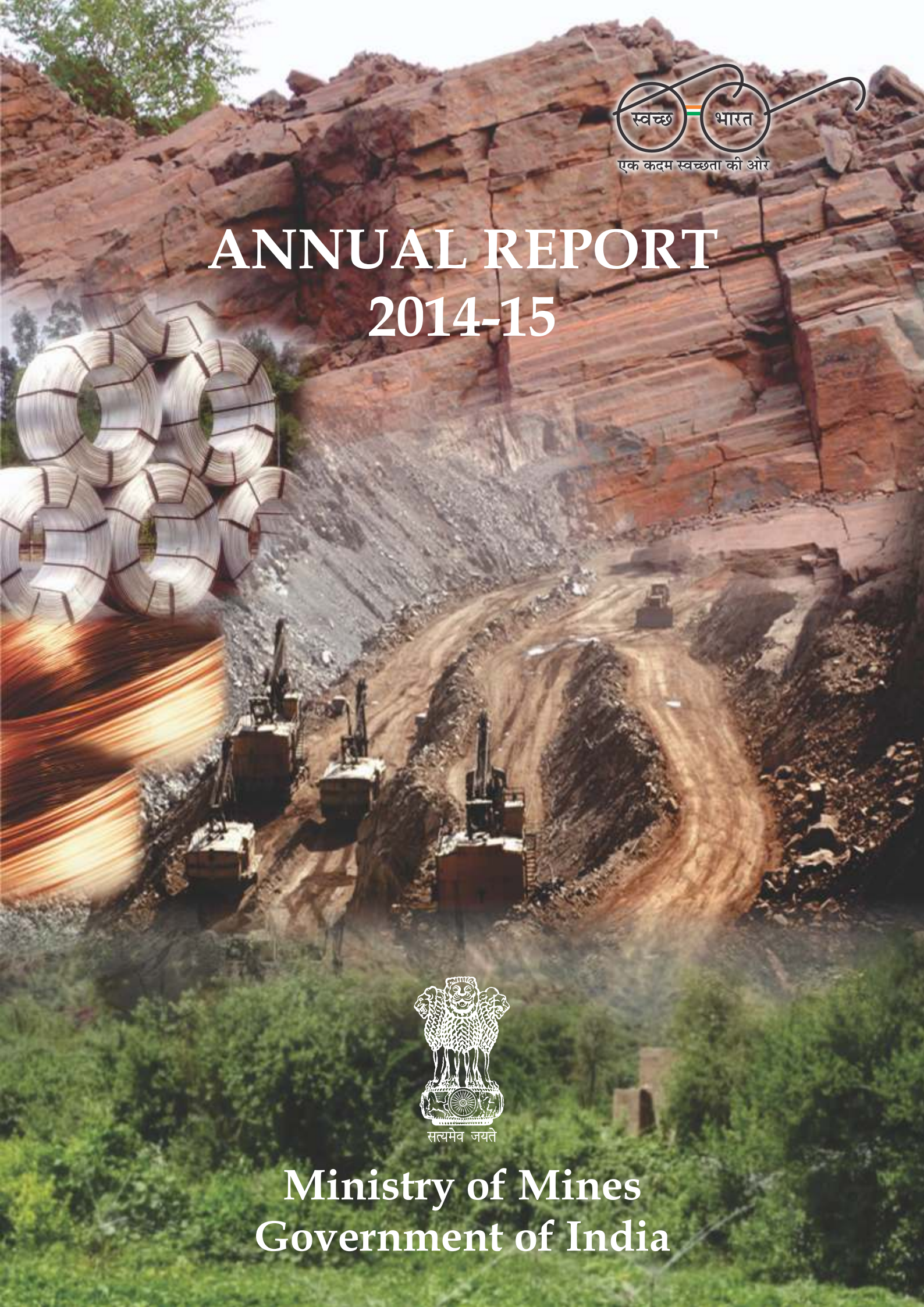

स्वच्छ भारत
एक कदम स्वच्छता की ओर
ANNUAL REPORT
2014-15
सत्यमेव जयते
Ministry of Mines
Government of India



ANNUAL REPORT
2014-15

स्वच्छ भारत

एक कदम स्वच्छता की ओर

सत्यमेव जयते

Ministry of Mines
Government of India

Ministry of Mines

Website Addresses:

Ministry of Mines	:	http://mines.gov.in
Geological Survey of India	:	www.portal.gsi.gov.in
Indian Bureau of Mines	:	www.ibm.gov.in
National Aluminium Company Limited	:	www.nalcoindia.com
Hindustan Copper Limited	:	www.hindustancopper.com
Mineral Exploration Corporation Limited	:	www.mecl.gov.in
Jawaharlal Nehru Aluminium Research Development and Design Centre	:	www.jnarddc.gov.in
National Institute of Rock Mechanics	:	www.nirm.gov.in
National Institute of Miners' Health	:	www.nimh.gov.in

Abbreviations

AMCG	Anorthosite-Mangerite-Charnockite-Granitoid
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
BALCO	Bharat Aluminium Company Limited
BSE	Bombay Stock Exchange
CBM	Coal Bed Methane
CoI	Commission of Inquiry
C-Tempo	Centre for Techno Economic Mineral Policy Options
CCoM	Chief Controller of Mines
CEC	Coordination-Cum-Empowered Committee
CGPB	Central Geological Programming Board
CHQ	Central Head Quarter
CII	Confederation of Indian Industry
CoM	Controller of Mines
CMPDIL	Central Mine Planning & Design Institute Ltd
CPPP	Central Public Procurement Portal
CSO	Central Statistical Office
CSR	Corporate Social Responsibility
DCoM	Deputy Controller of Mines
DGCA	Directorate General of Civil Aviation
DGM	Directorate of Geology & Mining
DRDO	Defence Research and Development Organisation
EC	Environmental Clearance
EEZ	Exclusive Economic Zone
EIA	Environment Impact Assessment
EPS	Enterprises Procurement System
FICCI	Federation of Indian Chamber of Commerce and Industry

FIMI	Federation of Indian Mineral Industries
FMCP	Final Mine Closure Plan
FS	Field Season
GAIL	Gas Authority of India Limited
GSI	Geological Survey of India
HCL	Hindustan Copper Limited
HINDALCO	Hindustan Aluminium Company Limited
HPC	High Power Committee
IBM	Indian Bureau of Mines
ICMM	International Council of Mining and Metals
ICT	Information and Communication Technology
IDCOL	Industrial Development Corporation of Orissa Limited
IGC	International Geological Congress
ISRO	Indian Space Research Organisation
IUCN	International Union for Conservation of Nature and Natural Resources
JNARDDC	Jawaharlal Nehru Aluminium Research Development and Design Centre
JWG	Joint Working Group
KCC	Khetri Copper Complex
LME	London Metal Exchange
MALCO	Madras Aluminium Company Limited
MCAS	Mineral Concession and Approval System
MCDR	Mineral Conservation & Development Rules
MCP	Malanjkhand Copper Project
MCR	Mineral Concession Rules
MECL	Mineral Exploration Corporation Limited
ML	Mining Lease
MMDR Act	Mines & Mineral (Development and Regulation) Act
MML	Mysore Minerals Limited



MoC	Ministry of Coal
MoM	Ministry of Mines
MoEFCC	Ministry of Environment, Forests and Climate Change
MOIL	Manganese Ore India Limited
MoU	Memorandum of Understanding
MTS	Mining Tenement System
NALCO	National Aluminium Company Limited
NER	North Eastern Region
NFTDC	Non-Ferrous Materials Technology Development Centre
NGCM	National Geochemical Mapping
NIMH	National Institute of Miners' Health
NIRM	National Institute of Rock Mechanics
NMEEE	National Mission for Enhanced Energy Efficiency
NMI	National Mineral Inventory
NMP	National Mineral Policy
NMRL	Naval Material Research Laboratory
NPCIL	Nuclear Power Corporation of India Limited
ONGC	Oil & Natural Gas Corporation
ORV	Oceanographic Research Vessel
OMC	Orissa Mining Corporation
PDAC	Prospectors and Developers Association of Canada
PERC	Project Evaluation and Review Committee
PGE	Platinoid Group of Elements
PL	Prospecting Licence
PMCP	Progressive Mines Closure Plan
RA	Revision Application
RCoM	Regional Controller of Mines
REE	Rare Earth Elements

RFD	Results-Framework Document
RP	Reconnaissance Permit
RQP	Recognised Qualified Persons
SAIL	Steel Authority of India Ltd.
SCEC	State Coordination-Cum-Empowered Committee
SCPP	Standing Committee on Promotional Projects
SDF	Sustainable Development Framework
SGPB	State Geological Programming Board.
SSAG	Standing Scientific Advisory Group
STM	Specialised Thematic Mapping
TIMS	Thermal Ionisation Mass Spectrometer
ToR	Terms of Reference
TOASS	Twin Otter Airborne Survey System
UCIL	Uranium Corporation of India Ltd.
UNFC	United Nations Framework Classification
VAL	Vedanta Aluminium Limited
VAM	Vapour Absorption Machines
WPI	Wholesale Price Index



Contents

S. No.	Chapters	Page No.
1	An Overview	01
2	Minerals and Metals in the Country	07
3	Legislative Framework, Mineral Policy and Implementation	19
4	Revenue from Mineral Resources	29
5	International Co-operation	35
6	Attached / Subordinate offices	41
7	Central Public Sector Undertakings	75
8	Science, Technology and Autonomous Bodies	101
9	Corporate Social Responsibility	113
10	Progressive Use of Hindi	119
11	Exploration Activities in the North-Eastern Region	127
12	Welfare Activities for SCs/STs, Women, Minorities & Persons with Disabilities.	137
13	Plan, Budget and Audit Paras	145
14	Miscellaneous	153
	Annexes	163



1

Ministry of Mines: An Overview

Ministry of Mines

An Overview

- Vision and Mission page - 3
- Role and Organization of the Ministry page - 3
- List of Subjects Allocated to the Ministry page - 3
- Organizational Structure page - 4
- International Co-operation page - 5
- Results-Framework Document page - 5

Vision & Mission

1.1 Ministry's Vision and Mission are as below:

Vision

(i) Achieve optimal utilization of India's mineral resources through scientific, sustainable and transparent mining practices, exploration and geo-scientific research & development.

Mission

i) To develop geo-scientific partnerships with State Governments, Industry and other Stakeholders for management of mineral resources both on land and offshore and development of mineral-based industries on scientific and sustainable basis.

ii) To ensure fairness and transparency in allotment of mineral concessions.

iii) To establish an e-governance mechanism for accountability of mineral resources from mine to end use/export.

iv) To ensure that the Geological Survey of India (GSI) and Indian Bureau of Mines (IBM) provide high standards of services to stakeholders.

Role and Organisation of the Ministry

Main Functions

1.2 Ministry of Mines is responsible for survey, exploration and mining of all minerals, other than natural gas, petroleum, atomic minerals and Coal. In the case of atomic minerals and coal activities of the Ministry are limited to regional exploration. The Ministry is responsible for the administration of the Mines and Minerals (Development and Regulation) Act, 1957, (67 of 1957) and rules made there under in respect of all mines and minerals other than coal, natural gas and petroleum. The Ministry also administers the Offshore Areas Mineral (Development and Regulation) Act, 2002 and rules made there under.

1.3 A list of subjects allocated to the Ministry of Mines, and names of attached office, subordinate office, Public Sector Undertakings and Autonomous Bodies under the administrative control of Ministry of Mines are given below:

List of subjects allocated to the Ministry of Mines:

(a) Legislation for regulation of mines and development of minerals within the territory of India, including mines and minerals underlying the ocean within the territorial waters or the continental shelf, or the exclusive economic zone and other maritime zones of India as may be specified, from time to time by or under any law made by Parliament.

(b) Regulation of mines and development of minerals other than coal, lignite and sand for stowing and any other mineral declared as prescribed substances for the purpose of the Atomic Energy Act, 1962 (33 of 1962) under the control of the Union as declared by law, including questions concerning regulation and development of minerals in various States and the matters connected therewith or incidental thereto.

(c) All other metals and minerals not specifically allotted to any other Ministry / Department, such as aluminium, zinc, copper, gold, diamonds, lead and nickel.



Automatic Water Sprinklers on Road

(d) Planning, development and control of, and assistance to, all industries dealt with by the Ministry.

(e) Administration and management of Geological Survey of India.

(f) Administration and management of Indian Bureau of Mines.

(g) Metallurgical Grade cilicon

Attached Office / Subordinate Office:

1.4 Geological Survey of India (Headquarters at Kolkata) is an attached office and Indian Bureau of Mines (Headquarters at Nagpur) is a subordinate office of the Ministry.

Public Sector Undertakings

1.5 There are three Public Sector Undertakings under the Ministry of Mines, namely:-

- National Aluminium Company Limited (NALCO), Bhubaneswar
- Hindustan Copper Limited (HCL), Kolkata
- Mineral Exploration Corporation Limited (MECL), Nagpur

Autonomous Bodies

1.6 There are three Research Institutions which are Autonomous Bodies of this Ministry:

- Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC), Nagpur;
- National Institute of Rock Mechanics (NIRM), Kolar Gold Fields, Karnataka, and
- National Institute of Miners' Health (NIMH), Nagpur.

Organisational Structure

1.7 The Ministry is headed by a Cabinet Minister who is assisted by a Minister of State. The Secretariat of Ministry of Mines is headed by the Secretary having other officers like one Additional Secretary, three Joint Secretaries, one Joint Secretary & Financial Adviser common for Ministries of Coal, Ministry of Mines and Ministry of Youth Affairs & Sports, one Economic Adviser, nine Directors/Deputy Secretaries, five Under Secretaries, in addition to Assistant Director for Official Language, supported by Section Officers and other Staff. Sanctioned strength and present incumbency of officers/officials in Secretariat proper of Ministry of Mines is at **Table 1.1** Organisational structure of the Ministry of Mines is shown in **Annex 1.1**.



Aluminium Wire Rod

Table 1.1
Sanctioned strength and present incumbency of Officers/Officials in Secretariat proper of Ministry of Mines as on 31.12.2014

	Sanctioned Strength	Total Number of Present Incumbents (Including General)	Number of SC/ST/OBC/Minority/Women out of Present Incumbents				
			SC	ST	OBC	Minority	Women
Group-A Gazetted	27	23	01	01	01	03	03
Group-B Gazetted	38	29	06	03	04	00	03
Group-B Non-Gazetted	58	36	02	05	02	01	13
Group-C	100	67	17	01	02	01	02
Total	**223**	**155**	**26**	**10**	**09**	**05**	**21**

International Co-operation

1.8 During the year 2014-15, Ministry of Mines successfully furthered its cooperation programme in Geology and Mining with countries with a developed mining sector, in particular, with Australia and Canada. This was done through capacity building in the area of deep seated mining, mine closure measures, reclamation and rehabilitation process. Joint Working Group meeting as well as interactions in the area of mining sectors was held with Ontario province of Canada and Australia respectively. During the year Ministry of Mines led the Indian delegation along with other concerned Ministries / Departments, State Governments and PSUs to participate in two leading international mining events. The events were 'Mining Indaba - 2015' held in Cape Town, South Africa during 9th to 12th February, 2015 and 'PDAC International Convention & Trade Show - 2015' held in Toronto, Canada during 1st to 4th March, 2015.

Results-Framework Document (RFD)

1.9 Central Government has adopted a Results-Framework System to set goals and quantitatively monitor performances on an outcome basis. Major objectives under Result Framework for 2014-15, of Ministry of Mines, are outlined in **Table 1.2**.



Ingots at NALCO'S Smelter at Angul (Odisha)

Table 1.2
Major Objectives under Results Framework Document (RFD) for 2014-15

1	Revision of rates of royalty and dead rent as per Section 9 of the MMDR Act, 1957.
2	Moving official amendments to the MMDR (Bill), 2011
3	Facilitating techno-economic and scientific development in the mineral sector.
4	Bringing about improvement in the functioning of GSI.
5	Bringing about improvement in the functioning of IBM.
6	Effective supervision of mineral concession system.
7	Meeting Governments Obligations under MoU with PSUs.
8	Promoting R&D projects.
9	Accelerating partnerships with resource rich countries.

Contribution to GDP

1.10 The contribution to Gross Domestic Product (GDP) at current prices, from mining and quarrying by way of advanced estimates for the first two quarters of 2014-15 is estimated at ₹ 1,07,585 crore. The sector accounted for about 2.0% of GDP.



Aluminium Billet, NALCO



2

Minerals and Metals in the Country

Minerals and Metals in the Country

- Mineral Production page - 09
- Gross Domestic Product from Mining and Quarrying Sector page - 10
- Mining page - 10
- Self-reliance in Minerals and Mineral Based Products page - 13
- Production Trends page - 15
- State-wise Mineral Scenario page - 17

National Mineral Scenario

Mineral Production

2.1 Based on the overall trend so far the index of mineral production (base 2004-05) for the year 2014-15 is estimated to be 127.7 as compared to 124.7 for 2013-14 showing a positive growth of 2.4%. The trend of index of mineral production and trend in value of mineral production for the last five years is depicted in **Figure 2.1.** and **Figure 2.2** respectively. The value of minerals produced by groups for the last five years is given in **Figure 2.3**

2.2 The total value of mineral production (excluding atomic minerals) during 2014-15 has been estimated at ₹2,67,637 crore, which shows a decrease of about 3.78% over that of the previous year. During 2014-15, estimated value for fuel minerals account for ₹ 1,71,014 crore or 63.90%, metallic minerals, 36,773 crore or 13.74% of the total value and non-metallic minerals including minor minerals ₹ 59,850 crore or 22.36% of the total value. Information on production and value of selected minerals from 2010-11 to 2014-15 is given in **Annex 2.1**. The details of export and import of Minerals during the period 2009-10 to 2013-14 is given in **Annex 2.2** and **Annex 2.3** respectively.

Figure 2.1
Index of Mineral Production (Base 2004-05=100)



Figure 2.2
Trends in Value of Mineral Production, Exports & Imports

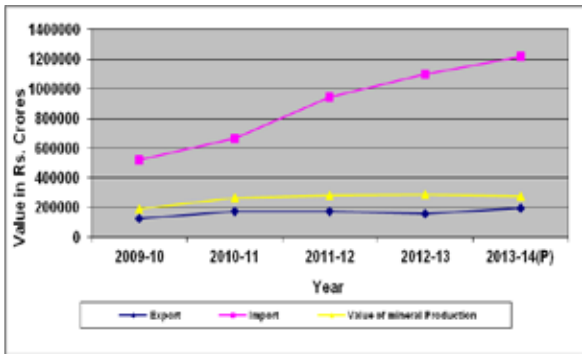
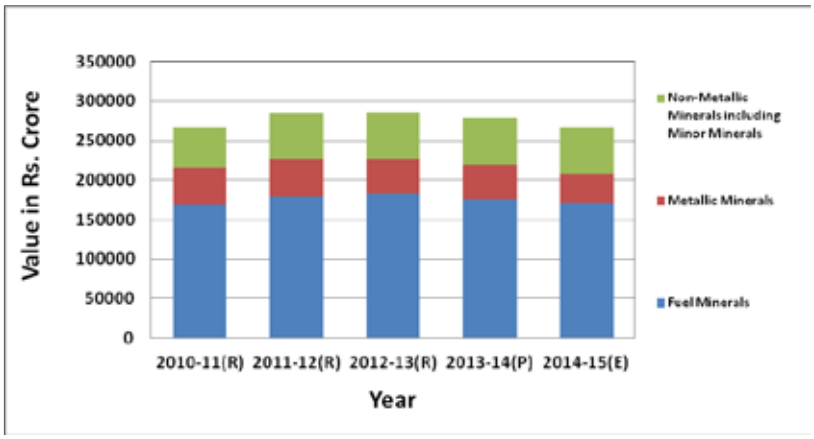


Figure 2.3
Value of Minerals Production (By groups)



Price Trend

2.3 The WPI for minerals (base 2004-05=100) stood at 348.1 in October 2014, and the corresponding index was 355.3 for October, 2013.

2.4 The minerals included in the wholesale price index are bauxite, chromite, iron ore, copper ore, zinc concentrate, manganese ore, barytes, dolomite, fireclay, gypsum, kaolin, limestone, magnesite, phosphorite, graphite, steatite and sillimanite. The wholesale price index for metallic minerals was 398.9 in October, 2014 as compared to 375.8 in October, 2013 and that of other minerals was 208.2 in October, 2014 as compared to 212.3 in October, 2013. The wholesale price index for Coal stood at 189.8 in October, 2014 as compared to 191.5 in October, 2013.

Gross Domestic Product from Mining & Quarrying Sector

2.5 The Gross Domestic Product (GDP) accrued from mining and quarrying sector at 2004-05 prices for the first two quarters of 2014-15 is estimated at ₹ 50,960 crore, indicated a increase of about 2.0% over that in the same period of previous year. Similarly, the advance estimates of GDP (at current prices) for the first two quarter of the year 2014-15 is estimated at ₹ 1,07,585 crore. The mining and quarrying sector contribution to GDP accounted for about 2.0 % for the first two quarters of the year 2014-15.

Mining

2.6 Indian mining industry is characterized by a large number of small operational mines. The number of mines which reported mineral production (excluding minor minerals, petroleum (crude), natural gas and atomic minerals) in India was 3318 in 2014-15 as against 3722 in the previous year. Out of 3318 reporting mines, 498 were located in Rajasthan followed by Andhra Pradesh (444), Gujarat (362), Madhya Pradesh (326), Tamil Nadu (272), Jharkhand (250), Chhattisgarh (201), Karnataka (178), Odisha (173), Maharashtra (150), Telangana (145) and West Bengal (120). These 12 States together accounted for 94% of total number of mines in the country in 2014-15. The numbers of reporting mines are given in **Table 2.1**. Area-wise distribution of Mining Leases all over India pertaining to all minerals excluding fuel, atomic and minor minerals is given in **Table 2.2.**

Table 2.1

Number of Reporting Mines

Sector	2012-13	2013-14(P)	2014-15(E)
All Minerals*	3978	3722	3318
Coal (including Lignite)	575	575	575
Metallic Minerals	708	663	595
Non-Metallic Minerals	2695	2484	2148

**Excluding atomic minerals, petroleum (crude), natural gas (utilized) and minor minerals.*



Plantation in Mines Area

Table - 2.2

Area Wise Distribution of Mining Lease* As on 31/03/2013 (All India)

Frequency Group (Area in Hect.)	Number of Mining Leases	Percentage of Total Leases	Area in '000 Hects.	Percentage of Total Area
All Groups	11,104	100	498	100
0 to 10	7,122	64	28	6
10 to 20	1,003	9	15	3
20 to 50	1,243	11	41	8
50 to 100	844	8	63	13
100 to 200	449	4	57	11
200 to 500	300	2	89	18
Above 500	205	2	205	41

** Excluding fuel, atomic & minor minerals*

2.7 The number of underground mines in operation mineral-wise (excluding fuel, atomic and minor minerals) is given in Table 2.3.

Table 2.3

Number of Underground Mines 2013-14 @ (By Principal Minerals)

Minerals	'A' Category	'B' Category	Total
Apatite	-	1	1
Asbestos	1	2	3
Barytes	-	6	6
Chromite	6	-	6
Copper ore	4	-	4
Gold	3	1	4
Lead & Zinc	8	-	8
Manganese ore	8	5	13
Mica	2	19	21
Steatite	2	15	17
Total	**34**	**49**	**83**

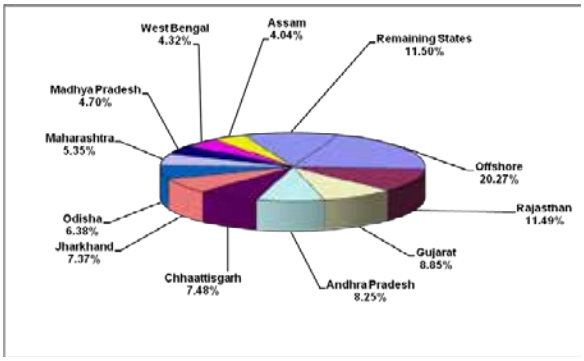
@ Excluding fuel, atomic & minor minerals 'A' Mechanized Mines: >150 labour in all or >75 labour in workings below ground. 'B' Other than 'A' (Rule 42 MCDR, 1988)

Mineral Production

2.8 During 2014-15, Mineral production was reported from 33 States/Union Territories (actual reporting of MCDR & fuel minerals from 23 states and estimation of minor minerals for all 32 States/Union Territories) of which the bulk of value of mineral production of about 94.18% was confined to 13 States (including off shore areas) only. Offshore areas are in leading position, in terms of estimated value of mineral production in the country and had the share of 20.27% in the national output. Next in order was Rajasthan with a share of 11.49% followed by Gujarat (8.85%), Andhra Pradesh (8.25%), Chhattisgarh (7.48%), Jharkhand (7.37%), Odisha (6.38%), Maharashtra (5.35%), Madhya Pradesh (4.70%), West Bengal (4.32%), Assam (4.04%), Karnataka (2.96%) and Uttar Pradesh (2.72%) in the total value of mineral production. Remaining States and Union Territories having individual share of less than 2.5% all together accounted for remaining of total value during the year under review. The contribution of States/ Regions in the value of mineral production during 2014-15 estimated is pictorially shown in Figure 2. 4.

Figure 2.4

Share of States in Value of Mineral Production 2014-15 (Estimated)



2.9 State-wise analysis revealed that during 2014-15, the value of mineral production have shown a mixed trend as compared to that in the previous year. The states which have indicated an increase in the value of mineral production are Tripura (14.3%), Karnataka (1.6%), Bihar (6.6%), Himachal Pradesh (16.5%), Meghalaya (61.6%), Uttar Pradesh (0.8%) and Chhattisgarh (0.7%). However, some of the principal mineral producing states revealed decrease in value of mineral production and those include Odisha (25.8%), Arunachal Pradesh (18.3%), Andhra Pradesh (8.8%), Tamil Nadu (8.4%), Jharkhand (4.6%), Assam (3.4%), Madhya Pradesh (3.3%), Gujarat (3.2%), West Bengal (2.8%), Rajasthan (2.3%), Maharashtra (1.7%), Goa (1.0%), Jammu & Kashmir (0.7%) and Off-shore (0.3%). The all India Reserves and Resources of various minerals as on 01.04.2010, as per UNFC System is given in **Annex 2.4**.

2.10 During 2013-14, the Public Sector continued to play a dominant role in mineral production accounting for 67.91% or ₹ 1,53,250 crore in the total value. Small mines, which were mostly in the private sector, continued to be operated manually either as proprietary or partnership ventures. The minerals which were wholly mined / recovered by the public/joint sector in 2013-14 were Copper ore and concentrate, Diamond, Dunite, Fluorite (graded), Selenite and Sulphur. By and large, almost the entire production of Sand (others), Lignite and Gypsum was from Public Sector. In 2013-14, the Public Sector accounted for sizeable 84% production of coal, 95% of Tin concentrate, 68% of Petroleum (crude), 99% of Gold, 87% of Phosphorite and 58% of Magnesite.

2.11 India's ranking in 2012 as compared to world production was 2nd in barytes, and Talc/Steatite/Pyrophyllite, 3rd in Chromite, Coal & Lignite and Zinc (slab), 4th Kyanite/ Andalusite/ Sillimanite, 5th in Iron ore, and Steel (Crude), 6th in Bauxite ore, 7th manganese ore and 8th in Aluminium. The statistics on indigenous and world production of principal minerals and metals are given in **Table 2.4**.



BGML meeting on 28th January, 2015

Table – 2.4

Contribution and Rank of India in World Production of Principal Minerals & Metals, 2012

Commodity	Unit of quantity	Production		Contribution (Percentage)	India's rank in order of quantum of production
		World	India*		
Mineral Fuels					
Coal & lignite	Million tonnes	7691	604	7.8	3rd
Petroleum (crude)	Million tonnes	4008	38	1.0	25th
Metallic Minerals					
Bauxite	'000 tonnes	248000	15360	6.2	6th
Chromite	'000 tonnes	25800	2950	11.1	3rd
Iron ore	Million tonnes	2969	136	4.06	5th
Manganese ore	'000 tonnes	48300	2322	4.80	7th
Industrial Minerals					
Barytes	'000 tonnes	9700	1739	17.9	2nd
Kyanite, andalusite & sillimanite	'000 tonnes	408(e)**	45	11.0	4th
Magnesite	'000 tonnes	24500	213	1.0	11th
Apatite & rock phosphate	'000 tonnes	215000	2125	1.0	13th
Talc/steatite/ pyrophyllite	'000 tonnes	7800	1184	15.2	2nd
Mica (crude)	tonne	317000	1255	0.4	16th
Metals					
Aluminium	'000 tonnes	47000	1675	3.6	8th
Copper (refined)	'000 tonnes	20300	493	2.4	10th
Steel (crude/liquid)	Million tonnes	1547	78.3@	5.1	4th
Lead (refined)	'000 tonnes	10500	118	1.1	15th
Zinc (slab)	'000 tonnes	12600	704	5.6	3rd

* Figures relate to 2012-13, ** Mineral Commodity Summary 2014,USGS.
@ JPC, Kolkota April,2013,
Source : World Mineral Production, 2008-2012; British Geological Survey.

Self-Reliance in Minerals & Mineral Based Products

2.12 India continued to be wholly or largely self-sufficient in minerals which constitute primary mineral raw materials to industries, such as, thermal power generation, iron & steel, ferro-alloys, aluminium, cement, various types of refractories, china clay-based ceramics, glass, chemicals like caustic soda, soda ash, calcium carbide, titania white pigment, etc. India is, by and large, self-sufficient in coal (with the exception of very low ash coking coal required by the steel plants) and lignite among mineral fuels; bauxite, chromite, iron and manganese ores, ilmenite and rutile among metallic minerals; and almost all the industrial minerals with the exception of chrysotile asbestos, borax, fluorite, kyanite, potash, rock phosphate and elemental sulphur. Despite high degree of self-sufficiency, some quantities of flaky and amorphous graphite of high fixed carbon, kaolin and ballclay for special applications, very low-silica limestone, dead-burnt magnesite and sea-water magnesia, battery-grade manganese dioxide, etc. were imported to meet the demand for either blending with locally available mineral raw materials and /or for manufacturing special qualities of mineral-

based products. To meet the increasing demand of uncut diamonds, emerald and other precious and semiprecious stones by the domestic cutting and polishing industry, India continued to depend on imports of raw uncut stones for their value-added re-exports. The degree of self-sufficiency in respect of various principal minerals and metals/ ferro-alloys in 2012-13 is given in Table 2.5.

Table 2.5

Degree of Self-sufficiency in Principal Minerals & Metals, 2012-13(p)

Sl. No.	Commodity	Demand/ Domestic consumption ('000 tonnes)	Supply/Domestic supply ('000 tonnes)	Order of self-sufficiency (%)
	Minerals			
1	Asbestos (chrysotile)	104	++	++
2	Barytes	186	1739	100
3	Bauxite	11019	15360	100
4	Chromite	2602	2950	100
5	Dolomite	6805	6713	99
6	Felspar	465	1291	100
7	Fireclay	480	817	100
8	Fluorite	63	3	5
9	Gypsum	8667	10082*	100
10	Ilmenite	191	738	100
11	Iron ore	103399	136019	100
12	Kyanite	3	1	33
13	Limestone & other calcareous minerals	259314	279977#	100
14	Magnesite	490	213	44
15	Manganese ore	4177	2322	56
16	Rock phosphate (including apatite)	4221	2125	50
17	Rutile	26	16	62
18	Sillimanite	20	44	100
19	Silica minerals	2285	5096	100
20	Sulphur	1816	928$	51
21	Talc/steatite/pyrophyllite	368	1184	100
	Metals			
22	Aluminium	2435	1675	69
23	Copper (refined)	438	493	100
24	Lead (primary)	248	118	48
25	Zinc	649	704	100
	Ferro-alloys			
26	Ferro-chrome	287	944	100
27	Ferro-manganese	124	518	100
28	Ferro-silicon	42	90	100

Note: Even in cases where almost entire domestic demand is satisfied by domestic supplies, some quantities of certain special quality/types of minerals and metals/ferro-alloys are imported to meet the requirement in certain specific end-uses.

* Includes mineral gypsum, by-product marine gypsum and estimated production of by-product phospho-gypsum, based on available information besides selenite.

\# Excludes production of limestone as a minor mineral, calcite and chalk.

$ Relates to recovery of by-product sulphur from petroleum refineries and sulphur equivalent of by-product sulphuric acid recovered from copper & zinc smelters consuming indigenous ores and concentrates.

Production Trends

Metallic Minerals

2.13 The value of metallic minerals in 2013-14 at ₹ 42,654 crore decreased by about 1.19% over the previous year. Among the principal metallic minerals, iron ore contributed ₹ 32,031 crore or 75.10%, zinc concentrate 2,742 or 6.43%, manganese ore ₹ 1,499 crore or 3.51%, chromite ₹ 2,318 crore or 5.43%, bauxite ₹ 951 crore or 2.23%, copper (concentrate) ₹ 680 crore or 1.59%, silver ₹ 1578 crore or 3.70%, gold ₹ 423 crore or 0.99%, while the remaining was shared by lead concentrate and tin concentrates.

2.14 The production of **iron ore** at about 152.43 million tonnes in 2013-14 registered an increase of 11.58% over the previous year. About 39% of the total production was shared by Public Sector Companies like NMDC, SAIL and Orissa Mining Corporation (OMC) etc. The share of Private Sector was 61% which includes Tata Steel (TISCO). During the year Odisha was the leading producer of Iron Ore accounting for 50% of the total production followed by Chhattisgarh (20%), Jharkhand (15%), Karnataka (12%) and remaining (3%) production was reported from Andhra Pradesh, Madhya Pradesh, Maharashtra and Rajasthan.

2.15 The production of **copper** concentrate was at 139 thousand tonnes in 2013-14 increased by about 12% as compared to the previous year. The average metal content in copper concentrate was 23.11% Cu.

2.16 The production of **chromite** was at 2,853 thousand tonnes in 2013-14 increased by 0.67% as compared to the previous year. Odisha reported almost entire output of chromite (99.96%) in the country. Mining of chromite was mostly dominated by six principal producers, namely TATA STEEL, Odisha Mining Corporation (OMC), Indian Metal & Ferro Alloys Ltd (IMFAL), Ferro Alloys Corporation Ltd (FACOR), Balasore Alloys Ltd. and Jindal Stainless Limited (JSL). Three public sector companies, namely OMC, Mysore Mineral Limited (MML) and Industrial Development Corporation of Odisha Limited (IDCOL) having 4 mines together reported 24 % of the total production and the remaining 76 % was contributed by private sector mines.

2.17 The production of **manganese ore** at 2,588 thousand tonnes in 2013-14 increased by about 11% compared to that in the previous year. Manganese Ore India Limited (MOIL) continued to be the largest producer of manganese ore with a share of 44% of the total production in 2013-14 followed by Tata Steel (13%), Odisha Mines & Mineral Limited (OM&ML) (6%), RBSSDP (6%) & ML Rungta (4%). Of the total production of manganese ore in 2013-14, Madhya Pradesh contributed 29.82%, Maharashtra 25.66%, Odisha 25.52%, Andhara Pradesh 13.28% and the remaining production was from Karnataka, Goa, Jharkhand and Rajasthan.

2.18 The production of primary **gold** at 1,564 kg (excluding by-product gold recovery from imported concentrates) in 2013-14 registered decrease of about 2% as compared to the previous year. Karnataka was the leading producer of gold accounting for 99.49% of the total production. The remaining production was reported from Jharkhand.

2.19 The production of **bauxite** at 21.67 million tonnes in 2013-14 increased by 30.43% compared to the previous year. NALCO, HINDALCO, Bombay Minerals, Prabhu Das Vitthal Das and Utkkal Alumina

Industrial Ltd. are the major companies engaged in the mining of bauxite in the country in 2013-14.Odisha accounted for 35.24% of the total production of bauxite during 2013-14 followed by Gujarat 32.41%, Jharkhand 10.53% and Maharashtra 9.51%, Chhattisgarh 6.07%, Madhya Pradesh 3.38%. The remaining production was reported from Goa, Tamil Nadu and Karnataka.

2.20 During 2013-14, the production of **lead** concentrate at 194 thousand tonnes increased by 5.4% and that of **zinc** concentrate at 1,491 thousand tonnes also decreased by 0.1% over the previous year. Average metal content in lead concentrate was 56.48% Pb and that in zinc concentrate was 51.65% Zn. Rajasthan accounted for the entire production of lead concentrate and zinc concentrate during 2013-14.

Non-Metallic Minerals

2.21 The value of production of non-metallic minerals at ₹ 6,924.42 crore during 2013-14 decreased by 7.24% as compared to the previous year. Limestone retained its leading position by contributing 67.73% of the total value of non-metallic minerals in 2013-14. The other non-metallic minerals in the order of importance were phosphorite/rock phosphate (6.34%), barytes (5.21%), dolomite (3.72%), gypsum (2.00%), kaolin (1.67%), garnet (abrasive) (1.38%), ball clay (1.30%), talc/ soapstone/ steatite (1.31%) and Silica Sand (1.25%). The remaining was from other non-metallic minerals.

2.22 The production of **limestone** at 279 million tonnes in 2013-14 decreased by 2.1% as compared to that in the previous year. As much as 86.95% of the total output in 2013-14 was contributed by seven principal States; viz, Andhra Pradesh (21.29%), Rajasthan (20.21%), Madhya Pradesh (13.24%), Gujarat (8.35%),Tamil Nadu (8.60%), Karnataka (7.70%) and Chhattisgarh (7.56%). The remaining 13.05% of the total production was shared by other limestone producing states. About 49% of total production was reported by principal producers, namely, Ultra Tech Cement Limited (15%) Jaiprakash Associates Limited (7%), Ambuja Cement and ACC Limited (6% each), Shree Cement Limited (5% each) The India Cement Limited (4%), Dalmia Cement (Bharat) Ltd. and The Ramco Cement Limited (3% each).

2.23 The production of **phosphorite/ rock phosphate** at 1,384 thousand tonnes decreased by 28.70% in 2013-14 as compared to the previous year. The 87% production was from Public Sector. Jhamarkotra mine of Rajasthan State Mines & Minerals Ltd. (RSMML) alone accounted for 77% of the total production in India and the entire production of Rajasthan during 2013-14. Madhya Pradesh contributed the remaining 10.20% of the production.

2.24 The production of **dolomite** at 7,109 thousand tonnes in 2013-14 registered 1.73% decrease as compared to the preceding year. Steel Authority of India Ltd. is the major producer of dolomite accounting 15% of total production followed by the Rastriya Ispat Nigam Ltd. 7%, South West Mining 6%, Bisra Stone & lime Co. Ltd. 4% and Commercial Stone Supply Co. 4% during 2013-14. Chhattisgarh (36.50%), Andhra Pradesh (19.37%), and Odisha (9.25%), Karnataka (9.01%), were the principal producing States of dolomite. The remaining 25.87% was contributed by five states during the year, namely, Madhya Pradesh, Gujarat, Rajasthan, Jharkhand and Maharashtra.

2.25 The production of **kaolin** in 2013-14 was at 4,753 thousand tonnes increased by 11.60% as compared to that in the previous year. Nearly 64.82% of total output of kaolin in 2013-14 was reported from Gujarat followed by Rajasthan (16.96%), by Kerala (14.99%) and West Bengal (1.90%) while remaining (1.33%) was contributed jointly by Andhra Pradesh, Jharkhand, Karnataka and Madhya Pradesh.

2.26 The Production of **gypsum** at 2,930 thousand tonnes in 2013-14 registered a decrease of 17.62% as compared to the previous year. By and large, the entire production of gypsum was reported from Rajasthan (98.81%). The remaining 1.19% was from Jammu & Kashmir, Tamil Nadu and Gujarat. Two Public Sector Companies namely, RSMML and Fertilizer Corporation of India Ltd. accounted for almost the entire production.

2.27 The production of **talc/soapstone/ steatite** in 2013-14 was at 865 thousand tonnes a decrease by about 10.95% over the previous year. Rajasthan, the principal State accounted for 82.96% of the total production in 2013-14. Five principal producers contributed nearly 61% of the total production of steatite. They are Associated Soapstone Distributing Co. (P) Ltd. (25%), Udaipur Mineral Development Syndicate (P) Ltd. (24%), Rajasthan Minerals & Company (5%), Ratanlal Deedwaniya (4%), and Katiyar Mining & Indl. Corpn. (3%).

2.28 The production of **magnesite** was at 195 thousand tonnes during 2013-14 decreased by 13.05% as compared to the previous year.

Minor Minerals

2.29 The value of production of minor minerals was estimated at ₹ 52,490 crore in 2013-14. Andhra Pradesh with share of 23.5% in the value of minor minerals produced in the country occupied the top position. Gujarat was at second place had a share of 23.0% in the value of minor minerals. Next in the order was Maharashtra 14.6%, Rajasthan 12.9%, Uttar Pradesh 7.6%, Kerala 5.9%, Karnataka 3.9%, Madhya Pradesh 3.7% and Goa 1.6 percent. The contribution of remaining states and UTs was less than one percent each.

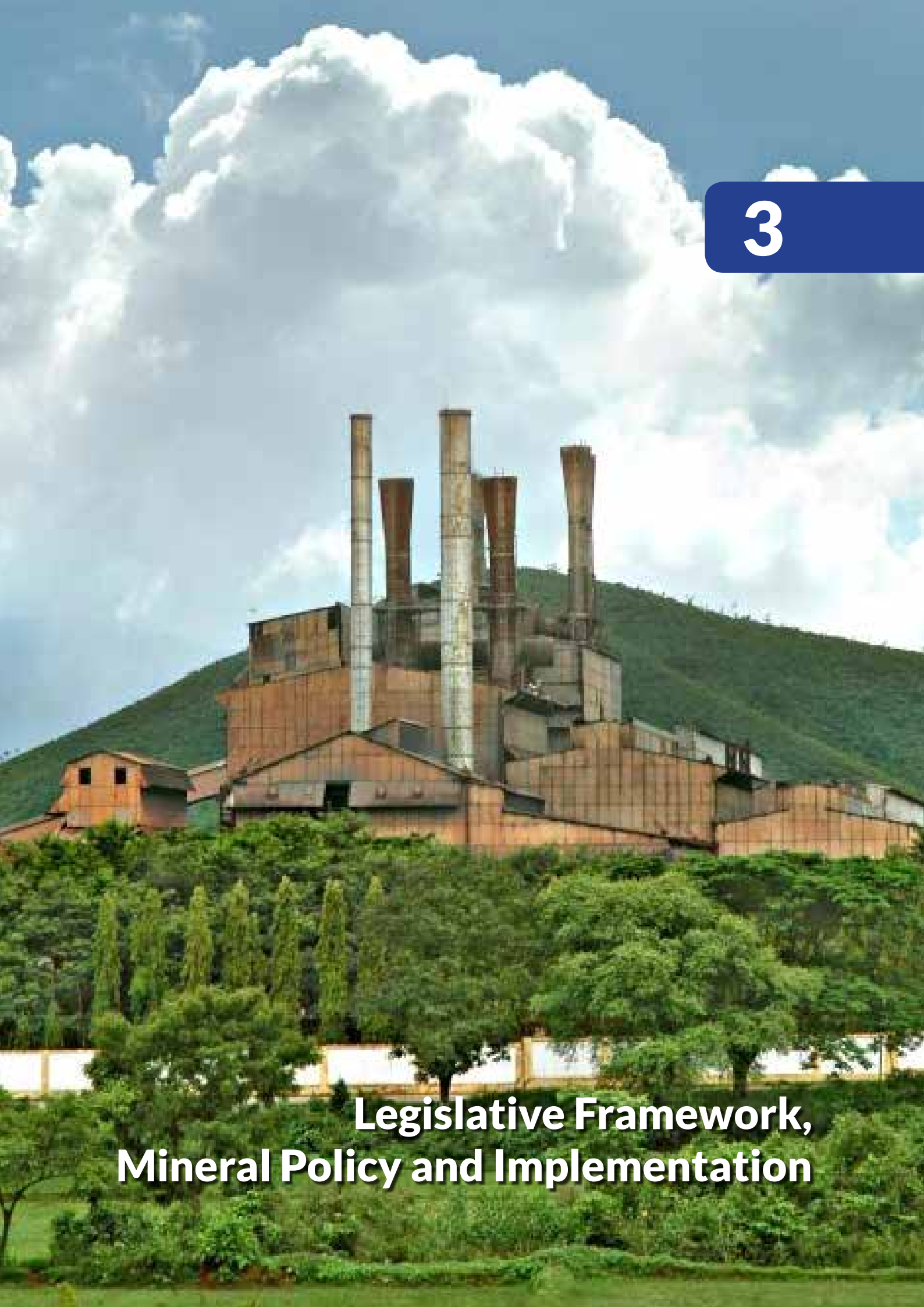
2.30 Item-wise analysis revealed that road metals had the largest share of 38.7% to the value of minor minerals followed by building stone 21.9%, ordinary sand 16.5%, brick-earth 5.2%, marble and gravel 3.1% each, murrum 2.2%, kankar and limestone 2.1% each, quartzite & sand stone 1.5%, ordinary earth 1.3 percent. The individual share of remaining minerals was less than 1.0% which together contributed 2.3 % of value of minor minerals.

State-wise Mineral Scenario

2.31 Status of Mineral Production in 11 Mineral rich States of India is at **Annex 2.5**



Hon'ble Minister of State for Mines & Steel Shri Vishnu Deo Sai and Dr. Anup K. Pujari, Secretary Mines at the India Mining Summit



3

Legislative Framework, Mineral Policy and Implementation

Legislative Framework, Mineral Policy and Implementation

- The Legislative Framework Page - 21
- National Mineral Policy, 2008 page - 22
- Mines and Minerals (Development & Regulation) Bill, 2015 page - 23
- Measures taken to control illegal mining page - 24
- Mineral Concession System page - 26
- Revision Applications page - 28

The Legislative Framework

3.1 In the federal structure of India, the State Governments are the owners of minerals located within their respective boundaries. The Central Government is the owner of the minerals underlying the ocean within the territorial waters or the Exclusive Economic Zone of India.

3.2 In this context, the entry at serial No. 23 of List II (State list) to the Constitution of India states,

'Regulation of mines and mineral development subject to the provisions of List I with respect to regulation and development under the control of the Union.'

3.3 The entry at serial No. 54 of List I (Central list) to the Constitution of India states,

'Regulation of mines and mineral development to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest.'

3.4 In pursuance to the entry at serial No. 54 of List I, the Central Government have framed legislation titled Mines & Minerals (Development and Regulation) (MMDR) Act, 1957 as Central Act No. 67 of 1957.

3.5 The Mines & Mineral (Development and Regulation) Act, (MMDR Act), 1957 is the law governing the Mineral Sector (other than Petroleum and Natural Gas) of the Country. The Mineral Concession Rules, 1960 and the Mineral Conservation and Development Rules, 1988 are the rules covering the sector.

3.6 The scheme of MMDR Act, 1957 recognises a substantial role for the State Governments. As per Section 15 of the MMDR Act, 1957 State Governments have complete powers for making rules for grant of concessions in respect of minor minerals; and levy and collection of royalty on minor minerals. Further, as per section 23C of MMDR Act, 1957, State Governments have complete powers to make rules for prevention of illegal mining and for purposes connected therewith. Therefore, matters relating to regulation of mining and control of illegal mining of minor minerals are all matters which lie in the domain of State Governments.

3.7 In exercise of powers under section 3 (e) of the MMDR Act, 1957, the Ministry notifies 'minor minerals'. Recently the Ministry (on 10.02.2015) notified 31 minerals as 'minor minerals'. The notification has been published in the Gazette of India vide S.O. 423(E) dated 10.2.2015. The total number of minerals notified as 'minor minerals' so far is 55.

3.8 The other Minerals are popularly known as major minerals. In the case of major minerals, States substantially regulate and develop minerals subject to provisions of the Act. In the case of Minerals covered under Part A - Coal and Lignite and Part B - Atomic Minerals in the First Schedule to the Act, States are required to take prior approval of the Central Government to grant concessions. The Central Government retains the power of revision, fixation of royalty etc. in respect of major minerals.

3.9 The Ministry of Coal exercises all powers of the Central Government with respect to Coal and Lignite under the Act. The Department of Atomic Energy similarly exercises all powers for Atomic Minerals.

3.10 The Ministry also administers the Offshore Areas Mineral (Development and Regulation) Act, 2002 (OAMDR Act) and the rules made there under, for all minerals, other than Petroleum and Natural Gas within the territorial waters and the continental shelf. All minerals underlying the ocean belongs to the Central Government and the Ministry accordingly administers the OAMDR Act.

