the Company is ₹ 1500 crore. The Paid-up Equity Share Capital of the Company of ₹ 200 crore percentage-wise is held by following Government Corporation / Bank / Company:-

1	General Insurance Corporation of India	35.00%
2	National Bank for Agriculture And Rural Development (NABARD)	30.00%
3	National Insurance Company Limited	8.75%
4	The New India Assurance Company Limited	8.75%
5	The Oriental Insurance Company Limited	8.75%
6	United India Insurance Company Limited	8.75%
	TOTAL	100.00%

14.4.1 The Company having received approval from Insurance Regulatory & Development Authority (IRDA) commenced its business operations w. e. f. 1st April, 2003. The total number of employees as on 31st March, 2014 is 280 all over the country. It has its Head Office in New Delhi, 17 Regional Offices in various State Capitals and 4 one man offices at District levels. During the year, the Company has implemented National Agricultural Insurance Scheme (NAIS), a central sector crop insurance programme of Ministry of Agriculture along with three more pilots'

Schemes i.e., Pilot Weather Based Crop Insurance Scheme (WBCIS), Pilot Modified NAIS and Pilot Coconut Palm Insurance Scheme (CPIS) introduced by Ministry of Agriculture. Apart from these certain other commercial crop insurance products designed by the Company has also been marketed during the year. The details of the operations of these Schemes are as under:

- National Crop Insurance Programme (NCIP): Ministry of Agriculture introduced National Crop Insurance Programme (NCIP) from 1st November

2013 replacing National Agricultural Insurance Scheme (NAIS). NCIP has three component Schemes viz. Modified National Agriculture Insurance Scheme (MNAIS), Weather Based Crop Insurance Scheme (WBCIS) and Coconut Palm Insurance Scheme (CPIS). MNAIS and WBCIS are being implemented by AIC and 9 other private sector insurance companies.

- b. Modified National Agricultural Insurance Scheme (MNAIS): The Scheme before incorporation in NCIP was piloted from Rabi 2010-11 to Kharif 2013. The modified version has many improvements viz. Insurance Unit for major crops is village panchayat or other equivalent unit; threshold yield based on average yield of past seven years, excluding up to two years of declared natural calamities; minimum indemnity level of 80 percent is available (instead of 60 percent in NAIS); and premium rates are actuarial, supported by up-front subsidy in premium, which ranges from 40% to 75%, equally shared by Centre and States. Insurer is responsible for the entire claims. AIC has been implementing MNAIS since its inception. During Kharif 2013, the pilot was implemented by AIC in 29 Districts across 13 States and during Rabi 2013-14 as part of NCIP, MNAIS has been implemented in 127 Districts across 12 States.

Since introduction as pilot in Rabi 2010-11 to Kharif 2013, MNAIS covered about 51 lakh farmers insuring 57 lakh hectare area for sum insured of ₹ 13496.93 crore against premium of ₹ 1494.93 crore. Claims amounting ₹ 1428.43 crore became payable benefitting more than 9 lakh farmers.

- c. Weather Based Crop Insurance Scheme (WBCIS): Apart from the above two yield guarantee insurance Schemes, the Government of India had introduced another Pilot Scheme viz., Pilot Weather Based Crop Insurance Scheme (WBCIS) with effect from Kharif 2007, which became full-fledged Scheme as a component of NCIP. The Scheme operates on an actuarial basis with premium subsidy which ranges from 25% to 50%

equally shared by Centre and States. AIC has since implemented the Scheme in various States during all previous Kharif and Rabi seasons starting Kharif 2007. WBCIS is a parametric insurance product designed to provide insurance protection to the cultivator against adverse weather incidence during the cultivation period, such as deficit & excess rainfall, frost, heat (temperature), relative humidity, wind speed etc., which are deemed to adversely impact the crop yield.

The Company insured more than 35 different crops including perennial crops like Apple, Citrus crops, Grapes, Mango, Pomegranate, Cashew nut, Oil palm, etc. The Scheme was implemented in 13 States in Kharif 2012 and 14 States in Rabi 2012-13. During Kharif 2013, the pilot was implemented by AIC in 112 Districts across 13 States and during Rabi 2013-14 as part of NCIP in 123 Districts across 14 States.

Since introduction as pilot in Kharif 2007 to Kharif 2013, WBCIS covered about 3 crore farmers insuring 4.19 crore hectare area for sum insured of ₹ 53725.74 crore against premium of ₹ 5058.28 crore. Claims amounting ₹ 3511.33 crore became payable benefitting around 2 crore farmers.

- d. Coconut Palm Insurance Scheme (CPIS): AIC in collaboration with Coconut Board designed Scheme for coconut i.e. Coconut Palm Insurance Scheme (CPIS) is now a component of NCIP. The Scheme is available to all Coconut growing States/UTs in the country. Dwarf and Hybrid coconut palms in age range of 4 to 60 year and Tall variety coconut palms in age range of 7 to 60 year are eligible for coverage. On premium, 50% subsidy will be paid by Coconut Development Board (CDB) and 25% by State Government concerned and balance 25% of the premium will be paid by farmer / grower. Besides annual policy 2 year and 3 year policies can also be issued with a premium rebate of 7.5% and 12.5% respectively.