National Mineral Policy, 2008

3.11 The National Mineral Policy (NMP) was notified in 2008. It recommends measures like assured right to next stage mineral concession, transferability of mineral concessions and transparency in allotment of concessions, in order to reduce delays which are seen as impediments to investment and technology flows in the mining sector in India. The Mineral Policy also seeks to develop a Sustainable Development Framework for optimum utilisation of the country's natural mineral resources for the industrial growth in the country and at the same time improving the life of people living in the mining areas, which are generally located in the backward and tribal regions of the country.

3.12 Other features of the National Mineral Policy, 2008, inter alia, are:-

(a) NMP recognizes that minerals are valuable natural resources being the vital raw material for infrastructure, capital goods and basic industries, and therefore development of the extraction and management of minerals has to be integrated into the overall strategy of the country's economic development.

(b) The exploitation of minerals has to be guided by long-term national goals and perspectives which are dynamic and responsive to the changing global economic scenario.

(c) The NMP also recognizes that the country is blessed with ample resources of a number of minerals and has the geological environment for many others, being a part of the ancient Gondwana land which comprised parts of Australia, Africa and Latin America.

(d) NMP lays out that the guiding strategy for development of any mineral should naturally keep in view its ultimate end use in terms of demand and supply in the short, medium and long terms and this would be market oriented. However, a disaggregated approach in respect of each mineral should be adopted and a mineral specific strategy be developed to maximise gains from the comparative advantage which the country enjoys, and mineral development be prioritized in terms of import substitution, value addition and export, in that order.

(e) Conservation of minerals shall be construed not in the restrictive sense of abstinence from consumption or preservation for use in the distant future but as a positive concept leading to augmentation of reserve base through improvement in mining methods, beneficiation and utilisation of low grade ore and the rejects and recovery of associated minerals.

Important areas of focus in National Mineral Policy 2008:

3.13 The Policy states that the Central Government in consultation with State Governments shall formulate legal measures necessary for giving effect to

it to ensure basic uniformity in mineral administration across the country, to ensure that the development of mineral resources keeps pace, and is in consonance with the national goals. Some of the important areas of focus in the National Mineral Policy 2008 are:

(i) Ushering in greater liberalisation and private sector involvement, and to widen the scope of the regulatory framework of the Government in the mining sector by shifting the focus from conventional areas of managing the mineral concession systems to new areas of regulating the mineral sector holistically through addressing issues of simplification, transparency and sectoral best practices in order to attract capital and technology in the sector from new sources.

(ii) Developing partnerships with stakeholders including the State Governments, mineral and mineral-based industries and various concerned Ministries/Departments of the Central Government, for development and conservation of mineral resources and formulation of strategy to ensure raw material security. The policy also seeks to deepen the scope of the developmental framework by mandating better management of resources, enhancing the impetus on Research and Development, as also by developing the Human Resources in the sector.

(iii) Ensuring that the interests of host populations and other vulnerable sections are fully protected and the benefit of the economic activity in the mining sector flows equitably to the stakeholders.

Mines and Mineral (Development and Regulation) Amendment Bill, 2015

3.14 Based on the recommendations of the High Level Committee set up in the Planning Commission, Government of India, in consultation with State Governments, the National Mineral Policy (NMP) was notified on the 13th March, 2008. The NMP 2008 provides for a change in the role of the Central Government and the State Governments to incentivize private sector investment in exploration and mining and for ensuring level playing field and transparency in the grant of concessions and promotion of scientific mining within a sustainable development framework so as to protect the interest of local population in mining areas. This has necessitated harmonization of the extant legislation with NMP 2008.

3.15 The Mines and Minerals (Development and Regulation) Bill (MMDR Bill) 2011 was introduced in the Lok Sabha on 12.12.2011 which was then referred to the Standing Committee on Coal and Steel (Standing Committee) for examination and report on 05.1.2012. The Standing Committee submitted its 36th Report on the MMDR Bill on 07.5.2013. However, the MMDR Bill, 2011 lapsed with dissolution of the XV Lok Sabha.

3.16 The Government moved forward with the process of making necessary changes to the MMDR Act, 1957 and prepared a draft MMDR Amendment Bill, 2014, which was placed on the website of the Ministry on 17.11.2014 calling for comments/ suggestions on the draft Bill. Oral presentations seeking comments and suggestions on the draft Bill were held on 4.12.2014 and 5.12.2014 in the

Ministry. Consultations were held with State Governments on 19.01.2015 to discuss the provisions of the draft Bill. A meeting was held on 24.12.2014 to discuss the provisions of the draft Bill with the concerned Central Ministries/ Departments.

3.17 Based on the comments received, the deliberations held with stakeholders, and the discussions with the Central Ministries/ Departments, a draft Cabinet Note seeking the approval of the Cabinet for making the necessary changes to the MMDR Act, 1957 was prepared. As the Parliament was not in session and circumstances existed which rendered it necessary to take immediate action, the MMDR Act, 1957 was amended through the MMDR Amendment Ordinance, 2015 on 12th January, 2015.

3.18 Some of the important provisions of the amending Ordinance are: (i) grant of mineral concessions through auction by competitive bidding; (ii) extension of validity of lease period of existing leases; (iii) establishment of District Mineral Foundation for the benefit of persons and areas affected by mining operations; (iv) establishment of National Mineral Exploration Trust for the purposes of regional and detailed exploration; (v) simplification and removal of delays in the method of grant of mineral concessions; and (vi) stronger provisions for checking illegal mining.

3.19 The MMDR Amendment Bill, 2015, to replace the MMDR Amendment Ordinance, 2015, was passed by the Parliament and received the assets of President on 26th March, 2015. The Act has been notified in the official Gazetted on 27th March, 2015.

3.20 Measures taken to control illegal mining:

- The Shah Commission of enquiry was set up as reports had been received of illegal Mining more particularly of Iron and Manganese.
- State Governments were asked to frame rules to control illegal mining as per Section 23 (c) of MMDR Act, 1957 (so far 20 States have framed Rules).
- State Governments were requested to set up Task Forces at State and District levels to control illegal mining since the year 2005 (so far 22 States have reported to have set up Task Forces).
- State Governments were advised to set up State Coordination-cum-Empowered Committee (SCEC) to coordinate efforts to control illegal mining by including representatives of Railways, Customs and Port authorities (13 State Governments have set up such committees).
- All State Governments have been advised to adopt an Action Plan with specific measures to detect and control illegal mining including use of remote sensing, control on traffic, gather market intelligence, registration of end-users and setting up of special cells, etc.
- Railways have instituted a mechanism to allow transportation of iron ore only against permits issued rake-wise and verified by State Governments, apart from taking measures to fence and set up check posts at the railway sidings.
- Customs Department has issued instructions to all its field units to share information on ore export with State Governments.

- Ministry of Shipping has issued a direction to all major Ports to streamline the verification procedures for movement of consignment by road and rail to ports for export.

3.21 Separately, the Central Government through Indian Bureau of Mines (IBM) has constituted a Special Task Force for inspection of mines in endemic areas. During the year 2013-14 up to March 2014, IBM conducted 204 Special Task Force inspections in the States of Goa, Madhya Pradesh, Jharkhand, Karnataka, Andhra Pradesh, Gujarat, Rajasthan and Tamilnadu. IBM has suspended 29 mines under rule 13(2) of Mineral Conservation and Development Rules, 1988 due to serious violations.

3.22 The Mineral Conservation and Development Rules, 1988 (MCDR) provides for measures to ensure scientific management of the mining process. Rule 45 of the MCDR provides for the mining companies to provide periodic reports on the extraction and disposal of the mined material. Rule 45 of MCDR also facilitates end-to-end national-scale accounting of all minerals produced in the country from the pit head to its end-use, reducing the scope for illegal mining, royalty evasion, etc. The amended Rule 45 now makes it mandatory for all miners, traders, stockists, exporters and end-users of minerals to register and report on the production, trade and utilisation of minerals to the State Government(s) and Indian Bureau of Mines. Up to 28th February, 2015, total 8971 mining leases have been registered online with IBM. IBM has suspended 1103 mines for noncompliance and recommended 693 cases to State Governments for termination. Similarly as regards to the status of registration of end users, traders, stockists and exporters, at the end of February, 2015 total 3001 units of endusers, 4440 number of traders, 1517 number of stockist and 782 number of exporters have been registered. Indian Bureau of Mines has also requested the



Stacker at Alumia Refinery (for Stacking Bauxite)

State Governments not to issue transit passes for movement of minerals to unregistered operators.

Mineral Concession System

3.23 The position regarding mineral concession proposals disposed of by the Ministry of Mines during the year 2014-15 is given in Table-3.1, Table -3.2 and Table - 3.3.

Table 3.1
Status of Reconnaissance Permit (RP) proposals during the period
From 01.04.2014-23.02.2015

State	No of Proposals pending at the start of the period	No of proposals Received during the period	No. of prior approvals conveyed	No. of proposals returned to the State Govt.	No. of Proposals pending as on 23.02.2015
Andhra Pradesh	4	0	3	0	1
Assam	1	0	0	1	0
Chhattisgarh	1	0	0	1	0
Gujarat	0	3	0	3	0
Madhya Pradesh	7	3	0	8	2
Manipur	1	0	0	1	0
Rajasthan	3	6	0	4	5
West Bengal	3	0	0	3	0
Total	**20**	**12**	**3**	**21**	**8**

Table 3.2
Status of Prospecting Licenses (PL) proposals during the period
From 01.04.2014 to 23.02.2015

State	No of Proposals pending at the start of the period	No of proposals Received during the period	No. of prior approvals conveyed	No. of proposals returned to the State Govt.	No. of Proposals pending as on 23.02.2015
Andhra Pradesh	6	2	0	6	2
Chhattisgarh	16	4	1	15	4
Gujarat	1	0	0	1	0
Jharkhand	3	1	0	4	0
Karnataka	0	6	0	0	6
Madhya Pradesh	73	42	0	89	26
Maharashtra	3	2	0	0	5
Manipur	5	0	0	5	0
Meghalaya	3	1	0	3	1
Odisha	1	2	0	1	2
Rajasthan	2	3	0	2	3
West Bengal	3	0	0	3	0
Total	**116**	**63**	**1**	**129**	**49**

Table 3.3
Status of Mining Leases (ML) proposals during the period From 01.04.2014-23.02.2015

	No of Proposals pending at the start of the period	No of proposals Received during the period	No. of prior approvals conveyed	No. of proposals returned to the State Govt.	No. of Proposals pending as on 23.02.2015
Andhra Pradesh	18	5	0	19	4
Chhattisgarh	12	3	0	4	11
Gujarat	21	2	0	15	8
Himachal Pradesh	0	1	0	0	1
Jharkhand	0	1	0	0	1
Karnataka	17	3	0	13	7
Kerala	3	0	0	1	2
Madhya Pradesh	36	6	1	9	32
Maharashtra	10	0	1	7	2
Manipur	2	0	0	2	0
Odisha	0	2	0	0	2
Rajasthan	20	21	4	21	16
Tamil Nadu	21	0	1	16	4
Total	**160**	**44**	**7**	**107**	**90**

3.24 The Ministry of Mines had constituted a Coordination-cum-Empowered Committee (CEC) under the chairpersonship of Secretary (Mines) to monitor and minimize delays at various levels in grant of approvals for mineral concession applications on 4.3.2009. Keeping in view the need for having more effective coordination among the Central Ministries/Departments and the State Governments for grant of mineral concessions as well as for dealing with various important matters relating to mineral development and regulation in the country, the CEC has been reconstituted as "Coordination-cum-Empowered Committee on Mineral Development and Regulation" on 20th October, 2011. The CEC comprises senior officers of the Ministries of Mines, Environment and Forests, Home Affairs, Steel, Railways, Finance, Shipping, Fertilizers, Department of Atomic Energy, Directorate General of Civil Aviation (DGCA), Geological Survey of India (GSI), Indian Bureau of Mines (IBM). Representatives of State Governments are invited to the meetings of the CEC as special invitees. The Terms of Reference (ToR) of the CEC have also been broadened so as to bring within its ambit other important matters viz. Sustainable Development Framework, Coordination/ review of steps for prevention of illegal mining, issues arising out of the National Mineral Policy and legislation governing mineral development etc.

3.25 The CEC meets quarterly, wherein important decisions aimed at minimizing delays in processing of mineral concession applications at various levels and bringing about efficiency and transparency in the overall mineral concession regime were taken.

3.26 One of the main decisions taken by the CEC in its first meeting that has been reiterated in the subsequent meetings was that a State level Coordination-cum¬-Empowered Committee (SEC) would be constituted in each State under the chairmanship of Chief Secretary or Additional Chief Secretary/Principal Secretary of the Mining/Industries Department with representation from all concerned Departments/institutions. As per the information received by the Ministry, all mineral-rich States viz. Andhra Pradesh, Chhattisgarh, Gujarat, Goa, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Tamil Nadu have constituted their respective SECs. The other major decisions/steps taken by the CEC relating to mineral concessions were: calling upon the State Governments to ensure timely submission of quarterly reports on mineral concessions, prompt issuance of letters of intent (LOI), and expeditious disposal of long-standing concession cases.



Trucks being loaded

3.27 The Ministry of Mines is using internet based services to bring about more accessibility and transparency in processing the mineral concession applications recommended by the State Governments. The website of the Ministry (www.mines.gov.in) provides all information on the current status of the mineral concession applications.

Revision Applications:

3.28 Disposal of revision application has public interface. In order to ensure transparency in Revision Cell, a new web based Revision Application Monitoring System has been put in place. The salient futures of new system are:-

(i) Status of Revision Application is available on net;

(ii) Orders are available on the net;

(iii) Order numbers are generated by the system;

(iv) Hearing details etc. are available on the net;

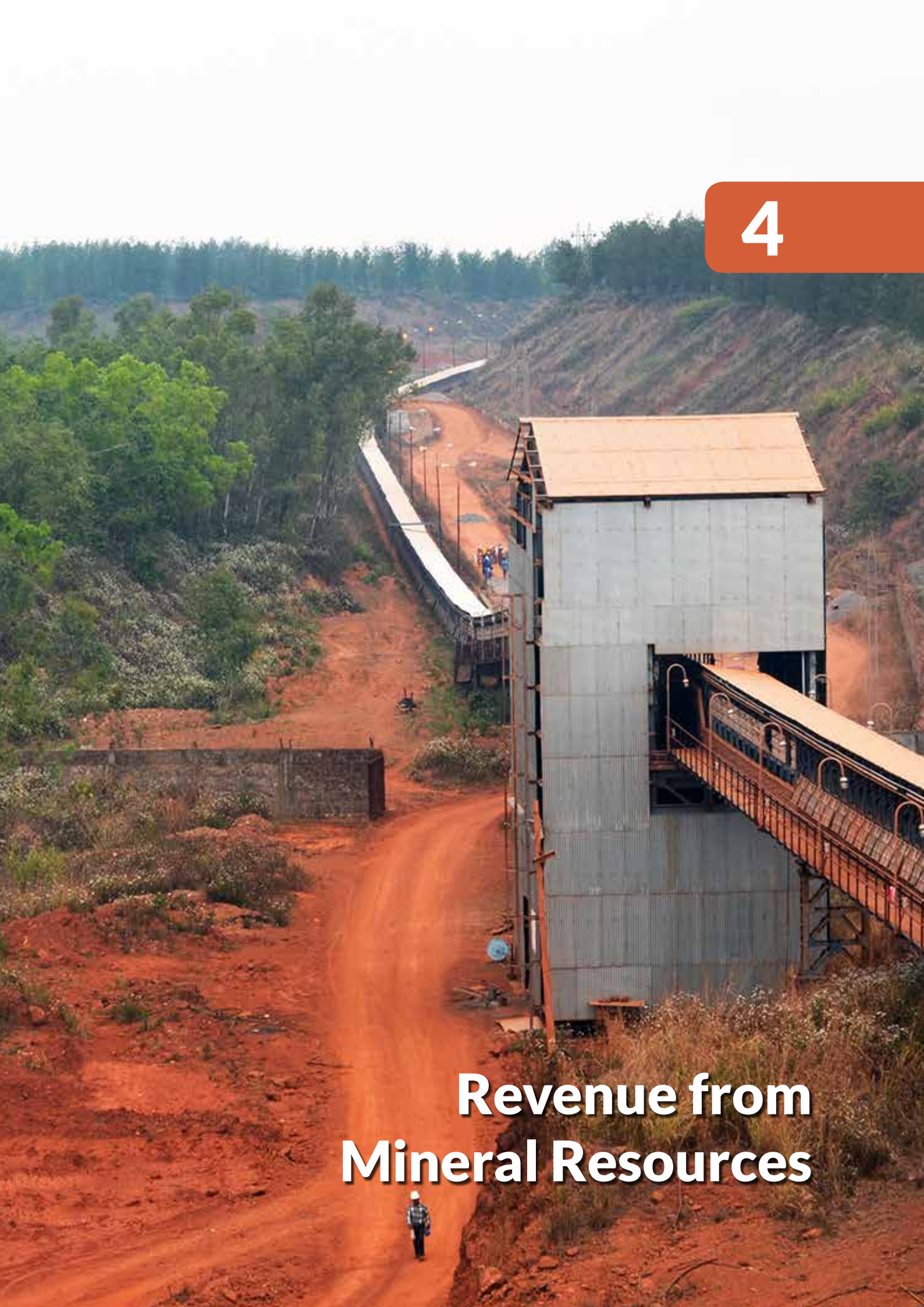
(v) Revision Application numbers are generated by the system;

(vi) Revision Authorities have been asked to give hearing to all revision applicants;

(vii) Revision Authorities have been asked to pass orders within 30 days after orders are reserved, and

(viii) As far as possible, cases are being heard on a chronological order.

3.29 New Revision Software for monitoring of revision applications filed under Section 30 of the MMDR Act, 1957 has been made fully operational. During April, 2014 to March, 2015, 207 Revision Applications were disposed of.



4

Revenue from Mineral Resources

Revenue from Mineral Resources

- Royalty - Legal provisions page - 31
- Revision of rates of royalty and dead rent in respect of major minerals page - 31
- Revised Rates of royalty page - 31

Royalty

Legal Provisions

4.1 Under the provisions of Section 9(3) of the MMDR Act, 1957, the Central Government is empowered to amend the Second Schedule to the Act, by notification in the official Gazette, so as to enhance or reduce the rate at which royalty shall be payable in respect of any minerals, provided that the Central Government shall not enhance the rate of royalty in respect of any minerals more than once during any period of three years. Similarly under Section 9A (2) of the Act, the Central Government may, amend the Third Schedule to the Act so as to enhance or reduce the rate at which the dead rent shall be payable in respect of any area covered by mining lease and such enhancement or reduction shall take effect from such date as may be specified in the notification, provided that the Central Government shall not enhance the rate of the dead rent in respect of any such area more than once during any period of three years.

Revision of rates of royalty and dead rent in respect of major minerals (non-coal minerals)

4.2 In order to review the royalty rates and dead rent, the Ministry of Mines had constituted a Study Group for revision of royalty rates and rates of dead rent for minerals (other than coal, lignite and sand for stowing) on 13th September, 2011 and to make appropriate recommendations to the Government. Ministries of Finance, Coal, Steel, Department of Atomic Energy, Indian Bureau of Mines (IBM), State Governments of Jharkhand, Karnataka, Odisha, Chhattisgarh, and Rajasthan, representatives from FIMI, FICCI, ASSOCHAM and Confederation of Indian Industry were members of the Study Group.

4.3 Based on the recommendations of the Study Group submitted in its Report of 28.6.2013, the Central Government amended the Second Schedule and the Third Schedule to the MMDR Act, to revise the rates of royalty and dead rent in respect of minerals (other than coal, lignite and sand for stowing), which was notified vide Gazette notification no.GSR 630 (E) and GSR 631 (E) dated 1.9.2014.

4.4 The revised rates of royalty in respect of some important minerals are given in Table 4.1.

Table 4.1

Revised Rates of Royalty in Respect of Important Minerals

1.	Bauxite and Laterite:	*(a) Metallurgical Grade:* Zero point six zero per cent. of London Metal Exchange Aluminium metal price chargeable on the contained aluminum metal in ore produced for those dispatched for use in alumina and aluminium metal extraction. *(b) Non Metallurgical Grade:* Twenty five per cent. of average sale price on ad valorem basis for those dispatched for use other than alumina & aluminium metal extraction.
2.	Chromite:	Fifteen per cent. of average sale price on ad valorem basis.
3.	Copper:	Four point six two per cent. of London Metal Exchange Copper metal price chargeable on the contained copper metal in ore produced.
4.	Diamond:	Eleven point five per cent. of average sale price on ad valorem basis.

5.	Gold: (i) Primary (ii) By-product gold	Four per cent. of London Bullion Market Association Price (commonly referred to as London Price) chargeable on the gold metal in ore produced. Three point three per cent. of London Bullion Market Association Price (commonly referred to as London Price) chargeable on the by-product gold metal actually produced.
6.	Iron Ore: (CLO, Lumps, fines and concentrates all grades)	Fifteen per cent. of average sale price on ad valorem basis.
7.	Manganese Ore: (i) Ore of all grade (ii) Concentrates	Five per cent. of average sale price on ad valorem basis. One point seven per cent. of average sale price on ad valorem basis.
8.	Nickel:	Zero point one two per cent. of London Metal Exchange Nickel metal price chargeable on the contained nickel metal in ore produced.
9.	Silver: (i) By-product (ii) Primary Silver	Seven per cent. of London Metal Exchange Price chargeable on by-product silver metal actually produced. Five per cent. of London Metal Exchange Silver Metal Price chargeable on the contained silver metal in ore produced.
10.	Zinc:	(a) Nine point five per cent. of London Metal Exchange Zinc metal price on ad valorem basis chargeable on contained zinc metal in ore produced. (b) Ten per cent. of London Metal Exchange Zinc metal price on ad valorem basis chargeable on contained zinc metal in concentrate produced.

4.5 The revenue from royalty from non-coal minerals to the State Government is likely to increase from ₹ 9,406.45 crore (at the year 2011-12 production level) to ₹ 13,274.18 crore, an increase of 41%. The estimated State-wise increase in royalty collections is given at **Table 4.2**.



Oil Separation Plant of a Mine Workshop

Table 4.2
State Wise Estimated increase in Royalty Collections

Sl. No.	Name of States	Royalty collection at the current Rate in the Yr 2011-12 (₹ in '000)	Estimated Royalty collection at the Rate proposed by Study Group (₹ in '000)	% Increase in Royalty Collection
1	Andhra Pradesh	44,87,100	57,11,188.35	27.28
2	Assam	18,700	23,746.03	26.98
3	Bihar	34,594.56	43,903.20	26.91
4	Chhattisgarh	1,34,63,068	1,97,60,217.39	46.77
5	Goa	94,27,381	1,41,39,821	49.99
6	Gujarat	22,33,743	31,19,349.18	39.65
7	Himachal Pradesh	9,00,803	11,42,291.28	26.81
8	Jammu Kashmir	15,945.40	19,770.40	23.99
9	Jharkhand	64,59,123	94,43,897.74	46.21
10	Karnataka	35,27,152	51,34,430.84	45.57
11	Kerala	1,11,672	1,23,458.10	10.55
12	Madhya Pradesh	37,57,700	47,21,615.88	25.65
13	Maharashtra	13,63,891	17,72,978.09	29.99
14	Meghalaya	2,27,280.33	2,89,162.22	27.23
15	Odisha	3,24,95,405	4,87,99,240.03	50.17
16	Rajasthan	1,30,01,628	1,53,28,553.39	17.90
17	Tamil Nadu	22,08,114	27,79,807.42	25.89
18	Uttarakhand	32,150.96	32,152.01	0.00
19	Uttar Pradesh	2,99,019.18	3,56,205.78	19.12
	Total	**9,40,64,470.43**	**13,27,41,788.35**	**41.12%**



Hon'ble Minister of Mines & Steel, Shri Narendra Singh Tomar Meeting with Russian delegation

5



International Cooperation

International Cooperation

- Participation in 'Mining Indaba- 2015 page - 37
- Participation in 'PDAC Convention – 2015 page - 39
- 8th Joint Working Group meeting with the Ontario Province of Canada: page - 39

Objectives:

5.1 The mining sector is an essential core industrial sector for the country. India is still in need of advanced technology and expertise in deep seated mining, mine closure measures, as well as sustainable mining. Through the cooperation programme with Australia, Canada and Ontario Province of Canada, Ministry of Mines was able to arrange capacity building in those areas. The Ministry also endeavored to showcase opportunities in Indian Mineral and Mining Sector in various international mining events for attracting Foreign Direct Investment (FDI).

Participation and interactions:

5.2 A meeting between Indian delegation led by Mr. Narendra Singh Tomar, Hon'ble Minister of Mines & Steel and a Canadian delegation led by Mr. Tony Clement, President of the Treasury Board, Canada was held on 1st September, 2014 in New Delhi. Issues for strengthening and furthering the cooperation programme in the area of geology and mining between India and Canada were discussed in the meeting.

5.3 As a follow-up action of the 8th JWG meeting under the work programme on Mining and Minerals, between India and Australia held during 11th-12th June, 2013 in India, three GSI officers were sent to Australia, in cooperation with Geoscience Australia, Government of Australia for five months (June to October, 2014) training for skill up-gradation and capacity building on deep seated mineral exploration in MacArthur Basin in Australia. After completion of the training, the three trained geologists have been assigned ongoing projects to train other geologists for deep seated exploration techniques.

5.4 In compliance with the decision taken in the 7th meeting of the Joint Working Group between India and Ontario Province of Canada on Geology and Mineral Resources held on 7th March, 2014 at Sudbury, Canada, five officers from Indian Bureau of Mines and Ministry of Mines were sent to Sudbury, Ontario, Canada for eight days from 27th September to 4th October, 2014 for the purpose of capacity building relating to mine closure measures, reclamation and rehabilitation process.

Participation in leading International Mining Events abroad:

Participation in 'Mining Indaba- 2015'

5.5 'Mining Indaba-2015' was held during 9th to 12th February, 2015 at Cape Town, South Africa. It is the largest annual mining convention/ exhibition of the African Continent. An Indian delegation led by Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel along with Shri Rajendra Shukla, Mining Minister of the State Madhya Pradesh and participants from various Ministries, public sector undertakings



Indian Pavilion in Mining Indaba-2015 at Cape Town, South Africa

and industry bodies participated in this mining event. An Indian Pavilion was set up to showcase India's capabilities and requirements of the select PSUs of the Government of India. An Indian session was held at the Convention Centre on 11th February, 2015. Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel, Government of India addressed the gathering and briefed about India's focus on mining sector and its strengths, possibilities and requirements. More than 150 delegates from various countries attended the session.

5.6 Important bilateral meetings on the side-line of 'Mining Indaba-2015' led by Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel:

Meeting with the Government of Zambia:

Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel met the Ministerial delegation of the Government of Zambia led by Hon Margaret Mhango Mwanakatwe, Minister of Economics & Trade on 10th February 2015. During the meeting, both the countries discussed the areas of cooperation in the field of exploration and capacity building.



Bilateral meeting with the Government of Zambia held on 10th February, 2015 on the sideline of 'Mining Indaba-2015' at Cape Town, South Africa

Meeting with the Government of South Africa:

A bilateral meeting between Indian delegation led by Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel, with the delegation of South Africa led by Mr. Ramatlhodi, the Minister of Natural Resources of South Africa was held on 11th February 2015 on the side-line of 'Mining Indaba-2015'. During the meeting both the countries agreed to work to revive cooperation in geology and mineral resources.



Bilateral meeting with the Government of South Africa held on 11th February, 2015 on the sideline of 'Mining Indaba-2015' at Cape Town, South Africa.

Meeting with the Democratic Republic of Congo:

The Indian delegation met the representatives from the Democratic Republic of Congo (DCR) on 11th February 2015. During the meeting, both side agreed to initiate action for cooperation in the mining sector.



Bilateral meeting with the delegation of Congo

Participation in 'PDAC Convention – 2015':

5.7 The Annual Convention of the Prospectors and Developers Association of Canada (PDAC) is the largest mining event in the world. 'PDAC-2015' was held during 1st to 4th March, 2015 at Toronto, Canada. An Indian delegation led by Shri R. Sridharan, Additional Secretary, Ministry of Mines participated in 'PDAC 2015'. A 800 sq feet Indian Pavilion was set up which received the attention of visitors and prospective investors. An 'India Day' was also celebrated on 3rd March, 2015, concurrently with the PDAC convention, which showcased opportunities in Indian Mineral and Mining Sector and the purpose as well as benefit of the new Mines and Minerals Development and Regulation Amendment Ordinance, 2015.

8th Joint Working Group meeting with the Ontario Province of Canada:

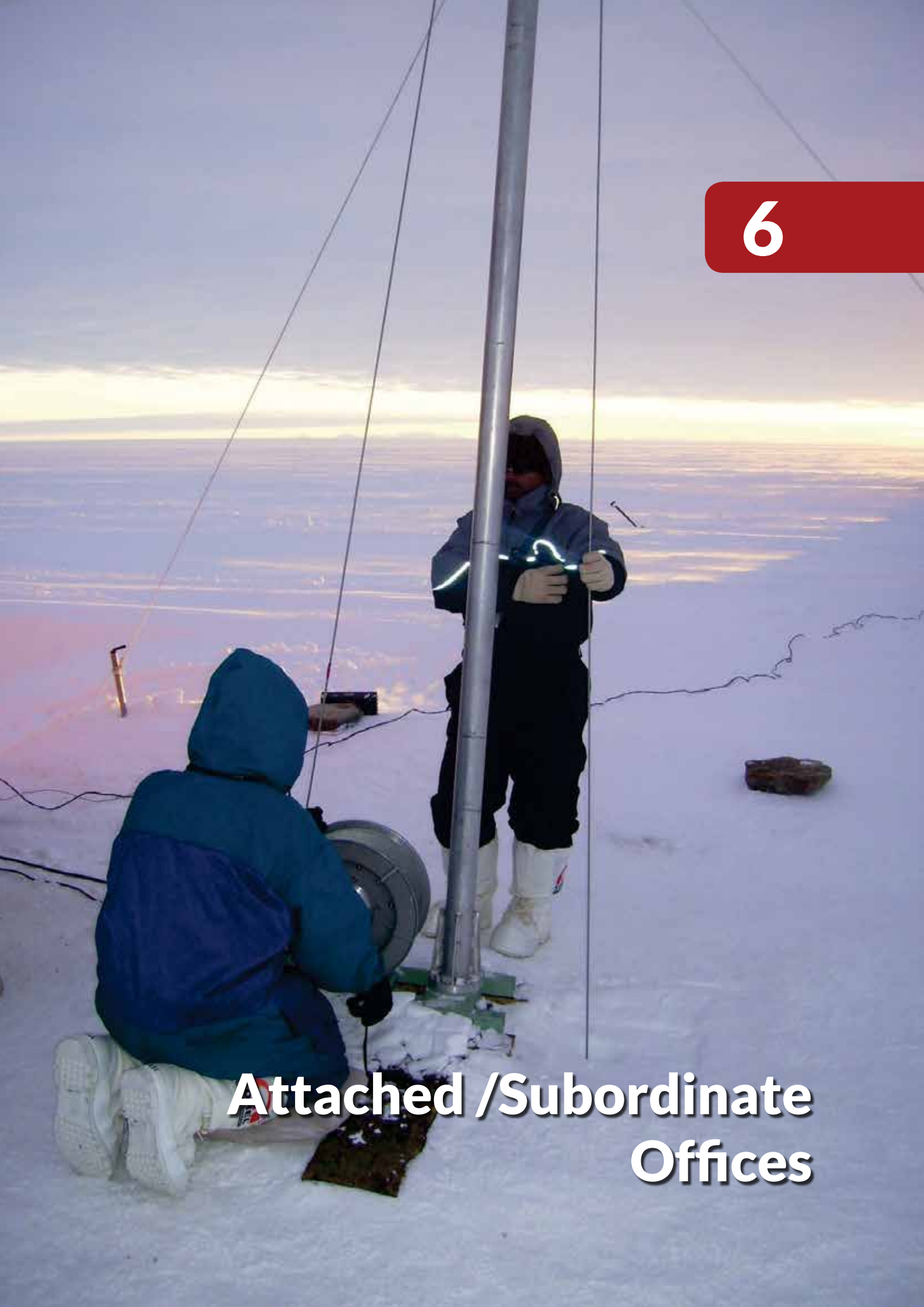
5.8 The 8th meeting of the Joint Working Group (JWG) between the Ministry of Mines, Government of India and the Ontario Ministry of Northern Development and Mines (MNDM) under the existing MoU relating to geology and mineral resources, was held on 3rd March, 2015 at Toronto, Canada on the sideline of 'PDAC-2015'. Dr. Niranjan Kumar Singh, Joint Secretary, Ministry of Mines co-chaired the meeting from India side and Ms. Cindy Blancher Smith, Assistant Deputy Minister, Ministry of Northern Development & Mines co-chaired from Ontario side. During the meeting, issues on capacity building and follow up on engagement requirements for outsourcing of PGE sample analysis and capacity building for analyzing PGE mineral at GSI laboratories were discussed.



Indian Pavilion in 'PDAC - 2015' at Toronto, Canada



Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel addressing the meeting of Mining Mazma, 2014



6

Attached /Subordinate Offices

Attached /Subordinate Offices

Geological Survey of India

- Highlights page - 43
- Performance of GSI during 2014-15 page - 46
- Reorganisation of GSI page - 46
- MISSION I: Baseline Geoscience Data Generation page - 48
- MISSION: II Natural Resource Assessment page - 50
- MISSION III – Geoinformatics page - 51
- MISSION: IV Fundamental and Multidisciplinary Geosciences and Special Studies page - 53
- MISSION: V Training and Capacity Building page - 56
- Organising International Geological Congress in 2020 page - 58
- Bilateral Collaborative Activities page - 59

Indian Bureau of Mines page - 62

- Key activities and functions of IBM page - 63
- Inspection of mines page - 65
- Statistical publication page - 70
- Grant of Exploration Licence in the Offshore Areas page - 71

Geological Survey of India (GSI)

6.1 The Geological Survey of India (GSI) was set up in 1851 primarily to find coal deposits for the Railways. Over the years, it has not only grown into a repository of geo-science information required in various fields in the country, but has also attained the status of a geo-scientific organisation of international repute. The main functions of GSI relate to creation and updation of national geoscientific information and mineral resource assessment. These objectives are achieved through ground surveys, air-borne and marine surveys, mineral prospecting and investigations, multi-disciplinary geoscientic, geo-technical, geo-environmental and natural hazards studies, glaciology, seismotectonics, and carrying out fundamental research.

6.2 GSI, headquartered at Kolkata, has six Regional offices located at Lucknow, Jaipur, Nagpur, Hyderabad, Shillong and Kolkata and State Unit offices in almost all States of the country. Presently, Geological Survey of India is an attached office to the Ministry of Mines.

Highlights:

Meetings:

6.3 The meetings of importance that took place during the period are as follows:

i) The second meeting of the Technical Advisory Committee (TAC) on Landslide Mitigation and Management in India was held on 23rd April 2014 at Shastri Bhavan, New Delhi under the Chairmanship of Dr. Anup K Pujari, Secretary, Ministry of Mines, Government of India. Proceedings volume of the Regional Workshop on Landslide Disaster Management held at Wellington, Tamil Nadu on 17th-18th January, 2014 was released during the meeting.

ii) The 12th Training Advisory Committee (TAC) meeting was held on 21st May 2014.

iii) A Brain Storming Session (BSS) on National Landslide Susceptibility Mapping (NLSM) Programme was held at P. N. Bose Meeting Hall in Geological Survey of India (Eastern Region), Kolkata on 30th May 2014.

Resolutions:

6.4 During 2014-15 a number of resolutions were adopted by GSI. These are as follows:

i) A Resolution has been adopted vide which a Central Innovation Council has been constituted.

ii) A 'Gondwana Research Centre' under the aegis of Mission-IIB (Natural Energy Resources-NEnR), GSI, Kolkata has been established to identify



Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel addressing the delegates of 54th CGPB Meeting

and investigate specific problems of Gondwana geology vide Resolution, issued on 22nd April, 2014.

iii) 'Centre for Research and Development in Himalayan Geosciences' has been created in Geological Survey of India, Northern Region, Lucknow vide a resolution on 30th April, 2014.

iv) A Resolution to set up a new Division for undertaking "Quaternary Sciences and Palaeoclimate Research" in the 'National Centre of Excellence in Geoscience Research [NCEGR]', GSI, Faridabad.

v) Resolution was also adopted wherein the Varkala Cliff Site, Kerala was declared as a Geoheritage site.

vi) A Resolution on creation of Research & Development Division for creation of Data Packages, Integration and Spatial Modelling under Data Repository & Management (Mission IIIA), Geological Survey of India, Kolkata has been adopted on 16th June 2014.

vii) A Resolution on Declaration of stromatolite bearing dolomite/ limestone of Buxa formation at Mamley, near Namchi, South District, Sikkim as Geoheritage site was issued on 24th June 2014.

viii) A Resolution on Declaration of the plant fossil bearing inter-trappean beds of Rajmahal Formation around Mandro, Sahibganj district, Jharkhand as Geoheritage Site has been issued on 26th June 2014.

ix) A Resolution on declaration of Nagahill ophiolite site near Pungro, Nagaland, India as Geoheritage site has been issued on 24th July, 2014.

x) A Resolution on Creation of "Meteorite & Planetary Science Division" within the ambit of 'National Centre of Excellence in Geoscience Research [NCEGR]', GSI, Kolkata and functional responsibilities of National Meteorite Repository [NMR], GSI, Kolkata on 25th July, 2014.

Memorandum of Understanding:

6.5 GSI entered into MOUs for collaborative projects, data sharing etc with the following organizations/ institutes:

i) Birbal Sahni Institute of Paleobotany at Lucknow on 24th April 2014 to launch research projects on joint collaboration mode. Another MOU between GSI, Western Region and Birbal Sahni Institute of Palaeobotany, Lucknow was signed on 16th June, 2014 to undertake a collaborative programme entitled "Biostratigraphic and Palaeoclimatic Investigations of the Mesozoic sequences of Jaisalmer Basin, Rajasthan".

ii) MECL on 14th June 2014 during the 4th Synergy meeting conducted between GSI and MECL for sharing of technical reports between the two organizations.

iii) Commissionerate of Geology & Mining (CGM), Government of Gujarat on 21.06.2014 for Gujarat Geochemical Mapping Project (GGCMP).

iv) Indian School of Mines, Dhanbad on 4th July 2014 on Research Project entitled "Characterization of shale horizons with respect to Shale Gas Potentiality and Quantitative estimation of Shale Gas Resources by direct method in Mohuda sub-basin of Jharia Coalfield."

v) National Centre for Seismology (MoES) on 25th July 2014 on general framework for sharing of geological, geophysical and other data /information and collaboration for enrichment of geoscientific knowledge base for sustainable development

vi) Defence Terrain Research Laboratory (DTRL), DRDO, on 5th September 2014 on "Development of Instrumentation and Monitoring of Landslides for Early Warning System in India"

6.6 Inaugurations:

i) Formal inauguration of Volcanology Division in State Unit (SU): Maharashtra, Pune, was done on 19th June 2014. A brochure entitled, "A brief introduction to the Division of Volcanology and its path ahead" was also released on this occasion.

ii) Engineering Geology and Landslide Division at State Unit: Kerala, GSI on 23.08.2014.

iii) Quaternary & Environmental Geology Division in Southern Region on 1st July, 2014 at Hyderabad.

iv) GSI Field Training Centre office at Aizawl by Mr. H. Rohluna, Hon'ble Minister, Department of Industries and Mines, Government of Mizoram on 28th June 2014.

Response to Natural Disasters:

6.7 GSI responded urgently to study the landslides that took place in Uttarakhand and Pune, Maharashtra

i) GSI formulated contingent plan to accord highest priority to Uttarakhand for completion of National Landslides Suceptibility Mapping on 1:50K scale in deference to the directive from Cabinet Secretary, Govt. of India.



Shri Narendra Singh Tomar, Hob'ble Minister of Steel and Mines releasing a GSI Publication during the 54th CGPB Meeting

ii) The Malin Landslide, near Pune took place on 31st July, 2014, where 153 lives were lost. A high level GSI team, including DG, GSI rushed to the spot and a quick response project team to study the causes was formed and report submitted to NDMA, Ministry of Home Affairs.

6.8 Workshops:

i) One day awareness workshop on landslide and climate change was jointly organised by GSI, SU Kerala and State Disaster Management Authority, Kerala on 25 August 2014, Thiruvananthapuram, Kerala.

ii) A two-day Workshop on 'Compilation and Interpretation of Seabed Maps and Obvious Geological Potential (OGP) Areas for Mineral Exploration and Review of Activities of M&CS Division, GSI' was held on 21st and 22nd July 2014 at Marine & Coastal Survey Division, Mangalore.

iii) A National Workshop on "Recent trends in mineral exploration strategies in India" was organised by National Mission-II, GSI on 2014-2015 July, 2014 at Nagpur.



Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel with Secretary (Mines) and other dignitaries during the 54th CGPB Meeting

6.9 Coffee-table books:

(a) The following books in coffee table format were released during the period:

i) GSI Through Lenses - Antiquity Revisited

ii) 'Lakshadweep'

iii) 'St. Mary Islands', Karnataka

iv) Glimpses of Deccan Volcanics: Characteristics and Landscapes,

v) The Siwaliks

vi) Himalayan Glaciers

vii) Geology & Landscape of Andaman & Nicobar Islands

viii) Thar desert landforms

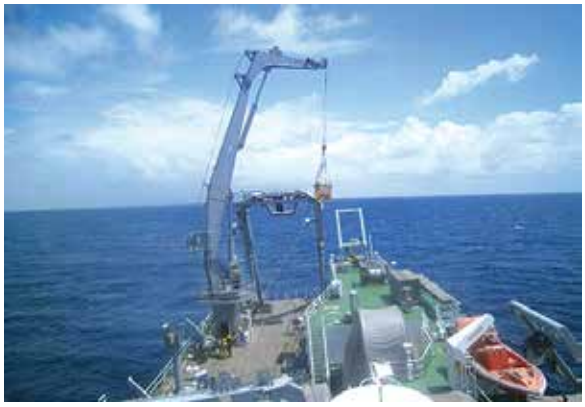
(b) The 1st generation seabed sediment maps has been prepared and the Obvious Geological Potential areas in the off-shore region has been delineated that will guide prioritization of further detailed mineral exploration onboard Oceanographic Research Vessel Samudra Ratnakar.

Performance of GSI during 2014-2015

6.10 Summarised performance of Geological Survey of India in terms of physical targets and achievements for the first three financial years of the XII plan (2012-13, 2013-14 and 2014-15) is given at **Annex 6.1**.

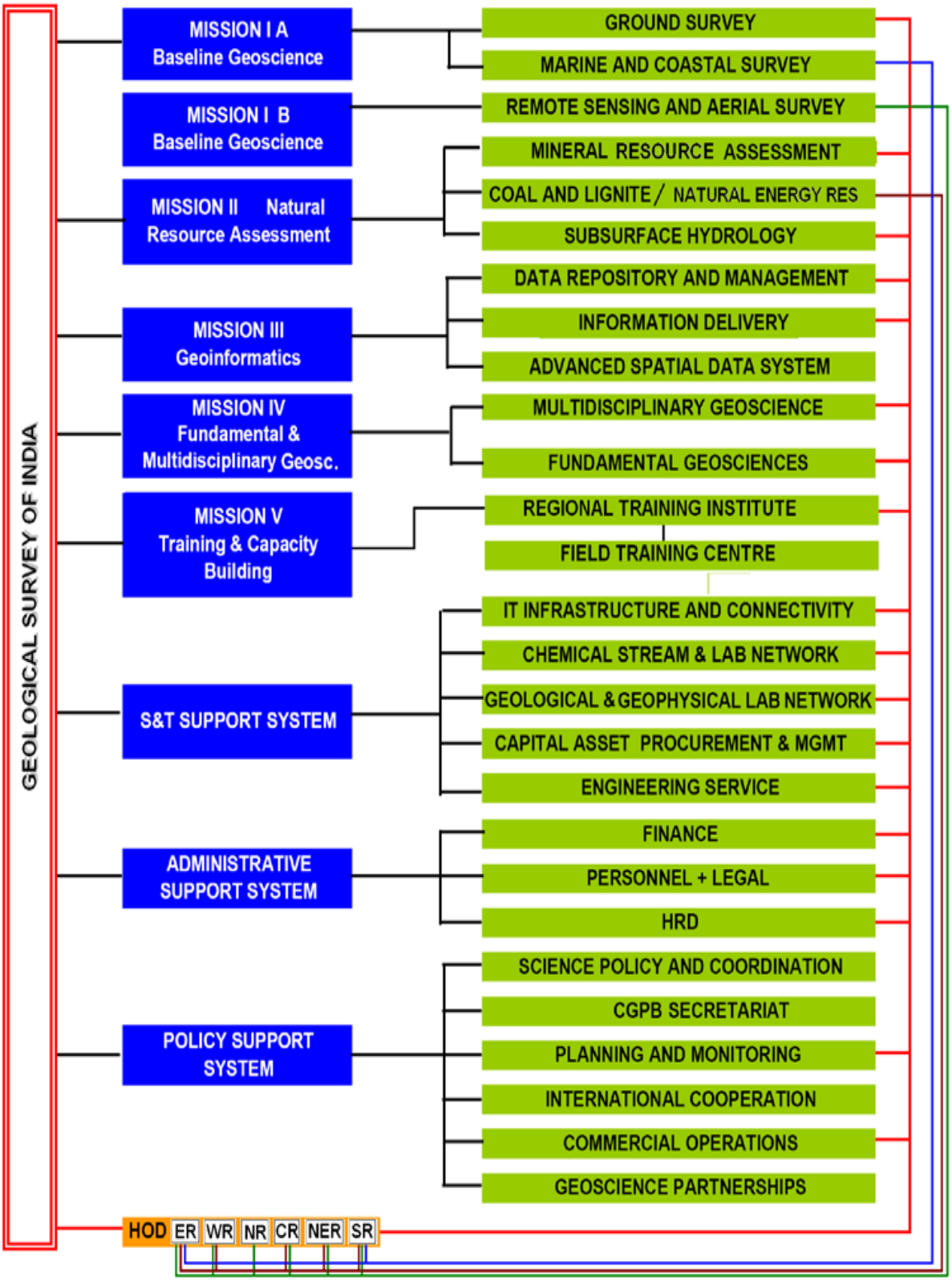
Reorganization of GSI

6.11 Geoscientific work of GSI encompasses practically the entire gamut of earth sciences and thus great responsibilities are bestowed on the organisation. In accordance with the HPC recommendations, the activities of GSI had been reorganized into 5 Missions in line with its future challenges, which are namely, Baseline Geosciences data generation (Mission I), Natural Resource Assessments (Mission II), Geoinformatics (Mission III), Fundamental and Multi-disciplinary Geoscience (Mission IV) and Training and capacity building (Mission V). Three Support Systems, Policy Support System (PSS), S&T Support System (STSS) and Administrative Support System (ASS) were introduced and structured to provide support and cross-cutting co-ordination. **(Figure: 6.1)**:



Crane routine maintenance operation onboard R.V. Samudra Ratnakar

Figure 6.1 : GSI - MISSION REGION MATRIX



MISSION I: Baseline Geoscience Data Generation

6.12 Systematic Geological Mapping (SGM)

Systematic Geological Mapping on 1:50,000 scale, the most fundamental mapping programme, adopted by GSI in past decades generated the basic data stream which catered to our National Geoscientific Information and knowledge base. Out of the 3.146 million sq. km mappable area, 3.09875 million sq. km have so far been covered by systematic mapping, bringing the total coverage to 98.49%.

6.13 Specialised Thematic Mapping (STM)

a) GSI has launched specialized theme oriented large-scale (1:25,000 or larger) studies/mapping items (Specialised Thematic Mapping) from VIII Plan period. This kind of mapping involves collection of multidisciplinary data, which is complemented by precise laboratory studies and has immense application in prognostication of natural resources; environmental analysis; natural hazard recognition; risk management; land use management; evaluation of major civil engineering projects etc. This integrated geoscientific data bank helps resolving many of the geological ambiguities and sometimes opens up new avenues for future investigations.

b) During FY 2014-15 (up to December 2014) an area of 12,640.9 sq. km has been covered by specialised thematic mapping.

6.14 Geophysical Mapping

Systematic ground gravity - magnetic surveys under the Geophysical Mapping Programme (GPM) has been initiated during X Plan Period and is being continued in XI and XII Plan Period. The mapping process involves acquisition of gravity and magnetic data with an average station density of one station per 2.5 sq km area for compilation of standardized gravity and magnetic maps of the country on 1:50,000 scale. The main objective of the survey is to generate base line Geoscience data to be used as input to locate and delineate subsurface geological structures and help in postulating conceptual models along with the geochemical and geological maps to focus on potential/probable target areas of interest for mineral exploration of deep as well as shallow level. A total of 0.2349 million sq km area is completed by ground gravity survey and magnetic (VF or TF) survey on 1:50,000 scale till the end of March 2014.

During FY 2014-15 (up to December, 2014), an area of 24,227 sq. km has been covered under GPM programme.

6.15 Geochemical Mapping

India's National Geochemical Mapping (NGCM) Programme was initiated by GSI in 2001-02 with the launching of pilot surveys in different States all over the country. The prime objective of this endeavor is to produce geochemical data on 1:50,000 scale for the Indian landmass based primarily on stream sediments, analyzed using a consistent set of methods. These data will comprise a complete, national-scale geochemical coverage of the Indian land area, and will enable construction of geochemical maps, refine estimates of baseline concentrations of chemical elements in the sampled media, and provide context for a wide variety of studies in the geological and environmental sciences. A total of 4,27,009 sq km

spreading over 642 toposheets has been covered systematically under the "National Geochemical Mapping Programme till the end of March 2014.

During the XI Plan period an area of 1,35,245 sq. km. has been covered.

During the XII Plan period an area of 1,72,593 sq. km has been covered during the first two years and during FS 2014-15 an area of 55,016 sq. km has been covered till December, 2014.

6.16 Remote Sensing and Airborne Survey

Airborne Geophysical Surveys are being carried out by the Twin Otter Airborne Survey System (TOASS) with Magnetic and Gamma Ray Spectrometric sensors acquired by GSI in 1986. Since then (up to F.S. 2010-2012) a total of 5,12,062 line km over an area of 3,04,142 sq.km. was covered by deploying multi sensor systems. During the period from April 2013 to March 2014, 52,380 line km have been covered in Vengurla-Jamnagar in parts of Maharashtra & Gujarat and Chandrapur – Brahmapuri area in parts of Maharashtra. During FS 2014-15 the aircraft has not flown till December 2014 as it is under maintenance at Hosur.

As part of the modernization programme, GSI has procured one helicopter ' Garuda Vasudha' with state-of-the art Time domain EM system fitted on a heliborne platform along with the latest magnetic, spectrometric and gravity heliborne geophysical survey systems. The first Heliborne survey operation covered 165 line km over Aladahalli-Nuggihalli schist belt, Hasan District, Karnataka, for testing the response of different sensors after their installation by M/s PICO Envirotech Ltd, Canada. During FS 2014-15, 300 line km have been covered till December 2014. Regular Heliborne surveys are planned in Dhani-Punagarh area, Pali district, Rajasthan and Sitampundi belt in Tamil Nadu.

6.17 Aerogeophysical Data Processing

Compilation of aeromagnetic data of NGRI, Operation Hard Rock (OHR), and areas covered by TOASS over parts of Andhra Pradesh, Karnataka & Tamil Nadu have been initiated in the FS 2014-15. Integration of Geological, Geochemical, Geophysical, Aerogeophysical and Remote sensing data of Raichur – Narayanapet Kimberlite province and its surrounding to identify target areas for mineralization using GIS has also been taken up.

6.18 National Geomorphological and Lineament Mapping (NGLM)

NGLM on 1:50,000 scale, a collaborative project between GSI and ISRO under National Natural Resources Management System – Standing Committee on Geology [(NNRMS-SC (G)]: The project has been implemented on a two-tier basis. In the first tier, 23 Participating Institutes (PI) under the control of ISRO are engaged in generating state-wise geodatabase on themes involving Geomorphology, Lineament and Field data and in the second tier, GSI and NRSC/ISRO team jointly are scrutinizing the quality of geodatabase [External Quality Check (EQC)] and finalizing them sheet-wise.

During FS 2014-15, the target for intra-regional mosaicing is 542 sheets out of which all 542 have been covered till the end of December 2014. Of the 383 inter regional sheets to be covered during FS

2014-15, 141 sheets have been completed till the end of December, 2014.

6.19 Hyperspectral Remote Sensing Technique in Exploration

Development of Hyperspectral sensor for mineral mapping is being stressed upon as it is very effective and sophisticated tool for identifying mineral deposits. With the objective of detailed study of mineralized zone /alteration zone using Hyperspectral and ASTER Multispectral data, for building up of spectral library for minerals and application of the results in extension / virgin areas the following areas were covered during FS 2014-15.

i) Kesarpur copper belt, Orissa and Baraganda copper-lead-zinc mineralised belt, Bihar.

ii) Gadag schist belt, Karnataka.

iii) Parts of Sakoli & Sausar belt Bhandara & Nagpur Districts, Maharashtra, Balaghat District, MP. Capacity building for spectral library.

6.20 Marine and Coastal Surveys

Geological Survey of India carried out off shore geo-scientific studies both in Exclusive Economic Zone (EEZ) and Territorial Water (TW) along the East and West coasts of India. Surveys in the near shore zones (0m-10m isobaths) were carried out using hired small mechanical boats. The main purpose of the Marine Survey is not only to discover the undersea treasure of Economic Minerals but also to unravel the evolutionary history of formation of seabed morphology and its continuous transformation under the influence of various dynamic processes still operative on different scales in different parts of the globe.

Up to March 2014, GSI has completed seabed mapping of 1,30,040 sq km out of 1,50,000 sq km in 5 km x 2 km grid within Territorial Waters and 18,51,438 sq km out of 18,64,900 sq km in the EEZ beyond Territorial Waters on reconnaissance scale. The total EEZ coverage including TW is 19,81,478 sq km out of a total EEZ area of 20,14,900 sq km.

MISSION: II Natural Resource Assessment

6.21 Mineral Resource Assessment

GSI's work under mineral exploration programme is mainly confined within the limits of 'reconnaissance' [G4] and 'prospecting' [G3] though in some cases it also encompasses 'general exploration' [G2] [United Nations Framework Classification (UNFC): G- axis]. Thus the resource estimates by GSI comes under the category of '334' [reconnaissance mineral resource]; '333' [inferred mineral resource] and '332' [indicated mineral resource] under the UNFC. Mineral commodity-wise exploration block database is also being prepared, which is in consonance with GSI's 'geoinformatics' programme initiated during the year 2000.

As per the approved FSP 2014-15, a total of 146 (excluding five offshore mineral investigation) mineral investigation programmes have been taken up of which 110 are under 'Mineral resource assessment' (ores and minerals) and 36 belong to 'Natural energy resources' (except Oil & Gas, coal, lignite and geothermal).

6.22 'Mineral Resource Assessment' (ores and minerals):

Among these 110 Mineral Resource Assessment Projects initiated, 13 are

Ferrous Minerals (Iron, Manganese, Chromite), 32 Precious Metals & Minerals (15 for Gold, 8 for PGE, 8 for Diamond & 1 for precious minerals), 42 for Non-Ferrous and Strategic Minerals (24 Base metal, 18 Strategic Mineral) and 23 for Industrial & Fertilizer Minerals.

During F.S. 2014-15, till the end of December 2014 coverage by Large Scale Mapping stood at 3066.50 sq. km while coverage by Detailed Mapping stood at 34.53 sq. km and Drilling in mineral exploration items stood at 18,083.03m

6.23 'Natural Energy Resources' (except Oil & Gas)

In Natural Energy Resource Assessment till December 2014, Large Scale mapping of 196.24 sq. km and drilling of 35,302.87m has been carried out.

GSI has augmented coal resource in different states during FS 2013-14 and the total resource of coal of the country stands at 2,98,914.06 million tonnes and that of lignite stands at 43,215.86 million tonnes as on 01.04.2014.

6.24 Geothermal Studies

During the FS 2014-15 the following items have been taken up:

i) Monitoring of temperature, discharge and chemical parameters of hot water affected areas in Rajasthan for ascertaining the variation with cold water located in and around the adjoining area.

ii) Monitoring of discharge parameters of hot springs in Himalayan Belt of Uttarakhand and Himachal Pradesh for assessment of Geothermal Resource for direct heat utilization.

iii) Monitoring of discharge and composition of hot springs of Son-Narmada valley and Peninsular Geothermal areas, Central India.

iv) Monitoring discharge and temperature of hot springs of Andhra Pradesh, Tamil Nadu and Karnataka states.

v) Exploration for Geothermal Resource Assessment at Tatapani Geothermal Field, Balarampur District, Chhattisgarh.

MISSION III – Geoinformatics

6.25 Geo-informatics of GSI includes activities under Data Repository and Management, Information Delivery, Map & Publication and also Advanced Spatial Data Systems. Mission-III aspires to maintain and manage IT infrastructure, archive and disseminate data and deliver geo-information to various stakeholders in an effective way.

All reports, maps and publications of GSI are placed in the portal (www.portal.gsi.gov.in) as per the existing data sharing and access policy of GSI published in January 2014.

All GSI offices including Central Headquarters (CHQ), Regional Head



The twin otter Airborne Survey System of GSI carrying out Survey.

Quarters (RHQ) and State Units (SU) are connected through an enterprise Virtual Private Network (MPLS IP VPN) with converged data voice-video communication. The GSI Portal hosts different scientific and office applications for internal stakeholders.

Mission-III actively participates in all national and international collaborative initiatives (NSDI, NDSAP, NGIS, IGCP 624 -'One-Geology', etc.) concerning dissemination of geo-information as well as coordinates with the Policy Support System of GSI and Ministry of Mines regarding the issues pertaining to information dissemination policies and guidelines.

Mission-III is taking an active role in e-governance of GSI.

Mission-III has also provided technical support to Saudi Geological Survey towards design and development of their Geospatial Data Management System under Bilateral Technical Cooperation programme.

Besides, Mission-III is on the verge of implementing an integrated web–enabled interactive system- Online Core Business Integrated System (OCBIS). After implementation of OCBIS project GSI will be able to align itself towards national data sharing policies and meet the demands of stakeholders. Implementation is expected to commence in the first quarter of 2015-16.



A rare occurrence of Chromitite showing pitted appearance occurring as a band within ultramafic schist in Sindhudrg District.

6.26 Data Repository and Management

The Mission maintains Territorial Water (TW), National Geochemical Mapping (NGCM), National Geomorphology and Lineament Mapping (NGLM), Map and Publication database of GSI. SOP of Mission-III and NGLM have been prepared. Efforts are on to develop Geological data model for 1:250K /50K geological mapsheets of GSI. Standard Unified Modelling Language (UML) as prescribed by ISO1903 has been used in developing the geological data model. A UML class diagram has been prepared for 250K/50K sheets of GSI in Enterprise Architecture. Standardization of stratigraphic units under Supergroup, Group, and Formation of lithology layer of 1:50K Map geodatabase for 4,716 topographic sheets is under progress. This standardized dataset will be used for creation of National Stratigraphic Legend and List of Values (LOV) for databases related to Map Domain (1:50K, 1:25K and others).

6.27 Information Delivery

GSI is the only premier organisation in the country to prepare and publish geological maps of India in parts or whole. GSI has a new data sharing and accessibility policy. Web Map Service (WMS) is being provided from Oracle Spatial software and a standard JPEG file is shared with the end user using WMS. Web Feature Service (WFS)/ Geographical Markup Language (WML) for GSI data sets has been created for downloading of GIS data. A new link

has been created (for general public) in the home page of GSI portal on "National Mission on Geomorphology & Lineament Mapping" (Collaborative project with ISRO) project. Existing map service (Metadata search, Geological map on 1:2M scale, Seismotectonic atlas on 1:2M scale, Recent landslide occurrences in India, 50K Geological map, 50K Geomorphological map, Coal Map, Marine Maps and Geochemical mapping) and related query-based application has been enhanced utilizing Arc GIS server.

6.28 Maps and Publication:

During the period GSI has released 11 scientific publications and 8 maps. The Metadata and representative images of the maps is available through GSI Portal. Another 25 publications are likely to be released during Field Season 2014-15.

The various publications of GSI till December 2014 include 134 volumes of Memoirs, 55 volumes of Palaeontologia Indica, 147 volumes (with several parts) of Records; 100 volumes of Special Publication; 72 volumes of Miscellaneous Publications; 63 volumes of Bulletin Series A; 66 volumes of Bulletin Series B; 09 volumes of Bulletin Series C; 08 volumes of Catalogue Series, 62 volumes of Indian Minerals and 7 volumes of Indian Journal of Geosciences.

6.29 Advanced Spatial Data Systems

Advance Spatial Data Systems Division, a Division under Mission-III, has been contributing meta-data & 50K map data to National Spatial Data Infrastructure (NSDI) India Geo portal. Metadata of different agencies presently form an important component of the NSDI single window access mechanism of India Geo portal linked to the GSI Node of NSDI over the Internet.

MISSION: IV Fundamental and Multidisciplinary Geosciences and Special Studies

6.30 Laboratory Studies, Research and Development

As a result of up gradation and establishment of state-of-the-art instrumental facilities in the fields of Petrology, Geochronology and Isotope Geology (GIG), Palaeontology, Photogeology and Remote Sensing, Geophysics, Mineral Physics, Analytical Chemistry etc. intensive laboratory studies were carried out to generate precise analytical database in consonance with the global trend and to keep pace with the research activities carried out in similar Surveys elsewhere. GSI possesses state of the art facilities in three different National Centres of Excellence in Geoscience Research to carry out research on isotope geology and dating of rocks, minerals, sediments and organic matters covering the entire geological time scale from Archaean to Recent. These laboratory facilities are

i) Isotopic studies of radioactive element to date crystalline rocks using Rb-Sr and U-Pb systematics in Thermal Ionisation Mass Spectrometer (TIMS) in Kolkata.

ii) The newly acquired Laser Ablation Multi-collector Inductively Coupled Plasma Mass Spectrometer (LA-MC-ICPMS) for isotopic analysis of U-Pb, Rb-Sr, Hf etc from dry insitu or wet samples in Kolkata.

iii) 14C dating of carbon extracted from organic samples in Liquid Scintillation Counter (LSC) in Kolkata

iv) Stable isotope studies of C,O and S in Isotope Raito Mass Spectrometer (IRMS) in Bangalore

v) Thermoluminiscence (TL) and Optically Stimulated Luminiscence (OSL) at Faridabad for dating of recent and Quaternary sediments.

Specialized Investigations

Geotechnical Surveys

6.31 GSI has made commendable contribution at different stages of geotechnical investigations for the successful completion of large numbers of Water Resource Projects like hydroelectric, irrigation and river linking projects within and outside the country. During the FS 2014-15, 77 items of on Geotechnical, Landslide and Seismic Hazards have been taken up till December 2014.

6.32 Landslide Hazard Studies

- Detailed metadata of landslide investigation reports/incidences pertaining to 17 states and one Union Territory are being entered into a server-hosted database.
- Landslide hazard / susceptibilty zonation study on macro scale i.e. 1: 50,000/1:25,000 scale is being carried out in the states of Nagaland, Uttarakhand, Maharashtra, Kerala, Tamil Nadu and Karnataka as a part of National Landslide Susceptibility Mapping (NLSM) program.
- Landslide hazard zonation study on meso scale i.e. 1: 10,000 scale is being carried out in the state of Sikkim.
- Landslide inventory: During the FS 2014-15 landslide inventory works has been carried out in the states of North Eastern Region, Southern Region, Central Region and Northern Region.
- Site specific study of landslide: During 2014-15, site specific investigations including monitoring of items are being carried out in the states of Sikkim, Uttarakhand and Maharashtra.
- One research item has been taken up by the Geohazard Research Management (GHRM) cell of GSI, CHQ, for developing GIS-based, qualitative/quantitative landslide hazard and risk assessment in Mandakini valley in collaboration with GSI, Northern Region.
- Creation of a Landslide Compendium of Darjeeling-Sikkim Himalayas, North-western Himalayas and Western Ghats are being carried out by utilizing available data of GSI on landslide inventory and zonation

6.33 Earthquake Geology

- GSI undertakes the study of active faults (study of source region of earthquake) and seismic micro-zonation (site of interest) of urban agglomerations in various geological domains of the country.
- During the Field Season 2014-2015 seismic hazard microzonation of urban agglomeration is being carried out in Amritsar, Srinagar, Greater Baroda, Satara, Koyna and Warna areas, Kohima, Darbhanga and Kochi areas.
- Active fault mapping and Differential Global Positioning System (DGPS)-based crustal deformation studies are being carried out in West Patna Fault, Bihar. Neotectonic studies along Satlitta (Soan) thrust in Himalayan frontal belt are carried out in Punjab and Himachal Pradesh.

- The permanent Ground Positioning System (GPS) station at Lucknow (established by DST since 1999) is engaged in round the clock monitoring of GPS data. The data is supplied regularly to National GPS Data Centre, Survey of India, Dehradun for further processing/interpretation.

6.34 Environmental Geology & Medical Geology

During FS 2014-15, GSI has taken up nine items of environment geology and Medical Geology

6.35 Glaciological Studies

Under Glaciological studies the following items have been taken up during FS 2014-15

i) Long term monitoring of Mass Balance of Hamtah glacier, Lahaul and Spiti district, Himachal Pradesh- On expedition basis.

ii) Glaciological studies in Central Dronning Maud Land, East Antarctica

iii) Recessional history of the polar ice sheet in Schirmacher Oasis, Antarctica

iv) Glaciological studies in the Larsemann Hills East Antarctica

v) Integrated monitoring of Vastre Broggerbreen Glacier, Svalbard Arctic

6.36 Arctic / Antarctic Studies (Polar Studies)

So far 117 GSI officers have participated in all the 33 Indian Antarctic Expeditions launched till date. Polar Studies Division, earlier known as Antarctica Division, have contributed in the National Antarctic Programme in a very significant way with 12 Leaders, 4 Deputy Leaders, 3 Voyage Leaders and 4 Observers in various Antarctic Expeditions.

About 19,000 sq. km of area (including ice covered area) has been geologically mapped by the geologists of GSI. As an ongoing studies pertaining to Climate Change Studies, the snout of Dakshin Gangotri glacier and its western extension of the polar ice sheet overriding Schirmacher Oasis is being monitored which shows continuous recession.

Limnological studies utilizing lake bottom sediment cores have documented palaeo climate changes.

Detailed Ground Penetrating Radar (GPR) investigations have been carried out to record spatial pattern of ice thicknesses along with determination of loci for L-I-S (Land-Ice-Sea) at latitude 70°51.090'S and longitude 12°14.429'E expressed by a steeply sloping land-ice interface juxtaposed against gently sloping sea-ice interface. Apart from regular geological work of PSD, services of GPR have also been extended to BSF, Delhi crime branch, Delhi Metro, Kedarnath tragedy, Mussoorie Landslide, and some more fields of public interests.

Since 2008, 14 geologists have participated in Indian Arctic Expedition and worked in Vestre Broggerbreen glacier of Ny-Alesund, Svalbard area of Arctic region.



Glaciological Field work on Arctic Glacier

MISSION: V Training and Capacity Building

6.37 Human Resource Development

The Geological Survey of India Training Institute (GSITI) with its headquarters at Hyderabad, six Regional Training Institutes (RTI), at Lucknow, Jaipur, Nagpur, Hyderabad, Kolkata and Shillong together with the twelve Field Training Centres (FTI) at Aishmuqam, Saketi, Bimtal, Zawar, Kuju, Aizawl, Raipur, Sukinda, Kothagudem, Chitradurga, Vajrakarur and Salem backed by GSI laboratories impart training in different disciplines of earth science, other scientific, technical and administrative subjects to officers and staff of GSI, State DGMs, officers from other organizations including trainees from foreign countries.

GSITI conducts long duration induction level training programs (Orientation Course). Currently the 38th Orientation course is in progress. Acknowledging that training is one of the most effective tools in human resource development, the GSITI conducts many refresher courses for middle level professionals. A number of advanced courses to promote specialisation, are also conducted. GSITI conducts workshops in various disciplines of geological sciences. The GSITI also conducts courses in Administration, Finance and Vigilance matters for Group A & B officers and staff of GSI .Adding to its programmes, the Institute has been imparting sponsored training in collaboration with DST, ISRO, Central and State Departments, Indian Railways, A.P. Ground water department, etc. The ISRO sponsored GIS course is done periodically. Currently the 4th Post PG Diploma course in Geoinformatics in Earth Science is in progress.

The Institute has evolved into a knowledge sharing institute not only for purposes of its own, but also for other stakeholders of the geoscientific sector, viz. Central and State Government institutions, private sector institutions, academic and research organizations. It also draws guest faculty from a pool of very experienced retired GSI officers as well as from other scientific organisations. The training programs of GSITI are centered around the thrust areas of GSI activities and requirements of the stake holders in geoscientific domain.

During F.S. 2014-15, 69 training programs were completed up to December 2014 and 2 training programs are currently in progress. A total of 1277 nos. of personnel were trained out of which 1030 are from GSI, 122 from State DGMs and 100 from other organizations and 25 from foreign countries. In addition to the above, assistance is also provided to a large number of university/college students in the form of lectures.

6.38 4th Geoscience Advisory Council Meeting

The fourth meeting of Geoscience Advisory Council (GAC) was held under the Chairmanship of Shri Narendra Singh Tomar, Hon'ble Minister of Steel & Mines, in the presence of Shri Vishnu Deo Sai, Hon'ble Minister of State, Steel & Mines, at Vigyan Bhawan, New Delhi on 12th November, 2014. Dr. Anup K. Pujari, Secretary (Mines) as Vice-Chairman of the council was also present. The meeting was attended by senior officers of Ministry of Mines and Ministry of Earth Sciences and members representing various scientific organizations and academia.

Discussions were held covering various issues related to geosciences and their growth in the country. Some of these issues are emphasis on geological mapping and fundamental research, understanding of success stories of other countries in the field of geosciences and applying them in India, developing synergistic institutional efforts in the country, developing technology for extraction of metals from low grade ores, encouraging research in areas of ecosystem, scientific exchange programs etc.

6.39 Central Geological Programming Board [CGPB]

The Central Geological Programming Board (CGPB) is the apex body at the national level to overview the programme of geoscientific activities in the country including mineral exploration. It was established through the Government of India Resolution dated 27th July, 1966. CGPB reconstituted as per resolution of 12th March, 2009, is supported by 12 theme-based Committees.

The 54th meeting of CGPB was held on 5-6th February, 2015 at Vigyan Bhavan, New Delhi. The Field Season Programme for 2015-16 of GSI comprising 737 programmes was approved.

6.40 ISO certification of Chemical Laboratories

The accreditation work for obtaining ISO 17025:2005 for XRF and ICPMS labs of GSI has been taken up by the consultant namely Institute of Applied Quality Management.

6.41 Quality Management (QM) Cell of GSI

The QM Cell in GSI was set up at GSI, DGCO, Delhi in February 2010 with the objective of assessing and improving the overall quality of scientific work in GSI, at par with the best International practices so that the services provided by it meets the expectations of the stake holders. To improve the quality of work in GSI, QM Cell has initiated several steps at the behest of the Quality Management Committee. Major achievements of the QM Cell since its creation include introduction of SOPs for major activities under Mission-IA, IB and IIA and important activities under Mission-III and IV for maintaining high standards of work, external peer review of FSP items and FSP reports to improve the Quality of content and variance analysis of geological samples to ensure quality consistency in chemical analyses in varies labs. For improving Quality of field work, processing of reports and their timely circulation, modus operandi and flow charts defining duties and responsibilities of officers at various levels were introduced.

As per the established practice, the QM Cell, GSI, DGCO arranges external peer review of 20% progress reports generated during each field season. A total of 69 reports were peer reviewed, of which ten reports were graded as excellent, fifty two as very good and seven reports were found to require up-gradation.

As regards FS 14-15, the QM Cell undertook 20% external peer review of GSI FSP items of pertaining to NRO, SRO, CRO, NERO, ERO, WRO and Central Facilities, CHQ, between 19th December 2013 and 7th January 2014.

6.42 Internal Resource Generation

During the period from April to September 2014, a total amount of Rs. 7,70,55,049 (Rupees Seven Crores Seventy Lakhs Fifty Five Thousand and Forty Nine only) has been generated as Internal Resource and

Rs. 89,48,593/- (Rupees Eighty Nine Lakh Forty Eight Thousand Five Hundred and Ninety Three only) collected as Service tax and Educational Cess by way of undertaking various commercial activities such as Sponsored Commercial Geotechnical Works, Sale of Maps, Unpublished Reports, testing and analysis (petrological/chemical/ mineral physics Labs.) of samples, EPMA Studies/ Gem testing, Exploration for minerals etc.

6.43 International Cooperation

The activities of GSI in the international arena include bilateral exchange programme on geoscientific projects with various foreign governmental organisations/ scientific agencies. GSI participates in international seminars/ symposia/workshops, advanced foreign training programmes and trainings abroad on the purchased/ procured instruments.

6.44 Organizing International Geological Congress in 2020:

India along with Bangladesh, Nepal, Pakistan and Sri Lanka will host the 36th International Geological Congress (IGC) in the year 2020 at Delhi. The event will be hosted jointly by the Ministry of Mines (MoM) and Ministry of Earth Sciences (MoES) with active support from Indian National Science Academy (INSA) and science academies of co-host nations. All major geoscience institutions and organizations will be associated. GSI has been designated as Nodal Agency for organising the IGC.

The 36th International Geological Congress Working Office-cum-Secretariat (WOCS) set up at GSI, DGCO, C-II, Pushpa Bhawan, New Delhi has been coordinating preparatory activities for organizing 36th IGC in year 2020.

6.45 During FY 2014-15 following activities have been pursued by WOCS:

i) Re-estimation of Budget for organizing 36th IGC to include expenditures that were not factored in the budget estimates indicated in the earlier approved Cabinet Note i.e. prior to the 36th IGC bidding in August, 2012. A revised estimate of ₹ 92.00 crore as Government support has been indicated. The year-wise requirement for preparatory activities have been shown in this budget.

ii) A Memorandum of Association for setting up 36th International Geological Congress Society (36IGCS) has been prepared.

iii) A draft Road map for organizing 36th IGC has been prepared by WOCS.

iv) Two regional Brain Storming Sessions titled 36th IGC: A unique Opportunity for advancement of Geoscience at Central Region, Nagpur and Southern Region, Hyderabad in December 2014 were organized by GSI Regional IGC Cells at Nagpur and Hyderabad.

v) WOCS is seeking suggestions for Field Excursions besides the list that had been circulated as Excursions: IGC 2020 Delhi. The document is available for download at 36 IGC website-www.36igc.org for download

vi) The 36th IGC is being organized following the statues laid down by International Union of Geological Sciences (IUGS) at the 34th IGC in Brisbane.

6.46 International Geoscience Programme (IGCP)

6.45.1 During 2014-15, ten IGCP projects are being pursued in India on subjects like stratigraphy, geomorphology etc.

6.47 Bilateral Collaborative Activities

GSI continued its participation in bilateral cooperation and collaborative programmes with other countries on several geoscientific arenas for mutual benefit. Ministry of Mines as well as GSI has entered into MoUs with different countries in various spheres of geosciences. MoUs are operative with 17 countries/institutions viz. Afghanistan, Australia, Canada (NRCan, Ontario, British Colombia, and Quebec, Saskatchewan), Chile, Columbia, Malawi, Mali, Mozambique, Namibia, Peru, Argentina, Saudi Arabia, and University of Michigan (USA). Status of the bilateral cooperation is summarized below:

USA

A three-year MoU between GSI and the University of Michigan and Museum of Paleontology (UMMP), Michigan, U.S.A. for Study of Late Cretaceous Continental Tetrapod Fossils from Lameta Formation was signed on 27th February, 2012. The collaborative study has been continuing during the third year after submission of preliminary report for the work carried out during 1st and 2nd years. One of the key objectives of the MoU is to establish an Advanced Vertebrate Preparation Laboratory in India (at GSI, CR, Nagpur). In this direction, one geoscientist from GSI was sent to UMMP, Michigan, USA from 07.08.2014 to 22.08.2014 for learning techniques of advance processing of vertebrate fossils.

Australia

With fast depletion of easily accessible and shallow or near surface ore bodies, the challenge before GSI is locating "deep seated" and "concealed/hidden" ore bodies through modern and sophisticated exploration methods / techniques. To Develop capacity in identifying deep seated deposits and in persuance of the outcomes of 8th meeting of a Joint Working Group (JWG), three officers of GSI were sent to Geoscience Australia, from June to October, 2014, for skill up-gradation and capacity building on deep seated mineral exploration techniques.

Quebec Province of Canada

As an outcome of the 1st JWG meeting with Quebec Province of Canada, held on 5th March, 2014 at Toronto, Canada, discussion with the SIGEOM (geomining database system) design experts of Quebec has been initiated on integration and interpretation of the available data sets in GSI to target potential mineralized zones.

Natural Resources, Canada

In pursuance of the agreement of the 2nd Steering Committee meeting with NRCan, held on 4th March, 2014, dialogue has been initiated with NRCan to finalize formalities for a collaborative project on remote sensing based monitoring and early warning of Indian landslides and capacity building of the geoscientists of GSI in the field of PGE exploration and research.

Ontario

The 7th JWG meeting with Ontario Province of Canada was held on 7th March, 2014 at Sudbury, Ontario, Canada. The issues that were discussed in the meeting, pertaining to GSI are outsourcing of PGE sample analyses and capacity building for analyzing PGE minerals at GSI Laboratories.

Developing state-of-the-art techniques for integration and interpretation of multi-parametric airborne/heliborne geophysical data and geo-factors for search of concealed and deeply buried poly-metallic deposits and diamond.

Afghanistan

Under the aegis of a MoU, signed on 04.10.2011, between India and Afghanistan on co-operation in the field of mineral resources development, 14 officials of Afghan Geological Survey attended a training programme on Basic English Language, Geological Mapping and Laboratory Techniques between 21.05.2014 and 09.07.2014 at Field Training Centre (FTC), Chitradurga.

Colombia

Under the framework of the India-Colombia MoU, signed on 04.05.2011, one geoscientist from GSI visited Colombia from 1st to 11th April, 2014 to impart training to Colombian geoscientists on structural geology.

Saudi Arabia

Under the aegis of MOU of "Technical Cooperation Program", signed between GSI and Saudi Geological Survey (SGS), two officers from GSI visited Jeddah, Saudi Arabia from 29th June to 10th July, 2014 for design and development of SGS portal.

6.48 Collaborative Projects with Other Organisations:

A total of 67 programmes have been taken up upon request or sponsorship. Out of these, 12 have been taken up on State Government's requests, one on state request for collaboration, three under collaboration with National Agencies (NRSC & NTPC), four items are IGCP programmes, three are University collaboration items and one is of international collaboration. 16 items have been sponsored by Ministry of Coal and 27 Geotechnical items have been sponsored by various agencies.

6.49 Modernization programme in GSI

GSI has acquired a new Oceanographic Research Vessel:

'Samudra Ratnakar' with State- of- the- art equipment like Acoustic Doppler Current Profiler, multi-beam Echosounder, sub bottom profiler, Acoustic positioning system, Single streamer Multi- channel Seismic system, Marine Magnetometer, Side scan sonar, Synthetic Aperture Sonar system, ROV, and different kinds of sampling devices. Regular scientific cruises have been taken up during FS 2014-15.

The avionics system of the Twin Otter Airborne Survey System (TOASS) has been upgraded to state-of-the-art level.

A state-of-the-art Heliborne Geophysical Survey System name of Garuda Vasudha has been inducted in GSI in January, 2014. It is fitted with magnetic, gravity, spectrometric and time-domain electromagnetic sensors.

GSI shall take up the implementation of Phase –III of the portal through the OCBIS from F.S. 2014-15 and an amount of ₹ 90 crore has been earmarked for the project which includes implementation of the OCBIS, network upgradation, increase of bandwidth, procurement of additional hardware and software etc.

Schemewise plan budget expenditure of GSI against the approved plan outlay during XIII Plan for the financial year 2013-14 and 2014-15 upto December, 2014 is presented in **Table 6.1**.

The total sanctioned personnel strength of GSI is 12, 369. The present filled-in strength is 7359 as on 31st October, 2014. The stream/cadre-wise sanctioned strength of personnel in GSI as on 31st October, 2014 is shown in **Table 6.2**.

Table 6.1
Year wise Scheme-wise Financial Performance of GSI against the approved Plan outlay during first two years of the XII Plan

Schemes	F. Y. 2013-14			F. Y. 2014-15		
	BE	R.E	Actual up to Mar 2014	BE	RE Tentative	Actual up to Dec 2014
Survey and Mapping	71.83	71.83	71.66	165.84	130.94	116.61
Mineral Exploration	25.25	25.25	25.02	42.04	33.59	25.12
Spl. Investigation	6.12	6.12	6.00	8.17	5.74	4.55
Research & Development	8.33	8.33	8.25	25.89	12.92	10.00
Information Dissemination	16.22	16.22	15.67	101.57	27.51	17.08
HRD	7.78	7.78	7.75	15.21	12.12	8.83
Mod. & Replacement	249.31	352.45	351.49	105.63	35.88	19.88
TSP	7.16	8.56	8.55	19.35	10.00	6.63
Total	**392.00**	**496.54**	**494.39**	**483.70**	**268.70**	**208.70**
% of Utilisation of Fund against allotment (RE)			99.57%			77.67%
Construction Budget of GSI	10.00			80.00		

Table 6.2
Statement showing sanctioned & filled in strength in Geological Survey of India as on 31.10.2014

	Sanctioned Strength	Total No. of Employees in Position	SC	ST	OBC	No. of Women	PH	Total [SC,ST,OBC, Women, PH]
Group 'A'	4,080	2,234	395	155	483	482	1	1,516
Group 'B'	786	195	64	24	5	23	3	119
Group 'B' (NG) (Min)	1,130	750	144	68	26	156	11	405
Group 'B' (NG) (Tech.)	1,524	860	180	96	120	84	7	487
Group 'C' (Min)	925	595	106	49	99	124	11	389
Group 'C' (Tech.)	1,924	1,239	261	134	172	12	6	585
MTS(erstwhile Group 'D')	2,000	1486	370	170	162	217	27	946
Total	**12,369**	**7,359**	**1,520**	**696**	**1,067**	**1,098**	**66**	**4,447**

SC : Scheduled Caste; ST : Scheduled Tribe ;
OBC : Other Backward Caste ; PH : Physically Handicapped Person

Indian Bureau of Mines (IBM)

6.50 The Indian Bureau of Mines (IBM) is a subordinate office under the Ministry of Mines. It is engaged in the promotion of scientific development of mineral resources of the country, conservation of minerals, protection of environment in mines, other than coal, petroleum and natural gas, atomic minerals and minor minerals. It discharges regulatory functions with respect to the relevant provisions of Mines and Minerals(Development and Regulation) Act, 1957 and enforcement of the rules framed thereunder namely Mineral Conservation and Development Rules, 1988, Mineral Concession Rules, 1960, Environmental (Protection) Act, 1986 and Rules made the reunder.

6.51 It undertakes scientific, techno-economic, research oriented studies in various aspects of mining, geological studies, ore beneficiation and environmental studies.

6.52 Vision for IBM

Indian Bureau of Mines (IBM) to perform as a National Technical Regulator and to discharge the developmental functions for the sustainable development of the mineral industry and to work as repository of database on mines and minerals.

6.53 Mission

i) To ensure effective regulation of Indian Mineral Sector which promotes long term benefits for its sustainable growth.

ii) To provide capacity building to State regulatory agencies and also to provide quality technical assistance to the mineral industry, and

iii) To work as data bank on mines and minerals and to disseminate mineral information for policy formulations.

6.54 Objectives

i. To continue as National Technical Regulator operating at national-level designing systems, processes and guidelines for regulation of the mining sector;

ii. To function as a facilitator for creation and improvement of state-level regulatory mechanisms and to facilitate state agencies to ensure adherence to standards and parameters for scientific and systematic mining in the sector;

iii. To work as catalytic agent for development of mineral sector by evolving capability & proficiency in beneficiation techniques; dissemination of knowledge and skills in mining and allied areas through its training facilities; consultancy services.

iv. To play crucial role of that of an Advisor to the Government in matters and issues relating to the mineral sector in areas of short, medium and long-term mineral-wise strategies, mineral taxation and legislative processes.

v. To play the role of National Repository of mineral data through maintaining a data bank of mines and minerals in the country by developing advanced IT based Mineral Information System enabling the industry to report and access information online, and;

vi. To broaden its interactive base and reach out to overseas counterparts through consultations and exchange programmes and to build capacity, skill & expertise through academic and training programmes at institutes of international repute.

6.55 Present Charter of Functions

In the wake of liberalization of the policy regime governing mineral sector and increasing need for adequate environment management as part of systematic and scientific mining, the mandated functions of IBM, vide Resolution No. 31/ 49/ 2014 – M. III, dated 3rd November, 2014 reads as:-

i) Collect, collate and organize into a database, all information on exploration, prospecting, mines and minerals in the country in the shape of a National Mineral Information Repository and to publish and disseminate the same;

ii) Function as the National Technical Regulator in respect of the mining sector, and lay down regulations, procedures and systems to guide the State Governments (first tier of regulation);

iii) Build up capacity in the system, both for regulatory as well as the developmental work, at the central level as well as at the level of the States;

iv) Establish institutional mechanisms of co-ordination between the centre, the States, mineral industry, research and academic institutions and all stake holders, so as to proactively develop solutions to the demands and problems faced by the industry;

v) Promote research on all aspects of practical relevance to the Industry and to act as bridge between research institutions on the one hand and user industry on the other;

vi) Provide Technical Consultancy Services;

vii) Participate in International collaborative projects in the area of regulation and development of the mineral sector;

viii) Advise Government on all matters relating to the mineral industry; and

ix) Undertake any such other activity as has become necessary in the light of developments in the field of geology, mining, mineral beneficiation and the environment.

6.56 Key Activities and Functions of IBM

In light of the role and charter of IBM, the key functions being exercised by IBM can be broadly classified as (1) Regulatory Functions, and (2) Developmental Functions.

6.57 Regulatory Functions

i) Accreditation to qualified persons as Recognized Qualified Persons (RQP) to prepare Mining Plans (Rule 22B & 22Cof MCR 1960);

ii) Mining Plan & Scheme of Mining -Inspections and Approval (Rule 22(4),24A of MCR 1960; Rule 9, 10, 11 & 12of MCDR 1988);

iii) Mining Regulations for ensuring implementations of Mining Plan, Scheme of Mining, Mine Closure Plan and other statutory provisions of MCDR 1988 and initiation of prosecutions (Section 22 &24 of MMDR Act 1957);

iv) Inspections and grant of permissions to carry out 'stopping' operations in underground mines (Rule 26 of MCDR1988);

v) Monitoring of Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) aspects of

mining operations (Rule 13 and 31 to 41of MCDR 1988 and Section 10 of EP Act1986);

vi) Calculations of State-wise, mineral-wise and month-wise royalty on ad valorem basis (Rule 64D of MCR 1960 and Rule45 of MCDR 1988);

vii) Mine Closure Plan - Inspections, Approval and monitoring (Rule 23A to 23F of MCDR 1988);

viii) Co-ordination with State Governments for curbing illegal mining activities(intimation of violation of Section 4(1) of MMDR Act 1957 to State Government agencies), and

ix) Grant of mineral concessions and monitoring of its activities in the offshore areas [various provisions of Offshore Areas Mineral (Development and Regulation) Act 2002 and the Offshore Areas Mineral Concession Rules, 2006].

6.58 Developmental Functions

i) R&D in Mineral Processing: To play a role of a catalytic agency to promote &develop the much-needed R&D in mineral processing in the field of mineral beneficiation, mineral characterization, chemical analysis of ores and minerals and analysis of environmental samples;

ii) Information Support and Advisory Services: To function as an advisory body to the government in formulation of mineral policy, lending technical guidance &support for framing Mineral Acts and in articulating provisions, rules & regulations thereof and lend it the credentials to formulate strategies, articulate policy requirements and oversee their implementation at both national and State levels;

(iii) National Mineral Inventory: Periodical Updation of National Mineral Inventory reflecting the micro-level status and possession of various mineral resources of the country as per the international standards like UNFC;

iv) Repository on Mines & Minerals: To shoulder the responsibility for collection, processing and storage of statistical data in respect of all major minerals through statutory and non-statutory basis;

v) Publications on topical interest: To assort process and analyse mines and mineral information generated on account of statutorily and non-statutorily collected information and supply them as important inputs for policy interventions, and

vi) Training and Capacity Building: To provide training facilities for human resource development and to develop required technical expertise and skill in the personnel manning the mineral industry.

Organizational set up of IBM

6.59 IBM has its headquarters at Nagpur, 3 Zonal Offices at Ajmer, Bengaluru and Nagpur and 12 Regional Offices at Ajmer, Bengaluru, Bhubaneswar, Chennai, Dehradun, Goa, Hyderabad, Jabalpur, Kolkata, Nagpur, Ranchi and Udaipur and 2 sub-regional offices at Guwahati and Nellore.

6.60 IBM has well-equipped ore dressing laboratories and pilot plants at Ajmer, Bengaluru and Nagpur with a clay

laboratory has also been established at Kolkata to cater to the needs of the North–Eastern Region.

6.61 Performance of IBM

The activities of IBM have been conducted through the following continuing schemes:

Scheme No. 1. Inspection of mines for scientific and systematic mining, mineral conservation and mine environment;

Scheme No. 2. Mineral beneficiation studies, utilization of low-grade and sub-grade ores and analysis of environmental samples;

Scheme No. 3. Technological Upgradation and modernization;

Scheme No. 4. Collection, processing, dissemination of data on mines and minerals through various publications; and

Scheme No. 5. Mining Tenements System (under implementation).

6.62 These schemes are being implemented by the following divisions of IBM:

i) Minerals Development & Regulation Division (MDRD); erstwhile Mines Control & Conservation of Minerals Division (MCCM);

ii) Mineral Processing Division (MPD); erstwhile Ore Dressing Division (OD);

iii) Technical Consultancy, Mining Research and Publication Division;

iv) Mineral Economics Division;

v) Mining and Mineral Statistics Division and

vi) Planning and Coordination Division.

6.63 Performance relating to various activities of IBM during the year 2014-15 (up to December 2014) is given hereinafter.

Inspection of Mines

6.64 During the year 2014-15 (up to December, 2014), 1688 inspections for enforcement of the provisions of Mineral Conservation and Development Rules (MCDR) 1988 and for examination of mining plans/ schemes of mining/mine closure plans were carried out. Consequent to inspection of mines, 3,035 violations were pointed out as against 5,292 violations in 2013-14 in respect of 2,512 mines. Total 1,314 violations were rectified during the year. 66 prosecution cases were launched in various courts, 20 cases were decided in favour of IBM as against 28 in 2013-14. Mining operations were suspended under Rule 13(2), 45 and 56 of MCDR 1988 in 284 mines for not carrying out mining operations in accordance with the approved mining plan/scheme of mining and for non-submission of online returns/ discrepancies in submitted returns. A list of principal violations observed during inspection of mines is given at **Table 6.3 & Table 6.4** for the year 2013-14 and 2014-15 respectively.

Table 6.3

Principal Violations of MCDR, 1988 detected by IBM during 2013-14

Rule No	No. of Violations Pointed out
12(3)	384
13(1)	890
22(1)	163
23B(2)	64
23E(2)	167
23F(1)	140
23F(3)	252

24	151
27(4)	95
29	70
31	11
33(2)	18
42(1)(c)(i)	130
42(1)(c)(ii)	146
45(1)	81
45(5)(a)	684
45(5)(b)	767
Others	1,079
Total	**5,292**

Table 6.4
Principal Violations of MCDR, 1988 detected by IBM during 2014-15 (up to December, 2014)

Rule No	No. of Violations Pointed out
12(3)	301
13(1)	444
22(1)	23
23B(2)	20
23E(2)	180
23F(1)	29
23F(3)	146
24	88
27(4)	63
29	64
31	2
33(2)	7
42(1)(c)(i)	102
42(1)(c)(ii)	87
45(1)	6
45(5)(a)	439
45(5)(b)	562
Others	472
Total	**3,035**

Rule description

i.	Rule 12 (3) - Submission of scheme of mining
ii.	Rule13 (1) - Mining operations in accordance with mining plans
iii.	Rule 22(1) - Notice of opening of mine
iv.	Rule 23B(2) - Submission of progressive mine closure plan
v.	Rule 23E(2) - Responsibility of the holder of mining lease to submit yearly report
vi.	Rule 23F(1) - Calculation of Financial assurance
vii.	Rule 23F(3) - Submission of Financial assurance
viii.	Rule 24 - Notice of temporary discontinuance of mining operations
ix.	Rule 27(4) -Maintenance of plans and
x.	Rule 29 - Copies of plans and sections to be submitted
xi.	Rule 31 - Protection of environment
xii.	Rule 33(2) - Storage of overburden, waste rock, etc.
xiii.	Rule 42(1)(c)(i) -Employment of Whole time Mining Engineer/Geologist
xiv.	Rule 42(1)(c)(ii) -Employment of Part time Mining Engineer/Geologist
xv.	Rule 45 (1) - Submission of returns
xvi.	Rule 45 (5)(a) - Submission of Monthly Return
xvii.	Rule 45 (5)(b) - Submission of Annual Return

6.65 The status of mining leases and mines in India in respect of scheduled minerals is given in **Annex 6.2**. Statze-wise break-up of inspection of mines carried out during 2014-15 is given at **Table 6.5**.

Table 6.5

Inspection of Mines carried out by IBM during 2014-15 (up to December, 2014)

S. No.	State	No. of inspection
1	Andhra Pradesh	201
2	Assam	3
3	Bihar	18
4	Chhattisgarh	38
5	Goa	7
6	Gujarat	100
7	Haryana	3
8	Himachal Pradesh	20
9	J & K	0
10	Jharkhand	126
11	Karnataka	197
12	Kerala	40
13	Madhya Pradesh	183
14	Maharashtra	48
15	Manipur	4
16	Meghalaya	12
17	Odisha	132
18	Punjab	0
19	Rajasthan	267
20	Sikkim	0
21	Tamil Nadu	166
22	Telangana	34
23	Uttaranchal	55
24	Uttar Pradesh	13
25	West Bengal	21
	Total	**1,688**

Mining Plan, Scheme of Mining and Mine Closure Plan

6.66 The existing mining regulations i.e. the Mineral Concession Rules, 1960 and the Mineral Conservation and Development Rules, 1988 stipulate that mining operations are required to be conducted as per an approved Mining Plan and after extraction of minerals, the mines are required to be reclaimed as per an approved Mine Closure Plan. The Mining Plans are approved by the IBM and in case of opencast mines of 29 notified non-metallic or industrial minerals; the powers have been delegated to respective State Governments. The Mine Closure Plan is required to comprise a Progressive Mine Closure Plan (PMCP) prepared for five yearly periods of the successive mining schemes and a Final Mine Closure Plan (FMCP). Mine Closure Plan is expected to address issues relating to environment protection including air, water and land protection, management of top soil and overburden, reclamation and rehabilitation of land and control on ground vibration, surface subsidence and restoration of flora.

6.67 As on December 2014, Financial Bank Guarantees for a value of ₹ 213,16,41,673 have been collected and certificates under Rule 29A of MCR 1960 have been issued for 98 cases of partial or full surrender of lease.

6.68 State-wise break-up of Mining Plan approvals during the year 2014-15 is given at **Table 6.6**.

Table 6.6

State-wise Mining Plans/Schemes of Mining/Final Mine Closure Plans approved by IBM during 2014-15 (up to December 2014).

S. No.	State	Mining Plans		Scheme of Mining		Final Mine Closure Plan	
		Approved	Not Approved	Approved	Not Approved	Approved	Not Approved
1	Assam	1	0	0	0	0	0
2	AP	9	3	30	30	0	1
3	Jharkhand	1	2	4	4	2	3
4	Bihar	0	0	0	1	1	1
5	Chhatisgarh	0	1	13	7	0	0
6	Delhi	0	0	0	0	0	0
7	Goa	0	1	0	1	0	1
8	Gujrat	4	1	34	10	0	0
9	Himachal	3	1	0	0	1	0
10	Haryana	0	0	0	0	0	0
11	J & K	0	0	1	0	0	0
12	Karnataka	11	1	25	5	3	1
13	Kerala	0	1	2	3	0	0
14	MP	34	6	104	14	1	0
15	Maharashtra	1	1	10	2	0	0
16	Meghalaya	0	0	0	1	0	0
17	Orissa	8	4	13	4	1	4
18	Rajasthan	118	5	49	12	2	1
19	Sikkim	0	0	0	0	0	0
20	Tamilnadu	7	6	93	3	0	0
21	Telangana	0	2	1	1	0	0
22	UP	2	1	3	0	0	0
23	Uttaranchal	2	0	1	0	0	0
24	W.B.	0	0	0	5	0	0
	Total	**201**	**36**	**383**	**103**	**11**	**12**

Technical Studies

6.69 The performance of Annual Programmeof IBM including technical studies,investigations and preparation of mineral inventory/maps etc. is indicated in the Annex 6.3

6.70 During the year 2014-15 up to December, 2014, 1001 NMI sheets have been updated for inventory as on 01/04/2013. Out of total 13 minerals, updating for 7 minerals viz. iron ore (magnetite), magnesite, fluorite, corundum, nickel, cobalt and laterite have been completed.

6.71 IBM monitors the progress of reconnaissance permits and prospecting licences, the details of which are given at Table 6.7 and Table 6.8, respectively.

Table 6.7

Status of Reconnaissance Permits in India as on 31st December, 2014.

S. No	State	Total No. of RPs granted by the State Government till date (as on 31.12.2014)	No. of RPs where final exploration data submitted to IBM
1	Andhra Pradesh	56	41
2	Arunachal Pradesh	01	00
3	Chhattisgarh	42	24
4	Gujarat	04	00
5	Jharkhand	04	02
6	Karnataka	66	26
7	Kerala	01	00
8	Madhya Pradesh	91	28
9	Maharashtra	10	08
10	Manipur	01	00
11	Odisha	26	19
12	Rajasthan	74	29
13	Uttar Pradesh	21	08
14	West Bengal	04	01
	Total	**401**	**186**

Table 6.8

Status of Prospecting Licences in India as on 31st December, 2014

S. No.	State	Total No. of PLs granted by the State Government till date from Nov. 2007 to 31st Dec., 14	No. of PLs where final exploration data submitted to IBM
1	Andhra Pradesh	105	36
2	Arunachal Pradesh	08	00
3	Chhattisgarh	28	20
4	Gujarat	16	00
5	Himachal Pradesh	03	03
6	Jharkhand	22	01
7	Karnataka	05	04
8	Kerala	01	00
9	Madhya Pradesh	432	79
10	Maharashtra	38	01
11	Manipur	14	00
12	Odisha	01	01
13	Rajasthan	185	05
14	Tamil Nadu	18	00
15	Telangana	02	01
16	Uttarakhand	42	00
	Total	**920**	**151**

6.72 Preparation of Mineral Maps

During 2014-15 up to December, 2014, 75 multi-mineral leasehold maps on a scale of 1:50,000, with corresponding forest overlays in respect of Andhra Pradesh and Bihar were updated.

6.73 Mineral Beneficiation

Mineral beneficiation studies including mineralogical testing and chemical analysis is intimately related to both conservation and development of mineral resources. During the year 2014-15 (up

to December 2014), 36 ore dressing investigations, 23,426 chemical analyses, 1,743 mineralogical examinations were completed. Ore Dressing officers are also associating with officers of MCCM division in carrying out Regional mineral Development Studies (RMDS).

National Mineral Inventory (NMI)

6.74 Synthesis of inventories of freehold and leasehold Public & Private sector deposits and generation of summary outputs in respect of 13 minerals viz. Iron Ore (Magnetite), Manganese Ore, Bauxite, Vanadium, Dolomite, Magnesite, Fluorite, Graphite, Laterite, Corundum, antimony, Nickel and Cobalt are under progress.

Sub Sector Development Plans of Minerals and Metals

6.75 Report on Lead & Zinc completed and draft submitted. Other reports on Aluminium and Rock Phosphate are under progress.

Statistical Publications

6.76 IBM disseminates statistical information on mines, minerals, metals and mineral-based industries through various publications. Information on mineral production, stocks, dispatches, employment, inputs in mining, mining machinery and related matters received from the mine owners on statutory basis under the MCDR, 1988 and ancillary statistics on metals production, mineral trade and market prices of minerals, revenue from the mining sector, rent, royalty and cess on minerals, etc from other agencies is compiled regularly by IBM.

6.77 The statistical publications released during the year 2014-15 include Indian Mineral Industry at a Glance 2011-12 issue, Statistical profiles of minerals 2012-13 and 12 issues (October, 2013 to September, 2014) of Monthly Statistics of Mineral Production (MSMP).

Consultancy Service

6.78 IBM provides technical consultancy services on prescribed charges for geological appraisals, survey of the areas, preparation of feasibility study reports, environment impact assessment and environment management plan, selection of suitable mining equipment, evaluation of feasibility report prepared by other consultants, financial institutions, etc.

Technical Publications

6.79 IBM brings out technical publications relating to mines and minerals, mineral-based industries, trade, beneficiation, R&D activities, etc. During the year 2014-15, Half-yearly Bulletin on Mineral Information (October 2013– March2014 issue), Bulletin on ML/ PL/RP-2013 (Web Version), Application of Rock Mechanics, Surface & Underground Excavation and Volume -3 of IMYB - 2013 were released.

Training

6.80 IBM imparts training to technical and non-technical officials of IBM and also to persons from the mineral industry and other agencies in India and abroad. During the year 2014-15 up to December, 2014, 13 training programmes were conducted in which a total of 233 IBM personnel, 184 industry personnel and 45 NER personnel participated. During the year 2013-14, 16 training programmes were conducted in which a total of 186 IBM personnel, 305 industry personnel, 50 officers of Directorate and Geology participated.

Measures for Abatement of Pollution and Environmental Protection

6.81 IBM undertakes inspections/studies for the enforcement of provisions of MCDR,1988 which include provision on protection of mine environment to ensure that due care is being taken by the mine operators. During inspection it ensures that mine operators are taking due care for preservation and utilization of top soil, storage of overburden / waste rocks, reclamation and rehabilitation of land, precaution against ground vibration, control of ground subsidence, abatement measures against air, water- and noise pollution, restoration of flora, etc. in addition to other conservation and developmental measures. Necessary guidance to mine managements/ operators are also given for systematic and scientific development of mine including protection of environment. While approving the mining plans, schemes of mining and mine closure plans, IBM ensures that environment impact assessment studies have been carried out and to that effect environmental management plan has been incorporated for its effective implementation, besides reclamation and rehabilitation of mined-out areas.

6.82 IBM also ensures that mining operations are carried out in accordance with the approved mining plan / scheme of mining.

6.83 As a result of follow up for implementation of EMP. During the year 2014-15 (up to December, 2014) about 0.94 million saplings have been planted over an area of 573 hectares in and around mine areas. So far, 107.67 million saplings have been planted over an area of about 42,985 hectares with a survival rate of 67.40 percent.

6.84 During the year 2014-15, simultaneous reclamation/ rehabilitation is going on in 292 working mines covering an area of about 240 hectares taking the cumulative figure up to 2,368 working mines covering an area of about 15,732 hectares.So far, 92 abandoned mines covering an area of 1,030 hectares have been reclaimed / rehabilitated.

6.85 IBM continued to take initiative to organize Mines Environment and Mineral Conservation (MEMC) Week every year in important mining centers through its regional offices to promote awareness among mine owners for minimizing environmental pollution.

Revenue Generation

6.86 IBM generates revenue through consultancy, training, statutory processing and sale of publications &data etc. Revenue generated during 2014-15 (up to December 2014) is 67.00 lakhs comprising 4.09 lakhs from consultancy work in mining and geology; 37.54 lakhs from mineral beneficiation assignments;1.55 lakhs from mining research assignments; 10.31 lakhs from processing of mining plans/schemes of mining and compounding fees & fines; 10.33 lakhs from training and balance 3.18 lakhs from sale of publications, mineral maps, mineral inventory data etc.

Grant of Exploration Licence in the Offshore Areas

6.87 The Controller General, Indian Bureau of Mines is the Administering Authority for the Offshore Areas Mineral (Development and Regulation) Act, 2002. The mineral bearing blocks available for the grant of Exploration Licence in the offshore waters of Bay of Bengal and Arabian Sea were notified on 7th June 2010. In

response to this, 377 applications were received for grant of Exploration Licence and Grant orders were issued for 62 blocks to 16 applicants in April 2011. Exploration Licenses are yet to be executed as the matter is sub-judice.

6.88 A technical committee to frame field guidelines for exploration of offshore areas as per UNFC classification was constituted on 27.08.2010 under the Chairmanship of Controller General, IBM with representatives from Ministry of Earth Sciences, New Delhi, National Centre for Antarctic & Ocean Research, Vasco-da- Gama and National Institute of Oceanography, Dona Paula, Goa. The draft field guidelines for exploration (placers) in offshore areas for adoption of UNFC have been prepared.

Computerization

6.89 The Regional/Zonal offices and Headquarters of IBM have been linked through a sophisticated system based on client server architecture established with the help of BRGM, France. IBM has well established LAN facility, besides WAN system to communicate and exchange data with Regional, Zonal offices and Headquarter offices.

6.90 A new Web Portal of IBM as per the guidelines of Government of India was designed by National Informatics Centre (NIC) and hosted on its server in July, 2010 at www.ibm.gov.in. Information regarding IBM's history, functions, organization, divisions of IBM and its activities, jurisdiction of regional & zonal offices, services offered by IBM etc. There is also provision for online submission of Vigilance Complaints and Grievances. This year new domain ibmreturns.ibm.gov.in is also functional for facilitating the stakeholders to submit the Monthly & Annual Return online and also scrutiny of the same by IBM. Further, to fulfill the assurance given to Third Subcommittee of Parliament on Official Language Committee, the Bilingual Website of IBM has put on live since 15th January 2015.

6.91 As a result of amendment to Rule 45 of MCDR, 1988 vide notification No. 75(E), dated 9th February, 2011, it was decided to create a portal of IBM to facilitate online registration of miners, traders, stockist, exporters and end users of mineral and submission of monthly and annual return thereon. Accordingly, after introduction of online submission of returns system, the mine owners have commenced submission of monthly and annual returns online. The month-wise monthly returns submittedonline are given in Table - 6.9.

Table 6.9
Month-wise Returns Submitted online (up to November, 2014)

S. No.	Month	No. of monthly returns received online
1	April, 2014	1,408
2	May, 2014	1,393
3	June, 2014	1,385
4	July, 2014	1,364
5	August, 2014	1,345
6	September, 2014	1,297
7	October, 2014	1,285
8	November, 2014	1,226

Mining Tenement System

6.92 MTS has been taken up by the IBM during the programme year 2009-10. The objective of the Scheme is to develop an online National Mineral Information System for investors by linking Central and State organizations engaged in administration of mineral resources in the country. The Mining Tenement System (MTS) would have graphical information database (GIS) as well as information in textual form.

6.93 These two databases, i.e., non-special database and special database would be seamlessly integrated so as to retrieve graphical information as well as relevant textual information. The system will be thus web enabled and access to the system will be given online to prospective investors, government organizations and private public through Internet as per policy of the Government.

6.94 The retendering of Request for proposal (RFP) for selection of an implementing agency for design, development, maintenance and operations of Mining Tenement System is under process.

Threshold Values of Minerals

6.95 In the interest of systematic development of mineral deposits and conservation of minerals, Controller General, IBM issued directives under Rule 54 of MCDR, 1988 notifying threshold value of minerals vide Notification No. T 45031/CGBM/2007(PF)dated 16 October, 2009, for general information and immediate compliance by the mine owners. Subsequently, circulars highlighting procedure to be followed for exploration within the leaseholds in respect of which the threshold values have been significantly changed i.e. for iron ore, chromite, bauxite, limestone & dolomite, ollastonite and magnesite were also issued for reassessing the reserves/ resources.

Committee for Review and Restructuring of the Functions and Role of IBM

6.96 A Committee was constituted on 23 July,2009 by the Ministry of Mines for reviewing and restructuring of the functions and role of IBM in terms of the Policy directions given in the National Mineral Policy 2008. The Government accepted the recommendations of the Committee in September 2012. The Committee had made 73 major recommendations for overall restructuring of the IBM including creation of additional 933 posts and infrastructure development like opening of new offices, new environmental laboratories, training centers, etc. Out of 73 major recommendations, 47 recommendations are having financial implications, which requires the approval of Cabinet for implementation.

6.97 IBM has initiated action to implement 26 non-financial recommendations of Review and Restructuring Committee. Ministry has considered 2 non-financial recommendations regarding national level awards and RQP examination as financial implicated and dropped from non-financial recommendations. So far, action has been initiated in respect of 17 recommendations. They are being implemented and are ongoing activities in IBM. Three (3) proposals regarding renaming of divisions and new charter of functions of IBM notified in gazette on 22.11.2014.

Human Resources

6.98 The total sanctioned personnel strength of IBM is 1477. The cadre-wise employment position in IBM as on 31.12.2014 is given in **Table 6.10**.

Table 6.10
Employment of Personnel In IBM as on 31.12.2014

Group	Sanctioned strength	Total No. of employees in position	Number of Personnel					
			SC	ST	OBC	Minorities	Women	Physically Handicapped
A	244	141	22	11	15	16	08	---
B (Gaz.)	177	116	09	08	09	04	13	01
B (NG)	362	280	42	18	17	31	49	05
C	694	542	125	43	77	21	62	06
Total	**1477**	**1079**	**198**	**80**	**118**	**72**	**132**	**12**

IBM Budget 2014-15

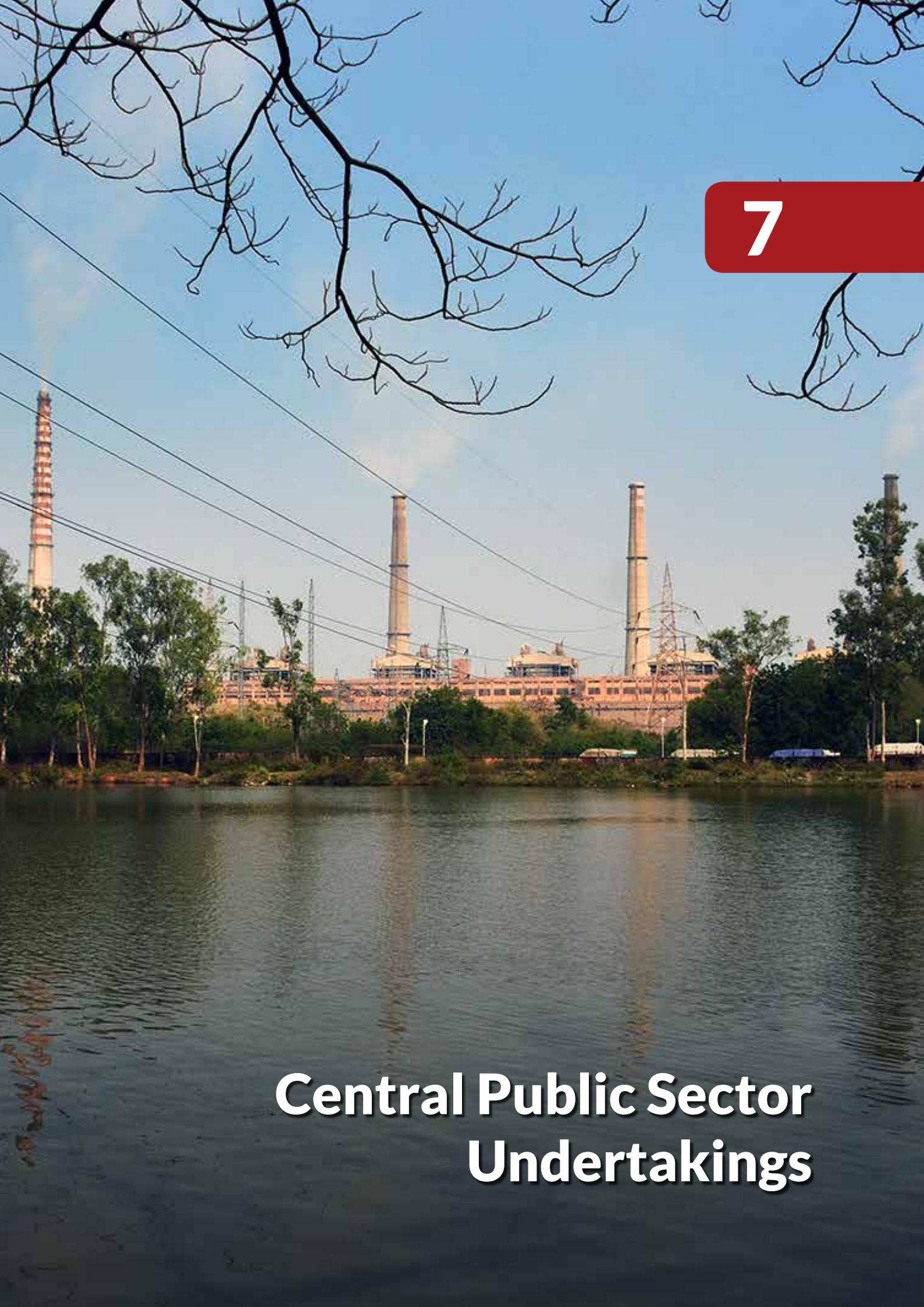
(₹ in crore)

Head	B. E.	R.E	Expenditure (Up to 23rd March, 2015)
Plan	53.00	31.50	26.20
Non-Plan	53.17 #	53.17	51.22

After 10% mandatory cut



Hon'ble Minister of Mines & Steel and Secretary (Mines) Meeting with Hon'ble Chief Minister Odisha



7

Central Public Sector Undertakings

Central Public Sector Undertakings

National Aluminium Company Ltd. page - 77

- On-going projects of NALCO page - 79
- Aluminium industry in India page - 84

Hindustan Copper Limited page - 86

- R&D activities of HCL page - 89
- Copper industry in India page - 90

Mineral Exploration Corporation Limited page - 93

National Aluminium Company Limited (NALCO)

Introduction

7.1 National Aluminium Company Limited (NALCO) is a Navratna CPSE under Ministry of Mines. It was established on 7th January, 1981, with its registered office at Bhubaneswar. The Company is an integrated and diversified mining, metal and power group 'A' CPSE with sales turnover of ₹ 7024 crore in financial year 2013-14. Presently, Government of India holds 80.93% equity of NALCO.

7.2 NALCO is the first Public Sector Company in the country to venture into international market in a big way with London Metal Exchange (LME) registration since May, 1989. The Company is listed at Bombay Stock Exchange (BSE) since 1992. Besides, ISO 9002, ISO 14001, OHSAS 18000 & SA 8000 certification; the Company has also adopted ISO 50001 standards, for energy management system.

Existing Operations & their Locations

Bauxite Mines

7.3 The Company has its bauxite mines situated on a plateau in Damanjodi, Koraput, in the State of Odisha. This bauxite deposit is mined by a fully mechanised system having a capacity of 6.8 MT per year. Panchpatmali plateau stands at an elevation of 1154 m to 1366 m above mean sea level. Bauxite occurs over the full length of the Panchpatmali plateau, which spans over 18 km. The mined-out bauxite is transported from the mine to refinery by a 14.6-km-long single-flight multi-curve 1800 tonnes-per-hour (TPH)- capacity cable belt conveyor.

Alumina Refinery

7.4 The alumina refinery is located at Damanjodi, Odisha, approximately 14 km from the bauxite mine at Panchpatmali. The alumina produced is transported to aluminium smelter at Angul (Odisha) and to Vizag (Andhra Pradesh) port by rail with NALCO's captive wagons.

Operations

7.5 The present capacity of alumina refinery is 2.275 million tonnes per annum. Alumina produced is used to meet Company's requirements for production of primary aluminium at smelter. The surplus alumina that remains after internal consumption is sold to third parties in the export markets. A small portion is also sold to the domestic market.

Aluminium Smelter

7.6 The aluminium smelter is located at Angul, Odisha, approximately 699 km from the refinery and 5 km away from the captive thermal power plant. The aluminium produced at the smelter is transported to Vizag port (548 km away), Kolkata Port (526 km away) and Paradeep port (183 km away) by rail for export. Aluminium in the forms of ingots, sow ingots, tee ingots, billets, wire rods, cast strips, alloy ingots and chequered sheets is also sold in the domestic market through its stockyards located across the country.

Operations

7.7 The aluminium smelter entered into production progressively from 1987. The present capacity of smelter is 4.60 lakh tonnes per annum. Alumina is converted into primary aluminium through a smelting process using electrolytic reduction. From the pot-line, the molten aluminium is routed to either the casting units, where

the aluminium can be cast into ingots, sow ingots, tee ingots, billets, wire rods, cast strips and alloy ingots, or to holding furnaces at flat aluminium products unit where the molten aluminium is rolled into various cold-rolled products or cast into aluminium strips.

Captive Power Plant

7.8 The aluminium smelter and coal-based pit head captive power plant at Angul are strategically located. The Power Plant is located approximately 5 km away from aluminium smelter.

7.9 The location of captive thermal power plant at Angul is also strategic to the availability and supply of coal. NALCO sources its major coal requirement for captive thermal power plant from the Talcher coalfields of Mahanadi Coalfield Ltd. (a subsidiary of Coal India Ltd.), located approximately 15 km from Angul. The 18.5-km captive railway system links the captive thermal power plant to the Talcher coalfields, enabling transport of the critical and bulk requirement of coal.

Operations

7.10 The captive thermal power plant commenced operations in 1986. Presently the captive thermal power plant has a generation capacity of 1200 MW by way of 10 turbo generators, each rated at 120 MW. While the captive thermal power plant provides entire electric power requirement of aluminium smelter, it also provides for approximately 35 MW of the power requirement to the alumina refinery.

Wind Power Plants

7.11 The 1st wind power plant of capacity 50.4 MW (2.1MW, 24 nos. Wind Electric Generator (WEGs) in Gandikota, Andhra Pradesh was commissioned in December 2012 and the 2nd wind power plant of capacity 47.6 MW (0.85 MW, 56 nos. WEGs) in Jaisalmer, Rajasthan was commissioned in Jan'2014. Both the plants are in operation.

Port Facilities

7.12 On the Northern Arm of the Inner Harbour of Visakhapatnam Port on the Bay of Bengal, NALCO has established mechanized storage and ship handling facilities for exporting Alumina in bulk and importing Caustic Soda.

7.13 Physical Performance, Financial Performance and Sales Performance are presented at **Table 7.1, Table 7.2** and **Table 7.3**.

Table-7.1
Physical Performance of NALCO

Product	Unit	2011-12 Actual	2012-13 Actual	2013-14 Actual	2014-15 MOU Target	2014-15 Actual till Dec'14	2014-15 Projected (Jan'15 to Mar'15)	Total 2014-15
Bauxite	Lakh MT	50.03	54.19	62.93	68.25	43.039	20.086	63.125
Alumina Hydrate	Lakh MT	16.87	18.02	19.25	21.65	14.239	5.831	20.07
Aluminium Metal	Lakh MT	4.13	4.03	3.16	3.15	2.44	0.807	3.247
Net power	MU	6,200	6,076	4,989	5,001	3,858	1,251	5,109

*metric tonne

Table 7.2
Financial Performance of NALCO

(₹ in crore)

Sl. No.	Particulars	2011-12 Actual	2012-13 Actual	2013-14 Actual	Annual Budget Estimate (2014-15	Actual upto Dec., 2014	Estimated for 2014-15 (RE)
1.	Income	7,154	7,427	7,339	7,681	6,093	8,355
2.	Operating Cost*	5,488	6,010	5,896	6,170	4,304	6,320
3.	Interest & Transaction Loss	1	7	0	-	-	-
4.	Depreciation & Amortization	467	505	525	533	316	420
5.	Net Profit before Income tax and Dividend	1,198	905	918	978	1,473	1,615

* includes exceptional expenditure of ₹ 22 crore in 2011-12 & ₹ 49 crore in 2013-14.

Table 7.3
Sales Performance of NALCO

SALES	Unit	2011-12 Actual	2012-13 Actual	2013-14 Actual	Target for 2014-15	Actual Upto Dec'14	Estimated 2014-15
Total Alumina/ Hydrate Sale	Lakh MT*	8.42	9.83	13.42	14.61	9.42	14.71
Aluminium Export	Lakh MT	0.98	1.44	1.01	0.95	0.44	0.71
Domestic Aluminium Sale	Lakh MT	3.18	2.59	2.18	2.17	1.96	2.51
Total Aluminium Sale	Lakh MT	4.16	4.03	3.20	3.12	2.41	3.22

*metric tonne

On-Going Projects

Utkal-E Coal Block

7.14 Background: Ministry of Coal, Government. of India had allocated Utkal-E Coal Block to meet the coal requirement for 9th & 10th unit having 120 MW each as well as proposed 11th & 12th Captive Power Plant Units at NALCO, Angul. The total mineable reserve of Utkal-E Coal Block is 67.49 million tonnes. The mine life is 36 years at the target production of 2.0 million tonnes per year. The estimated cost of the Project is ₹ 338 crore at May, 2011 price level.

7.15 Present Status

- As per Hon'ble Supreme Court judgement dt. 25.08.2014 and Order dtd. 24.09.2014, NALCO's Utkal-E Coal Block stands de-allocated.
- All further expenditures have been kept on hold.
- NALCO is in the process of availing consultancy services for approaching coal block securitization in line with provisions of the coal ordinance promulgated by Government. of India.
- NALCO has provided relevant details to coal ministry regarding Utkal-E Coal



CMD, NALCO is giving Dividend cheque to Hon'ble Minister of Mines & Steel

Block as per the directives from coal ministry.

- In this regard, the Company has requested appropriate Government authorities for allocation of coal block through Government. allotment route for the existing CPP and growth projects in Odisha and Madhya Pradesh, respectively.

4th Stream Upgradation Project of Alumina Refinery

7.16 Capacity Upgradation project of 4th Stream of Alumina Refinery from 5.25 lakh TPA to 7.0 lakh TPA and that of Bauxite Mines from 6.3 Million Turn Per Year (TPY) to 6.825 Million TPY at an estimated project cost of ₹ 409 crore has already been commissioned. Cumulative actual expenditure for the project till December, 2014 is ₹341.51 crore.

New Schemes/Diversification:

Greenfield Growth Projects

7.17 NALCO has prepared the Detailed Project Report for setting up of a 1 MTPA Alumina Refinery project in Gujarat based on supply of bauxite by Gujarat Mineral Development Corporation (GMDC) from its bauxite mines in Kutch district at an estimated investment of ₹ 6,263 crore. GMDC has been requested to hold 49% equity in the project.

7.18 NALCO has planned to set up a 0.5 MTPA Smelter and 1050 MW Power Plant in Sundargarh district in Odisha at an estimated investment of ₹19,000 crore. Government of Odisha, in Sept. 2012 accorded 'in-principle' approval for the project subject to certain conditions and in Sept, 2013 intimated regarding availability of water for the project. Since a captive coal block is needed for viability of the project, Company is pursuing to get the same through Government dispensation route.

Diversification:

7.19 Various initiatives taken for diversification are detailed below:

- The Company plans to set up 100 MW Wind Power Project in a suitable place in India with an estimated investment of ₹ 660 Crore. Tender finalization is in process.
- A Detailed Feasibility Report has been prepared for establishment of approx. 14 MW Wind Power Project in mined out area of Damanjodi with an estimated investment of ₹ 82 Crore. Actions have been initiated for tendering.
- In another major green initiative, the Company has successfully commissioned 260 KWp roof-top solar system at its Corporate Office building and township buildings at Bhubaneswar.
- The Company also plans to install about 2 MW rooftop and ground mounted solar power project at NALCO

Research and Technology Centre (NRTC) campus at Bhubaneswar. Detailed Feasibility Report (DFR) for the project is under preparation.

- In addition, the Company is also on look out to set up approx. 15 MW Solar Power Project at any solar potential place in India. Consultant has been engaged for preparation of Techno Economic Feasibility Report (TEFR).
- JV Company "NPCIL-NALCO Power Company Ltd. (NNPCL)" has been incorporated in March, 2012. Kakrapar Atomic Power Station (KAPS) – 3 & 4 (2×700 MW) Project has been taken up as the 1st JV Project. Allotment of the project to the JVC by Government. of India is awaited for NALCO's equity infusion.
- NALCO has signed MOU with Gujarat Alkalis Chemicals Ltd. (GACL) for development of 2 LTPA Caustic Soda Project as a backward integration project. Detailed Project Report (DPR) has already been prepared and same is under review considering inclusion of Captive Power Plant.
- MOU has been signed with Power grid to set up a JV company for manufacturing of aluminum conductors. Feasibility Report for the project has been prepared. Government. of Odisha has made in-principle allocation of 30 acres of land in the Angul Aluminium Park. Discussions are being held with Power grid to formulate the mechanism for procurement of conductor from the proposed JVC.
- NALCO has signed a MoU with Indian Rare Earth Ltd (IREL) in July, 2014 for development of 1 LTPA titanium slag project at Chhatrapur in Odisha in JV. Consultant has been engaged by IREL for preparation of pre-feasibility report.
- NALCO is exploring the opportunity to set up a Greenfield aluminium smelter in a country where energy would be available at a competitive price.The Company has shortlisted five countries considering certain factors. A consultant has been engaged for zeroing in the best destination among the shortlisted countries.
- To promote downstream and ancilliary industries that would increase value addition within the state the Company has committed 50,000 tonnes of hot metal to the Angul Aluminium Park, which has been established in JV mode with IDCO.

Computerisation

7.20 NALCO has a strong usage of Information and Communication Technology (ICT) for its day to day operations. NALCO's ERP (SAP) applications cover Materials & Contracts (MM), Sales & Distribution (SD), Production Planning (PP), Finance & Controlling (FICO) and Human Resource Management (HR) modules. These modules are



Metal tapping of NALCO



Stacked Standard Ingot, NALCO

implemented organisation wise, including all its Works sites, Offices and facilities. For Maintenance Management, NALCO uses the Ramco e.Apps maintenance module. The non-SAP applications are in the process of centralisation.

7.21 The Data Centre facilities at Corporate Office have been further strengthened with a Disaster Recovery site at Damanjodi, so as to effectively implement Business Continuity Plan for the IT based processes. NALCO has fault tolerant redundant data links across Units and to the internet, to ensure un-interrupted data connectivity. The Local Area Networks (LAN) at all the Works sites and Corporate Office is currently being replaced with high bandwidth and fault tolerant, state of the art solution.

7.22 Towards e-governance, biometric based attendance solutions have been implemented for employees as well as contract labour. As per recent guidelines from GoI, this will be further upgraded to the Aadhar Enabled Biometric Attendance System (AEBAS) shortly. E-tendering for export sales operates with standard security measures like SSL and Digital signature systems. Materials procurement has been invigorated with online bidding through SRM 7 module of SAP. Implementation of e-bidding for Works/Service tenders is in progress using CPPP portal of GoI. In the area of HR, Graduate Engineer Training (GET) recruitment, parallel recruitment, etc are being done by online systems.

7.23 NALCO has taken a determined step towards green computing by cutting down on both the quantity of printers and the amount of printing. Both internal and external communication is mostly over e-mail. Paper conservation is also strengthened by staged implementation of Document Management System, where our dependence on paper documents is reduced.

Action Taken on Pollution Control and Environment:

7.24 Sustainable operation of an Industry demands attention initiative taken towards abatement of pollution. As a responsible corporate entity & Navaratna company, NALCO has taken utmost care of the Environmental issues in all its activities. Accordingly all production Units were certified to International Standard under ISO14001 Environmental Management System and are valid during the operating year 2014-15.

7.25 All operating units of NALCO have operated with valid "Consent to operate" under Water (P&CP) Act'1974 & Air (P&CP) Act'1981, valid authorizations under Hazardous Waste Management and handling Rules, Urban Solid Waste Management Rules, Biomedical Waste Management and handling Rules etc. & valid licenses under different statutory regulations applicable to the organization

7.26 All operating units of NALCO have adopted zero discharge with respect to

their waste water management as well as sewage waste water management. The treated waste water were recycled and reused in the process/ horticulture purposes.

7.27 NALCO has adopted rooftop Rain water Harvesting, surface run off rain water harvesting systems at operating units during the year.

7.28 For monitoring waste water quality, stack emission, ambient air quality adequate laboratory facilities along with Ambient Air Monitoring Stations (AAQMS), Automatic Weather Monitoring Station, On line Stack monitoring Systems have been provided at different stack of all units to monitor Air pollution like SPM, SO2, NOx & CO, Fluoride etc.

7.29 World Environment Day, Vanamahotsav, Chemical Disaster Prevention Day, Ozone Day, National Safety Day/Week, Electrical Safety Week, Road Safety Week and Publication of Bulletins, Newsletter and Annual journal are brought out for awareness on Environment & Safety apart from training to employees and contract workers.

Energy Conservation:

7.30 Under the National Action Plan for Climate Change, Energy Conservation measures play a vital role. NALCO being a Navaratna Company gives utmost importance to the Energy Conservation Measures in its all production units, through Small Group Activities (SGAs).

7.31 As a pioneer, NALCO has adopted International Standard ISO-50001, Energy Management System in its production units & as on date its Captive Power Plant, Alumina Refinery Plant & Aluminium Smelter Plant, got certified to ISO-50001, Energy Management System in February, 2013, March, 2014 & August, 2014 respectively. Further to above NALCO has implemented auto switching of light system, installation of LED lights, Energy Efficient lighting system, Variable Frequency drives, Energy Efficient Compressors, preventing idle running of machineries etc in all its units.

Research & Development

7.32 Thrust has been laid on patenting of process know-how developed in the company either through in-house or collaborative R&D efforts. Till date 27 patents have been filed out of which eight have been accepted and five have been commercialized. The Company is in process of finalizing various R&D projects & facilities that are to be taken up in its R&D centers including NRTC (NALCO Research and Technology Centre). Board level technology Committee and Research & Scientific Advisory Committee (RSAC) meetings are being held periodically to review the R&D activities of the company including technological up gradation and innovative modification carried out in different units and benefits derived thereon for further improvements in the process and productivity & also to review MoU Projects. One R&D process titled Heat treatment process for destruction of toxic cyanide present and recovery of valuables from spent pot lining material has been commercialized during the year.

7.33 Some benefits derived as a result of the above R&D (in-house & collaborative):

- Vanadium sludge was extracted in the pilot scale using the existing facilities of plant & vanadium sludge commands good value in the market and can be a revenue generating by-product. The

extraction of V2O5, in addition to generating revenue from sale of the sludge, will also help in minimizing the scale formation in certain regions of the process circuit, thereby eliminating flow restrictions in pipelines and heat transfer equipments, thereby avoiding production loss on this account. This will also help to eliminate the additional Lime charging (to control Vanadium) presently practiced, thus reducing the Lime consumption.

- Probable alternate synthetic flocculants were identified in the Laboratory scale to replace wheat bran; the natural flocculants. Wheat bran being a natural fodder can be suitably replaced.
- IR thermography studies is going on as a collaborative project to locate hot spots in heat and electrical installation in the plant which will help for taking timely action to minimize/ eliminate heat losses and prevent related major breakdowns.
- Inclusion analysis and metallographic studies have helped to improve product quality
- Regular analysis of baked anodes have helped to improve anode quality
- Installation of cast house furnace door with improvised design will lead to reduction in fuel consumption.
- New processes have been developed out of some of the collaborative projects and also related patents have been filed.

7.34 Industrial Relations

- The general industrial relation climate in the Company remained cordial throughout the year. The Recognised Unions at all major locations of the Company played a very constructive and dynamic role in helping the Management taking decisions on many critical areas of cost control and sustainability. In order to maintain high motivation level among the employees, Productivity Linked Incentive Schemes has been revised for maximizing Production and Productivity.
- In order to address the security concern as well as to boost the productivity, biometric attendance system was launched successfully throughout the company.
- The recognition process for unions of S&P complex has been completed after completion of secret ballot election in request of CPP and Smelter by central labour authority. The election for selection of RU in Refinery in M&R Complex is over along with that of Mines.
- In order to enhance the skill of the land displaced persons, SUPT scheme in revised form has been implemented for S&P as well as M&R complex.

MOU rating of NALCO during the last three years

Year	Composite Score	Grade
2010-11	2.464	Very Good
2011-12	2.49	Very Good
2012-13	1.50	Excellent
2013-14	1.488 (provisional)	Excellent (provisional)

Aluminium Industry in India

7.35 India is richly endowed with bauxite resources, which is the basic raw material



Aluminium Ingots ready for despatch

for aluminium production. Estimated bauxite reserves of the country (proven and probable) stand at 593 million tonnes. The country occupies 7th place in the world in terms of bauxite reserve base.

7.36 The total domestic production of aluminium metal during FY 2013-14 was about 1.7 million tonnes and in FY14-15, it is expected to increase to about 2 million tonnes. The total domestic consumption of primary aluminium metal in 2013-14 was 1.6 million tonnes and is expected to remain the same during 2014-15. The Indian primary aluminium industry consists of three major players i.e. National Aluminium Company Limited (NALCO), HINDALCO Industries and the Sesa Sterlite Group, having total installed smelting capacity of about 2.9 million tonnes, presently. The domestic aluminium majors are now keenly pursuing brownfield and greenfield expansion programmes and it is expected that in the next few years, the aluminium capacity in the country would grow to more than 4 million tonnes.

7.37 The aluminium per capita consumption level in India continues to be very low i.e. it stands currently at around 1.4 kg as against the world average of roughly 8kg. However, the demand for aluminium in India is projected to grow, largely in line with the annual GDP growth rate of about 5.5 % per annum. In India, the power sector continues to be the major consumer of aluminium. Besides this, demand growth is also likely to be high in transport, packaging, building and construction sectors.

7.38 The total domestic production of aluminium metal by aluminium producers in the years 2012-13 to 2014-15 is at **Table 7.4**. The sales figures of aluminium (Domestic Sales of Aluminium & Export Sales of Aluminium in India are given in **Table 7.5** and **Table 7.6**.

Table 7.4
Production of Aluminium in India

(Figs. in MT)

Sl No.	Producer	2012-13	2013-14	2014-15 (Apr-Dec'14)	Jan- Mar'15 (Estimated figures)
1	NALCO	4,03,384	3,16,492	243,572	81,191
2	HINDALCO	5,47,416	6,18,286	589,606	-
3	VEDANTA GROUP	7,73,946	7,95,355	648,766	-
	TOTAL	17,24,746	17,30,133	14,81,944	81,191

(Note : Production figures pertaining to other primary producers are based on available market data ; Estimated figures for Jan'15-Mar'15 have been provided for NALCO only and details pertaining to other primary producers are not available with NALCO)

Table 7.5
Domestic Sales of Aluminium

(Figs. in MT)

Sl No.	Producer	2012-13	2013-14	2014-15 (Apr-Dec'14)	Jan- Mar'15 (Estimated figures)
1	NALCO	2,58,941	2,18,420	1,96,323	54,850
2	HINDALCO	4,57,844	4,73,651	3,57,438	-
3	VEDANTA GROUP	6,61,933	5,47,251	3,68,916	-
	Total	**13,78,718**	**12,39,322**	**922,677**	**54,850**

Table 7.6
Export Sales of Aluminium

(Figs. in MT)

Sl No.	Producer	2012-13	2013-14	2014-15 (Apr-Dec'14)	Jan- Mar'15 (Estimated figures)
1	NALCO	144,161	1,01,243	44,489	26,400
2	HINDALCO	89,586	1,38,366	214,120	-
3	VEDANTA GROUP	111,012	247,472	265,193	-
	Total	**3,44,759**	**4,87,081**	**523,802**	**26,400**

(Note : Sale figures pertaining to other primary producers are based on available market data ; Estimated sale figures for January, 2015 March 2015 for NALCO are based on RE 2014-15 ; Estimated figures for January-March, 2015 for other primary producers are not available with NALCO)

Hindustan Copper Limited (HCL)

7.39 Hindustan Copper Limited (HCL), a Mini Ratna Government of India (GoI) Enterprise under the administrative control of the Ministry of Mines, was incorporated on 9th November 1967 under the Companies Act., 1956. It was established as a Government. of India Enterprise to take over all plants, projects, schemes and studies pertaining to the exploration and exploitation of copper deposits, including smelting and refining from National Mineral Development Corporation Ltd. It is the only company in India engaged in mining of copper ore and owns all the operating mining lease of Copper ore and also the only integrated producer of refined copper (vertically integrated company). Major activities of HCL include mining, ore beneficiation, smelting, refining and casting of refined copper metal into downstream products. HCL has four operating units – one each in the States of Rajasthan, Jharkhand, Madhya Pradesh and Maharashtra. HCL is listed company on BSE and NSE, with 89.95% equity owned by the GoI.



CMD, HCL is giving Dividend cheque to Hon'ble Minister of Mines & Steel

7.40 Highlights of 2014

i. The Company has paid dividend to its shareholders at the rate 20% of the equity holding.

ii. HCL is a Zero debt Company.

iii. The Company has earned Profit Before Tax of ₹ 430.65 crore for financial year 2013-14.

iv. Ore production of 38.27 lakh tonne in 2013-14 was highest in the last 14 years.

v. Rolling out 08 Mine Expansion Projects to quadruple mine capacity from 3.2 million tonne to 12.4 million tonne per annum in the next five years. The Company has obtained Environment Clearance and Wild Life Clearance for Malanjkhand Underground Mine project from Ministry of Environment & Forests, Government of India in June, 2013 and 22nd December, 2014 respectively.

vi. HCL has won National Institute of Personnel Management (NIPM) National Award (Runner-up trophy) for best HR practices.

7.41 The capital structure of the Company as on 31st March, 2014 is given in Table 7.7.

Table 7.7
Authorized Capital Structure of HCL

a) Authorized Capital:		
i)	180 crore Equity shares of ₹ 5/- each	₹ 900 crore
ii)	20 lakh Preference shares of ₹ 1000/- each	₹ 200 crore
	Total	₹ 1,100 crore
b) Issued, Subscribed and Paid-Up Capital		
i)	92, 52, 18,000 equity shares of ₹ 5/- each	₹ 4,62, 60, 90,000/-
	Total	**₹ 4,62, 60, 90,000/-**

7.42 Present capacities of HCL's Mines, Smelters and Wire Rod are given in Table 7.8, Table 7.9 and Table 7.10.

Table 7.8
Production Capacity of Mines under HCL

Location of Mines	Ore Capacity (lakh tonnes per annum) (As per IBM approved Mine Plan)
Khetri Copper Complex, Rajasthan #	14.00
Malanjkhand Copper Project, Madhya Pradesh	20.00
Indian Copper Complex, Jharkhand	4.00
Total	**38.00**

- includes production capacity of Khetri, Kolihan and Banwas mines (which is under development)

Table 7.9
Production Capacity of Smelters under HCL

Location of Smelters	Metal Capacity (Tonnes per annum)
Khetri Copper Complex, Rajasthan *	31,000
Indian Copper Complex, Jharkhand	18,500
Total	**49,500**

* - Plant not operational since Dec., 2008 due to economic reasons

Table 7.10
Production Capacity of Wire Rod Plant under HCL

Location of Plant	Capacity (Tonnes per annum)
Taloja Copper Project, Maharashtra	60,000
Total	**60,000**

7.43 Physical Performance and Financial Performance are shown in Table 7.11 and Table 7.12.

Table 7.11
Physical Performance of HCL

Product	2012-13 Actual	2013-14 Actual	Target for 2014-15	2014-15 Actual (upto December, 2014)	2014-15 (Anticipat-ed)
Ore Production('000MT)	3,657	3,827	4,000	2,666	3,515
Metal in Concentrate (MT)	29,285	32,276	35,000	18,226	27,591
Refined Copper (Cathode) (MT)	24,210*	22,825*	32,628	15,406*	23,931*
Wire rod (MT)	20,368	22,976	18,000	14,317	20,502

* includes tolled cathodes.

Table 7.12
Financial Performance of HCL

(₹ in crore)

Sl. No.	Details	Actuals for the previous 2 years		Target for 2014-15	2014-15 (upto Sept., 2014) audited	2014-15 (Anticipated)
		2012-13	2013-14			
1	Turnover	1,475.27	1,615.90	1,650.13	574.22	1,310.44
2	Net Profit/(Loss) before Income Tax	403.61	430.64	316.5	32.03	109.38
3	Net Profit/(Loss) after income tax	355.64	286.42	214.92	30.41	82.61

Sales Performance

7.44 The Company has achieved total sales of 16,207 tonnes of copper during 2014-15 (upto December, 2014). The anticipated sales of wire rod, cathode and MIC during 2014-15 would be 24,546 tonnes.

Mine Expansion Schemes

7.45 The Company's strategy is to aggressively expand its mine and ore beneficiation capacities. Such a strategy would also enable the company to sustain its profitability even at significantly lower copper prices and also position it to remain a dominant copper player in the country. A road map has been prepared for enhancing its mine production from current level of 3.4 million tonne per annum to 12.4 million tonne per annum in the next 5 years. The Company is concurrently implementing eight mining projects. The Company's capital requirement for expansion of existing mines and re-opening of closed mines is estimated at ₹ 3,435 crore, spread over a period of 5 years.

R&D Activities

7.46 During the year the Company has taken following projects:

- Trials with latest low pressure burner in place of high pressure burner to improve combustion efficiency at ICC Smelter plant.
- Carrying out test work and desktop study for processing MCP concentrate to produce refined copper through hydrometallurgical route.
- Pilot study for recovery of valuable metals from copper ore tails at KCC.
- Study on utilisation of Copper granulated slag in cement manufacture.
- Recovery of nickel as nickel hydroxide from spent electrolyte of Refinery.

Information Technology (IT) Initiatives

7.47 The following IT initiatives, spanning all operational areas taken up by the Company for bringing about dynamism, transparency and business efficiency, are being maintained and updated. Major initiatives are:

Enterprise Resource Planning (ERP) implementation

7.48 Maintaining ERP (eBiz Suite R12) implementation has enabled HCL to adopt a centralized business management platform based on which the entire company has been thoroughly unified, increased real-time visibility of critical business parameters, thereby strengthening financial management & spares control, supply chain management, customer service and HR functions. Audited financial results have been finalized within scheduled planned time.

E-Procurement/EPS

7.49 Procurement of Stores & Spares items above ₹ 1.0 lakh continues to be done through Enterprise Procurement System (EPS), conducted by third party namely M-Junction, Kolkata.

Real time LME booking

7.50 The web based system is in place in HCL to enable customers to place on-line orders for copper wire rod and cathode with the Company in a Real time LME rate scenario. Web based booking of orders for items like sulphuric acid, copper sulphate & mill scale is also in place and the system helps customers to monitor the order

booking status and view HCL's price circulars.

Sustainable Development

7.51 HCL adheres to the sustainable development requirement as per the guidelines and policy of the Department of Public Enterprises (DPE). Sustainable Development policy and budget of HCL is approved by the Board of the Company and is reviewed every quarter. Following projects are implemented under sustainable development plan for the year 2014-15:

- Covering top soil & plantation at the waste rock dump at Malanjkhand, Madhya Pradesh.
- Installation of solar street lights
- Water management providing deep tube well water structure with storage tanks.
- Replacement of conventional lights with LED (Light Emitting Diode) in Malanjkhand Copper Project and Corporate office.

7.52 The total Manpower Strength of the Company is at Table 7.13.

Table 7.13
Manpower Strength Position at HCL as on 31.12.2014

Category	SC	ST	OBC	General	Total
Executives	93	28	72	456	649
Non-Executives	558	475	314	1789	3136
Total	**651**	**503**	**386**	**2245**	**3785**

MoU ratings achieved by HCL

Year	Grade
2009-2010	Very Good
2010-2011	Very Good
2011-2012	Excellent
2012-2013	Very Good
2013-2014	Very Good

Copper Industry in India

7.53 Copper finds widespread use in a wide range of application in all major sectors namely, construction, electric & electronic products, industrial machinery & equipment, transportation equipment & consumer and general products.

7.54 At present, the demand for copper minerals in the country for primary copper production is met through two sources i.e. copper ore mined from indigenous mines and imported concentrates. The indigenous mining activity among the primary copper producers is limited to only Hindustan Copper Limited (HCL). The other primary copper producers in the private sector import the required mineral in the form of concentrate.

Currently, three major players dominate the Indian Copper Industry. Hindustan Copper Limited (HCL) in Public Sector, M/s Hindalco Industries and M/s Sterlite Industries in Private Sector. HCL is the only vertically integrated copper producer in the country, while M/s Hindalco Industries

at Dahej in Gujarat and M/s Sterlite Industries in Tuticorn in Tamil Nadu have setup port based smelting and refining plants. Production of copper cathode by major players in copper industry for the year 2013-14 was 6,44,280 tonnes and during 2014-15 (upto December, 2014) are 5,63,799 tonnes are given at Table 7.14.

Table 7.14
Production of Copper in India

(in tonnes)

Commodity	Number of Factories	Installed Capacity	Production during 2013-14	Production during 2014-15 (upto Dec.,2014)
Cathode a) HCL	2	49,500	17,005	10,938
b) Sterlite Industries Ltd.	1	4,00,000	2,94,433	2,65,565
c) Hindalco Ind. Ltd. (Unit: Birla Copper)	1	5,00,000	3,32,842	2,87,296
Total		**9,49,500**	**6,44,280**	**5,63,799**

Reserves & Resources

7.55 India has very limited known reserves of copper ore exploitable for copper production. The total resources of copper ore as on 1.4.2010 as per UNFC system are estimated at 1.56 billion tonnes. Of these, 394.37 million tonnes (25.30%) fall under 'reserves' (proved and probable) categories while the balance 1164 million tonnes (74.69%) are 'remaining resources' category. India's share of world reserve & resource is 1.9% only. Total known reserves and resource of copper (in metal terms) are estimated to be around 630 million metric tonnes. Globally, Chile has the largest reserves of copper accounting for about 24% of the total world reserves followed by Peru 14%, Australia 13%, USA 6%, Indonesia & Russia 5% each and other countries 33%.

7.56 As on 1st April, 2010, HCL hold more than two-thirds of the copper ore reserves in India, with an average of 1.05% copper content. HCL as on 1.4.2010 has reserves (proved & probable) of 411 million tonne (average grade 1.05%) and resource (proved & probable) of 623.31 million tonne (average grade 1.04%).

Price of Copper

7.57 The domestic price of copper is linked to London Metal Exchange (LME) price. The LME Cash Settlement Price (CSP) is the basis on which prices of copper products are declared by domestic producers.

7.58 The year wise average LME price per tonne of copper is as indicated at Table 7.15.

Table 7.15
The Year-wise Average LME Price of Copper

YEAR	Average LME price of Copper (US $ per tonne)
2006-2007	6,970
2007-2008	7,584
2008-2009	5,864
2009-2010	6,101
2010-2011	8,140
2011-2012	8,485
2012-2013	7,855
2013-2014	7,103
2014-15 (Upto Dec.,2014)	6,800

7.59 Customs duty on imported copper had been reduced in phases from 35% in 2002-03 to 5% at present leading to a steep reduction in price, which, in turn, affected the profitability of domestic copper manufacturers. HCL is the only Company having captive mines, whereas private producers have to depend on import of copper concentrate to operate their smelter & refining plants, and their profitability is strongly dependent on the international variation in Treatment Charges and Refining Charges.

Refined Copper Consumption

7.60 Presently, electrical and electronic products are the largest sector consuming copper in India, accounting for 36% of total Indian copper consumption. Indian domestic refined copper consumption has grown at a CAGR of 8% between 2000 and 2010. This has been supported by strong growth in end user segments such as winding wires, power cables and other user applications. The total consumption of refined copper within the country is around 6.0 lakh tonnes. Although the country is an importer of copper concentrate, it is a net exporter of refined copper.

7.61 Analysts have indicated that India's copper consumption is likely to overtake that of Japan by 2015 and that of Germany by 2018. India is likely to be the third largest copper market in 2020 with a market size of 1.75 million tonne and the second largest copper market in the year 2025 with a market size of 2.75 million tonne, as per these projections.

7.62 Per capita copper consumption in India is of the order of 0.50 Kg as compared to 10 Kg in developed nations. Per capita consumption of copper of China and other European countries are given at Table 7.16.

Table 7.16
Per capita consumption of copper of China and other European countries.

i.	China	5.4 kg/person
ii.	Germany	13.6 kg/person
iii.	Italy	8.9 kg/person
iv.	Russia	3.3 kg/person
v	USA	5.5kg/person

Source: ICSG

Mineral Exploration Corporation Limited (MECL)

7.63 Mineral Exploration Corporation Limited (MECL), Mini Ratna, PSU under Ministry of Mines, is carrying out mineral exploration activities and is the premier exploration agency in the country. It carries out its exploration activities under Promotional programme funded by Government. of India and on contractual basis on behalf of other agencies including Public Sector & Private Sector and State Government(s) on mutually agreed terms and conditions. It has added 153 billion tonnes of mineral reserves to National Mineral Inventory upto December, 2014.

7.64 The authorised share capital and paid up equity of the company are ₹ 125.00 crore and ₹ 119.55 crore, respectively. The equity is fully held by Government of India. The company's registered office is at Nagpur, (Maharashtra). To facilitate the prompt maintenance of plants and machineries deployed at various projects, two Regional Maintenance Centres at Ranchi and Nagpur are being operated. Technical guidance to the projects, finalisation of geological reports, close liaisoning with the clients and looking for new business opportunities is being carried out through the Zonal Offices located at Ranchi and Nagpur. The business generation and commercial activities of the Company are being looked after by Business Development and Planning Division at Nagpur. In addition, one Business Development unit is in operation at New Delhi and a Liaison office at Kolkata.



Casting Copper Rod

7.65 In accordance with the national priorities identified in the Five Year Plan(s) and potentiality of the prospects, detailed exploration schemes are formulated and after due approval of Standing Committee on Promotional Projects (SCPP) and Ministry of Mines, projects are executed. Since its inception, MECL has carried out detailed exploration for ferrous, non ferrous, precious, industrial and other minerals on behalf of Ministry of Mines and a total of 4.98 billion tonnes of reserves have been established in respect of above said minerals.

7.66 MECL is also engaged in regional exploration of coal & lignite on behalf of Ministry of Coal. The schemes of exploration are being finalised by the Core Group of Committee on Energy Minerals and Resources, Group V of Central Geological Programming Board (CGPB). So far, a total of 47.32 billion tonnes of coal and 30.35 billion tonnes of lignite resources have been established by MECL on behalf of Ministry of Coal upto December, 2014.

7.67 In addition to mineral exploration activities, MECL has taken up diversification programme(s) in the field of drilling for CBM, geothermal and geotechnical exploration/ investigation.

Physico-Financial Performance 2014-15

7.68 The physical performance in drilling, developmental mining and geological reports for 2012-13, 2013-14, 2014-15 (Anticipated) is given in Table-7.17 and the financial performance is given in Table- 7.18.

Table 7.17
Physical Performance of MECL

Items	2012-13	2013-14	2014-15		
	Actuals	Actuals	MoU Target	Actual Achmt. (Upto Dec' 14)	Anticipated (Upto March' 15)
Drilling (Mtrs)	2,96,853	3,46,553	3,50,000	3,00,511	3,76,300
Mining (Mtrs)	9,087	8,926	7000	5875	7000
Geological Reports (Nos.)	23	26	17	19	20

Table No. 7-18
Financial Performance of MECL

(₹ in crore)

Details	2012-13	2013-14	2014-15		
	Actuals	Actuals	MoU Target	Actual Achmt. (Upto Dec'14)	Anticipated (Upto March'15)
Total Revenue #	171.68	198.56	206	187.28	234.31
Operating Cost	136.44	151.72	162.11	132.07	175.55
Depreciation and DRE	5.76	7.4	7.52	6.1	6.02
Net profit After Taxes	20.66	25.46	24.01	32.73	34.53

Including other income

MoU Performance

7.69 MoU rating of the company for the year 2013-14 is "Excellent" with highest score ever. The anticipated rating for 2014-15 is also "Excellent", based on the performance upto December, 2014.

Dividend Paid

7.70 MECL has paid a dividend of ₹ 5.14 crore to Government. of India for the year 2013-14.

Perspective on non-ferrous minerals:

7.71 During the year 2014 -15 (upto December, 2014) exploration for non-ferrous minerals has been carried out



Hon'ble Minister of Mines & Steel, Shri Narendra Singh Tomar receiving Dividend Cheque in the presence of Dr. Anup K. Pujari, Secretary to Government of India, Ministry of Mines from Dr. Gopal Dhawan, CMD, MECL.

by MECL in 10 projects. Out of these 10 projects, 3 projects have been completed and geological reports submitted viz. i) Nimi – Pyakatsu (Limestone) Block, Nagaland, ii) Parasi East (Gold) Block, Jharkhand and iii) Gurla South (Lead-zinc) Block, Rajasthan.

7.72 In three projects viz. Pahardia & Parasi West (Gold) Blocks, Jharkhand and Lumthalary (Limestone) block in Meghalaya the exploratory drilling has been completed and analytical work and documentation of geological report is under progress. Exploratory drilling is being carried out in four projects namely Ajjanahalli Gold Prospect, Karnataka, Lumshortoh (Limestone) Blocks, Meghalaya, Kuhi – Khobna (Tungsten) Block, Maharashtra and Muariya (Polymetallic) Block in the state of Madhya Pradesh.

Baseline Environmental Studies

7.73 Baseline environmental / land use / land cover studies through Remote Sensing in Ajjanahalli East Block (Block-A) have been carried out during the year.

Sale of Report

7.74 The detailed exploration reports of MECL projects are available for sale to prospective entrepreneurs. MECL has uploaded in its website (www.mecl.gov.in), the executive summaries of the exploration reports of various category i.e. "A", "B", "C" & "D" (221A, 331A, 332B, 332C, 332D & 333D) for easy access of the investors.

7.75 During the year one report on Saipum Shell Limestone, Kolasib District, Mizoram has been sold to the DGM, Mizoram. Cumulatively, a total of 23 reports (8 in A, 2 in B, 4 in C and 9 in D categories) have been sold upto November, 2014.

Action Taken on Abatement of Pollution and Environment :

7.76 The exploration activities of MECL do not cause any significant pollution. However, as a part of exploration work, MECL is carrying out environmental studies to generate baseline environmental data such as: Geology & Geomorphology, Meteorology, Air Quality, Noise, Land use/ Land cover studies, Soil quality, Biota, Water regime & Socio-economic studies.

7.77 For helping the exploration agencies to plan measures for abating possible pollution and Environmental Impact Assessment (EIA) in various exploration projects a report on the same is included as a part of Geological Report of various exploration projects.

Information Technology (IT)

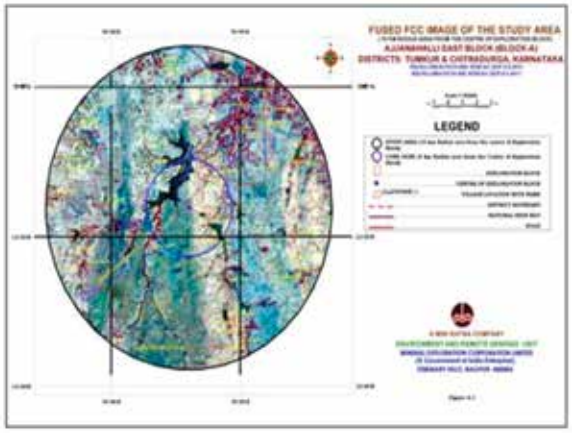
7.78 Data processing of 30 Nos. of Geological reports for the blocks under Exploration by MECL were carried out during the financial year from April to December, 2014. 22 Nos. of Geological Reports (DGR/FGR) have been submitted till December, 2014. The mineral wise reports completed are, Coal (9). Lignite (1), Gold (1), Base Metal (2), Limestone (1) and Iron ore (8) Data processing of 18 Nos. of Geological Reports are in progress (Coal-8, Lignite-1 and Iron Ore-9). The work includes computerized database creation, Vectorisation of Maps / plans, generation of graphical & numerical out puts Scanning, Digitization and printing of maps for MOC, MOM Proposals and for CGPB & SGPB presentations etc.

7.79 Geological 3D modeling for Coal blocks such as Chirra North East-A, Basin Phatehpur South Extension and Syang

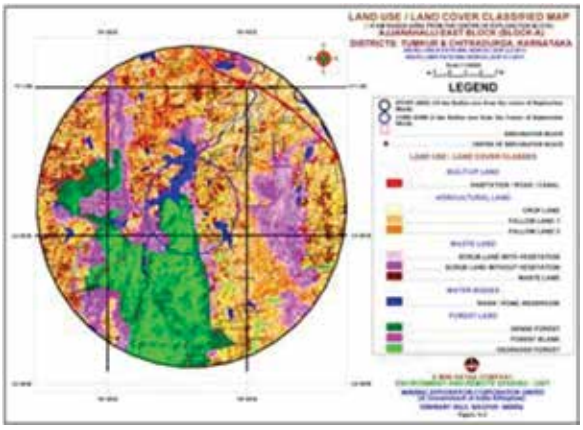
East-A coal blocks were completed. This includes Modeling of Coal Seams intersected in the boreholes. The 2D Plans viz-Floor Contours, Roof contour, Seam folios, iso parting between the seams, Iso-pachytes of Overburden and Over & Inburden, Geological Cross sections etc. were generated from the Model. Reserves were computed from the Geological model.

7.80 Baseline environmental/Land use/ Land cover studies through Remote Sensing.

SED FCC (LISS-III + PAN) SATELLITE IMAGE OF AJJANAHALLI EAST BLOCK (BLOCK-A), KARNATAKA



LAND USE & LAND COVER MAP OF AJJANAHALLI EAST BLOCK (BLOCK-A)



7.81 IT Policy for the organization was formulated during the year, as it is in process of creating information infrastructure to support its key business functions and to provide various IT services.

7.82 As per the guidelines of Ministry of Mines, MECL has implemented e-Procurement on CPP Portal, developed by M/s NIC. Business Development and Planning Division will also be taking up e-Procurement through the CPP Portal, shortly.

7.83 MECL has increased the official Email accounts, of the domain www.mecl.gov.in for its officials. Management of the Email accounts is being done through Delegated Admin Console in-house.

7.84 In order to have wide publicity about CSR Activities undertaken by MECL, a dedicated CSR Website, displays all the photos, videos and details, of the activities carried out at our project sites/ offices. The interactive website also provides Monthly/ Quarterly/ Final Report Generation of various CSR Activities completed/ under progress, for Project Managers, HOD's and CSR nodal Office, for monitoring purpose.

7.85 As per the Ministry of Home affairs, Rajbhasha Vibhag, Unicode Encoding Samarthit Fonts have been installed on all new Computers/ laptops in MECL, so that more and more officials, are able to work in Hindi due to its easy functionality.

7.86 Provided information to Ministry of Mines, regarding IT related queries on Networking Security, Website security, Quarterly submission of IT-Security Report, CERT Guidelines, Cyber Security, Crisis Management, Roadmap of IPV6, etc.

7.87 The exploration/ geological softwares like GDM, MINEX, SURPAC were upgraded during the year and the use of the upgraded version of software in preparation of geological report, has resulted in using recent technology particularly in 3D modeling.

7.88 MECL Website has been re-designed and quarterly updation of the same is being carried out in respect of Current Projects, Physical Performance of MECL since Inception. Coordinating and providing technical assistance is being done in carrying out necessary upgradations in MECL Website as per the guidelines issued from time to time, by the Ministry of Mines, in areas like Web Security, Web Content Accessibility, Domain Registration, VPN renewal, Cyber Security, etc.

7.89 As per National IPv6 Roadmap, MECL has successfully tested IPv6 Connectivity on Lease Line on HTH, through Router, Firewall.

7.90 For improving the existing internet facility for users, installed the latest, high speed FTTH, fibre connectivity, Internet broadband facility in CHQ, premises.

Business Development Activity

7.91 Through business development division, vigorous efforts are being made to obtain work from both public and private sectors through submission of competitive techno-commercial offers and MoU route and a series of techno-commercial discussions. As a result during 2014-15, a total of 30 work orders were received valued at ₹ 73.64 crore.

7.92 In addition to above, promotional work of ₹ 59.50 crore is available on behalf of Ministry of Mines and Ministry of Coal for the year 2014-15. Thus, the total value of new work orders received upto November 2014 is ₹133.14 crore. The extension of MoU with the major clients i.e. CMPDIL & SAIL on longterm basis are in progress. This may generate work of around ₹90-110 crore. Further, MECL is also planning to have MoU with NALCO and other prospective clients for increasing its business opportunity in bauxite and other minerals.

Future Plan

7.93 Short Term Plan

i) Preparation of Pre-Feasibility and Feasibility Reports for mining prospecting.

ii) Preparation of Geological Reports compliant to UNFC.

iii) Mining plan for Coal Mines in view of the large demand for coal in energy sector

iv) Expansion of exploration activities abroad as Indian companies, both from private and public sector are acquiring mining leases/ rights abroad for different minerals for their raw material security.

v) Exploration for Geothermal Energy as India has potential of geothermal energy in Himalayan region.

vi) MECL plans to take up drilling work for geotechnical studies for hydel projects, dam construction projects, railway tunnelling projects etc.

7.94 Long Term Plan

i) Bauxite Mining : MECL has acquired a bauxite mining lease for Serendag deposit in Chhattisgarh and is making efforts to obtain its Forest and Environmental clearances.

ii) Exploration for CBM and Shale Gas: MECL has the experience of exploratory drilling & geo physical logging in Coal Bed Methane (CBM) exploration. It intends to take up such jobs in future also. Similar endeavours will be made for shale gas exploration.

iii) Drilling Services Underground Coal Gasification (UCG): The companies like GAIL, etc. require exploratory drilling for their underground coal gasification projects. MECL proposes to offer its drilling services for such projects.

iv) Mining Leases: MECL plans to find out the possibility for further exploration/ development in the prospect(s) explored, as the case may be, through JV or MoU route.

Diversification Activity

7.95 MECL is diversifying its activities in the following fields.

i. Drilling for geothermal exploration.

ii. Deep slim hole drilling for Coal Bed Methane (CBM) studies on behalf of ONGC, CMPDIL and other organisations.

iii. Remote Sensing and Environmental studies.

iv. Reverse circulation drilling for iron ore.

v. Exploratory Drilling for geotechnical studies.

vi. Feasibility Report preparation.

Manufacturing Unit

7.96 MECL has a well equipped central workshop and manufacturing unit at Nagpur to cater to the needs of drilling and developmental mining projects and to provide engineering support to field operations. It carries out repairing/ overhauling of drilling and mining equipment and light/heavy vehicles. It manufactures Tungsten Carbide (TC) bits and spares & accessories for coring and non-coring drill machines. Also, it has CNC lathe machine for the manufacturing of drill tubular. During 2014-15 (upto December'14), a total of 12805 items were manufactured, which include 3362 Nos. of TC bits and 1375 Nos. of other drill accessories and 8068 Nos. threading / re-threading of drill rods & casings.

Salient Aspects of the Work Being Done by Advisory Boards/ Councils.

7.97 During the period April to December 2014, MECL participated in the following meetings and has close interaction with various Central committees in connection with formulation / review of exploration schemes and also for work generation.

- Attended Technical Sub-Committee meeting of 29th Standing Committee on Promotional Projects (SCPP) on 21.05.2014 at Nagpur.
- Attended meeting of 29th SCPP on 09.07.2014 at New Delhi.
- Attended the 10th meeting of CGPB Committee-I on Iron, Manganese, Chromite, etc. on 22.09.2014 at Kolkata.
- Attended the 10th meeting of CGPB Committee-V on Energy Minerals & Resources on 23.09.2014 at Kolkata.
- Attended the 10th meeting of CGPB Committee-IX (Geo-informatics and Data Management) on 26.09.2014 at Kolkata.

- Attended the 10th meeting of CGPB Committee-II on precious metals & minerals on 10.10.2014 at Hyderabad.
- Attended 10th meeting of CGPB-IV (Industrial and Fertiliser Minerals) on 17.10.2014 at Nagpur.
- Attended the 10th meeting of CGPB Committee-VIII (Geology and Mineral Resources of NER) on 21.11.2014 at Shillong.

7.98 Employment

The category wise employment position including General /SC /ST /OBC / Minorities /Women (As on 31.12.2014) in the company is given in Table-7.19.

Table 7.19
Employment of Personnel as on 31.12.2014

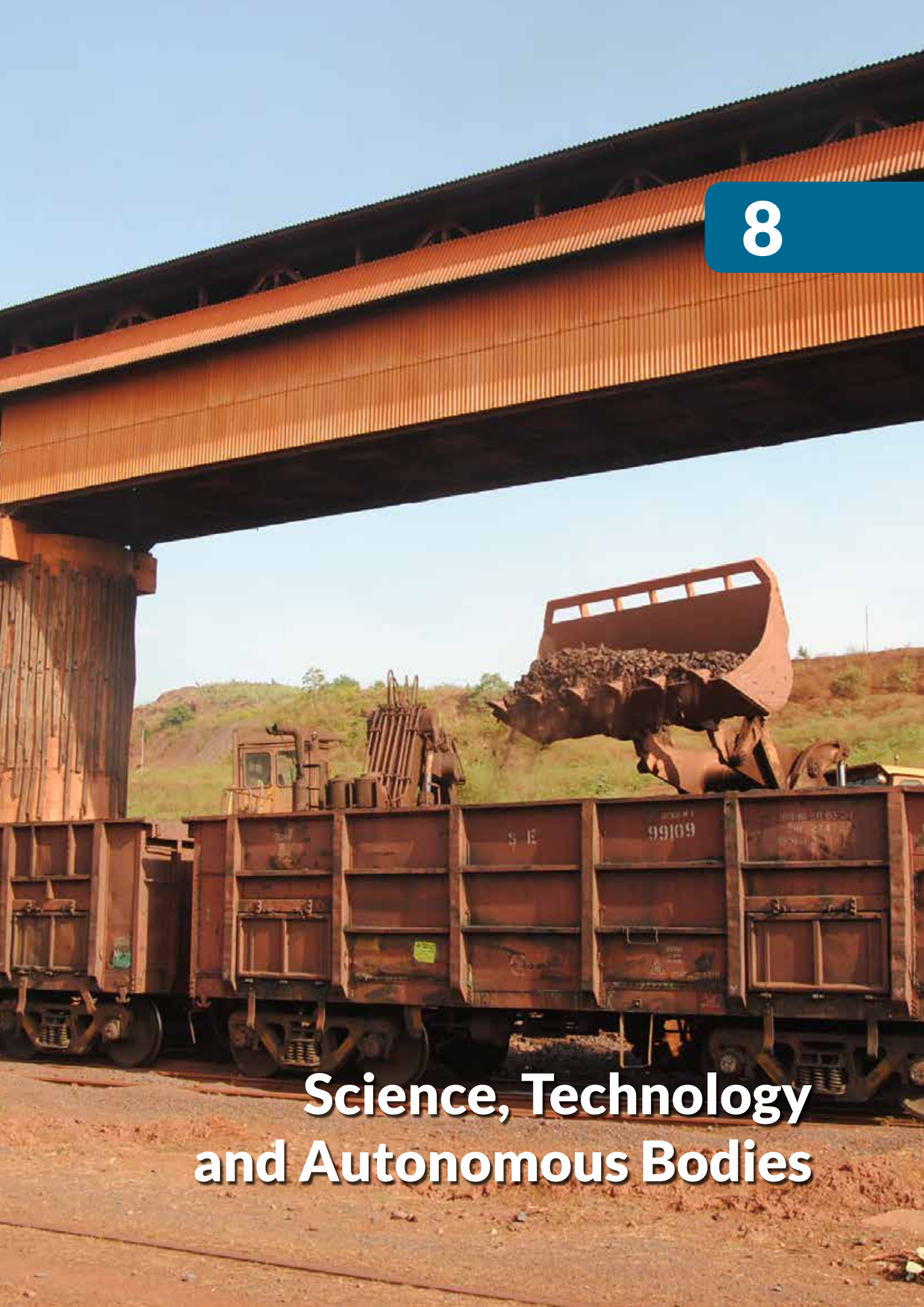
Group	Total No. of employees	General	SC	ST	O.B.C	Minorities	Women
A	235	143	42	14	36	11	13
B	60	45	09	03	03	04	03
C	1092	750	166	88	88	78	22
D	11	05	05	01	00	01	06
Total	1,398	943	222	106	127	94	44



Alumina Refinery, Damanjodi



Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel and Hon'ble Minister of State for Mines & Steel Shri Vishnu Deo Sai with some of the State Mines Ministers during discussion on the amendment to MMDR Act.



8

Science, Technology and Autonomous Bodies

Science, Technology and Autonomous Bodies

- Research & Development page - 103
- Jawaharlal Nehru Aluminium Research Development & Design Centre page - 105
- National Institute of Rock Mechanics page - 106
- National Institute of Miners' Health page - 107

Research & Development

8.1 Recognizing the paramount importance of safety, economy, speed and the efficiency in extraction of ore resources and in its convergence into viable economic alloy and metals, National Mineral Policy has accorded higher priority to R&D programmes. For fructification of principles as enunciated in the National Mineral Policy, guidelines for support to 'Mining Research' was issued in May 2013. With a view to promote R&D in the mining sector, Ministry of Mines has launched a comprehensive Science & Technology Programme which includes (i) R&D component (ii) Information Education and Communication (IEC) and (iii) one-time capital component for up-gradation of R&D facilities of Jawaharlal Nehru Research Development & Design Centre, National Institute of Miners' Health and National Institute of Rock Mechanics.

Science & Technology Programme (R&D component)

8.2 The underlying principle behind R&D Component is to foster utilisation of the available mineral resources judiciously, economically efficient and environmentally sustainable manner. Under the R&D component of the Science & Technology Programme Research projects are funded through grant–in–aid. The broad thrust area for supporting research in mining sector include -

(i) Prospecting/exploration for strategic rare and rare earth minerals.

(ii) Research in mining methods. This includes rock mechanics, mine designing, mining equipment, energy conservation, environmental protection and mine safety.

(iii) Improve efficiency in process, operations, recovery of by-products and reduction in specification and consumption norms.

(iv) Research in metallurgy and mineral beneficiation techniques to utilize lower grade and finer size ores.

(v) Extraction of value added products from mine waste, plant tailings etc.

(vi) Development of new alloys and metal related products etc.

(vii) Evolve low capital and energy saving processing systems

(viii) Production of materials of high purity.

8.3 During the Financial Year 2014-15 (till December, 2014) 11 projects which have been considered as relevant to the identified priorities have been approved. With the participation of large number of Research Institutes the Scheme is becoming more broad based and apart from research projects of Jawaharlal Nehru Research Development & Design Centre, National Institute of Miners' Health and National Institute of Rock Mechanics, during the current year, the proposals of Institutes of Non Ferrous Material Technology Centre for purification of commercial Rare Earth Oxides, Indian School of Mines for development of low density emulsion explosives, Aligarh Muslim University for study on Synthesis, characterisation and photocatalytic performance of Metal doped semiconductor nano-Materials, Indian Institute of Technology, Roorkee for study of Alkaline Carbonatite, Indian Institute of Technology, Khargpur for development of Nickel containing steel from Chromite over burden, Gandhi Institute of Engineering and Technology, Odisha for study on production on

Geopolymer based construction material from pond ASH, National Institute of Technology, Rourkela, for development TDR based wireless system for slope, Directorate of Geology and Mining, Govt. of Nagaland for prospecting/exploration of platinum groups of metals have also been cleared.

8.4 The Grant in-aid released to the various institutions in the country under the scheme for the year 2014-15 can be seen at **Annex 8.1.**

8.5 Plan and Non- Plan Grant provided to the three autonomous institutions under Ministry of Mines is giving **Table 8.1** and **Table 8.2**.

Table 8.1
Plan

(₹ in crore)

Component of one time grant of JNARDDC	₹ 7.40
Component of one time grant of NIRM	₹ 5.05
Component of one time grant of NIMH	₹ 1.25

Table 8.2
Non Plan Grant

(₹ in Lakhs)

Organisation	Funds released
NIMH	₹ 150 lakh
NIRM	₹ 111.23 lakh
JNARDDC	₹ 275.77 lakh

Information Education and Communication component (IEC)

8.6 The purpose of this component of the Scheme is to create awareness regarding issues relating to the mining and mineral sector by organizing or being associated with promotional events, like seminars, workshops, exhibitions etc. evaluation studies, surveys awareness programmes, consultation with stakeholders, organization of national and international events/conference, creating audio-visual publicity materials and propogation of policies and programmes.

8.7 Industry associations, recognized Universities, recognized Academic and Research Bodies having at least three years experience in the mining and mineral sector are eligible for receiving funds under the Scheme.

One-time capital component for up-gradation of R&D facilities

8.8 The quality of R&D hinges upon availability of state of art research facilities in the country. In the mining sector R&D activities are being pioneered by the three autonomous bodies functioning under Ministry of Mines i.e. Jawaharlal Nehru Research Development & Design Centre, Nagpur National Institute of Miners' Health, Nagpur and National Institute of Rock Mechanics, Kolar. As these Institutions were carrying out R&D related work with obsolete equipment, need was felt to replace the capital equipment which have outlived their life. Since these autonomous bodies are unique from the point of view of the national importance and keeping their core competence in mind, the Ministry modified the S&T Scheme after due evaluation by an impartial and independent agency and considered to add one more component in the Scheme viz "One-Time Grant to the Autonomous Bodies under the Ministry of Mines for Capacity Building". During the year 2014-15 (till December, 2014) grant to the tune of ₹ 13.70 crore has been released to these Institutions **Table 8.1**.

The Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC), Nagpur

8.9 JNARDDC an Autonomous Body under Ministry of Mines is a "Centre of Excellence" set up in 1989 as a joint venture of Ministry of Mines, Government of India and UNDP with a view to provide major R&D support system for the emerging modern aluminium industry in India.

8.10 The Centre is also recognized as a scientific & industrial research organization by the Department of Scientific & Industrial Research, Ministry of Science & Technology, Government of India. It is the only institute of its kind in India pursuing the cause of R&D from bauxite to finished product under one roof.

8.11 The objective of the Centre is to assimilate the technology available in the country and abroad for the production of alumina and aluminium including aluminium alloys as well as to develop technical know-how for the basic engineering process and downstream areas and to provide training to the personnel employed in the Indian aluminium industries.

8.12 The Centre caters to R&D needs of both primary and secondary producers. It has made key contribution in the areas of beneficiation, characterization, technological evaluation, upgradation of bauxites, reduction of energy consumption and environmental pollution by the effective utilization of aluminium industry residue materials such as red mud, dross & scrap etc. and process modeling for the overall interest of the aluminium industry and the nation as a whole.

Major Activities

8.13 The Centre completed three projects in the field of aluminium and fourteen R&D projects were in progress till December, 2014 for various government and non-government organisation viz. National Aluminium Company Ltd. (NALCO), Bhubaneshwar, Defence Metallurgical Research Laboratory (DMRL), Hyderabad, Mineral Exploration Corporation Ltd. (MECL), Nagpur. Several projects are under negotiation with NALCO, Ministry of Environment & Forests (MoEF), BALCO, VEDANTA, Aria Chemicals Pvt. Ltd. etc.

8.14 The Bureau of Energy Efficiency (BEE), Ministry of Power has nominated JNARDDC as a sector expert for the aluminium sector under the PAT (Perform, Achieve & Trade) Scheme in the National Mission for Enhanced Energy Efficiency (NMEEE) under Climate Change Project launched by the Hon'ble Prime Minister of India. The services of JNARDDC are utilized by BEE as a sector expert for evaluation of energy audit reports of Indian aluminium industries.

Silver jubilee year of JNARDDC

8.15 JNARDDC completed 25 years of its glorious existence in April 2014. As a part of the silver jubilee celebrations, the Centre successfully organized the following four academic events in association with well established organizations and academic institutes.

a) International Conference on Non-ferrous Minerals & Metals (ICNFMM-2014) held at Nagpur on July 11th-12th, 2014 in Association with Corporate Monitor, IBAAS and VNIT.

b) National conference on Energy Efficiency Opportunities and

Challenges in Aluminium Industries (NCEEOCAI) on 4th - 5th August, 2014 at JNARDDC, Nagpur in association with Bureau of Energy Efficiency (BEE).

c) International conference on Technological Improvements & Market Developments in aluminium industry with Special Reference to value added products of bauxite, alumina and aluminium. (IBAAS-2014) on 27th-29th November, 2014 at Vishakhapatnam in Association with IBAAS & CHALIECO, China.

d) National Seminar on Aerospace Structures (NASAS) during 15 -16 December, 2014, at Nagpur in association with VNIT, Nagpur, AR&DB), Ministry of Defence and HQMC Airforce Maintenance Command Nagpur

Review of JNARDDC by Secretary (Mines)

8.16 Dr. Anup Kumar Pujari, Secretary (Mines) visited the Centre on 8th May 2014 to review the activities of the Centre. The completed and ongoing R&D projects were reviewed by Secretary (Mines) which was followed by lab visit.



JNARDDC souvenir being inaugurated at the hands of Shri Ansuman Das, CMD, NALCO, Shri Ramesh Nair, CEO, BALCO & Shri Sanjay Sarkar, President, Birla Copper (HINDALCO) and Dr. Anupam Agnihotri, Director, JNARDDC

Finances

8.17 The Centre achieved an Internal and Extra Budgetary Resource generation (IEBR) of ₹ 1.53 crores up to December, 2014. A non-plan budgetary grant of ₹ 507 lakh and S&T plan grant of ₹ 490.93 lakh was released from the Ministry of Mines in 2014-15 upto December, 2014.

National Institute of Rock Mechanics (NIRM)

8.18 The National Institute of Rock Mechanics (NIRM) is a premier centre for research in applied and basic rock mechanics. It is an ISO-9001:2008-certified Research Institute. The Institute is located at Kolar Gold Fields, Karnataka and it has one unit at Bangalore. The present strength of the Institute is 56, out of which 48 are scientists and scientific/technical staff.

8.19 NIRM provides research and consultancy services for improving safety and productivity in the mining and civil engineering sectors and for infrastructure projects. Equipped with the state-of-the-art laboratory facilities and software, and with experienced manpower, the Institute plays a vital role in offering technical services



Mr. B. Mohanty, GM, Sesa Sterlite Industries, Jharsuguda, Mr. V.Balasubramanyam, ED (P&T), NALCO, Mr. Jens Burgtorf, GIZ (Indo-German Energy Program), Dr. Anupam Agnihotri, Director, JNARDDC & Mr. M.J. Chaddha, Convener, JNARDDC

in mining, hydro-electric and tunneling projects, site evaluation for construction of nuclear power plants and underground storage caverns for petroleum products. NIRM carries out research work through both government-funded and industry-sponsored S&T and consultancy projects. The clientele includes the mining industry (metalliferous & coal mines, underground & opencast mines); civil engineering industry (underground caverns and tunnels for hydro-power projects, nuclear power project sites), and infrastructure development industry (underground metros and LPG/crude oil storage caverns).

Projects Undertaken

8.20 During the year 2014-15 (upto February, 2015), NIRM carried out investigations for 54 research projects, of which, 34 are new projects taken up this year. The projects of national importance carried out by the Institute during the year include the geological mapping and design of rock support systems for the underground tunnels and structures for irrigation projects in Andhra Pradesh, geophysical investigations for oil pipeline stability in West Bengal, 3D numerical modelling for mine shafts and underground caverns of hydroelectric projects, rock blasting close to structures, blast design for opencast mines and canal works. NIRM also carried out proof testing and non-destructive testing (NDT) of wire ropes, mining machinery and their accessories, as per the guidelines of the Directorate General of Mines Safety and as per international standards.

8.21 NIRM scientists contributed a total of 22 technical papers in various national/ international journals and symposia.

8.22 During the year 2014-15, the Institute is expected to register an internal revenue generation amounting to nearly ₹ 450 lakhs.

National Institute of Miners' Health (NIMH)

8.23 National Institute of Miners' Health, an autonomous Institute under Ministry of Mines, conducts applied research in the field of occupational health and hygiene of persons employed in mining and mineral based Industry with the vision of "Safe Mines and Healthy Miners" and the mission "Indian mining and mineral industry sans





Dr. Anup Kumar Pujari, Secretary (Mines) alongwith Dr. Anupam Agnihotri, Director, JNARDDC during lab visit.



NIMH-DGMS-ILO National Workshop on Detection of Pneumoconioses and use of ILO Classification 2000

occupational diseases". The Institute is recognized as a Scientific & Industrial Research Organization by the Department of Scientific & Industrial Research, Ministry of Science & Technology, Government of India. The Institute has completed 24 years of service to the nation in conducting research and promoting occupational health & hygiene among mine workers. The institute has state of the art infrastructure, facilities and trained manpower to officer Technical Support Services for;

- Routine Initial and periodic medical examinations as per Mines Rules, 1955
- Health surveillance as recommended by Conferences on Safety in Mines.
- Personal exposure assessment studies for noise, dust, vibration heat & humidity as required under the Mines Act, 1952 and recommended by Safety Conferences.
- Work environment evaluation for dust, noise, vibration, illumination, etc as required under MMR 1961, CMR 1957.
- Evaluation of Mining Machineries for vibration, noise, dust emission etc.
- Ergonomic assessment of Mining Machinery as per ISO Standards.
- Training of airborne dust survey in-charge as per DGMS Circular.
- Health awareness and promotion programme on occupational health issues.

8.24 The Institute provides services to both Private and Public sector mining companies viz. Reliance Industries, Ambuja Cements Ltd., NALCO, ACC Limited, UltraTech, NMDC, Essel Mining, Sesa Goa, GMDC, APMDC, RSMML, Western Coalfields Ltd. etc.

8.25 The main objectives of the Institute include:

- Promotion of health and prevention of diseases among persons employed in mines and mineral based industries.
- Research & development to ensure safe and healthy extraction of the country's mineral wealth.
- Assessment of health hazards in the work environment of mines and allied industries for regulatory and remedial measures.
- Develop human resources in the field of occupational health, hygiene and safety.

Important Scientific Achievements

(a) Detection of Silicosis among stone mine workers in Rajasthan

8.26 NIMH evaluated chest radiographs of 471 persons with history of work in stone mines from Karauli and Dholpur districts of Rajasthan and detected 202 cases of Silicosis. Following NIMH report, the district administration has started free check up camps for Silicosis victims and the State Government is extending full support



NIMH-DGMS-ILO National Workshop on Detection of Pneumoconioses and use of ILO Classification 2000

to them. The Government of Rajasthan has sanctioned ₹ 3.00 crores as relief measures besides free treatment and sanction of BPL status to Silicosis victims.

(b) Signing of the MoU between National Institute Of Miners' Health (NIMH) and Central India Institute of Medical Sciences (CIIMS)

8.27 Memorandum of Understanding was signed between National Institute of Miners' Health and Central India Institute of Medical Sciences, Nagpur, to promote academics and research interaction and cooperation. According to the MoU between NIMH and CIIMS, both Institutes will exchange their respective important R & D facilities in order to promote academic and research in the areas of cooperation to intensify the high priority area programme of science and technology. Both institutes agreed to conduct, whenever feasible, joint Workshops, Conferences, Training Courses within the areas of co-operation.

(c) Students' Dissertation Projects

8.28 The institute has been providing research facilities for dissertation to post graduate students in Biochemistry and Biotechnology as part of its academic contribution. 3 students completed their projects during the period.

Activities during the year 2014-15

8.29 Clientele Sponsored Projects;

a) 24 Clientele sponsored projects were undertaken during the year

(b) S&T Projects

8.30 During the year, the Institute has completed following 2 S&T projects and final reports of the findings were submitted to Ministry of Mines

- A Pilot study on Health Status of Mine workers and nearby Population around Iron Ore Mines
- Systematic study of potential biomarkers of occupational diseases in miners.

8.31 The Institute is working on following 2 S&T projects sponsored by Ministry of Mines.

- Development of Standard Framework and Guidelines for Noise Mapping in Mines and Surrounding Community.
- Evaluation of biomarkers for early detection of Noise Induced Hearing Loss in the mine workers.

Health awareness and promotion programme on occupational health issues

8.32 As a part of health awareness and promotion programmes, the Institute regularly organizes workshops, conferences and training programmes to impart on-hand training to the front-line Managers, Safety Officers, medical doctors, etc, of mining organizations. Some of the workshops, conferences and training programmes conducted by the Institute during the year are listed below;

- Xth National Workshop on "Detection of Pneumoconioses and use of ILO Classification 2000" : 10th–13th June, 2014.
- National Workshop on "Applied Ergonomics for Mining" : 28th–29th November, 2014
- Training Programme on "Occupational Hazard Monitoring and Occupational Health Surveillance in Mines" organized for medical Officers of M/s Tata Steel Limited : 9th–12th December, 2014
- National Conference on "Research Methodology and Avenues for Grants": 7th–9th January, 2015.
- National Conference on Miners' Health – Occupational Health Hazards and Diseases in Indian Mines and Mineral Industries at Kolar Gold Fields; 21st February, 2014.

Financial Performance of Institute

8.33 Over last few years, the Institute has improved its financial performance. The financial performance of the Institute during last five years is given in **Graph 8.1.**

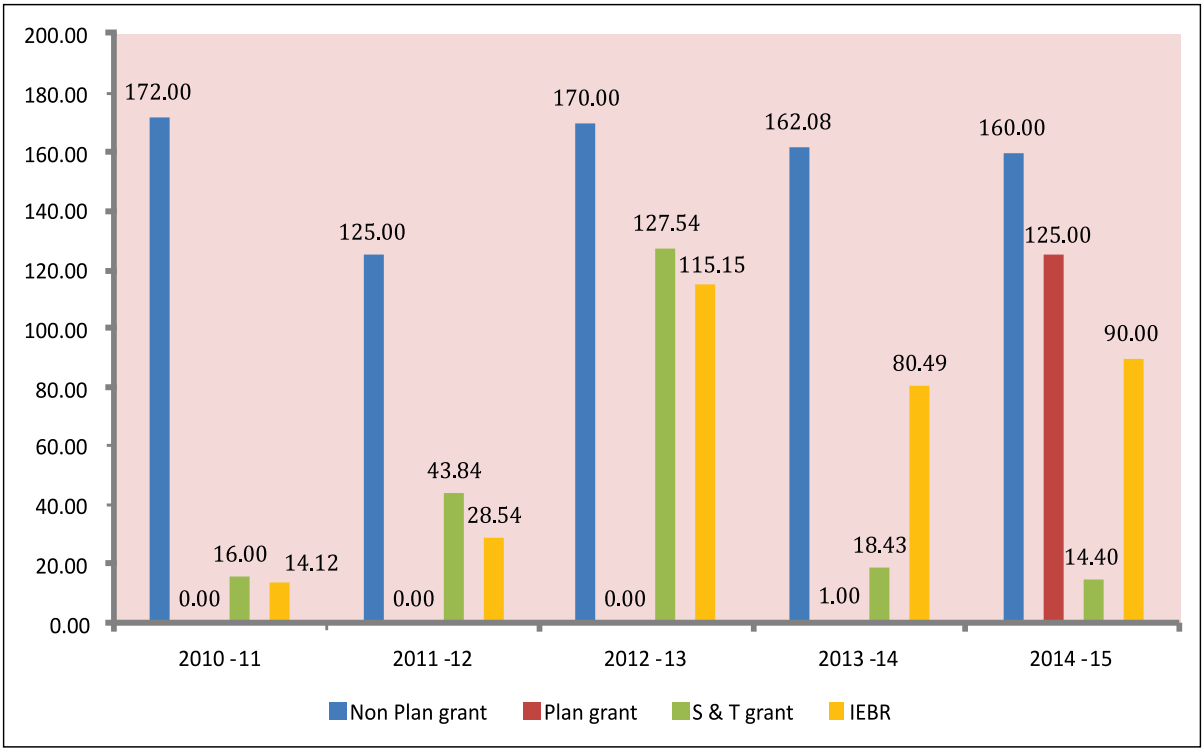
Other Important Events

(a) Silver Jubilee Year of NIMH

8.34 National Institute of Miners' Health has completed 24 years of service to the nation in conducting research and promoting occupational health & hygiene among mine workers. The Institute has entered into Silver Jubilee Year on 21st February, 2014. To commemorate this occasion, the Institute organized Foundation Day Function to start celebration of its Silver Jubilee Year on 21st February, 2014 with a Foundation Day lecture by Shri R B Chakraborty, Deputy Director General of Mines Safety (Retired)

Graph 8.1

(₹ in Lakhs)



on "Safe Mines and Healthy Miners: Issues and Priorities"

(b) Session on "Biomarker: A Breakthrough response to Heavy Metal Pollution"

8.35 Dr. Kaiser Jamil, Dean, School of Life Sciences, Jawaharlal Nehru Institute of Advance Studies (JNIAS), Hyderabad, visited NIMH on 6th May 2014 and shared her experience with NIMH scientists. The meeting explored the ideas for future research in collaboration with JNIAS on Biomarkers of occupational diseases.

(c) Celebration of Environment Day by Registered Office

8.36 The Registered Office NIMH, KGF celebrated the Environment Day on 5th June 2014. Tree sapling were planted by Assistant Director KGF on this occasion in the premise of the Registered office at KGF.

(d) Session on "Procedure of Patent Filing"

8.37 National Institute of Miners' Health organized a session on 28th July, 2014 to get idea about the patent filing methodology. Dr. Parimal Katolkar, Professor at Manohar Bhai Patel Institute of Pharmacy, Gondia, delivered a talk on "Procedure of Patent Filing" at the Institute.

(e) Swachh Bharat Abhiyaan

8.38 Swacha Bharat Abhiyan, a cleanliness drive initiated by Hon'ble Prime Minister Narendra Modi was launched on Mahatma Gandhi's 145th birth anniversary. Staff and Officers of NIMH at Nagpur and KGF enthusiastically joined the "Clean India Campaign" and participated with fervor, initiating a cleaning drive.

(f) Publications/Presentations/ Poster

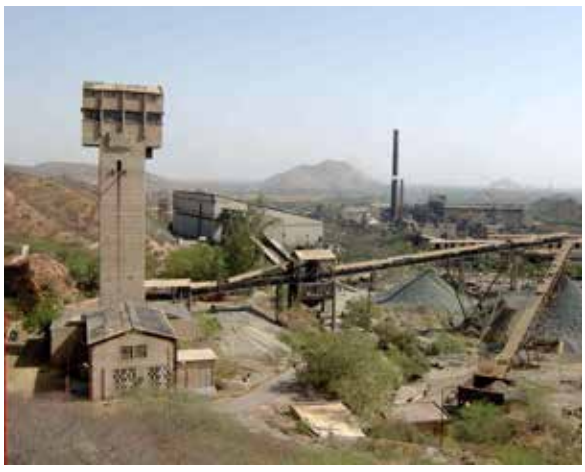
8.39 The officers and staff of Institute published fifteen (15) scientific papers in national and international journals.

(g) Conferences /Workshops/ Training Programme

8.40 The officers of the Institute attended 12 conferences/seminars/workshops and contributed as faculties and delegates.



Copper Cathodes



Khetri Plant



Aluminium Rolled Product, NALCO



9

Corporate Social Responsibility

Corporate Social Responsibility

- NALCO page - 115
- HCL page - 116
- MECL page -117

National Aluminium Company Limited (NALCO)

9.1 Periphery Development & CSR Initiatives: High Lights on CSR activities for the financial year 2014-15 are furnished below.

- Every year NALCO allocates 2% of its net profit on CSR activities. 1% of this allocable amount is spent for periphery development activities through Rehabilitation and Periphery Development Advisory Committees (RPDACs) set up by Govt. of Odisha and the balance 1% is spent for CSR activities through NALCO Foundation.
- Total provisional fund allocation for CSR activities for the financial year 2014-15 is ₹1,390 lakhs i.e. average of 2% of the net profit of last 03 preceding years. Out of this allocable amount, ₹695 lakhs is to be spent on Peripheral Development activities. For Angul and Damanjodi Sector, Rehabilitation & Periphery Development Advisory Committees are yet to finalize the CSR Projects for the year 2014-15. For Corporate level CSR activities a total amount of ₹115 lakhs has already been committed as on December, 2014.
- The balance ₹695 lakhs allocated to NALCO Foundation to undertake CSR activities for the financial year 2014-15. A total amount of ₹297.43 lakhs has been incurred so far.
- For bringing the Tribal students to the mainstream of education, as an important CSR initiatives, 655 students from 16 periphery villages of Damanjodi sector have been sponsored for formal education in 3 residential schools i.e. (i) Kalinga Institute of Social Sciences, Bhubaneswar, (ii) Koraput Development Foundation, Koraput & (iii) Bikash Vidyalaya, Koraput. NALCO Foundation has taken the responsibility for funding the total cost related to study, lodging and boarding of those students till they complete schooling.
- Four Mobile Health Units (MHUs) are being operated in collaboration with Wockhardt Foundation in periphery villages of M&R Complex, Damanjodi. Similarly Four Mobile Health Units (MHUs) are operating in Angul Sector with the help of Lions Club, Angul. Each MHUs provide primary health service at the villages with a doctor and paramedical staff providing free medicines, diagnostics and awareness building through Information Education Communication (IEC) activities. From April, 2014 to December, 2014, total 1,644 nos. of Health Camps were conducted and total 79,350 patients from periphery villages were treated at free of cost. It is expected that from January, 2015 to March, 2015, 550 no. of Camps shall be organized and 26,500 no. of patients may be treated.
- At S&P Complex, Angul, NALCO is operating an OPD Centre meant for out patient treatment of people of



Community hand pump and solar panel for lighting at Pandrapani, MP

periphery villages since July, 2014 in the Training Centre of S&P Complex. Till December, 2014, 997 no. of patients have availed the services.

- For distribution of saplings in the periphery villages of Damanjodi, nearly 25,000 saplings have been procured and the distribution of 1,028 saplings has been done in 2 villages. Distribution is in progress in other villages.

9.2 NALCO has joined the National movement of Swachh Bharat Mission and is fully committed for its success.

9.3 Swachh Vidyalaya Abhiyan

- As regards Swachh Vidyalaya Abhiyan, 160 Schools from the list of MHRD have been blocked and the Company has committed to undertake construction of Toilet Blocks in these Schools at an approximate estimated of ₹ 5.00 crore through NALCO Foundation.

- Work order has been issued and Foundation Stone laying ceremony for construction of 05 toilets as "Pilot Project" were taken up at Hanjaraguda & Gumalguda School in Damanjodi Sector, Kainphuliasahi School at Angul Sector and Damana U.G.U.P. School & Govt. High School, Damana at Bhubaneswar. Construction works of the toilets have already been started and shall be completed by end of January, 2015. Action is being taken to issue work order for construction of balance toilets shortly.



World Toilet Day of NALCO

Hindustan Copper Limited (HCL)

9.4 HCL embraces the principles of United Nations Global Compact (UNGC). HCL's CSR Policy revolves round the principles laid down in the Millennium Development Goals (MDGs) and Targets. CSR Plan for the financial year 2014-15 was prepared in alignment with the Companies Act, 2013 and also considering the learning from project implemented during financial year 2013-14. HCL allocated CSR Budget of 2% of the average net profits of the company made during the three immediately preceding financial years to the extent of ₹ 6.43 crore for financial year 2014-15.



Eye camp at Ghatsila, Jharkhand

9.5 The projects are being implemented in the target communities with the help of recommended local NGOs. Following CSR activities have been taken up during the year.

- Drinking Water, Health and sanitation: Installation of Borewell including soak pit, Health Camps, support to e-health centre, drinking water services by mobile tankers for nearby villagers.
- Education, Vocational skills and Livelihood: Diversified Agriculture (System of Rice Intensification/ Systematic Wheat Intensification), Female Literacy Center, Computer Training Center, Exposure visit of SHG (Self-help-group) member and farmers, Capacity building of SHG members, imparting vocational skills in trades, i.e., Motor winding & starter and Training on TV/VCD.
- Environment and animal welfare: Veterinary Camps, Maintenance of existing plantation done in 2012-13 and in 2013-14, Covering top soil & Plantation at the waste rock dump in Malanjkhand Copper Project.
- Sports: Training of youth, provision of sports Items and organizing tournaments.

9.6 Swachh Bharat Abhiyaan and Swachh Vidyalaya Abhiyaan: Developing awareness to keep our workplace and surrounding villages/area clean, Developing awareness on safe sanitation and the need to build and use toilets, Prabhat Pheri/walkthons by employees and their families, Rallies by students with banners/placards in local languages and construction/repair of toilets in schools under Swachh Vidyalaya Abhiyaan.

9.7 The actual expenditure in the CSR activities during last three years is given in Table 9.1.

Table 9.1

(₹ in crore)

Financial Years	Spent
2012-13	5.13
2013-14	7.11
2014-15 (upto Dec.,2014)	2.00

Mineral Exploration Cooperation Limited (MECL)

9.8 MECL has drawn a long term Corporate Social Responsibility Policy;

9.9 For the year 2014-15, an approximate amount of ₹ 83 lakhs has been envisaged under Corporate Social Responsibilities and Sustainable Development as given below:

- Public Health & Sanitation: Bore well for drinking water with submersible pumps. Medical equipment to hospitals.
- Education & Other facility to students belonging to weaker section of the society : Scholarship for higher study to the 2 top students of Navodaya Vidyalaya.



Distribution of Cycle to Girls Students as part of CSR Activities

- Empowerment to Women: Cycles to the Girl students.
- Empowerment of Differently abled persons: Special facility to the differently abled persons (OH/VH/HH).

9.10 SD Project: Energy Management – Installation of 10 kw Solar Power system at Utility Complex, MECL, Nagpur.



Human Resources Development Centre of NALCO



10

Progressive Use of Hindi

Progressive Use of Hindi

- Official Language Implementation Committee page - 121
- Inspection of Parliamentary Committee on Official Language page - 121
- Rajbhasha fortnight page - 122
- GSI page - 122
- IBM page - 123
- NALCO page - 124
- HCL page - 125
- MECL page - 125

Introduction

10.1 The Ministry of Mines continues to take various steps to ensure compliance of the Official Language Policy of the Union of India in the Ministry as well as in its Attached/Subordinate Offices/ PSUs. Utmost efforts have been made for due compliance of Section 3(3) of Official Languages Act, 1963. Letters received in Hindi were replied to in Hindi.

Hindi Salahakar Samiti

10.2 In order to propagate and review the progress of Official language in the Ministry as well as in Attached/Subordinate Offices/ PSUs under its administrative control, process for reconstituting Hindi Salahakar Samiti, a high-powered Committee, has already been initiated, after expiry of the tenure of erstwhile committee. It recommends effective measures to promote the use of Official language and to ensure the compliance of Official Language Policy.

Official Language Implementation Committee

10.3 The Official Language Implementation Committee has been constituted in the Ministry headed by the Joint Secretary. All officers of the rank of Under Secretary and above up to the rank of Director are members of the Committee. The quarterly Progress Reports received from the Sections of the Ministry are reviewed in the meetings of the Committee and remedial measures are suggested to improve the progressive use of official language Hindi. The quarterly meetings of the Committee are held regularly.



Shri Narendra Singh Tomar, Hon'ble Minister of Mines & Steel meeting with Chief Minister, Rajasthan

Official Language Inspection

10.4 To assess the progress made in the use of Official language in Attached/ Subordinate Offices/PSUs under the administrative control of the Ministry of Mines, Officers from Ministry, mainly from Rajbhasha Unit, conduct inspections regarding progressive use of Hindi in official work in Attached/Subordinate offices of the Ministry from time to time. Any shortcomings detected during the course of inspection are brought to the notice of the offices concerned and measures for overcoming the shortcomings are also suggested.

Inspections by Committee of Parliament on Official Language

10.5 Committee of Parliament on Official Language conducts inspections regarding progressive use of Hindi in official work of various Central Government offices, undertakings, corporations etc.

Website of the Ministry

10.6 The website of the Ministry serves as a vital link with the masses. The material on website is available in bilingual form. Material available on website is updated from time to time by concerned sections.

Measures for Implementation of Official Language Policy

10.7 It is the policy of the Government to propagate the use of Official language through inspiration and incentive. In order to inspire and encourage the officers/ employees of the Ministry to work in Hindi, various cash award schemes of the Department of Official Language have been implemented.

Training

10.8 Under Hindi Teaching Scheme of Ministry of Home Affairs, Department Of Official Language the officers/employees are nominated for training in Hindi Language (Prabodh, Praveen & Pragya), Hindi stenography / typing.

Workshops

10.9 In order to encourage officials/ employees to perform their official work in Hindi, workshops are organized from time to time as per requirement.

Rajbhasha Fortnight

10.10 With a view to create a conducive atmosphere for the progressive use of Official language in the Ministry, Rajbhasha fortnight is organised during September every year. This year also Rajbhasha Hindi Prayog Protsahan month was observed from 1st - 30th September, 2014. A message was also issued by the Hon'ble Minister for Mines, Shri Narendra Singh Tomar. Various competitions i.e. noting/drafting, sulekh and dictation, quiz competition, Hindi typing, instant speech competition were conducted during month. The winners of the competitions were given cash awards.



Meeting with Chief Minister, Rajasthan

Publication of 'Khan Sampada'

10.11 Ministry of Mines has been publishing its Hindi house journal 'Khan Sampada' since 1998. Publication of 37th issue is in progress.

Translation Work

10.12 All translation work relating to Standing Committees, Parliament, Cabinet Notes, MMDR Bill, Ordinance, Reports, MOUs for International Cooperation in the field of mines & minerals with various countries was carried out.

Geological Survey of India (GSI):

10.13 GSI is one of the premier and prestigious organizations amongst the Geological Surveys of the world that deals with geo- scientific and technical activities of the country since its birth (1851A.D.). Despite being a scientific and technical organization, GSI is also engaged in promoting the use of Hindi in the scientific, technical and administrative work. The organization achieved impressive success in using Hindi in its official activities with a view to implement the policy of official language of the Government of India.

10.14 The main achievements of Geological Survey of India in promoting and encouraging Hindi during the year 2014 –2015 are illustrated below:

In House Magazines

10.15 The recent issues of in-house magazines, such as Dhauli, Bhuvan, Lichchvi and Bhoogaurav were published by State Units Odisha, Haryana, Bihar and WR, Jaipur respectively

Implementation of Hindi Incentive Schemes

10.16 To promote use of Hindi in administrative work in GSI CHQ and other offices an incentive scheme has been initiated. A number of officers and staff were awarded prizes under the Hindi incentive scheme in the year 2014.

Inspection of Various Offices

10.17 In order to assess the progress made in use of Hindi in the various offices of the Geological Survey of India, the Deputy Director (Official Langauage) inspected, four offices of GSI. The offices inspected include RSAS, State unit Karnataka and Goa, Marine and coastal survey Division and Natural Energy Resources, Bangalore.

Hindi Workshop

10.18 As per directives of the Department of Official Language, Hindi workshops were organized for the Northern Region at Lucknow, Western Region at Jaipur North Eastern Region at Shillong, Central Region at Nagpur, Training Institute at Hyderabad. The workshops were also organized for GSI offices located at Patna Jammu, Faridabad Chandigarah Bhubhaneswar and Bangalore. In the one day workshop at CHQ, Hindi input using Unicode was taught. Southern Region held three day workshop from 30.07.2014 to 01.08.2014, while Eastern Region also held a three day workshop from 29.09.2014 to 31.09.2014.

Portal of the GSI in Bilingual Form

10.19 As per the policy of the Government of India, necessary steps have been taken to make the web portal of GSI available in Hindi as well.

Hindi Fortnight

10.20 Hindi Fortnight was celebrated by various offices of Geological Survey of India in the month of September, 2014, with September 14 being celebrated as Hindi Divas. During this period different kinds of competitions comprising Hindi Essay, Hindi noting & drafting, Hindi debate, Hindi Typing, Hindi Poem reading & Writing and Administrative terminology in Hindi were organized. A large number of officers and staff of GSI took part in the celebrations

Hindi Translation:

10.21 Gazette Notifications, Office Orders, Summaries, and other office correspondence received from different sections, divisions of GSI CHQ have been translated into Hindi and have been released in bilingual format, thus fulfilling the requirements of Section 3 (3) of Official Language Act, 1963.

Review of quarterly progress report of Regions:

10.22 The review of quarterly progress of all Regions and Missions is carried out regularly and feedback is given regarding shortfall for necessary action.

Indian Bureau of Mines (IBM)

10.23 Indian Bureau of Mines is constantly implementing the official language policy of the Government of India. IBM has it's headquarter situated in 'B' region. Five offices are in 'A' region and the rest are situated in 'C' region. As far as the 'A' region

is concerned, all the offices achieved the target of correspondence in Hindi fixed by the Department of Official Language. Many other programmes were also organized for the spread and dissemination of Hindi. In the headquarter also, many programmes related to Hindi were organized and the target of the Hindi correspondence has almost been achieved. All the offices of IBM located in 'A' and 'B' region, are notified under Rule 10 (4). Hindi Fortnight were organized. Except the two offices of the 'C' region, all the offices are notified under Rule 10 (4). During 2014-15, the details of the progress related to Hindi is as follows:

Meeting of the Departmental Official Language Implementation Committee in headquarter:

10.24 The 90th, 91st and 92nd meetings of the Departmental Official Language Implementation Committee were held respectively on 15.04.2014, 20.08.2014 and 12.12.2014 under the Chairmanship of the Controller General, IBM.

Hindi Fortnight in the Headquarter

10.25 The Hindi Fortnight was successfully organized from 02.09.2014 to 15.09.2014 under the guidance of Shri K. Thomas, Controller General In charge, IBM. During the fortnight, various competitions such as Hindi essay, Hindi noting and drafting, Hindi sulekhan, Hindi debate, Hindi extempore speech and Hindi Quiz were organized. Shri K. Thomas, Controller General and Dr. N. Nikam, Chief Guest, gave away prizes to the winners of the Hindi competitions.

Hindi Diwas in the Headquarter:

10.26 'Hindi Diwas' was celebrated on the 15th of September, 2014 under the Chairmanship of Controller General. On the occasion the message of the Hon'ble Union Home Minister, Shri Rajnath Singh and Hon'ble Minister for Steel & Mines Shri Naredra Singh Tomar was read out by Dr. P.K. Jain, Rajbhasha Adhikari.

Translation work:

10.27 During the year, various important technical and administrative documents were translated in to Hindi.

10.28 The officers and staff of Indian Bureau of Mines actively participate in different competitions organized under the aegis of Town Official Language Implementation Committee, Nagpur. This year, 3 officers and staff got the prize from 'TOLIC'.

Official Language Inspection:

10.29 Sri M. Sengupta, Chief Mining Geologist, from the head quarter conducted the official language inspection of Ranchi Regional Office on 21.04.2014 and 22.04.2014. Similarly, Sri M.V. Sahasrabudhe, Rajbhasha Adhikari, conducted the official language inspection of Dehradun Regional Office on 14.07.2014 and Northern Zonal Office, IBM, Ajmer on 16.07.2014.

National Aluminum Company Limited (NALCO)

10.30 As per the Official Language Act-1963 and Official Language Rules-1976, implementation of Hindi is being done in NALCO.

a) To promote Hindi usage, Hindi Fortnight and Hindi Day were observed from 01.09.2014 to 15.09.2014 at Corporate Office and many Competitions were organized for Hindi speaking, Non-Hindi speaking employees and students. Likewise Hindi Fortnight was observed from

02.09.2014 to 15.09.2014 at S&P Complex, Angul and Hindi Week was observed from 14.09.2014 to 21.09.2014 & Hindi Divas were observed on 14.09.2014 at M&R Complex, Damanjodi.

b) Meeting of the Town Official Language Implementation Committee, Angul was held at S&P Complex on 20.06.2014 & 24.11.2014. Similarly Meeting of Town Official Language Implementation Committee (Undertaking) Bhubaneswar was held on 25.06.2014 at Corporate Office, Bhubaneswar.

Hindustan Copper Limited (HCL)

10.31 During the year 2014-15, HCL made constant endeavour to increase use of Hindi in its Units/Offices. Raj Bhasha Pakhwara and Hindi Diwas were celebrated in the Units/Offices from 14th to 28th September, 2014. The messages of Hon'ble Home Minister, Hon'ble Union Minister for Steel & Mines Shri Narendra Singh Tomar and CMD, HCL were read out in all Offices/Units on this occasion. Various competitions were organized with a view to enhance interest among employees towards Official Language. Prizes were distributed to the winners. Employees are constantly motivated to use Hindi in their day-to-day official work. Hindi Workshops were conducted in the Units/Offices at regular intervals. Regular review of progressive use of Hindi and difficulties faced were carried out in Quarterly meetings of Official Language Implementation Committee under the Chairmanship of CMD at Corporate Office and Unit Heads in Units.

10.32 During the year 2014-15, the Company participated in the half-yearly meeting of Town Official Language Committee (PSUs), Kolkata held on 8th September, 2014. The Hindi edition of House Journal "Tamralipi" of HCL was awarded by Town Official Language Committee (PSUs), Kolkata under "Rajbhasha Award Scheme-2013-14" on 08.09.2014. HCL Corporate Office was also awarded.

10.33 The progressive use of Hindi is being reviewed regularly at the Board meetings. Effort is continuously made to ensure that the Company's advertisements for recruitment/tenders, etc. are also published bilingually. "One Hindi Word Every Day" scheme is operational for improving the Hindi vocabulary of employees. The use of Hindi in computers has been reinforced and advanced Unicode Software Hindi Open Office has been provided to all Units/Offices of the Company.

Mineral Exploration Cooperation Limited (MECL)

10.34 From 01.09.2014 to 16.09.2014 'Hindi Divas' and 'Hindi Pakhwara' was observed in the premises of MECL. Several competitions were organized and prizes were given away so as to encourage employees towards greater use of Hindi language.

10.35 Employees are time and again encouraged for greater use of Hindi in all official correspondence.

10.36 Four workshops were organized on increased use of Hindi where in 105 executives and non-executives participated.

10.37 In the year 2014-15 cash award scheme for progressive use of Hindi was continued wherein ₹ 300 per month was given to 139 employees.

10.38 Under the chairmanship of CMD, Rajbhasa Steering Committee meetings of each quarter was held on the progressive use of Hindi and the problems faced therein. Quarterly reports of the progressive

10.39 According to the directives of the Ministry, Unicode encoding font for Hindi has been installed in all the computers of MECL.



NMDC Mines



11

Exploration Activities in the North-Eastern Region

Exploration Activities in the North-Eastern Region

- Work done by GSI in North-Eastern Region page - 129
- Landslide hazard studies page - 132
- Work done by IBM in North-Eastern Region page - 134
- MECL page - 135

Introduction

11.1 The North Eastern Region has an unique geomorphological and geological setup. The rocks ranging in age from Precambrian to Recent age are exposed here. This part of the country attains significance with the presence of mighty Himalayan Mountain Belt in the north; Shillong Massif Plateau in the south and gorgeous Brahmaputra valley forming the extensive Assam plain in between and Indo-Myanmar Range in the east.

Review of Progress of Ongoing Projects in North-Eastern Region Work Done by GSI in North-Eastern

11.2 GSI, is relentlessly working for the development of the North Eastern Region (NER). To intensify GSI's activities in NER an office was set up at Shillong in 1961 which was a quantum leap for accelerating the activities on mapping and mineral assessment in Assam, North East Frontier Agency (NEFA), Nagaland, Manipur and Tripura. Since then with the changing need of the country and in conformity with the laid down policies of Government as envisaged under policies and five year plans, GSI is continually striving for the development of NER states through augmentation of baseline geological data, natural resource assessment , addressal of societal issues (involving environmental, geotechnical, seismic , landslide studies), publication of maps, literatures, geo-spatial data base and helping the states of NER in training, capacity building, technical and material assistance.

Work done by Geological Survey of India (GSI) in North Eastern Region:

MISSION: I Baseline Geoscience Data Generation

Survey & Mapping:

Regional Survey

11.3 Systematic Geological Mapping (scale: 1:50 K)

- Two items of Systematic Geological Mapping have been initiated in the States of Manipur and Nagaland during FS 2014-15. A total of 299 sq. km area has been covered by systematic mapping between April, 2014 and December 2014 out of total target of 660 sq. km.
- Systematic Geological Mapping in parts of Churachandpur Districts, Manipur was carried out where 189 sq km area has been covered between April, 2014 and December, 2014.
- An area of 110 sq. km has been covered between April, 2014 and December, 2014 in parts of Peren, Dimapur, Khirpere, Kohima and Phek Districts of Nagaland.



Load cast observed on the bottom surface of the sandstone bed on Seling to Thingsul village road section

Specialised Thematic Studies (scale: 1:25 K)

11.4 In North Eastern Region ten items of Specialized Thematic Mapping were taken up in the States of Arunachal Pradesh (3 items), Meghalaya (3 items), Mizoram (1item), Tripura (1 item) and Manipur (1 item) during FS 2014-15 with a total coverage of 1617 sq. km out of total target of 2750 sq. km.



Herringbone cross stratification present in buff to light brown sandstone on Seling to Thingsul village road section.

Geochemical Mapping (GCM)

11.5 A total of ten programmes have been taken up in the states of Arunachal Pradesh (2), Assam (2), Nagaland (2), Meghalaya (2), & Tripura (2) during FS 2014-15. An area of 3722 sq. km has been covered between April, 2014 and December, 2014 out of the total target of 7600 sq. km for FS 2014-15.

Geophysical Mapping (GPM)

11.6 Geophysical Mapping of 900 sq. km. in parts of Ri- Bhoi and Jaintia Hills Districts, Meghalaya and Karbi Anglong District, Assam has been covered.

Photo Geology & Remote Sensing

11.7 One item of Geological Mapping in parts of Meghalaya with the help of remote sensing studies on 1:50,000 scale (6 toposheets) and other item on photogeological Mapping in parts of East Khasi Hill District Meghalaya with Limited Field Checks, Toposheet No 78O/16 have been taken up during the F.S. 2014-15.

Mission II: Natural Resource Assessment (Mineral Exploration)

Introduction

Limestone:

11.8 Investigation for limestone in North of Larket Block, Litang valley, Jaintia hills District, Meghalaya (G3) has been taken up with drilling of 645.75m till the end of December, 2014 against a total target of 700.00m. Thickness of limestone horizons intersected vary from 103.95m to 137.26m.

11.9 Assessment of limestone in the extension area of Mawlong - Ishamati Block of Shella - Bholaganj belt, East Khasi Hills District, Meghalaya (G4) has been taken up in which in which drilling of 327.30m was achieved out of total drilling of 700.00 m along with detailed mapping of 0.35m till the end of December, 2014.

11.10 Investigation of dolomite & limestone around Namchi, Nayabazar & Bijanbari areas of South Sikkim & West Sikkim District, Sikkim (G4) in which an area of 29 sq. km has been covered by large scale mapping.

Iron Ore:

11.11 Preliminary Investigation for Iron Ores in Khetabari Formation and Ragidoke Formation of Bomdila Group in West Siang and Upper Subansiri Districts, Arunachal Pradesh (G4) was initiated during 2014-15 and an area of 20.00 sq. km has been

covered till the end of December, 2014 by large scale mapping.

Base Metals:

11.12 Investigation for Basemetal and associated precious metal mineralisation in Pakke- Kesang- Khadaso areas, East Kameng District, Arunachal Pradesh has been taken wherein and an area of 30.00 sq. km has been covered by large scale mapping and 0.1 sq. km by detailed mapping of Ningcho Block.

Chromium:

11.13 Investigation for Chromium and associated Basemetal in Ophiolite belt of Nagaland (G4) has been taken up and an area of 23.00 sq. km has been covered by large scale mapping till the end of December, 2014.

Lateritic Bauxite:

11.14 Investigation for Lateritic Bauxite around Rambrai area West Khasi Hills District, Meghalaya (G4) has been taken up and an area of 0.75 sq. km has been covered by detailed mapping. The thickness of lateritic bauxite at places is about 8-10 m.

Coal Exploration:

11.15 Regional Exploration for Gondwana Coal in and around Phatapara area in the down dip extension of Sukchar – Singrimari area, Singrimari Coalfield, Dhubri District, Assam at the border of Assam & Meghalaya (G3) has undertaken.

REE:

11.16 Investigation for W, Sn & REE in the Chakrasila, Nadangiri and Bhumeswar in the Bongaigoan, Dhubri and Kokrajhar Districts and Satali, Surya Pahar, Pancharatna, Bamundanga, Nalanga and Pandaba in the Goalpara District, Assam (G4) was taken up.

Graphite:

11.17 Preliminary Investigation for Graphite Deposits in Khetabari and Ragidoke Formation of Bomdila Group, West Siang District, Arunachal Pradesh was taken up in which an area of 25.00 sq. km has been covered by large scale mapping and 0.4 sq. km by detailed mapping till the end of December, 2014.

Mission: III Geoinformatics (Dissemination of Information)

11.18 During the period from April, 2014 to October, 2014 the following work was taken under:

- District Resource Maps (DRMs) of 7 District of Meghalaya in which DRM of West Khasi Hills District was finalized and Uploaded on GSI Portal.
- DRMs of 2 Districts of Arunachal Pradesh (Papumpare and Lower Subansiri District) in which geological layer of Papumpare District is initiated.
- DRMs of 3 Districts of Manipur (Imphal West, Thoubal & Bishenpur (Districts) will be taken up in which DRM of Thoubal District is in progress.
- DRMs of 03 Districts of Mizoram (Lunglei, Lawngtlai & Saiha Districts) will be taken up during 2014-15 in which the preparation of inset maps of Geomorphology, Geotechnical, Geohydrology and Landuse / Land cover themes of Lunglei District for incorporation in the main DRM of this District is completed.
- Materials from different divisions/ State Units were collected, compiled

and edited for Publication of Rec. GSI, Vol. 148, Pt. 4 (Extended Abstract for F.S. 2013-14) and GSI, e-News (NER), Vol. 24 (January, 2013 to December, 2013).

- Reviewed Compiled literature and checking of the digitized maps and typed text materials was done for Publication of Bulletin Series-A (Sillimanite deposits of Sonapahar area, West Khasi Hills District, Meghalaya) (FS 2014-15 and FS 2015-16).
- 13 scientific papers and 8 abstracts were scrutinized and processed for technical / scientific publications.
- Preparation of material for monthly progress of Project: Geoinformatics Extended Abstract, e-News, Annual General Report, RAC and Briefing Book of NER was carried out.

Mission: IV Fundamental & Multidisciplinary Geosciences and Special studies (Specialized Investigations)

Palaeontological Studies:

11.19 During FSP 2014-15, Search for fossils specially vertebrates in the Shella and Kopili Formations, Jaintia Hills District, Meghalaya and Search for vertebrate fossils in the Mahadek and Langpar Formations, East Khasi Hills District, Meghalaya has been taken up. Fish and reptile teeth were found from Langpar Formation, shark tooth and bone fragments were collected from Mahadek Formation. Microfossils are mainly represented by the larger foraminifera assemblages. A few bivalves fossils with moderately preserved ornamentation features are also collected. Plant fossils are also found from the Sandstone in the area from Sylhet sandstone units of Shella formation.

Geotechnical investigations:

11.20 NER may be termed as the 'power house' of India as it possesses hydropower potential, which is about 30% of the total hydel potential of the country. The hydel potential of major river basin of Arunachal Pradesh like Kameng, Subansiri, Siang, Lohit and Dibang totals production of 34,920 MW at 60% load factor (CEA) i.e. about 90% of the total hydropower resources of NER. Geotechnical Investigations were carried out in the following projects:

i) Pare H.E. Project, Papum Pare District, Arunachal Pradesh

ii) Kulsi Multipurpose Dam Project, Kamrup District, Assam

iii) Rukni Irrigation Project

iv) Sonai Irrigation Project

v) Sekmai Multi. Project, Cachar District

vi) Ganol Stage-II H.E.Project, W.K. Hills Distric

vii) Myntdu – Leshka H.E. Project Stage-II, Jaintia Hills District

viii) Geotechnical investigation of Tuirial Hydroelectric Project, Kolasib District, Mizoram:

ix) Mat-Sekawi Hydroelectric Project, Lunglei District, Mizoram

Landslide Hazard Studies:

11.21 The following items were taken up during FS 2014-15 in the North Eastern Region

Updation of Existing Landslide Inventory of North Eastern Region.

11.22 During FS 2014-15 post disaster studies and landslide inventory work carried out in the states of Arunachal Pradesh, Assam, Meghalaya, Nagaland and Sikkim. The following landslide incidences were studied

i) Barapathar landslide, Shillong, Meghalaya in which eight persons were killed and many others injured.

ii) Landslide along NH-40 at Umling, Ri-Bhoi district, Meghalaya that resulted in many casualities.

iii) Landslides inventory studies along Barapani to Byrnihat sector of the Guwahati-Shillong road (NH-40).

iv) Study of 10 debris slides from parts of toposheet no. 83 K/2, Kohima & Phek districts, Nagaland.

v) Landslide/subsidence at Tunjoy village, Senapati district, Manipur which affected around 70 households.

11.23 Meso scale (1:10000) Landslide Susceptibility Mapping in and around Mangan Urban area, North District, Sikkim was taken up in 2014-15.

Detailed Geotechnical investigation and monitoring of the Sangkhola landslide on NH 31A along Singtam-Gangtok Road, East District, Sikkim:

11.24 Survey pillars have been installed within the landslide zone. One set (pre-monsoon) monitoring data of all the installed survey pillars (10 nos.) has been recorded.

Earthquake Studies:

11.25 The Earthquake Studies the following work is taken up in FS 2014-15

i) Seismic and Landslide Hazard Assessment of Kohima City, Nagaland has been taken up in FS 2014-15 for suggesting disaster mitigation and urban planning.

ii) Detailed Seismological Studies of the Tripura Fold Belt and its adjoining areas with the aim to understand the seismicity pattern, nature of faulting and subsurface heterogeneity in the entire Tripura folds belt and its adjoining areas has been taken up in FS 2014-15.

Medical Geology:

11.26 The following items have been taken up in 2014-15

i) Geology Environmental Hazard Study of Flood and Erosion in Majuli, Jorhat District, Assam was taken in FS 2014-15.

ii) Study of arsenic contamination in water and soil in parts of Nagaon and Morigaon Districts, Assam

Fundamental Geosciences

Sedimentological, Palaeontological and Petrographic



Tooth of a reptile found from Langpar Fm. near Pynursla, Meghalaya.

11.27 Study of coal bearing Sylhet Sandstone of Shella Formation, Jaintia Hills District, Meghalaya has been taken up in 2014-15 to confirm its stratigraphic status and to establish the provenance, dispersal pattern and mode of deposition of the lithounits, petrography and rank study of the coal associated with Sylhet Sandstone.

11.28 Budget and Expenditure of the Northeast Region for the Financial Year 2014-15 (Allocated Plan Outlay for NER) is given **Table 11.1**



Prolific occurrences of Larger Foraminifera within Upper Sylhet Limestone band of Shella Formation, Meghalaya



Occurrences of Bivalves in Limestone of Shella Formation, Meghalaya.

Table 11.1

S. No.	SCHEMES	BE	RE	Expenditure Till Dec 2014
1	Survey & Mapping	13.38	11.64	11.80
2	Mineral Exploration	6.81	6.03	6.08
3	Special Investigation & Antarctica Expl.	2.37	2.00	1.92
4	R & D	5.03	4.15	4.22
5	Information Dissemination	4.40	3.46	2.99
6	Human Resource Development (Training)	1.70	1.54	1.39
7	Modernization & Replacement	2.68	1.28	0.49
8	TSP	0.00	0.00	0.13
	Total	**36.37**	**30.10**	**29.02**
	% utilization of budget against RE			96%

Work done by Indian Bureau of Mines in North Eastern Region

11.29 The Sub-Regional Office of IBM at Guwahati continued to undertake inspection of mines and studies on development of resources in North-Eastern Region. During the year 2014-15 (up to December, 2014), 19 mines / areas were inspected for enforcement of provisions of MCDR, 1988 and for processing and disposal of mining plan/scheme of mining.

11.30 Three training programmes viz. (i) North-East Special Assistance Workshop at Gangtok (Sikkim) on 28th- 29th May

2014, (ii) Training Programme on 'Mineral Exploration & Opencast Mine Design with Blasting Techniques' during 17th-19th September, 2014 at Shillong and (iii) Training programme on Mineralogical studies and Clay beneficiation at Nagpur on 27th-28th November, 2014 were conducted, in which 45 industry personnel/ Government officials from North-Eastern Region participated.

Work Carried Out by MECL in North Eastern Region

11.30 MECL has been associated with mineral exploration activities and geo-technical studies for the development of mineral industry in the North Eastern Region in last 31 years. It has completed exploration for coal in 15 blocks in the states of Assam, Arunachal Pradesh, Nagaland and Meghalaya on behalf of Ministry of Coal, North Eastern Council and CMPDIL. Under its promotional programme funded by Ministry of Mines, it has completed eleven schemes which include copper, sillimanite, glass sand, shell limestone and Ferro-Silicon grade quartzite in the states of Assam, Meghalaya, Mizoram, Sikkim and Arunachal Pradesh. In addition, it has carried out geo-technical studies on behalf of Brahmputra Flood Control Board in the state of Assam and Arunachal Pradesh and consultancy work for remote sensing studies at Tripura on behalf of Ministry of Mines. Exploration services were also rendered to Atomic Mineral division involving survey, drilling & mining in Umarangaon / Domiaset block, West Kasi Hill district.

11.31 In addition to above, on behalf of Directorate General of Hydrocarbon, Govt. of India, MECL with BRGM France has completed studies for resource estimation in respect of oil shale deposit in an area of 254 sq.km. of Assam & Arunachal Pradesh.

11.32 The exploration works carried out in North East Region during 2014-15 are given below :

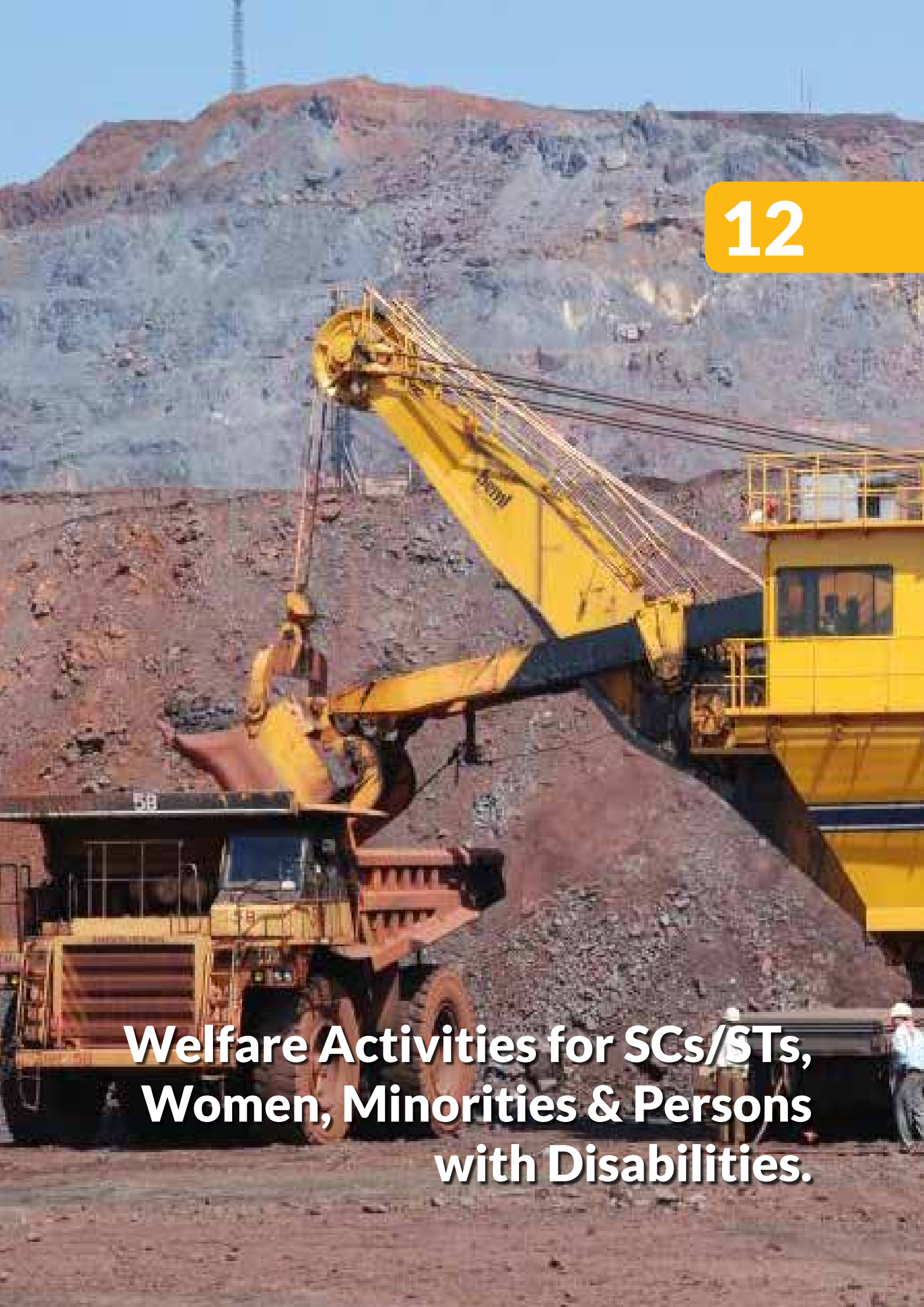
- NIMI – Pyakatsu (Limestone) Block, District - Kiphire, Nagaland.
- LUMTHALARY Limestone Block, District Jaintia Hills, Meghalaya.
- LUMSHORTOH (Limestone) Block, District - Jaintia, Meghalaya.



Dalli Manual Mines



Reclaimer at Alumina Refinery



12

Welfare Activities for SCs/STs, Women, Minorities & Persons with Disabilities.

Welfare Activities for SCs/STs, Women, Minorities & Persons with Disabilities.

- Ministry of Mines page - 139
- GSI page - 139
- IBM page - 139
- NALCO page - 140
- HCL page - 142
- MECL page - 142

Ministry of Mines

Welfare of Scheduled Castes (SCs), Scheduled Tribes (STs), Women and other Weaker Sections

12.1 The Ministry of Mines, with its attached office, subordinate office and the Public Sector Undertakings under its administrative control follow the Government guidelines with regard to welfare of weaker sections of the society, in letter and spirit. For upliftment of weaker sections of society, PSUs identify and implement a number of programmes in the peripheral area of their units/locations.

12.2 A number of activities like community education programmes, facilitating availability of drinking water, development/ repair of approach roads of surrounding areas, arranging health awareness programmes and medical camps in rural areas were undertaken by the PSUs for upliftment of the community in and around their townships as part of their social responsibility.

12.3 For the welfare of persons with disabilities, due attention is being given to Section 33 of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, which provides that every appropriate Government shall appoint in every establishment such percentage of vacancies not less than three per cent for persons or class of persons with disability, of which one per cent shall be reserved for persons suffering from (i) blindness or low vision; (ii) hearing impairment, and (iii) locomotor disability or cerebral palsy in the posts identified for each disability.



Village health camp at Ghatsila, Jharkhand

Geological Survey of India (GSI)

12.4 GSI has undertaken a number of activities for the welfare of Scheduled Caste (SC)/Scheduled Tribe and other weaker sections of the Society.

(i) Measures were taken for the persons with disabilities following Government orders to appoint them against the vacancies reserved for them.

(ii) As per the order issued by the Government from time to time reservation of SC/ST persons in employment has been followed. SC/ST cells constituted in the headquarters as well as in all the regional offices of GSI with one Liaison Officer for SC/ ST in each region of GSI to meet and discuss the difficulties faced by the community and to take appropriate measures for resolving the issues.

(iii) The Liaison Officers (SC/ST) meeting is being held regularly once in a year for discussing on SC/ST grievances and taking appropriate actions.

Indian Bureau of Mines (IBM)

Reservation of Vacancies for persons with Disabilities

12.5 IBM is strictly following the various instructions of the Government issued

from time to time regarding reservation of vacancies for persons with physical disabilities. As on 31st December, 2014, 13 physically handicapped persons were under employment in IBM of which 03 are visually handicapped, 01 is hearing handicapped and 09 are orthopedically handicapped.

National Aluminium Company Limited (NALCO)

12.6 Welfare of activities for SCs/STs,Women, Minorities and Persons with disabilities.

- The Presidential Directives issued from time to time on reservation of SC/ST persons in employment has been scrupulously followed by the Company. There are exclusive Cells constituted for the welfare of the SC/ST employees Welfare Associations which meet and discuss their view points at regular intervals both at Complex level as well as Corporate level.
- Relaxation/concession in Promotions- Relaxation of 10% of marks both in written test and interview is given to SC/ST employees in promotion up to lowest rung of Group-A.



Hand Pump provided by NALCO in the peripheral village

- 10% reservation in A&B types quarters & 5% in C,D & E types quarters is given to SCs/STs employees in allotment of residential quarters.
- Liaison Officers have been appointed for each of the units for implementing the Presidential Directives as well as to look after the welfare of SC/ST employees. SC/ST Cell have also been constituted under the control of the respective Liaison Officers to ensure the prompt disposal of Grievances and representations of SC/ST employees.
- The in-house programme on Govt. Directives on reservation of posts for SC/ST & OBC is being organised with the help of the faculty assistance of Dept.of Public Enterprises, Govt. of India on regular intervals at our Training Centre. The dealing officials on the subject, members of SC/ST Cell and office bearers of SC/ST Employees Welfare Associations are nominated to such programmes. In addition to above, office bearers of SC/ST Associations & HRD Executives are deputed for External Training programme on SC/ST reservation policy conducted by different agencies.
- NALCO SC/ST Employees' Welfare Associations functioning at different units/office are celebrating the Dr. Ambedkar Jayanti, Pandit Raghunath Murmu Jayanti Sahid Divas of Sahid Laxman Naik, Annual Day celebration and Jati Janjati festival every year for which financial assistance is extended by the Management.
- 20% of the scholarships are reserved for the children of SC/ST employees under Nehru Memorial Scholarship awarded to the children of NALCO

employees. 10% less marks is also given to SC/ST students as compared to general candidates.

- Invariably in all the Selection Committees/Boards for recruitment and the Departmental Promotion Committees for promotion, an officer from SC/ST category of appropriate status is included as one of the members in order to take the interest of the SC/ ST candidates.

12.7 Minority Welfare:

- A member of the minority community is associated in the Selection Committees for Recruitment in order to give a fair deal to the minority community. Advertisement to fill up the vacancy position is notified in regional languages in order to encourage the minority candidates about recruitment especially in Group- 'C' & 'D' posts.
- The Company takes due care towards the sentiment of various minority communities with a greater objective of communal harmony.

The Persons with Disability:

12.8 The Company has been taking efforts to achieve representation in all posts in Group – A, B, C & D as per section 33 of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 in spite of its state-of the-art technology requiring mostly healthy and competent technical personnel. As per Section -33 of the above Act, 3% of vacancies are being reserved for persons with disabilities of which 1% each is reserved for persons suffering from (i) Blindness or low vision, (ii) Hearing impairment & (iii) Locomotor disability or cerebral palsy.

12.9 The company organizes an All India level Badminton Tournament for disabled persons every year at their S&P Complex, Angul.

12.10 As on 31.12.2014, there are 82 persons with Disability in employment of the Company in various identified posts.

12.11 Employment of different categories of personnel in NALCO is shown in Table 12.1.

Table 12.1

Employment in NALCO of SC/ST/Ex-SM/PH/LDP/Minorities as on 31.12.2014.

Group	Total No. of Employees	SC	ST	EX-SM	PWD	LDP	Minority
Executives	**1,727**	222	119	02	09	23	73
Non-executives	**5,503**	953	1202	22	69	1,937	196
Trainees	**134**	25	07	--	04	01	04
Total	**7,365**	1,200	1,328	24	82	1,961	273
		2,528					

12.12 It may be seen from above that every third employee of the organization belongs to SC or ST Community.

Hindustan Copper Limited (HCL)

Welfare Activities

12.13 Employees Participation in Management over the years has been the backbone of harmonious Industrial Relations in the Company. The successful operation of various Bi-partite forums at all three levels, namely, at the Apex level, Unit level and Shop floor level has immensely contributed in the smooth performance of the Company. Quality Circles which were introduced in all the production units of the company have been successfully functioning and contributing towards reduction of cost and increasing productivity.

Representation of SC/ST and OBC

12.14 The representation of SC, ST and OBC employees out of the total manpower of 3785 as on 31.12.2014 is 17.20%, 13.29% and 10.20% respectively

Implementation of The Persons With Disability Act, 1985

12.15 During last few years, there has been limited recruitment in the company. Therefore, there was hardly any scope of fresh inductions of physically challenged persons. In addition, the mining operations of the Company being hazardous in nature, the scope of engagement of physically challenged persons is limited. The number of physically challenged persons employed in the Company as on 31.12.2014 is shown in Table 12.2.

Table 12.2

Group	Number of physically challenged persons
A	3
B	0
C	23
D	13
Total	39

Mineral Exploration Corporation Limited (MECL)

12.16 Welfare of SC/ST: MECL gives due importance to meet socio-economic needs of the SC and ST communities. For this purpose, MECL provides Health Check-up facilities and training to these communities by providing sewing machines and vocational training for their welfare and career development etc under the SC/ST sub plan Scheme.

12.17 During 2014-2015, MECL has decided to distribute ₹ 25,000 each to students of Navodaya Vidyalaya belonging to SC/ST/OBC Category. The same is mentioned under the guidelines for regulation and payment of scholarships under MECL.

Gender Equality

Ministry of Mines

12.18 A complaint committee under chairpersonship Smt. Sujata Prasad, JS&FA was reconstitute on 29.05.2014 to look into the cases of sexual harassment of women at work place. A meeting of the committee was held on 30.1.2015.

12.19 As on date there are 21 women employees working in the Ministry of Mines. All benefits are extended to them

as per rules.

Indian Bureau of Mines (IBM)

12.20 Women employees constitute about 12.36 per cent. Training is imparted to women employees in the field of technical as well as administrative matters.

12.21 A Committee has been constituted in IBM to redress the complaints made by the victims of sexual harassment at work place in a time bound manner.

National Aluminium Company Limited (NALCO)

12.22 The Company has adopted the principle of equal opportunity to the women employees in the matter of employment and the Company has 356 women employees at different levels and categories. In the recently held recruitment of GETs 11 number of women engineers have been appointed.

12.23 Need based developmental and functional training programmes are provided to the women employees. Institutional mechanism through conduct rules has also been put in place to avoid sexual harassment of women. The internal committees to deal with sexual harassment cases are in place in M&R Complex, S&P Complex and Corporate Office. As a mark of development in their individual leadership, women executives of the company have got a place as Coordinator/member of National Organizations like Women in Public Sector (WIPS) and they play active roles in policy making in (WIPS).

12.24 This year NALCO hosted the Regional Meet of Women in Public Sector (WIPS) Eastern Region at Bhubaneswar on 05.12.2014. Around 250 women from different Public Sector of Eastern Region of the country participated in the Meet.

12.25 Two women executives were sponsored to attend 3 months leadership programme (2 months in Administrative Staff College of Hyderabad and 1 month in University of Slovenia) and they have completed the course successfully.

Hindustan copper Limited (HCL)

12.26 In pursuance to the judgment of the Supreme Court, HCL has set up committees in all the units/offices of the company for the prevention of sexual harassment of women in work place. A provision in this regard has also been incorporated in the Conduct, Discipline and Appeal Rules of HCL. During the year under report, no incidence of discrimination amongst employees on the basis of gender has come to light.

Mineral Exploration Corporation Limited (MECL)

12.27 Women and weaker sections: Being a CPSU, MECL is committed for raising and improving the socio-economic status of women and weaker sections of the society. For this purpose, under the CSR activities during 2014-15, the company has provided cycles to the Girl students in 12 schools.

12.28 In order to avoid sexual harassment of women at work places a Grievance Committee on 'Sexual Harassment' on women at work place has been constituted.

12.29 MECL gives equal status to its women employees and the Service Rules, etc. are uniformly made applicable. The women employees in the Company are provided Maternity benefits as per rules.

12.30 MECL has also started "CRECHE"

facility for working woman employees at Corporate office, Nagpur.

National Institute of Rock Mechanics (NIRM)

12.31 Steps were taken to fill up the backlog vacancies in respect of SC/ST/ OBC/Persons with Disabilities. NIRM has set up a committee to check any form of harassment against women employees at the work place. NIRM gives equal status to its women employees and the Service Rules etc are uniformly made applicable. The women employees in the Institute are provided maternity benefits as per rules.

12.32 The institute is emphasizing on cleanlines at the Institute and its campus involving the staff and their family as a part of Swachh Bharat activities.



Drinking water: Distribution of Tata Swatchh at Malanjkhand, Madhya Pradesh by HCL

13



Plan, Budget and Audit Paras

Plan Budget and Audit Paras

- Annual Plan 2014-15 page - 147
- Annual Plan 2015-16 page - 148
- Audit paras page - 150

13.1 The Ministry had projected the Gross Budgetary Support (GBS) Outlay of ₹ 4,923.57 crore for the 12th Five Year Plan 2012-17. As against this, the Ministry has been allocated ₹ 2,332.00 crore in the 12th Five Year Plan. The 12th Five Year Plan (2012-17) proposed GBS outlay and allocation is given in the **Table -13.1**. The Scheme-wise allocation of 12th Five Year Plan is given at **Annex-13.1**.

Table-13.1

12th Five Year Plan 2012-2017 (Proposed) GBS and Allocation

(₹ in Crore)

Sl. No.	Organisation	Proposed	Allocated
1	MECL Promotional	50.00	50.00
2	GSI	4,333.00	1,876.42
3	IBM	198.53	198.53
4	S&T Programme	49.05	49.05
5	Construction		
	GSI	292.99	128.00
	IBM	30.00	30.00
	Total	**4,923.57**	**2,332.00**

Annual Plan 2014-15

13.2 Keeping the 12th Five Year Plan (2012-17) objectives in view, the Ministry had proposed GBS of ₹ 844.66 crore for Annual Plan 2014-15. GSI had proposed an Outlay of ₹ 697.29 crore for 2014-2015 of which the major portion of the Outlay is for Survey & Mapping (₹ 206.60 crore), Information Dissemination (₹145.69 crore) and Modernization & Replacement (119.48). IBM had proposed an Outlay of ₹60.85 crore for 2014-2015. IBM's proposed outlay is for five ongoing schemes. The proposal of IBM is mainly on account of Mining Tenement System (₹20.00 crore) and Inspection of Mines for Scientific & Systematic Mining, Mineral Conservation and Mine Environment (₹16.40 crore). The Planning Commission had allocated ₹650.00 crore to the Ministry for the Annual Plan 2014-15.

13.3 The Annual Plan 2014-15 proposed GBS outlay and allocation is given in the **Table-13.2**.

Table-13.2

Annual Plan 2014-2015 (Proposed) GBS and Allocation

(₹ in Crore)

Sl. No.	Organisation	Proposed	Allocated
1	MECL Promotional	10.00	10.00
2	GSI	697.29	483.70
3	IBM	60.85	53.00
4	S&T Programme	22.30	20.30
5	Construction		
	GSI	51.22	80.00
	IBM	3.00	3.00
	Total	**844.66**	**650.00**



Cement Plant

Annual Plan 2015-16

13.4 Considering the 12th Five Year Plan (2012-17) objectives and allocation given in the first three years of the 12th Five Year Plan, the Ministry had proposed GBS of ₹527.04 crore for the Annual Plan 2015-16. GSI had proposed an Outlay of ₹425.50 crore for its 8 schemes excluding Construction budget. The major portion of the Outlay is for Survey & Mapping (₹142.15 crore), Information Dissemination (₹108.66 crore) and Modernization & Replacement (₹91.02 crore).

13.5 IBM has proposed an Outlay of 54.44 crore for 2015-2016 for its five on-going schemes. The proposal of IBM for 2015-16 is mainly on account of Inspection of Mines for Scientific & Systematic Mining (₹16.59 crore), Computerization of Online Register on Mining Tenement System (₹13.80 crore), Technological up gradation & Modernization (₹5.75 crore) and Mineral Beneficiation studies utilization of low grade & sub-grade ores & analysis of environmental (₹7.65 crore).

13.6 As against the total requirement of ₹527.04 crore, the Ministry of Finance has allocated an amount of ₹570.58 crore for the Ministry excluding the Constructions grant. The proposed outlay alongwith allocation organization-wise of the Ministry of Mines during Annual Plan 2015-16 is given in the Table-13.3.

Table-13.3

Annual Plan 2015-2016 (Proposed) GBS and Allocation

(₹ in Crore)

Sl. No.	Organization	Proposed Outlay	Allocated
1	MECL Promotional	27.00	40.00
2	GSI	425.50	462.58
3	IBM	54.44	53.00
4	S&T Programme	20.10	15.00
	Total	**527.04**	**570.58**

13.7 The Organization-wise distribution of Outlay for Annual Plan 2014-15 and 2015-16 showing Internal Resources (IR), Extra Budgetary Resources (EBR), Gross Budget Support (GBS), North Eastern Region (NER), and Tribal Sub Plan (TSP) is given at the Table-13.4.

Table -13.4
ANNUAL PLAN 2014-15 & 2015-16

(₹ in Crore)

S. No	Schemes / Programme	ANNUAL PLAN 2014-15						ANNUAL PLAN 2015-16					
		BUDGET ESTIMATE						BUDGET ESTIMATE					
		Plan Outlay				Outlay earmarked		Plan Outlay				Outlay earmarked	
		Outlay	IR	EBR	GBS	North-East	TSP	Outlay	IR	EBR	GBS	North-East	TSP
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Central Sector Schemes												
1	NALCO	1,181.02	1,181.02	0	0	0	0	1142.21	1,142.21	0	0	0	0
2	HCL	522.16	522.16	0	0	0	0	475	475	0	0	0	0
3	MECL												
	Promotional	10	0	0	10	0	0	40	0	0	40	0	0
	Capital	18.71	18.71	0	0	0	0	17.23	17.23	0	0	0	0
4	GSI	483.7	0	0	483.7	48.37	19.35	462.58	0	0	462.58	21.66	10
	Construction												
	GSI	80	0	0	80	0	0	0	0	0	0	0	0
5	IBM	53	0	0	53	5.3	2.12	53	0	0	53	5.3	2.12
	Construction												
	IBM	3	0	0	3	0	0	0	0	0	0	0	0
6	S&T	27.8	7.1	0.4	20.3	0	0	23.45	7.9	0.55	15	0	0
	Total	**2,379.39**	**1,728.99**	**0.4**	**650**	**53.67**	**21.47**	**2,213.47**	**1,642.34**	**0.55**	**570.58**	**26.96**	**12.12**

* The total approved Outlay of the Geological Survey of India (GSI) is of ₹ 462.58 crore consists of ₹ 256.00 crore which is for payment to SCI towards maintenance of GSI vessels (₹ 120.00 crore) and for OCBIS project (₹ 136.00 crore. The GSI has proposed for exemption from DoNER for making provision for NER. Hence more than 4% of the balance of ₹ 206.58 crore (₹ 462.58crore – ₹ 256.00 crore), i.e. ₹ 10.00 crore has been kept for TSP and more than 10% for NER which comes to ₹ 21.66 crore.

Audit

13.8 The Audit Paras are being reviewed quarterly in the Standing Audit Committee (SAC) meeting under the Chairmanship of the Secretary (Mines). There were 7 Audit Paras pending in the Ministry as on 31.03.2014. Due to the Quarterly Review by the SAC and the concerted efforts, 3 Paras have been settled during the year and 4 are pending.

13.9 There have been 12 SAC meeting in series, since the inception of the Committee, which was set up on 11th August, 2010. The latest status of these Audit Paras is given in **Annex-13.2.**

Annual Plan 2015-16

Geological Survey of India (GSI)

13.10 During FY 2015-16 GSI has proposed a Budget outlay of ₹ 425.5 crore and will be adequate for carrying out both the special projects / expenditure (OCBIS, Modernisation Programme, maintenance of the Vessels / Aircraft / Heliborne Systems etc) and operational (FSP) expenditure.

13.11 In the present proposed outlay ₹ 107.2 crores has been sought under Other Charges of Survey & Mapping Head. After the recent acquisition of the OGRV R.V. Samudra Ratnakar, the maintenance charges to SCI for the vessel have increased substantially. Maintenance of existing marine vessels, airborne systems, outsourcing of vehicles, will be met from the existing budget of FY 2015-16.

13.12 The provision for Mineral Exploration Head, has been pegged at ₹ 27.75 crore under OC to take up the outsourcing of drilling programmes.

13.13 GSI shall take up a project for implementation of Phase III of the GSI Enterprise portal through Online Core Business Integrated System (OCBIS) for which ₹ 101 crores has been proposed.

13.14 Under R&D scheme ₹ 9.85 crores have been projected for meeting the essential expenditure related to sophisticated laboratory gadgets, service contract (AMC) for laboratory equipments, procurement of spares and consumables for the sophisticated equipment installed in the different geological and chemical laboratories, exigency fund for meeting expenditures of emergent nature related to the running of the sophisticated state-of-the-art laboratories.

13.15 The coastal vessels of GSI are very old (~ 30 years) and already completed their lifespan and considering this fact GSI is in the process of procuring one multi-utility Geotechnical vessel with shallow drilling capabilities which is awaiting final approval from the Government. ₹50.5 crores is proposed towards procurement of the GTV.

13.16 During the FY 2015-16 an amount of ₹76 crores is proposed under M&E head and another ₹ 4.0 crore under motor vehicle head.

13.17 Further, GSI has proposed ₹20 crores under the construction budget for continuing renovation and repairing of the heritage building at Kolkata, Phase-II 'Lab Complex', Chemical Lab building, including Conference Hall, at RSAS, Vasudha Bhavan, GSI Complex at Bangalore, Office-cum-Lab. Complex for GSI at Shillong, Office Building including development of site and bulk services for GSI at Guindy, Chennai.

Annual Plan 2015-16

Indian Bureau of Mines

13.18 IBM had proposed an outlay of ₹ 60.85 crore for 2014-2015. The IBM's proposed outlay was mainly for five ongoing schemes. Proposed GBS and Allocation for annual plan 2014-15 is given in Table - 13.5.

Table 13.5
Annual Plan 2014-2015 (proposed GBS and Allocation

(₹ in Crore)

Organization	Proposed Outlay	Allocated
IBM	60.85	53.00
IBM – Construction	3.00	3.00

13.19 Ministry has allocated an outlay of ₹ 53.00 crore for 2014-2015 for five ongoing schemes Proposed GBS and Allocation for annual plan 2015-16 is given in Table -13.6.

Table 13.6
Annual Plan 2015-2016 (proposed GBS and Allocation)

(₹ in Crore)

Organization	Proposed Outlay	Allocated
IBM	54.44	---
IBM – Construction	4.91	---

13.20 The outlay for Annual Plan 2014-15 and proposed outlay for 2015-16 showing Internal Resources (IR), Extra Budgetary Resources (EBR), Gross Budget Support (GBS), Net Budget Support (NBS), North Eastern Region (NER), and Tribal Sub Plan (TSP) is given at the Table 13.7.

Table 13.7
Annual Plan 2014-15 and 2015-16

(₹ in Crore)

S. No.	Schemes / Programmes	Annual Plan 2014-15 Budget Estimate							Annual Plan 2015-16 (proposed) Budget Estimate						
		Plan Outlay				Outlay earmarked			Plan Outlay				Outlay earmarked		
		Outlay	IR	EBR	GBS	NBS	North East	TSP	Outlay	IR	EBR	GBS	NBS	North East	TSP
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	IBM (Central Sector Schemes)	53	0	0	53	53	5.3	2.12	54.44	0	0	54.44	54.44	5.44	2.18



Water Sprinkling on Roads



14

Miscellaneous

Miscellaneous

- Centre for Techno-economic Mineral Policy Options (C-TEMPO) page - 155
- National Informatics Centre (NIC) page - 155
- E-Office page - 156
- Bio Metric Attendance (BAS) page - 157
- Internet Protocol version 6 (IPv6) page - 157
- E-samiksha page - 157
- Swachh Bharat Mission page - 157
- Redressal of public grievances page - 158
- Vigilance cases page - 159
- RTI page - 160

Centre for Techno-Economic Mineral Policy Options (C-TEMPO)

14.1 Centre for Techno-Economic Mineral Policy Options has been set up as a Registered Society within the administrative purview of Ministry of Mines, to function as a think tank, to advice and evolve attributable but non-binding policy options on techno-economic issues concerning the mineral and mining sectors, for the consideration of the Government.

14.2 During the period 2014-15, the Centre Developed two Reports.

(i) The first report – "An overview of technology metals from Indian perspective" describes the significance of eleven technology metals - Molybdenum (Mo), Rhenium (Re), Tellurium (Te), Selenium (Se), Germanium (Ge), Cadmium (Cd), Indium (In), Gallium (Ga), Vanadium(V), Scandium (Sc) and Lithium (Li), in high-tech civil-defence applications and their global availability. Since India does not produce most of these metals and we need them for developing energy efficient processes and clean energy-green energy technologies, the report also looks at strategies to attain mineral security.

(ii) The second report on "Recovery of minerals and metals from mine waste and tailings" is aimed at promoting zero-waste mining and optimal utilization of all natural resources within a sustainable development frame work. High-grade ores are fast depleting and the low-grade ores, mine waste and tailings are emerging as the best alternate source for many valuable metals and minerals. Towards this, there is a need to develop viable processes and technologies capable of extracting metals from low concentration sources.

National Informatics Centre (NIC)

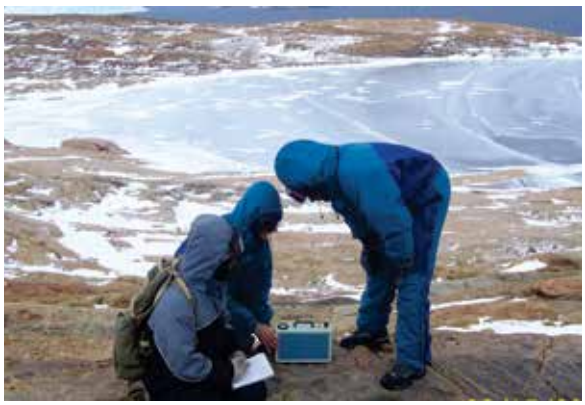
IT Support by NIC at Ministry of Mines

14.3 National Informatics Centre (NIC) of the Department of Information Technology is providing network backbone and e-Governance support to the Ministry of Mines. The following are the IT Services that NIC provided during the year:

Management Information Systems

14.4 Ministry of Mines with the help of National Informatics Centre (NIC) is implementing various decision support system required for better planning, monitoring and decision making. The computerization has been done in the area of prior approval for Mineral Concession Applications, Registration under Rule 45, Revision Applications, and Payroll etc. The various Applications which are operational in the Ministry are as follows:

- Mineral Concession Approval System
- Revision Application System
- Registration under Rule 45 of MCDR, 1988
- Post approval activities of Mineral



Geological Field work at Larsemann Hills Antarctica

Concessions at Indian Bureau of Mines

- Online Network/Internet Complaint System

14.5 Following Centralised Systems from NIC are also implemented in the Ministry:

- eOffice
- Comprehensive DDO package for pay related data processing
- Public Grievance Monitoring System
- ACC Vacancy Monitoring System
- RTI Information System
- Visitor Management System (eVisitor)
- AEBAS (Aadhar enabled Biometric Attendance System)

E-Office

14.6 The e-office was implemented in the Ministry of Mines from May, 2013.The following modules have been successfully adopted.

- e File – (File Management System) – eFile system has been started with migrated data of File Tracking System(FTS). All new files in most of the Sections are being opened as e-files. All legacies files are being digitized for bringing them into e-file system.



Geological Field work in Larsemann Hills area, Antarctica

- LMS- (Leave Management System) – LMS has been started in August, 2012 and now no physical leave application is being accepted.
- KMS-(Knowledge Management System)- KMS is a central repository for all employees to share all the documents/O.M./Office Order which they want to share with all as well as for personal use if they want to restrict.
- PIMS - (Personal Information Management System) – PIMS has started 1st June, 2013 for all the employees to access their eService book online via e-Office.
- eTour-(Tour Management System)- eTour has started in September, 2013 and all officer(s) apply for tour and obtain approvals in this module.

14.7 Other than these applications the additional activities which have been carried out in e-Office are as follows:

- 100% Pay slips being generated and being made available online via e -office.
- SMS alert regarding pay and deductions to all personnel.
- Intra Mines link i.e. earlier version of automated office work has been fully incorporated in e-Office.
- e-Office Adoption for all employees to monitor their pendency of VIP/PMO categories receipt and take necessary action accordingly.

Website of the Ministry:

14.8 Web site of Ministry of Mines is developed and maintained by NIC. It provides comprehensive information on various subjects like Acts & Rules

and working of the Ministry, Right to Information Act, National Mineral Policy, Information about the Indian Mineral Sectors, current status of the Revision Applications and Mineral Concession (RP/PL/ML) Cases, Annual Report of the Ministry and provides links to its PSUs and offices. A new website design which is GIGW compliant is being developed.

Local Area Network (LAN):

14.9 LAN has been established in the Ministry, which interconnects various officers/staff in the Ministry. This LAN is being maintained by NIC. There are approximately two hundred users connected to the LAN.

Bio Metric Attendance (BAS)

14.10 As per the directions issued by the Government of India. Ministry has adopted the Aadhaar enabled Bio Metric Attendance (BAS). All employees of Ministry of Mines are marking their attendance on BAS. 193 employees (including outsourced staff) are registered in the BAS. For this purpose 12 devices have been installed in the premises of Ministry of Mines.

Internet Protocol version 6 (IPv6)

14.11 In accordance with the National Telecom Policy (NTP), 2012 the Ministry of Mines is ready for transmission to next generation Internet Protocol (IPv6). All IT hardware purchased in the Ministry are in dual stack.

E-samiksha

14.12 All issues concerning other Ministries/Departments and State Governments which have been pending long are updated on the e-samiksha portal and replies to issued raised by the Ministries



Bauxite Mines, Damanjodi

/Departments and State Governments are taken up on priority and reply/status uploaded on e-samiksha every month.

Swachh Bharat Mission

14.13 Ministry of Mines observed "Swachh Bharat Day" on 2nd October, 2014. A function was held on 2nd October, 2014 at 11.30 AM in the Ministry of Mines to commemorate the occasion. The oath on Swachh Bharat Day was administered to the officers/staff of Ministry of Mines.

स्वच्छ भारत

एक कदम स्वच्छता की ओर

14.14 Employees of Ministry were sensitised to the need of cleanliness of the surroundings and personal hygiene. Employees were also requested not throw waste and leftover in corridors corners and in wash-basins.

14.15 Loose cables i.e. telephone, electrical and Internet wires in the corridors were Identified and confined to channels inside the corridors. Regular exercise is under taken to weed out old files and unwanted papers and documents. Legacy files are

being digitized for bringing them into the e-office systems.

Redressal of Public Grievances

Ministry of Mines

14.16 Department of Administrative Reforms & Public Grievances (DAR&PG) is implementing a web based Centralized Public Grievance Redressal and Monitoring System (CPGRAM) vide which grievances of Ministries / Departments are forwarded for redressal. Shri Arun Kumar, Joint Secretary of the Ministry of Mines has been designated as the Nodal Officer of Public Grievances and vested with adequate powers in respect of matter pertaining to public Grievances. During the year 2014-15 (upto 27th February, 2015), 479 cases were received. 216 cases were brought forward. Total 575 cases have been disposed during the period and rest cases have been referred to concerned Organization/ Authority for taking further necessary action in the matter.

Geological Survey of India (GSI)

14.17 The public grievance redressal system is a part and parcel of the administrative machinery of GSI and it has stablised into an efficient and effective mechanism as per guide lines of 2nd Administrative Reform Commission report. It has successfully resolved various types of problems under the guidance of the Director General, GSI at Central Headquarters, Kolkata.



Teakwood plantation at Malanjkhand Copper Project, M.P.

Working of Grievance Mechanism in GSI

14.18 Grievance cases are received are replied/acknowledged within a fortnight and all efforts are made to redress the grievance within stipulated period of 60 days. The pending grievances are directly monitored by the Director General, Geological Survey of India, through regular meetings with all concerned Nodal officers and administrative officers and departmental heads.

14.19 A standing committee on grievance was formed by the Director General, headed by Dy. Director General (personnel) and regional grievance officers to review and examine old and complicated grievance cases pending for a long time.

14.20 Till December 2014, 95 cases are pending of which a majority of cases (51) are related to pension and efforts are being made for speedy disposal of the pending grievance cases.

Indian Bureau of Mines

14.21 At the beginning of the year, 05 Grievance cases were pending at various stages. During the year 2014-15 (up to December, 2014), 26 grievance petitions were received. So far 17 cases have been disposed off including five grievance cases pending at the beginning of the year. Remaining 14 cases are under processing at various stages. Online facility for Registration of Public Grievances has already been provided by linking IBM

website with the Grievance Portal of DoPT "Central PGRAMS".

Hindustan Copper Limited (HCL)

14.22 All complaints so received are registered in the Government website and accordingly disposed of. These are being regularly monitored. Twenty public grievances were received during the period April to December, 2014, of which nine were disposed of as on 31st December, 2014.

14.23 A link to public grievances site on Government of India www.pgportal.gov.in is provided in company's website www.hindustancopper.com main page as 'public grievance' in other information section at the bottom. Public grievances can be lodged through this link.

Mineral Exploration Corporation Limited (MECL)

14.24 No public grievance as defined under letter No. K-11011/17/2000-PG dated 26.06.2000 of Ministry of Personal, Public Grievances & Pension, New Delhi was received during the period under review.

Vigilance cases

Ministry of Mines

14.25 During the year 2014-15 (upto 27th February, 2015), 65 complaints were received out of which 12 cases were forwarded by CVOs, 6 complaints were forwarded by CVC for investigation, and rest were received directly from public/unions. Out of these 65 complaints 55 were brought to their logical conclusion and 10 complaints are still under investigation. Vigilance Awareness Week was observed from 27.10.2014 to 01.11.2014. During the week, essay competition related to vigilance activities was organized.



Reclaimed Area

Indian Bureau of Mines (IBM)

14.26 During the year 2014-15 (up to December 2014), 24 complaints were received of which 11 were brought to their logical conclusion after investigation. Besides, 04 complaints were sent to the Administrative Wing of the Department, 02 complaints sent to PAO, IBM and 1 complaint sent to Estate Manager, Nagpur for necessary action and the remaining 06 cases were under investigation. In addition to this, 01 case is under investigation with Inquiry Officer, IBM and 01 case is under scrutiny with Ministry of Mines, New Delhi. In one case charges against one officer were dropped by Ministry. In another case, two officers have been placed under suspension by Ministry. Besides, 293 Vigilance Clearance Certificates were issued in respect of officers and staff during the period.

14.27 Vigilance Awareness Week was observed in the IBM HQs at Nagpur and in all Zonal/ Regional Offices during 27.10.2014 to 01.11.2014. During the Week, essay and debate competitions for vigilance awareness were organised.

Right to Information Act, (RTI)

Ministry of Mines

14.28 The Ministry of Mines and its subordinate office, attached office, Autonomous Bodies and Public Sector Undertakings (PSUs) have appointed Central Public Information Officers and Appellate Authorities. The Ministry has also set up a 'Public Information Cell' for processing of the requests received from the public under the RTI Act, 2005 and for their monitoring. During the period 2014-2015 (from 01.04.2014 to 31.12.2014), the Ministry received 394 applications under the RTI Act, which were timely responded. 34 Appeals received against the decisions of the CPIOs were disposed of by the concerned Appellate Authorities within the stipulated time frame. The status regarding receipt and disposal of RTI Applications/Appeals in Ministry and its offices is given at Table 14.1, Table 14.2 and Table 14.3 respectively.

Table 14.1

RTI Application/Request Status (w.e.f. 01.04.2014 to 31.012.2014)

Organization	No. of cases					*Pendency			
	Previous pendency	No. of RTI Request/ Application received during the period	Disposal	Balance	Information denied under section 8 (1), 9,11,24 & Others of RTI Act.	0-3 months	4-6 months	7-9 months	10-12 months
Ministry of Mines (Sectt.)	11	394	376	18	11	18	0	0	0
NALCO	15	145	124	24	12	25	0	1	0
HCL	10	277	257	18	31	18	0	0	0
MECL	1	45	38	5	3	5	0	0	0
IBM	6	443	407	20	22	20	0	0	0
GSI	37	629	581	72	13	70	02	0	0
NIMH	0	6	6	0	0	0	0	0	0
NIRM	0	12	11	1	0	1	0	0	0
JNARDDC	0	4	4	0	0	0	0	0	0

* HCL – The mandatory 30 day time for replying to the respective queries was not yet over as on 31.12.2014.

NALCO – 8 Cases are pending for non-receipt of charges for providing information and 18 cases are pending due to non-receipt of required information from the concerned departments/deemed PIOs as 31.12.2014 out of which 8 cases are over 30 days of time limit.

MECL – Information yet to receive from the record holder.

Table 14.2
RTI Appeal Status (01.04.2014 to 31.12.2014)

Organization	No. of cases					Pendency			
	Previous pendency	No. of 1st Appeal received during the period	Disposal	No. of Appeals rejected/ inf. denied under Section	Balance	0-3 months	4-6 months	7-9 months	10-12 months
Ministry of Mines (Sectt.)	2	34	29	0	7	7	0	0	0
NALCO	0	20	20	0	0	0	0	0	0
HCL	1	37	26	12	0	0	0	0	0
MECL	0	4	3	0	1	1	0	0	0
IBM	1	30	28	0	3	3	0	0	0
GSI	7	59	52	1	13	13	0	0	0
NIMH	0	0	0	0	0	0	0	0	0
NIRM	0	0	0	0	0	0	0	0	0
JNARDDC	0	1	1	1	0	0	0	0	0

Table 14.3
CIC 2nd Appeal Status (01.04.2014 to 31.12.2014)

Organization	No. of cases				
	Previous pendency	No. of 2nd Appeals filed in CIC	Decided		*Balance
			In favour of Appellant	In favour of Organisation	
Ministry of Mines (Sectt.)	0	0	0	0	0
NALCO	0	0	0	0	0
HCL	0	1	0	1	0
MECL	0	0	0	0	0
IBM	16	0	0	0	16
GSI	2	2	0	0	4
NIMH	0	0	0	0	0
NIRM	0	0	0	0	0
JNARDDC	0	0	0	0	0

* IBM – Out of 16 cases, 8 cases have been heard by CIC on 13/12/2012 but orders were not received and 8 cases have not been heard so far.

Citizens' / Clients' Charter

Ministry of Mines

14.30 The Citizens' / Clients' Charter of the Ministry of Mines has been reviewed, based on the guidelines of the Department Administrative Reforms & Public Grievances (DAR&PG) and Performance Management Division of the Cabinet Secretariat. The charter has been put on the website http:/ /mines.gov.in for easy access by public. The Citizens'/Clients' Charter contains the information with respect to vision, mission, services / transaction of activities with persons responsible (with contact details), service standards and Ministry's commitments to the clients. Separately, information with reference to Attached / Subordinated Offices/ Autonomous Bodies of the Ministry has been incorporated along with contact details and addresses of their websites.

14.31 The Ministry makes continuous efforts to achieve its goals and fulfill commitments to the clients. Computerised Information Facilitation Centre in the Ministry has been set up which is rendering all necessary assistance to the public by making miscellaneous information available on various activities and schemes of the Ministry and the organizations under its fold.



Continuous Cast Copper Wirerod at Taloja Copper Plant



Anode casting operation at Smelter Plant

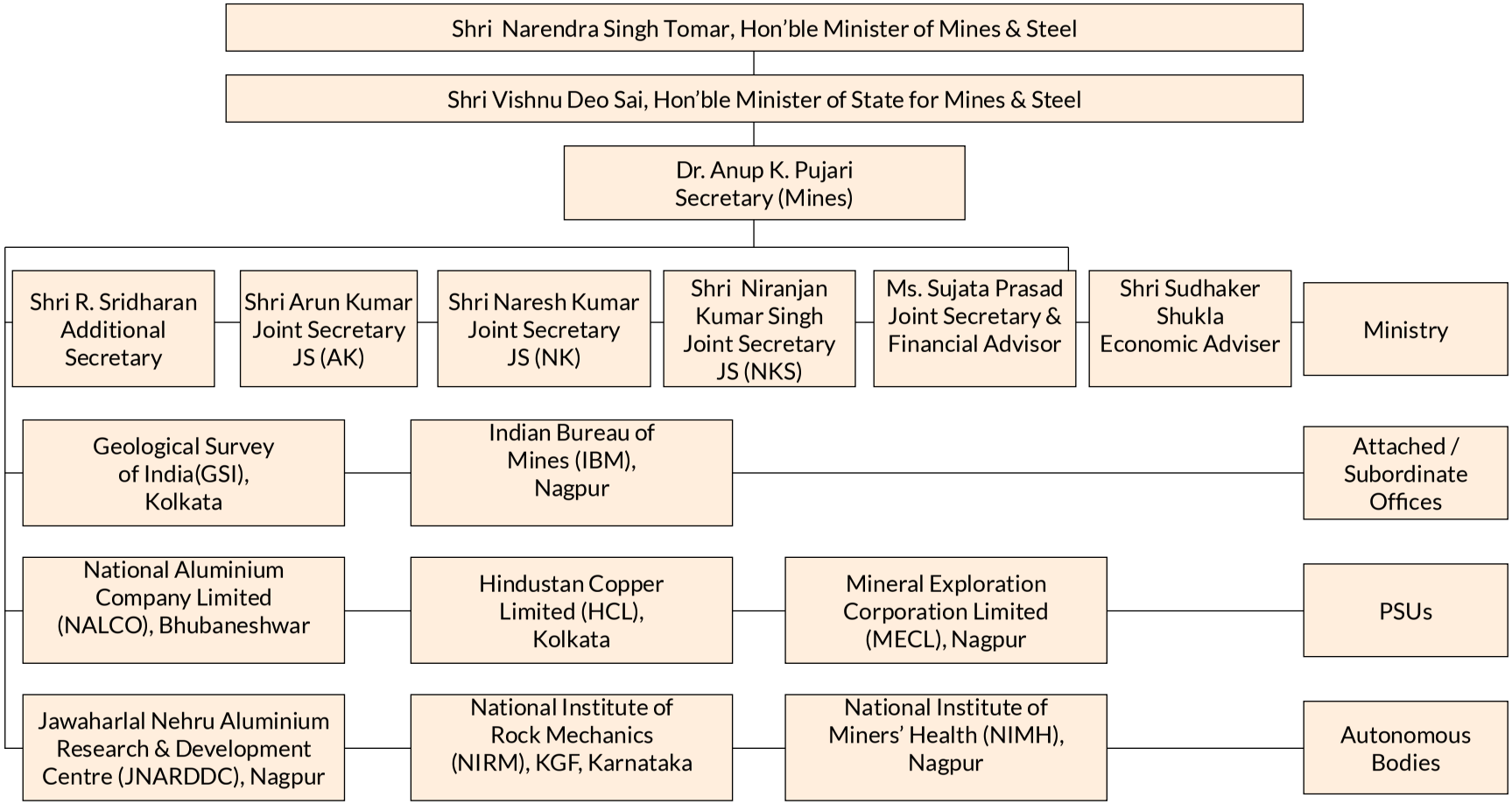


Annexes

Annexes

		Page No.
Annex 1.1	Organizational Structure of Ministry of Mines	165
Annex 2.1	Production of Selected Minerals, 2010-11 to 2014-15	166
Annex 2.2	Data on Exports of Ores and Minerals for the year 2009-10 to 2013-14	168
Annex 2.3	Data on Imports of Ores and Minerals for the year 2009-10 to 2013-14	170
Annex 2.4	Reserves/Resources of Minerals as on 1.4.2010: India	172
Annex 2.5	Scenario of mineral rich States	176
Annex 6.1	Target and Achievements during the First Three Years of XII Plan (2012-2017) of Geological Survey of India	178
Annex 6.2	Status of Mining leases in the country as on 31.3.2013. (First Schedule Minerals Minerals)	180
Annex 6.3	Performance of Annual Programme of IBM including Technical Studies, Investigations and Preparation of Mineral Inventory/ Maps in 2012-13 to 2014-15 (up to 30th December, 2014)	182
Annex 8.1	Grant-in-aid released to the various institutions in the country under the Science & Technology scheme for the year 2014-15	183
Annex 13.1	Twelfth Five Year Plan (2012-17) Scheme-wise Allocation of Ministry of Mines.	185
Annex 13.2	Status of Audit Para	186

Organizational Structure of Ministry of Mines



Annex -2.1 (Page 9)

Production of Selected Minerals, 2010-11 to 2014-15

(Value in ₹ Crore)

All Minerals	Unit	2010-11(R)		2011-12(R)		2012-13(R)		2013-14(P)		2014-15(E)	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
			267,032.39		**284,570.33**		**285,811.62**		**278,150.17**		**267,636.51**
Fuel			**168,581.27**		**178,921.99**		**182,689.23**		**176,081.29**		**171,013.82**
Coal	M.Tonnes	532.69	62,021.04	539.95	70,171.91	556.00	74,718.66	563.09	73,523.04	541.18	71,001.54
Lignite	M.Tonnes	37.73	4,330.72	42.33	5,337.65	46.00	5,511.41	44.28	5,434.66	43.37	4,977.50
Natural Gas (Utilised)	M.C.M.	52,219.00	33,425.38	47,559.00	34,210.70	40,679.00	33,642.05	34,412.00	28,459.15	32,693.00	27,037.65
Petroleum (crude)	M.Tonnes	37.71	68,804.13	38.00	69,201.73	38.00	68,817.11	37.78	68,664.44	37.41	67,997.12
Metallic Minerals			**47,638.79**		**47,032.02**		**43,167.30**		**42,653.97**		**36,772.60**
Bauxite	th. tonnes	12,722.82	512.22	13,599.57	612.60	16,611.00	799.46	21,666.01	951.39	20,201.31	950.42
Chromite	th. tonnes	4,325.70	2,596.42	2,923.44	2,424.50	2,834.00	2,262.76	2,852.85	2,317.59	1,681.37	1,472.53
Copper Conc.	th. tonnes	136.86	473.35	130.46	538.58	124.00	628.90	139.31	679.81	112.41	586.63
Gold	Kg.	2,399.00	434.52	2,194.00	531.16	1,588.00	517.25	1,564.00	422.53	1,322.00	338.06
Iron Ore	th. tonnes	207,157.00	39,614.17	168,582.00	38,357.03	136,618.00	32,824.44	152,433.00	32,031.50	129,103.00	27,921.09
Lead Conc	th. tonnes	147.63	200.04	161.85	245.45	184.00	330.09	194.43	430.31	178.29	486.51
Manganese ore	th. tonnes	3,056.39	1,468.40	2,411.87	1,177.70	2,342.00	1,283.62	2,588.31	1,498.54	2,166.34	1,284.15
Zinc Conc.	th. tonnes	1,427.23	1,793.02	1,414.01	1,986.22	1,493.00	2,394.87	1,490.66	2,742.16	1,318.40	2,816.91
Other met. Minerals			546.65		1,158.78		2,125.91		1,580.14		916.30
Non-Met. Minerals			**5,398.31**		**6,125.83**		**7,464.60**		**6,924.42**		**7,359.60**
Ball Clay	th. tonnes	1,086.71	39.02	1,646.52	69.37	1,751.00	78.07	1,874.05	90.26	1,950.44	95.98
Barytes	th. tonnes	2,338.81	269.83	1,776.98	168.60	1,789.00	531.41	1,136.81	360.49	1,438.67	440.15
Diamond	Carats	11,222.00	10.68	18,490.00	19.82	31,988.00	36.65	37.52	61.41	36.11	61.31
Dolomite	th. tonnes	5,839.71	187.00	5,968.55	173.70	7,234.00	261.89	7,108.70	257.69	7,382.98	288.23
Fire clay *	th. tonnes	856.74	13.67	983.16	15.80	1,000.00	18.27	706.64	15.99	669.01	14.50

Annex – 2.1 contd.

All Minerals	Unit	2010-11(R)		2011-12(R)		2012-13(R)		2013-14(P)		2014-15(E)	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
			267,032.39		**284,570.33**		**285,811.62**		**278,150.17**		**267,636.51**
Garnet Abrasive	th. tonnes	2,126.34	127.49	1,717.90	98.16	768.00	92.47	457.63	95.88	80.95	71.46
Gypsum	th. tonnes	4,918.17	147.55	3,978.81	168.60	3,557.00	169.98	2,929.91	138.55	2,736.65	141.48
Kaolin	th. tonnes	2,727.95	73.71	3,076.80	65.24	4,259.00	115.74	4,752.64	115.91	4,878.83	142.17
Laterite	th. tonnes	1,220.30	14.79	2,815.28	39.55	4,121.00	70.27	3,491.51	65.17	4,184.45	82.04
Lime shell	th. tonnes	30.41	3.22	33.23	4.08	24.00	4.19	18.79	3.49	18.43	3.55
Lime stone	M. tonnes	246.34	3,634.96	262.57	4,076.83	285.00	4,797.32	278.73	4,689.96	291.01	5,008.17
Magnesite	th. tonnes	235.76	37.82	224.10	35.50	224.10	45.92	195.11	39.76	304.67	69.49
Phosphorite	th. tonnes	2,097.49	501.47	2,259.73	749.63	1,941.00	680.72	1,384.00	438.90	1,011.25	267.36
Pyroxenite	th. tonnes	253.21	12.62	86.03	3.31	59.00	1.80	2.99	0.08	-	-
Sand (Others)	th. tonnes	2,057.12	10.97	2,625.11	16.30	2,638.00	20.18	2,552.92	25.35	2,480.29	28.50
Silica Sand	th. tonnes	3,380.97	44.47	4,867.67	71.41	4,304.00	100.20	3,346.11	86.41	4,131.91	102.93
Sillimanite	th. tonnes	48.78	40.74	59.21	52.27	44.00	35.21	61.60	37.35	76.48	54.87
Steatite	th. tonnes	902.69	61.83	998.44	87.86	972.00	88.84	865.13	90.52	790.91	99.54
Wollastonite	th. tonnes	183.38	14.60	184.45	16.00	146.00	12.75	192.64	15.70	179.66	16.26
Other Non -Met.Min.			151.89		193.80		302.72		295.54		371.62
Minor Minerals			**45,414.01**		**52,490.49**		**52,490.49**		**52,490.49**		**52,490.49**

M.Tonnes - Million tonnes th.tonnes - Thousand tonnes M.C.M. - Million cubic metre Kg - Kilogram
(P) Provisional and based on monthly returns to the extent available with IBM.
* Excludes the production of fireclay, if any recovered incidental to coal mining
(R) - Revised figures (E) Estimated figures
NOTE : (1) The value figures pertain to pithead value.
(2) Data based on the returns received under MCDR, 1988 except coal, lignite, petroleum (crude), natural gas (utilised) and minor minerals.
(3) Value of Petroleum (crude) and Natural gas on the basis of the price received from the NAD, CSO.
Source : a) Coal and Lignite : Coal Controller, Kolkata
b) Petroleum (crude) and Natural Gas : Ministry of Petroleum & Natural Gas, New Delhi
c) Minor Minerals : State Governments

Annex-2.2 (Page 9)

Data on Exports of Ores and Minerals for the years 2009-10 to 2013-14

(Value in ₹ Crore)

All Minerals	Unit	2009-10		2010-11		2011-12		2012-13(R)		2013-14(P)	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
		**	**127,831.00**	**	**174,370.00**	**	**175,310.00**	**	**160,101.00**	**	**194,783.00**
Abrasive (Natural)	Tonne	184,911.00	141.00	160,639.00	119.00	49,356.00	50.00	41,323.00	43.00	16,023.00	24.00
Alumina	Tonne	702,657.00	958.00	2,660,432.00	4,187.00	886,412.00	1,644.00	927,800.00	1,883.00	1,294,651.00	2,542.00
Barytes	Tonne	999,334.00	335.00	866,236.00	315.00	1,036,798.00	541.00	1,740,203.00	1,192.00	1,067,755.00	870.00
Bauxite	Tonne	475,692.00	73.00	116,066.00	30.00	401,027.00	92.00	4,197,804.00	676.00	3,492,546.00	673.00
Bentonite	Tonne	457,079.00	125.00	637,692.00	180.00	1,033,552.00	270.00	1,114,907.00	316.00	1,225,568.00	386.00
Building And Monumental Stones Nes	Tonne	1,053,238.00	296.00	1,270,142.00	436.00	1,630,292.00	631.00	1,540,625.00	581.00	1,686,357.00	627.00
Chromite	Tonne	689,081.00	801.00	172,864.00	286.00	225,084.00	489.00	196,435.00	311.00	195,125.00	346.00
Coal (Excl. Lignite)	000 T	2,471.00	521.00	4,272.00	1,152.00	2,025.00	587.00	2,511.00	900.00	2,188.00	1,083.00
Copper Ores & Conc.	Tonne	40,422.00	29.00	19,701.00	139.00	20.00	++	30.00	++	38,912.00	335.00
Corundum (Natural)	Tonne	6,807.00	3.00	412.00	++	...	...	...	...	...	...
Diamond (Mostly Cut)	Crt	66,090,838.00	85,126.00	78,951,465.00	134,064.00	62,654,023.00	133,881.00	65,560,577.00	126,568.00	83,850,627.00	158,005.00
Emerald (Cut & Uncut)		**	483.00	**	363.00	**	545.00	**	2,679.00	**	2,157.00
Felspar (Cut & Uncut)		**	5.00	**	1.00	**	6.00	**	4.00	**	2.00
Felspar (Natural)	Tonne	315,549.00	107.00	351,266.00	119.00	394,277.00	152.00	401,422.00	189.00	437,144.00	223.00
Flint	Tonne	940.00	++	1,688.00	1.00	968.00	++	717.00	++	2,524.00	2.00
Garnet(Abrasive)	Tonne	171,420.00	147.00	228,663.00	173.00	428,716.00	350.00	505,281.00	511.00	480,774.00	606.00
Granite	Tonne	3,827,668.00	4,994.00	4,500,060.00	5,593.00	4,605,078.00	6,382.00	6,061,302.00	7,942.00	6,802,309.00	9,869.00
Gypsum	Tonne	100,520.00	11.00	100,918.00	14.00	51,732.00	8.00	44,142.00	10.00	48,924.00	11.00
Ileminite	Tonne	463,625.00	251.00	1,019,268.00	545.00	879,522.00	1,150.00	791,735.00	1,416.00	686,264.00	873.00
Iron Ore	000 T	101,531.00	28,366.00	46,890.00	21,416.00	47,153.00	22,184.00	18,122.00	8,985.00	16,302.00	9,480.00
Kaolin	Tonne	160,935.00	49.00	112,016.00	42.00	184,734.00	58.00	191,953.00	74.00	276,165.00	105.00
Lead Ores & Conc.	Tonne	36,476.00	243.00	39,195.00	389.00	10,226.00	139.00	14.00	++	7.00	++

Annex – 2.2 contd.

All Minerals	Unit	2009-10		2010-11		2011-12		2012-13(R)		2013-14(P)	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
		**	**127,831.00**	**	**174,370.00**	**	**175,310.00**	**	**160,101.00**	**	**194,783.00**
Limestone	Tonne	2,405,783.00	154.00	1,034,830.00	68.00	2,691,026.00	254.00	2,991,810.00	270.00	2,779,074.00	343.00
Manganese Ore	Tonne	289,468.00	117.00	98,979.00	80.00	75,183.00	44.00	72,242.00	27.00	66,030.00	19.00
Marble	Tonne	275,502.00	305.00	521,723.00	327.00	325,241.00	386.00	371,222.00	544.00	337,937.00	571.00
Mica	Tonne	94,216.00	162.00	126,554.00	226.00	131,777.00	289.00	127,610.00	345.00	127,882.00	375.00
Natural Gas	Tonne	9,293.00	38.00	27,244.00	119.00	22,218.00	138.00	27,736.00	162.00	4,922.00	28.00
Nickel Ores & Conc.	Tonne	20.00	++	...	...	450.00	13.00	86.00	++	32.00	++
Red Oxide	Tonne	1,081.00	2.00	1,605.00	3.00	1,393.00	5.00	1,388.00	3.00	1,401.00	3.00
Rutitle	Tonne	382.00	1.00	4,031.00	14.00	6,699.00	51.00	2,322.00	25.00	1,619.00	168.00
Precious & Semi-Precious Stones (Cut & Uncut):		**	966.00	**	1,005.00	**	1,164.00	**	1,156.00	**	1,696.00
Quartz And Quartzite	Tonne	256,421.00	109.00	211,253.00	121.00	214,969.00	151.00	233,274.00	161.00	308,409.00	223.00
Salt (Other Than Common Salt)	Tonne	1,545,023.00	196.00	1,854,898.00	208.00	2,712,076.00	260.00	4,597,507.00	528.00	4,956,931.00	656.00
Sand (Excl. Metal Bearing)	Tonne	26,932.00	9.00	18,218.00	21.00	21,044.00	38.00	7,342.00	46.00	5,444.00	37.00
Sandstone	Tonne	632,406.00	439.00	304,138.00	321.00	370,238.00	387.00	443,010.00	516.00	540,874.00	758.00
Silica Sand	Tonne	7,478.00	3.00	12,451.00	16.00	10,020.00	8.00	4,689.00	4.00	4,497.00	3.00
Slate	Tonne	125,463.00	198.00	117,644.00	153.00	113,257.00	153.00	108,028.00	147.00	86,090.00	169.00
Steatite	Tonne	87,870.00	62.00	115,581.00	84.00	100,562.00	91.00	117,568.00	122.00	149,343.00	202.00
Sulphur (Exc. Sublimed Precipited & Colloidal)	Tonne	124,884.00	50.00	167,113.00	98.00	163,372.00	167.00	369,960.00	337.00	577,695.00	395.00
Wollastonite	Tonne	12,880.00	15.00	17,759.00	21.00	23,759.00	30.00	18,765.00	28.00	19,033.00	31.00
Zinc Ores & Conc.	Tonne	191,960.00	617.00	67,501.00	285.00	5,591.00	1.00	75,870.00	296.00	45,660.00	162.00
Other Minerals		**	1,324.00	**	1,636.00	**	2,521.00	**	1,104.00	**	725.00

Source: DGCI & S ,Kolkata
P : Provisional ,R: Revised
++ : Negligible
**: Quantity not given due to partial coverage,Value figures however have full coverage.

Annex-2.3 (Page 9)

Data on Imports of Ores & Minerals for the years 2009-10 to 2013-14

(Value in ₹ Crore)

All Minerals	Unit	2009-10		2010-11		2011-12		2012-13(R)		2013-14(P)	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
		**	524,830.00	**	669,010.00	**	944,430.00	**	1,100,800.00	**	1,215,721.00
Abrasive (Natural)	Tonne	12,058.00	15.00	10,082.00	14.00	7,940.00	9.00	5,850.00	8.00	4,312.00	6.00
Alumina	Tonne	337,072.00	679.00	281,285.00	692.00	548,891.00	1,322.00	1,113,927.00	2,459.00	1,169,523.00	2,754.00
Asbestos	Tonne	331,415.00	938.00	365,795.00	1,003.00	378,122.00	1,199.00	460,445.00	1,901.00	285,870.00	1,329.00
Ball Clay	Tonne	123,073.00	67.00	126,695.00	64.00	191,310.00	102.00	156,527.00	104.00	130,804.00	92.00
Bauxite	Tonne	54,345.00	115.00	63,584.00	120.00	78,980.00	160.00	66,742.00	150.00	421,612.00	366.00
Borax	Tonne	78,003.00	187.00	112,225.00	243.00	96,994.00	262.00	95,046.00	298.00	67,919.00	249.00
Building and Monumental Stones Nes	Tonne	1,874,801.00	147.00	909,936.00	153.00	1,137,648.00	132.00	1,211,434.00	126.00	958,905.00	115.00
Coal (Excl. Lignite)	000'T	73,257.00	39,180.00	68,918.00	41,549.00	102,841.00	78,827.00	145,790.00	86,850.00	166,861.00	92,336.00
Coke	Tonne	2,355,535.00	3,331.00	1,490,210.00	3,120.00	2,364,688.00	4,758.00	3,077,258.00	5,687.00	4,167,206.00	6,795.00
Copper Ores & Conc.	Tonne	2,187,460.00	18,968.00	1,902,026.00	20,023.00	2,124,501.00	26,451.00	2,296,421.00	30,970.00	2,048,240.00	33,227.00
Diamond (Mostly Cut)	Crt	130,101,282.00	74,299.00	182,227,342.00	152,657.00	152,810,849.00	132,181.00	135,729,330.00	117,568.00	146,612,350.00	134,117.00
Emerald (Cut & Uncut)		**	390.00	**	496.00	**	1,063.00	**	3,746.00	**	2,233.00
Felspar (Natural)	Tonne	7,281.00	3.00	20,409.00	6.00	41,627.00	17.00	59,956.00	25.00	42,448.00	21.00
Fluorspar	Tonne	147,138.00	197.00	161,925.00	233.00	183,662.00	464.00	98,043.00	224.00	117,254.00	241.00
Granite	Tonne	51,214.00	102.00	55,554.00	116.00	64,982.00	160.00	64,739.00	186.00	71,378.00	240.00
Graphite(Natural)	Tonne	12,780.00	40.00	14,348.00	46.00	19,287.00	94.00	19,485.00	119.00	22,916.00	124.00
Gypsum	Tonne	1,548,701.00	221.00	1,697,746.00	221.00	2,776,177.00	398.00	3,218,900.00	501.00	3,231,930.00	525.00
Iron Ore	000'T	897.00	468.00	1,867.00	1,028.00	978.00	689.00	3,056.00	2,577.00	369.00	342.00
Kaolin	Tonne	46,708.00	56.00	52,663.00	64.00	73,647.00	108.00	87,867.00	110.00	80,204.00	142.00

Annex – 2.3 contd.

All Minerals	Unit	2009-10		2010-11		2011-12		2012-13(R)		2013-14(P)	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
		**	524,830.00	**	669,010.00	**	944,430.00	**	1,100,800.00	**	1,215,721.00
Kieselgurh	Tonne	195.00	1.00	156.00	1.00	44.00	++	1.00	++	20.00	++
Limestone	Tonne	3,899,308.00	619.00	5,035,678.00	704.00	8,557,181.00	1,189.00	11,139,331.00	1,667.00	13,214,179.00	2,158.00
Magnesite	Tonne	66,118.00	206.00	54,929.00	159.00	72,475.00	228.00	79,080.00	278.00	66,001.00	222.00
Manganese Ore	Tonne	797,933.00	747.00	1,299,643.00	1,781.00	1,961,396.00	2,063.00	2,326,729.00	2,562.00	2,179,334.00	2,831.00
Marble	Tonne	431,022.00	842.00	512,169.00	1,032.00	635,962.00	1,447.00	757,793.00	2,032.00	757,948.00	2,211.00
Mica	Tonne	1,661.00	42.00	1,687.00	41.00	2,458.00	60.00	2,285.00	55.00	2,049.00	56.00
Natural Gas	Tonne	9,110,571.00	11,067.00	9,765,763.00	14,648.00	13,199,608.00	32,874.00	13,135,869.00	41,142.00	13,020,689.00	51,699.00
Nickel Ores & Conc.	Tonne	91.00	8.00	219.00	14.00	41,729.00	201.00	865.00	81.00	1,343.00	121.00
Petroleum (Crude)	000'T	153,629.00	365,901.00	153,120.00	421,616.00	165,712.00	643,689.00	185,534.00	785,602.00	189,176.00	869,657.00
Precious & Semi-Precious Stones (Cut & Uncut):		**	580.00	**	705.00	**	830.00	**	827.00	**	1,258.00
Red Ochre	Tonne	1,145.00	11.00	1,086.00	12.00	769.00	5.00	1,121.00	4.00	232.00	2.00
Rock Phosphate	Tonne	5,683,654.00	3,275.00	5,194,203.00	3,211.00	9,729,592.00	8,315.00	8,160,950.00	7,310.00	7,160,798.00	5,518.00
Silica Sand	Tonne	15,384.00	29.00	93,741.00	41.00	129,490.00	60.00	54,380.00	58.00	97,526.00	94.00
Sulphur (Exc. Sublimed Precipited & Colloidal)	Tonne	1,533,628.00	681.00	1,356,774.00	1,098.00	2,037,635.00	2,283.00	1,547,267.00	1,736.00	1,289,979.00	1,100.00
Tungsten Ores & Conc.	Tonne	87.00	++	1.00	++	327.00	1.00	107.00	3.00	17.00	3.00
Vanadium Ores & Conc.	Tonne	60.00	1.00	4.00	++	109.00	1.00	1.00	++	61.00	1.00
Zinc Ores & Conc.	Tonne	59,857.00	191.00	88,171.00	342.00	63,194.00	240.00	111,912.00	500.00	33,113.00	156.00
Other Minerals			1,226.00		1,757.00		2,548.00		3,334.00		3,380.00

Source : DGCI & S , Kolkata
P : Provisional
R : Revised
** : Quantity not given due to partial coverage; Value figures however have full coverage.
++ Negligable

Annex – 2.4 (Page 12)

Reserves/Resources of Minerals as on 1.4.2010 : India

(Value in ₹ Crore)

Mineral	Unit	Reserves				Remaining Resources								
		Proved	Probable		Total	Feasibility	Pre-feasibility		Measured	Indicated	Inferred	Reconnaissance	Total	Total Resources
		STD111	STD121	STD122	(A)	STD211	STD221	STD222	STD331	STD332	STD333	STD334	(B)	(A+B)
Andalusite	000'tonnes	-	-	-	-	-	-	-	-	-	18,450.00	-	18,450.00	18,450.00
Antimony														
Ore	tonnes	-	-	-	-	-	-	-	-	-	10,588.00	-	10,588.00	10,588.00
Metal	tonnes	-	-	-	-	-	-	-	-	-	174.00	-	174.00	174.00
Apatite (P)	tonnes	29,112.00	-	1,680.00	30,792.00	-	491,818.00	1,225,345.00	2,281,521.00	11,481,250.00	6,132,768.00	1,017,646.00	22,630,348.00	22,661,140.00
Asbestos	tonnes	1,700,152.00	4,588.00	806,101.00	2,510,841.00	109,641.00	3,072,849.00	3,257,941.00	100,687.00	2,527,918.00	10,528,926.00	57,800.00	19,655,762.00	22,166,603.00
BallClay	tonnes	12,292,820.00	350,832.00	4,134,190.00	16,777,842.00	6,122,450.00	3,906,958.00	12,387,575.00	268,486.00	2,279,330.00	41,650,863.00	-	66,615,662.00	83,393,504.00
Barytes	tonnes	29,557,972.00	90,844.00	1,935,312.00	31,584,128.00	179,447.00	4,288,189.00	2,608,562.00	207,384.00	1,269,214.00	32,491,229.00	105,721.00	41,149,746.00	72,733,874.00
Bauxite	000'tonnes	321,258.00	89,223.00	182,457.00	592,938.00	105,894.00	245,091.00	274,165.00	655,673.00	431,006.00	1,155,570.00	19,283.00	2,886,682.00	3,479,620.00
Bentonite	tonnes	-	11,415,982.00	13,644,526.00	25,060,508.00	-	3,067.00	-	26,519,818.00	225,744,237.00	265,309,715.00	25,730,000.00	543,306,838.00	568,367,346.00
Borax	tonnes	-	-	-	-	-	-	-	-	-	-	74,204.00	74,204.00	74,204.00
Calcite	tonnes	1,265,135.00	38,525.00	1,360,678.00	2,664,338.00	665,454.00	227,265.00	3,126,218.00	9,122,235.00	1,236,864.00	3,805,598.00	97,476.00	18,281,110.00	20,945,448.00
China Clay	000'tonnes	124,118.00	11,034.00	42,006.00	177,158.00	24,543.00	22,980.00	71,270.00	284,781.00	412,852.00	1,651,286.00	60,338.00	2,528,049.00	2,705,207.00
Chromite (P)	000'tonnes	56,890.00	14,045.00	36,286.00	107,221.00	28,011.00	20,171.00	36,806.00	21,249.00	32,994.00	53,376.00	21,922.00	214,529.00	321,750.00
Cobalt Ore	mill.tonnes	-	-	-	-	-	-	-	30.63	2.00	0.28	12.00	44.91	44.91
Copper Ore (P)														
Ore	000'tonnes	40,650.00	6,521.00	190,401.00	237,572.00	53,789.00	32,161.00	61,061.00	123,570.00	233,913.00	763,892.00	5,060.00	1,273,446.00	1,511,018.00
Metal	000'tonnes	370.31	61.44	2,565.22	2,996.97	511.15	338.00	625.88	1,589.19	2,077.81	4,064.35	15.18	9,221.56	12,218.53
Chalk	000'tonnes	3,266.00	537.00	528.00	4,332.00	184.00	5.00	127.00	-	-	269.00	-	585.00	4,917.00
Corundum	tonnes	-	310.00	288.00	598.00	5,824.00	763.00	115,167.00	13.00	38.00	92,389.00	526,000.00	740,194.00	740,792.00
Diamond (P)	Carat	984,875.00	-	-	984,875.00	-	-	-	304,601.00	1,524,317.00	29,047,514.00	-	30,876,432.00	31,861,307.00
Diaspore	tonnes	1,469,687.00	1,106,296.00	283,691.00	2,859,674.00	187,821.00	714,316.00	488,395.00	248,880.00	133,360.00	1,306,306.00	46,068.00	3,125,144.00	5,984,818.00
Diatomite	000'tonnes	-	-	-	-	634.00	-	-	-	-	2,251.00	-	2,885.00	2,885.00
Dolomite	000'tonnes	431,567.00	157,442.00	149,176.00	738,185.00	149,971.00	227,173.00	316,967.00	268,726.00	687,617.00	5,189,186.00	152,732.00	6,992,372.00	7,730,557.00

Mineral	Unit	Reserves				Remaining Resources								
		Proved	Probable		Total	Feasibility	Pre-feasibility		Measured	Indicated	Inferred	Reconnaissance	Total	Total Resources
		STD111	STD121	STD122	(A)	STD211	STD221	STD222	STD331	STD332	STD333	STD334	(B)	(A+B)
Dunite	000'tonnes	14,894.00	-	2,243.00	17,137.00	130.00	4,717.00	107,597.00	24,516.00	1,164.00	21,471.00	8,637.00	168,231.00	185,368.00
Feldspar	tonnes	24,545,334.00	8,278,221.00	11,679,685.00	44,503,240.00	14,672,107.00	4,427,797.00	12,967,154.00	4,191,330.00	9,874,858.00	41,549,070.00	149,895.00	87,832,212.00	132,335,451.00
Fireclay	000'tonnes	14,376.00	7,358.00	8,371.00	30,104.00	10,020.00	19,215.00	21,775.00	47,666.00	54,377.00	529,173.00	1,190.00	683,415.00	713,519.00
Fluorite	tonnes	4,566,234.00	-	146,082.00	4,712,316.00	673,889.00	745,390.00	529,966.00	1,713,833.00	6,218,421.00	3,474,906.00	145,183.00	13,501,588.00	18,213,904.00
Fuller's Earth	tonnes	-	-	58,200.00	58,200.00	-	-	-	-	912,340.00	255,681,539.00	-	256,593,879.00	256,652,079.00
Garnet	tonnes	3,252,107.00	4,712,202.00	11,360,484.00	19,324,793.00	9,270.00	81,901.00	207,041.00	117,887.00	10,226,689.00	26,995,243.00	-	37,638,032.00	56,962,824.00
Gold (P)														
Ore(Primary)	tonnes	10,920,436.00	2,832,000.00	863,529.00	14,615,965.00	1,486,133.00	1,260,000.00	1,104,647.00	38,101,248.00	70,136,727.00	223,529,973.00	144,569,333.00	480,188,061.00	494,804,026.00
Metal (Primary)	tonnes	56.44	7.72	7.75	71.91	4.98	3.59	4.35	144.47	143.80	206.78	60.50	568.47	640.38
Ore (Placer)	tonnes	-	-	-	-	-	-	-	-	2,552,000.00	23,569,000.00	-	26,121,000.00	26,121,000.00
Metal (Placer)	tonnes	-	-	-	-	-	-	-	-	2.29	3.57	-	5.86	5.86
Granite (Dimension Stone)	th.cu.m	35,741.00	201,377.00	26,574.00	263,692.00	38,462.00	51,990.00	8,234.00	837,325.00	2,063,964.00	42,499,338.00	467,296.00	45,966,608.00	46,230,300.00
Graphite	tonnes	3,685,172.00	2,266,174.00	2,080,518.00	8,031,864.00	102,173.00	1,409,511.00	3,078,665.00	224,859.00	6,603,670.00	19,736,371.00	135,662,532.00	166,817,781.00	174,849,645.00
Gypsum	000'tonnes	22,494.00	239.00	16,363.00	39,096.00	8,502.00	73,651.00	17,659.00	8,455.00	710,853.00	428,272.00	10.00	1,247,402.00	1,286,498.00
Iron Ore (Heamatite) (P)	000'tonnes	5,030,595.00	747,260.00	830,431.00	6,608,286.00	2,740,898.00	1,018,164.00	1,009,051.00	1,105,212.00	1,320,700.00	4,358,014.00	2,415,382.00	13,967,421.00	20,575,707.00
Iron Ore (Magnetite)	000'tonnes	15,973.00	3,672.00	2,111.00	21,755.00	189,478.00	1,714.00	50,816.00	1,513,168.00	1,984,566.00	6,313,583.00	568,980.00	10,622,305.00	10,644,060.00
Kyanite	tonnes	551,529.00	524,485.00	498,839.00	1,574,853.00	322,622.00	25,917.00	1,238,407.00	578,607.00	3,590,902.00	95,914,312.00	-	101,670,767.00	103,245,620.00
Laterite	000'tonnes	13,936.00	2,172.00	8,607.00	24,714.00	1,830.00	60.00	2,625.00	-	1,107.00	230,865.00	209,632.00	446,119.00	470,833.00
Lead & Zinc Ore (P)														
Ore	000'tonnes	34,289.00	66,200.00	2,306.00	102,795.00	7,654.00	7,341.00	10,507.00	18,465.00	208,111.00	349,641.00	4,530.00	606,249.00	709,044.00
Lead Metal	000'tonnes	657.00	1,422.30	35.61	2,114.91	181.62	230.44	198.23	411.87	2,421.79	6,444.94	-	9,888.89	12,003.80
Zinc Metal	000'tonnes	3,716.40	7,041.10	135.60	10,893.10	488.97	330.29	493.21	854.76	8,563.08	14,131.04	101.65	24,963.00	35,856.10
Lead & Zinc Metal	000'tonnes	-	-	-	-	-	-	-	-	-	118.45	22.37	140.82	140.82
Limestone	000'tonnes	8,978,583.00	3,650,574.00	2,297,234.00	14,926,392.00	1,827,583.00	3,739,470.00	6,309,489.00	6,858,999.00	22,040,640.00	124,835,558.00	4,396,981.00	170,008,720.00	184,935,112.00

Annex – 2.4 contd.

Mineral	Unit	Reserves				Remaining Resources								
		Proved	Probable		Total	Feasibility	Pre-feasibility		Measured	Indicated	Inferred	Reconnaissance	Total	Total Resources
		STD111	STD121	STD122	(A)	STD211	STD221	STD222	STD331	STD332	STD333	STD334	(B)	(A+B)
Magnesite	000'tonnes	20,851.00	7,786.00	13,313.00	41,950.00	1,776.00	2,244.00	32,326.00	59,010.00	59,652.00	138,169.00	45.00	293,222.00	335,172.00
Manganese Ore	000'tonnes	97,425.00	11,590.00	32,962.00	141,977.00	23,529.00	27,594.00	51,074.00	5,732.00	23,726.00	151,704.00	4,644.00	288,003.00	429,980.00
Marl	tonnes	133,236,150.00	4,650,000.00	2,090,000.00	139,976,150.00	11,704,870.00	-	-	-	-	-	-	11,704,870.00	151,681,020.00
Mica	Kgs	169,840,721.00	15,268,960.00	5,631,767.00	190,741,448.00	21,427,000.00	11,317,310.00	118,867,638.00	52,723,690.00	42,504,035.00	94,427,443.00	228,415.00	341,495,531.00	532,236,979.00
Molybdenum(P)														
Ore	tonnes	-	-	-	-	-	1,500,000.00	-	36,000.00	569,304.00	17,098,594.00	167,800.00	19,371,698.00	19,371,698.00
Cotained MoS2	tonnes	-	-	-	-	-	1,050.00	-	83.00	287.00	11,198.03	50.34	12,668.37	12,668.37
Nickel Ore	mill.tonnes	-	-	-	-	-	21.00	21.00	31.00	53.00	63.00	-	189.00	189.00
Ochre	tonnes	39,863,403.00	683,093.00	14,395,680.00	54,942,176.00	15,897,677.00	13,232,482.00	21,008,598.00	2,477,593.00	3,232,246.00	32,701,243.00	769,250.00	89,319,089.00	144,261,265.00
Perlite	000'tonnes	140.00	-	288.00	428.00	-	683.00	307.00	-	-	-	988.00	1,978.00	2,406.00
Platinum Group of Metals (PGM)	In tonnes	-	-	-	-	-	-	7.70	-	-	6.50	1.50	15.70	15.70
Potash	mill.tonnes	-	-	-	-	-	-	-	-	18,142.00	3,652.00	22.00	21,815.00	21,815.00
Pyrite	000'tonnes	-	-	-	-	27,129.00	-	32,597.00	9,590.00	77,729.00	1,527,356.00	-	1,674,401.00	1,674,401.00
Pyrophyllite	tonnes	12,146,045.00	6,888,351.00	4,241,055.00	23,275,450.00	3,256,515.00	4,919,285.00	6,595,687.00	3,976,532.00	3,963,980.00	9,786,686.00	308,766.00	32,807,450.00	56,082,901.00
Quartz & Silica Sand	000'tonnes	272,972.00	35,079.00	121,173.00	429,223.00	185,399.00	322,454.00	321,760.00	58,683.00	259,116.00	1,907,994.00	14,402.00	3,069,808.00	3,499,031.00
Quartzite	000'tonnes	59,004.00	1,647.00	25,948.00	86,599.00	33,217.00	105,018.00	147,686.00	93,116.00	113,611.00	669,453.00	2,548.00	1,164,648.00	1,251,247.00
Rock Phosphate (P)	tonnes	53,370,665.00	1,763,187.00	10,257,699.00	65,391,551.00	7,697,147.00	34,990,335.00	15,432,125.00	2,912,633.00	3,549,750.00	181,859,733.00	2,678,275.00	249,119,998.00	314,511,549.00
Rock Salt	000'tonnes	10,036.00	-	5,990.00	16,026.00	-	-	-	-	-	-	-	-	16,026.00
Ruby	Kg	143.00	-	93.00	236.00	-	-	3,165.00	286.00	38.00	1,623.00	-	5,113.00	5,349.00
Sapphire	Kg	-	-	-	-	-	-	-	-	-	450.00	-	450.00	450.00
Shale	000'tonnes	14,992.00	76.00	263.00	15,331.00	-	-	245.00	-	-	252.00	83.00	580.00	15,911.00
Sillimanite	tonnes	1,693,000.00	1,602,228.00	789,824.00	4,085,052.00	317,869.00	124,000.00	20,082,855.00	4,579,816.00	17,795,772.00	16,152,473.00	3,849,600.00	62,902,385.00	66,987,437.00
Silver (P)														
Metal	tonnes	5,213.97	-	2,694.00	7,907.97	107.38	42.85	403.00	3,625.20	1,995.36	15,706.59	-	21,880.38	29,788.35
Slate	000'tonnes	-	-	-	-	-	113.00	1,187.00	-	-	1,069.00	-	2,369.00	2,369.00

Mineral	Unit	Reserves				Remaining Resources								
		Proved	Probable		Total	Feasibility	Pre-feasibility		Measured	Indicated	Inferred	Reconnaissance	Total	Total Resources
		STD111	STD121	STD122	(A)	STD211	STD221	STD222	STD331	STD332	STD333	STD334	(B)	(A+B)
Sulphur (Native)	000'tonnes	-	-	-	-	-	-	-	-	-	210.00	-	210.00	210.00
Talc / Steatite / Soapstone	000'tonnes	54,615.00	8,772.00	26,640.00	90,026.00	9,732.00	12,773.00	27,080.00	6,403.00	7,256.00	115,195.00	558.00	178,996.00	269,023.00
Tin (P)														
Ore	tonnes	4,288.00	976.00	1,709.00	6,973.00	22,592,860.00	2,372.00	31,330,038.00	168,457.00	561,080.00	29,064,387.00	-	83,719,194.00	83,726,167.00
Metal	tonnes	958.26	189.56	33.37	1,181.19	32,230.73	656.84	54,033.00	813.29	231.63	13,128.16	-	101,093.65	102,274.84
Titanium Minerals	tonnes	15,271,219.00	4,274,178.00	2,484,826.00	22,030,223.00	5,198,882.00	151,888.00	-	2,046,780.00	50,177,023.00	314,391,121.00	-	371,965,694.00	393,995,917.00
Ilmenite	tonnes	13,369,586.00	4,090,393.00	2,209,232.00	19,669,211.00	4,970,726.00	151,888.00	-	1,090,326.00	39,870,981.00	269,835,940.00	-	315,919,861.00	335,589,072.00
Rutile	tonnes	933,502.00	183,785.00	132,553.00	1,249,840.00	228,156.00	-	-	4,460.00	3,331,042.00	8,584,030.00	-	12,147,688.00	13,397,528.00
Leucoxene	tonnes	674,592.00	-	25,625.00	700,217.00	-	-	-	1,994.00	-	341,949.00	-	343,943.00	1,044,160.00
Anatase	tonnes	-	-	-	-	-	-	-	-	3,345,000.00	-	-	3,345,000.00	3,345,000.00
Titaniferous Magnetite	tonnes	293,539.00	-	117,416.00	410,955.00	-	-	-	950,000.00	3,630,000.00	35,629,202.00	-	40,209,202.00	40,620,157.00
Tungsten (P)														
Ore	tonnes	-	-	-	-	2,230,000.00	-	173,063.00	19,611,152.00	23,435,954.00	25,356,049.00	16,581,246.00	87,387,464.00	87,387,464.00
Contained WO3	tonnes	-	-	-	-	3,568.00	-	450.00	9,914.00	20,180.92	103,415.15	4,566.28	142,094.35	142,094.35
Vanadium														
Ore	tonnes	293,539.00	-	117,416.00	410,955.00	-	1,720,000.00	4,000,000.00	-	232,000.00	18,355,933.00	-	24,307,933.00	24,718,888.00
Contained V2O5	tonnes	1,144.80	-	457.92	1,602.72	-	2,835.00	5,600.00	-	487.20	54,362.25	-	63,284.45	64,887.17
Vermiculite	tonnes	1,628,475.00	24,593.00	50,939.00	1,704,007.00	22,733.00	75,790.00	71,744.00	35,195.00	24,930.00	569,012.00	3,600.00	803,003.00	2,507,010.00
Wollastonite	tonnes	2,289,869.00	-	197,253.00	2,487,122.00	3,750,545.00	-	3,724,191.00	76,088.00	3,325,042.00	3,206,885.00	-	14,082,751.00	16,569,873.00
Zircon	tonnes	1,025,942.00	146,085.00	175,443.00	1,347,470.00	649,938.00	-	-	81,741.00	338,525.00	716,279.00	-	1,786,483.00	3,133,953.00

figures rounded off
(P) Provisional figure as on 01.04.2013

ANNEX- 2.5 (Page 17)

Scenario of mineral rich States

(Value in ₹ Crore)

Sl. No.	Name of the State	Value of mineral production in 2013-14 (Rs. In crore)	% Change in value as compared to previous year	Leading minerals produced in the State *	Value of minor minerals production in 2013-14 (Rs. In crore) #	No. of reporting mines during 2013-14	Index of mineral production during 2013-14 (base 2004-05 = 100), (Previous year's index in parenthesis)	Share of the State in country's production of certain minerals
1	2	3	4	5	6	7	8	9
1	Andhra Pradesh	24,203.52	-3.1	coal, natural Gas (ut.), limerstone, petroleum (crude), barytes, manganese ore, dolomite, iron ore, garnet (abrasive), laterite	12,336.24	661.00	133.69 (141.83)	mica (crude) and asbestos 100% each, berytes 99.5%, sand others 79.6%, vermicilite 78.4%, laterite 74.9%,quartzite 68.0%, sillimanite 64.5%,quartz 652.8% and silica sand 42.6%.
2	Chhatisgarh	19,900.96	6.22	coal, iron ore, limestone, dolomite and bauxite	334.95	202.00	168.58 (156.53)	tin conc. 100%, moulding sand 97.9%, dolomite 36.5%, coal 22.6%, iron ore 19.8%,limestone 7.6%, bauxite 6.1% and quartzite 6.0%.
3	Goa	974.93	-68.62	bauxite	964.24	69.00	0.00 (48.00)	Bauxite 2.1%.
4	Gujarat	24,454.20	-4.36	petroleum (crude), natural Gas (ut.), lignite, limestone and bauxite	12,064.77	464.00	80.51 (86.49)	agate and chalk 100% each, marl 98.9%, clay (others) 66.6%, kaolin 64.8%, bauxite 32.4%, lignite 26.2%, silica sand 25.3%, petroleum (crude) 13.4%, quartz 10.0% and limestone 8.4%.
5	Jharkhand	20,685.41	3.44	coal, iron ore, bauxite, limestone, copper conc. and dolomite	40.14	257.00	144.54 (140.64)	pyroxenite and flint stone 100% each, graphite (r.o.m.) 29.9%, coal 20.1%,iron ore 14.8% and bauxite 10.5%.
6	Karnataka	7,790.43	19.34	limestone, iron ore, dolomite, gold ore, manganese ore and dolomite	2,048.75	187.00	53.51 (37.97)	felsite 100%, gold 99.5%, shale 22.4%, iron ore 12.0%,dolomite 9.0%, limestone 7.7%, manganese ore 5.3% and quartz 4.5%

Annex – 2.5 contd.

Sl. No.	Name of the State	Value of mineral production in 2013-14 (Rs. In crore)	% Change in value as compared to previous year	Leading minerals produced in the State *	Value of minor minerals production in 2013-14 (Rs. In crore) #	No. of reporting mines during 2013-14	Index of mineral production during 2013-14 (base 2004-05 = 100), (Previous year's index in parenthesis)	Share of the State in country's production of certain minerals
7	Madhya Pradesh	13,012.47	1.23	coal, limestone, manganese ore, copper conc., iron ore, diamond and bauxite.	1,935.40	364.00	144.21 (142.90)	diamond 100%, Pyrophyllite 80.5%, copper conc. 62.0%, copper conc. 57.4%, manganese ore 29.84%, clay (others) 18.3%, shale15.1% and coal 13.5%.
8	Maharashtra	14,563.39	-1.62	coal, manganese ore, iron ore, limestone, bauxite and silica sand.	7,664.43	163.00	108.91 (114.67)	kynite and fluorite (graded) 100% each, manganese ore 25.7%, sand (others) 17.6%, quartzite 11.0%, bauxite 9.5% and shale 9.4%
9	Odisha	23,018.08	-2.85	iron ore, coal, chromite, bauxite, manganese ore and limestone.	85.68	180.00	158.18(144.44)	chromite 100%, iron ore 50.0%, bauxite 35.2%, manganes ore 25.5%, coal 20.1%, sillimanite 19.0% and dolomite 9.2%
10	Rajasthan	31,475.59	3.41	petroleum (crude), limestone, lead & zinc conc., natural gas (ut.), silver and phosphorite.	6,761.53	557.00	201.19 (201.21)	selenite, silver, wollostonite and zinc conc. 100% each, gypsum 98.8%, calcite 97.8%, ball clay 91.9%, phosphorite 90.5%, ochre 87.8% and steatite 83.0%.
11	Tamil Nadu	6,464.93	4.73	lignite, natural gas (ut.), limestone, petroleum (crude) and magnesite.	389.49	354.00	120.87 (117.28)	lime kankar 100%, dunite 98.5%, garnet (abrasive) 77.6%, graphite (r.o.m.) 60.6%, lignite 60.1%, fireclay 22.9% and vermiculite 21.6%.

* Except minor minerals.
# Figures of 2012-13 repeated due to non availability of data from State Governments.

Annex 6.1 (Page 46)

Target and Achievements during the First Three Years of XII Plan (2012-2017) of Geological Survey of India

Name of the Scheme /Project / Programme	Target Vs Achievement		Target Vs Achievement		Target Vs Achievement	
	Target	Achievement	Target	Achievement	Target	Achievement
	(April 2012 to March 2013)	(April 2012 to Mar.' 2013)	(April 2013 to March 2014)	(April 2013 to March' 2014)	(April 2014 to Dec 2014)	(April 2014 to Dec 2014)
MISSION-I : BASELINE GEOSCIENCE						
a)Ground Survey Systematic Geological Mapping (sq km)	1960	1289	2,000	2,640	700	299
Spl. Thematic Mapping (sq. km.) (1:25,000 scale)	15,000@	21,566.50	18,000	20411.5	18000	12651.9
Geochemical Mapping (in sq. km.) (1:50,000 scale)	46,000@	80,318	75,000	92275.5	85000	55036
Geophysical Mapping (in sq.km.) (1:50,000 scale)	22,000	27,535	27,000	34,398	33000	24247
b) Aerial Survey (i)Multisensor /Aeromagnetic Survey* (with Twin Otter (lkm.)	25,000	#	30,000	52,380	33000	0
(ii)Heliborne Survey(lkm)	10,000	$	15,000	165	18000	300
c) Marine Survey i) Parametric Survey within EEZ and beyond						
1) Bathymetry (lkm)	5,000	4,596	3,000	9,630	8000	3179
2) Magnetic (lkm)	1,700	3,923	3,000	5,531	10000	1220
3) Swath Bathymetry(Sq.km)	50,000	59,342	40,000	57,382	60000	52606
4) Seismic Survey (l. km) ^					7000	0
5) Gravity (l. km) ^					20140	10987
6) Sub bottom Profiling (l. km) ^					13485	10987
ii) Territorial Water +EEZ (sq.km)	1,700	1,775	1,500	2,375	1650	0
MISSION-II : NATURAL RESOURCE						
a) Large Scale Mapping (sq.km.)	2,500	4,916.59	4,500	5,263.65	4500	3262.74
b) Detailed Mapping (sq.km.)	40	45.43	50	62.525	50	34.03

Name of the Scheme /Project / Programme	Target Vs Achievement		Target Vs Achievement		Target Vs Achievement	
	Target	Achievement	Target	Achievement	Target	Achievement
	(April 2012 to March 2013)	(April 2012 to Mar.' 2013)	(April 2013 to March 2014)	(April 2013 to March' 2014)	(April 2014 to Dec 2014)	(April 2014 to Dec 2014)
c) Drilling (metre)	66,000	70,006.95©	70,000	68,037©	71000	58930.45
MISSION-III : GEO-INFORMATICS						
(Map, Publication, Information Technology, Core Library etc) (in nos)	30	30	30	Work initiated for all items.	30	30
MISSION-IV : FUNDAMENTAL AND MULTIDISCIPLINARY GEO-SCIENCE						
(Geotechnical, Earthquake Geology & Seismology, Geo-environment, Glaciology, Geothermal etc.) (in nos)	91	89	85	Work on 81 items undertaken£	77	77
Research & Development	36	36	30	36	45	66
Research (No of investigation including Deep Geol., Polar studies)						
MISSION-V : TRAINING AND CAPACITY BUILDING						
Training (in GSITI) No of Types (No of courses)	80	100 courses completed and 4 courses continued in FY 2013-14	75	74 courses completed and 3 courses in progress.	80	69 Courses completed and 2 Courses in progress

** Flying Season: normally in October – March*

• No Airborne survey conducted 2012-13 as Navigational system PNAV -2100 not working.

$ Sensors under installation to the helicopter

@ Upward revision of target made with the induction of new officers in the Dept.

© Includes drilling under M-IV also. µ Include additional request items (FS 2010-12)

£ Four Items were sponsored items and could not be taken up as there was no request from the Sponsor Agencies.

 test flight over Aladahalli covering 165 lkm. π Target as per outcome budget.

^ Instrumentation on RV Samudra Ratnakar

Annex - 6.2 (Page 67)

Status of Mining Leases in the country as on 31.03.2013 (First Schedule Minerals)

Mineral	State	Total No. of Mining Leases
Asbestos	Andhra Pradesh	5
	Odisha	2
	Rajasthan	26
	Total	**33**
Bauxite	Chhattisgarh	26
	Goa	3
	Gujarat	148
	Jharkhand	45
	Karnataka	5
	Kerala	2
	Madhya Pradesh	63
	Maharashtra	33
	Odisha	8
	Tamil Nadu	4
	Total	**337**
Chromite	Karnataka	6
	Maharashtra	1
	Manipur	2
	Odisha	26
	Total	**35**
Copper ore	Gujarat	1
	Jharkhand	4
	Karnataka	2
	Madhya Pradesh	2
	Rajasthan	4
	Sikkim	3
	Total	**16**
Diamond *	Madhya Pradesh	2
	Total	**2**
Gold	Andhra Pradesh	3
	Jharkhand	1
	Karnataka	8

Mineral	State	Total No. of Mining Leases
	Rajasthan	1
	Total	**13**
Iron ore	Andhra Pradesh	67
	Chhattisgarh	17
	Goa	287
	Jharkhand	52
	Karnataka	159
	Kerala	1
	Madhya Pradesh	20
	Maharashtra	26
	Odisha	129
	Rajasthan	16
	Total	**774**
Lead & Zinc ore	Andhra Pradesh	2
	Madhya Pradesh	2
	Odisha	1
	Rajasthan	9
	Total	**14**
Manganese ore	Andhra Pradesh	49
	Goa	47
	Gujarat	1
	Karnataka	66
	Madhya Pradesh	69
	Maharashtra	42
	Odisha	48
	Rajasthan	1
	Total	**323**
Ruby *	Karnataka	3
	Odisha	3
	Total	**6**
Sapphire *	Jammu & Kashmir	1
	Total	**1**

* Precious Stone

Annex- 6.3 (Page 69)

Performance of Annual Programme of IBM including Technical Studies, Investigations and Preparation of Mineral Inventory/Maps in 2012-13 to 2014-15 (up to 30th December 2014)

Sl. No.	Item	2012-13	2013-14	2014-15	
				Target	Achievement (as on 31.12.2014)
1	M C D R / M P / M S / F M C P Inspections	2520	2512	2500	1688
2	RMGS@/Updation of NMI as on 1.04.2010 in respect of Private Sector Leaseholds	12 RMGS	12 RMDS	4 RMDS	4 RMDS are under progress.
				1486 NMI sheets	1001 NMI sheets updated.
3	Updating of National Mineral Inventory (NMI) adopting UNFC.	NMI at a Glance as on 1.4.2010 has been prepared and released. 70 Analytical Reviews for "NMI an Overview as on 1.04.10" have been prepared and the publication has been released and uploaded on IBM's website	Synthesis of inventories of freehold and leasehold Public & Private sector deposits and generation of summary outputs in respect of 12 minerals viz. Copper, Lead-Zinc, Gold, Iron, Manganese Diamond, Tin, Tungsten, Molybdenum, Silver, Apatite and Rock Phosphate are under progress.	Intermediate Updation of NMI as on 1.4.2013 will be taken up for 13 minerals viz. Iron Ore (Magnetite), Manganese Ore, Bauxite, Vanadium, Dolomite, Magnesite, Fluorite, Graphite, Laterite, Corundum, antimony, Nickel and Cobalt	Synthesis of inventories of freehold and leasehold Public & Private sector deposits in respect of 12 minerals. Further, Summary outputs in respect of 21 minerals completed.
4	Preparation of multi-mineral maps with forest overlays	100 multi-minerals maps with forest overlays completed for Karnataka & Odisha States.	Updation of 100 multi mineral maps in Andhra Pradesh and Bihar States was completed	100 multi minerals maps with forest overlays for Andhra Pradesh and Bihar States.	75 multi-mineral leasehold maps on a scale of 1:50,000, with corresponding forest overlays in respect of Andhra Pradesh and Bihar were prepared.
5	OD Investigations	59	55	60	36
6	Chemical Analysis (No. of radicals)	42, 771	41,483	40,000	23,426
7	Mineralogical Studies	2,509	2,356	2,300	1,743
8	Technical Consultancy Assignments	03	04	03	3 survey investigations and 4 RMDS are under progress.
9	Mining Research including Environ-mental Studies	02	03	02	01 ground vibration study completed
10	Training	18	16	16	13

MCDR-Mineral Conservation & Development Rules; MP-Mining Plan; MS-Scheme of Mining; FMCP- Final Mine Closure Plan; @ Regional Mining Geological Studies

Annex-8.1 (Page 104)

Grant in-aid released to the various institutions in the country under the Science & Technology scheme for the year 2014-15

Sl. No.	Project/ Institution	Funds released
1	Development of copper bio-leaching methodology/ technique from tailing waste at Hindustan Copper Limited, Khetri, Birla Institute of Technoloqy & Science, Pilani, Rajasthan.	₹ 16.38
2	Value addition in mine waste tailing materials through geopolymer formation, Christ University, Bangalore.	₹ 5 lakh
3	Recoverable reserve estimation using non-gaussian copula-based orebody simulation along with open pit, National Institute of Technology, Rourkela, Orissa and Indian Institute of Technology, Kharagpur, W.B. (Jointly)	₹ 4.53 (National Institute of Technology) & ₹ 4.53 (IIT, Kharagpur)
4	Upgradation & Utilization of laterite of east and west coast deposits, JNARDDC, Nagpur	₹ 8.90 lakh
5	Jawaharlal Nehru Aluminium Research Development & Design Centre (JNARDDC), Nagpur (IEC).	₹ 5.50 lakh
6	Development of super thermal aluminium (STAL) conductor for Indian power sector, JNARDDC, Nagpur and NFTDC, Hyderabad (Jointly).	₹ 56 lakh (JNARDDC, Nagpur). ₹ 64 lakh (NFTDC, Hyderabad)
7	Evaluation of Biomarkers for early detection of noise induced Hearing loss, NIMH, Nagpur	₹ 6.20760 lakh
8	Recovery of copper from copper smelter dust and novel fixation or arsenic, NFTDC, Hyderabad	₹ 20 lakh
9	Federation of Indian Mineral Industries, Okhla Insdustrial Area, New Delhi (IEC)	₹ 10 lakh
10	Development of Standard framework and guidelines, NIMH, Nagpur	₹ 8.20 lakh
11	Development of portable analytical kit for field analysis, JNARDDC, Nagpur	₹ 4.90 lakh
12	Development of mathematical model (using fuzzy logic) to control superheat of aluminium electrolysis bath, JNARDDC, Nagpur	₹ 1.71 lakh
13	Process Development for production of low soda (Na2O) hydrate in bayer circuit, JNARDDC, Nagpur	₹ 2.22 lakh
14	Purification of commercial rare earth oxides e.g. ceria, by molten salf fusion and re-crystallization, NFTDC, Hyderabad	₹ 68.35 lakh
15	Integrated approach for development of process models and pilot production, JNARDDC, Nagpur	₹ 50.52 lakh
16	Development of low density emulsion explosives for energy, Indian School of Mines, Dhanbad	₹ 18.95 lakh

Sl. No.	Project/ Institution	Funds released
17	Development of hard and high temperature refractory material, JNARDDC, Nagpur	₹ 26.88607 lakh
18	Development of Nickel containing steel from chromite, Indian Institute of Technology, Kharagpur and Institute of Minerals & Material Technology, Bhuneswar (Jointly)	₹ 26.8638 lakh (IMMT) ₹ 26.901 lakh (IIT)
19	Development of TDR based wireless system, National Institute of Technology, Rourkela	₹ 15.12 lakh
20	Physico-chemical processing of low grade, Jadavpur University, Kolkata	₹ 25.37 lakh
21	Production of geopolymer based construction material, Gandhi Institute of Engineering and Technology, Gunupur, Odisha	₹ 13.805 lakh
22	Synethesis, characterization and photocatalytic performance of metal doped semiconductor, Aligarh Muslim University, Aligarh.	₹19.5285 lakh
23	Prospecting/Exploration of platinum group of metals within naga hills ophiolite at thengahu ridge, Government of Nagaland, Directorate of Geology and mining, Nagaland, Dimapur	₹ 7.425 lakh
24	Study of Alkaline-Carbonatite Complexes as Potential Resource of REEs,Nb-Ta and U-Th, Indian Institute of Technology, Roorkee	₹ 25.891 lakh

Annex-13.1 (Page 147)

Twelfth Five Year Plan (2012-17)
Scheme-wise Allocation of Ministry of Mines

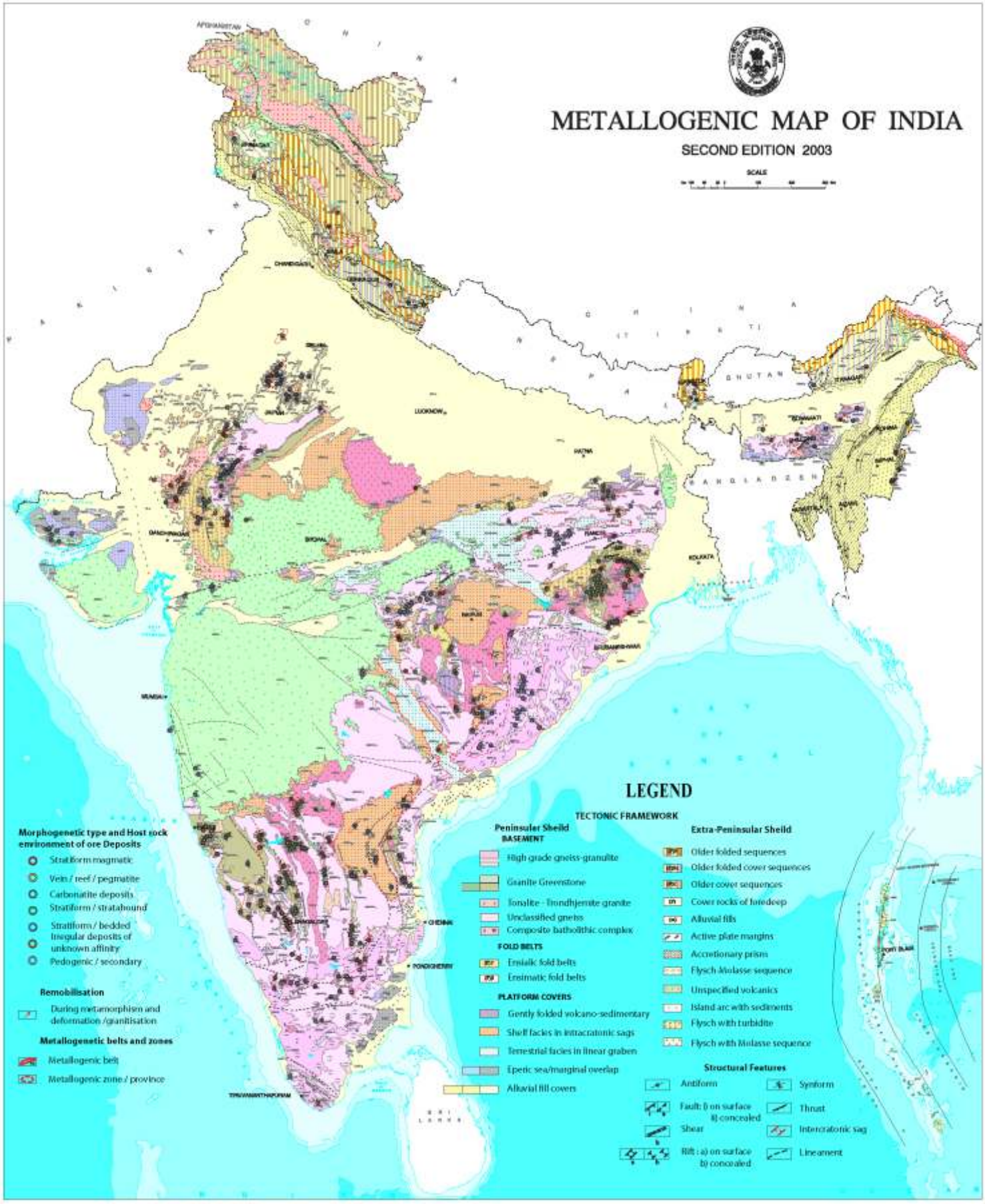
(₹ in Crores)

Sl. No.	Name of the Scheme	GBS Allocation
1.	MECL promotional	50.00
2.	S & T Programme	49.05
	Indian Bureau of Mines (IBM)	
3	Inspection of Mines	45.60
4	Mineral Beneficiation	39.88
5	Technological Upgradation	23.64
6	Dissemination of Data	13.44
7	Mining Tenement System	5.53
8	New Scheme- Ore Accounting Software	50.00
9	Tribal Sub-Plan	5.63
10	NER(Capital+Revenue+Major Works)	14.81
11	**Total (Sl. 3 to 10)**	**198.53**
12	Construction	30.00
13	**Total IBM (Sl. 11+Sl. 12)**	**228.53**
	Geological Survey of India (GSI)	
14	Survey & Mapping	599.29
15	Mineral Exploration	246.90
16	Information & Dissemination	238.52
17	Research & Development	62.08
18	Specialized Investigation + Antarctica Expe.	41.53
19	Human Resource Development	37.34
20	Modernization & Replacement	596.00
21	Tribal Sub-Plan	54.76
22	**Total (Sl. 14 to 21)**	**1,876.42**
23	Construction	128.00
24	**Total GSI (Sl. No. 22+ Sl. 23)**	**2,004. 42**
25	**Grand Total (Sl. 1+ 2+13+24)**	**2,332.00**

Annex- 13.2 (Page 150)

Present Status of C&AG Paras Pending in the Ministry of Mines as on 31.3.2015.

Sl. No.	Report, Para No. & concerned Sections	Subject	Current status as reported by the Administrative Division
1	CA.9 of 2009-10 **(Commercial)** Para No. 12.1.1 Met.II (BGML)	**Inept handling of estate related issues of BGML** BGML'S inept handling leading to encroachment/non collection of rent and loss of financial benefits of ₹44.18 crore. **ATN sent twice:** **(1st ATN sent on 19.1.2011)**	On 13.03.2014, a revised ATN has been sent to Audit stating that in consonance with the directions of the Supreme Court, BGML has initiated the process of global tendering to sell all the assets of the company. The Audit office has sent the ATN on 02.05.2014 for further comments which is under process in the Ministry/BGML.
2	Report No.8 of 2012-13 **(Commercial)** Chapter-X Met.I (NALCO)	**Second Phase capacity expansion and avoidable loss due to continuation of uneconomic operation of Special Grade of Alumina Plant.** 10.1.3.1 Delay in Completion of Project 10.2 Avoidable loss of ₹19.08 crore due to continuation of uneconomic operations of Special Grade Alumina plant. **ATN sent twice** **(1st ATN sent on 4.7.2013).**	The office of the Audit while vetting the ATN has remarked that the Semi-Mobile Crusher Plant (SMCP) and Fixed Long Distance Conveyor (FLDC) projects have not been commissioned so far. The revised ATN was sent to the Office of the Audit on 28.04.2014. The Audit has sent the ATN 20.06.2014 for further comments. which is under process in the Ministry/NALCO.
3	Report No.19 of 2013 Chapter-IX (Para No. 9.1) Compliance Audit Observations. **(Civil)** M.III (IBM)	**Unfruitful expenditure due to non-utilization of Rock Drilling Rig** IBM has incurred ₹58.16 lakh for procurement of Rig equipment under NER Assistance Programme. The selection of equipment unsuitable for hilly terrain and not taking necessary action in time led to equipment remaining idle for a period of six years.	The reply of the C&AG Audit para has been sent to Audit for vetting.
4	Report No. 13 of 2014 Chapter-X (Para No. 10.1) **(Commercial)** Met.III (HCL)	**Excess payment of royalty** In respect of Khetri mine where processing of mineral was carried out within the leased area, the Company paid royalty on metal-in-ore produced instead of metal-in-concentrate resulting in excess payment of royalty of ₹4.97 crore.	The Audit Para has been received in the Ministry on 13th August, 2014. The same has been forwarded to the Division dealing with HCL to furnish the ATN to the C&AG.


METALLOGENIC MAP OF INDIA
SECOND EDITION 2003
SCALE
LEGEND
TECTONIC FRAMEWORK
Peninsular Sheild
BASEMENT
High grade gneiss-granulite
Granite Greenstone
Tonalite - Trondhjemite granite
Unclassified gneiss
Composite batholithic complex
FOLD BELTS
Ensialic fold belts
Ensimatic fold belts
PLATFORM COVERS
Gently folded volcano-sedimentary
Shelf facies in intracratonic sags
Terrestrial facies in linear graben
Eperic sea/marginal overlap
Alluvial fill covers
Extra-Peninsular Sheild
Older folded sequences
Older folded cover sequences
Older cover sequences
Cover rocks of foredeep
Alluvial fills
Active plate margins
Accretionary prism
Flysch &/olasse sequence
Unspecified volcanics
Island arc with sediments
Flysch with turbidite
Flysch with Molasse sequence
Structural Features
Antiform
Synform
Fault: a) on surface b) concealed
Thrust
Shear
Intercratonic sag
Rift : a) on surface b) concealed
Lineament
Morphogenetic type and Host rock environment of ore Deposits
Stratiform magmatic
Vein / reef / pegmatite
Carbonatite deposits
Stratiform / stratabound
Stratiform / bedded
Irregular deposits of unknown affinity
Pedogenic / secondary
Remobilisation
During metamorphism and deformation /granitisation
Metallogenetic belts and zones
Metallogenic belt
Metallogenic zone / province
AFGHANISTAN
CHANDIGARH
LUCKNOW
PATNA
BHUTAN
GUWAHATI
BANGLADESH
KOLKATA
BHOPAL
RANCHI
NAGPUR
HYDERABAD
CHENNAI
PONDICHERRY
THIRUVANANTHAPURAM
SRI LANKA
PORT BLAIR



सत्यमेव जयते

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