



GOVERNMENT OF INDIA

OUTCOME BUDGET

2008-2009

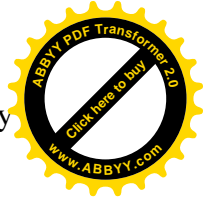
MINISTRY OF MINES



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EXECUTIVE SUMMARY

Role of the Ministry

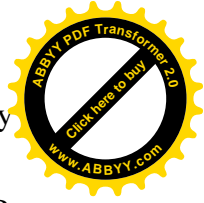
Ministry of Mines is responsible for survey and exploration of all minerals, other than natural gases, petroleum and atomic minerals; for mining and metallurgy of non-ferrous metals like aluminium, copper, zinc, lead, gold, nickel etc. and for administration of the Mines and Minerals (Regulation and Development) Act, 1957 in respect of all mines and minerals other than coal, natural gas and petroleum. List of subjects allocated to the Ministry of Mines is given below:

List of subjects allocated to the Ministry of Mines

1. (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.
2. All other metals and minerals not specifically allotted to any other Ministry/Department, such as Aluminium, Zinc, Copper, Gold, Diamonds, Lead and Nickel.
3. Planning, development and Control of, and assistance to, all industries dealt with by the Ministry.
4. Geological Survey of India
5. Indian Bureau of Mines
6. Metallurgical Grade Silicon.

Constitutional and Legislative provisions

The distribution of the Legislative powers between the Central Government and State Government is governed by Part XI of the Constitution of India. Article 246 of the Constitution of India refers to the Union List-I, State List-II and Concurrent List-III containing entries as given in the Seventh Schedule. Entry 54 of List-I of the Constitution gives powers to the Central Government for regulation of mines and mineral development to the extent to which such regulation & development under the control of the Union is declared by Parliament by law to be expedient in the public interest. The State Governments on the other hand have been given powers under Entry-23 of List-II for 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.



Parliament has enacted the Mines and Minerals (Development & Regulation) Act, 1957 (MMDR Act, 1957) under Entry 54 of List-I to provide for the regulation of Mines and development of minerals under control of the union.

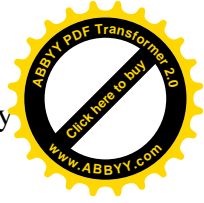
In pursuance of the reforms initiated by the Government of India in July, 1991 in fiscal, industrial and trade regimes, the National Mineral Policy was announced in March, 1993. The National Mineral Policy recognized the need for encouraging private investment, including state-of-the-art technology in the mineral sector. Further, the policy stressed that the State Governments, shall continue to formulate legal measures for the regulation of mines and the development of mineral resources to ensure basic uniformity in mineral administration so that the development of mineral resources keeps pace, and is in consonance with the national policy goals.

Though it has been the endeavour of the Ministry of Mines to encourage greater investment in exploration and mining, there is a need to make sustained efforts to increase the same and remove bottlenecks which hinder the productivity and efficiency of this sector. Recognising this need and to further improve the investment climate for mining in the country, the Planning commission set up a High Level Committee under the Chairmanship of Shri Anwarul Hoda, Member, Planning Commission, to review the National Mineral Policy and recommend possible amendments to the MMDR Act. The High Level Committee submitted its report to the government on 20th July, 2006 with recommendations on changes in the National Mineral Policy to attune it to the present requirements of the world economy for evolving of mining code adapted to the best international practices, streamlining and simplifying of procedures for grant of mineral concessions to reduce delays, strengthening the infrastructure for mining activities and recommendations on other issues for improving the environment for investment in the mining sector. A draft National Mineral Policy based on the recommendations of the Hoda Committee and consultations with State Government and inter-ministerial consultation is under active consideration of the Government.

Amendments made in the Act after the introduction of National Mineral Policy, 1993:

MMDR Act, 1957 has been amended twice in 1994 and 1999 after the declaration of the National Mineral Policy, 1993. Salient features of the amendments carried out in 1994 are as follows:

- (i) Removal of restriction on foreign equality holding in the mining sector by the company registered in India.
- (ii) Removal of 15 minerals from Part C of the First Schedule to the Act, leaving only 11 minerals for which permission of the Central Government is required for grant/removal of ML/PL.
- (iii) Greater stability on tenure of mineral concession enhancing the maximum period of grant of ML from 20 to 30 years with a minimum period of 20 years and also enhancing the period of Prospecting Licence from 2 yrs to 3 yrs.
- (iv) State Governments were empowered to terminate mining lease of minor minerals without prior approval of the Central Government.



Salient features of the amendments of the MMDR Act, 1957 in 1999

- (i) Introduction of a concept of reconnaissance operations as a stage of operation distinct from and prior to actual prospecting operations.
- (ii) Reconnaissance permit holder will enjoy preferential right for grant of PL.
- (iii) Area restriction of Reconnaissance Permit, Prospecting Licence, Mining Lease will apply Statewise instead of country as a whole.
- (iv) Mineral limestone has been deleted from the first schedule to the Act. Hence for only ten minerals (except fuel and atomic minerals) namely Asbestos, Bauxite, chrome ore, Copper, Gold, Iron Ore, Lead, Manganese Ore, Precious Stone and Zinc, permission of the Central Government is required for grant of mining lease.
- (v) Transfer of mining leases for these 10 minerals do not require reference to the Central Government.
- (vi) State Governments have been delegated powers to grant minerals concessions even for areas, which are do not compact or contiguous.
- (vii) State Governments have been empowered to permit amalgamation of two or more adjoining mining leases.
- (viii) State Governments have been delegated powers to approve mining plans in respect of 29 non-metallic/industrial minerals in case of open cast mines.

Statutory provisions regarding reservation of mineral bearing areas.

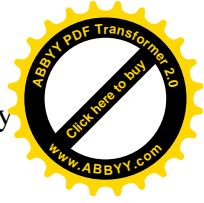
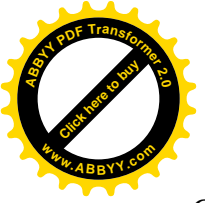
Traditionally, mining activities have been undertaken mostly in the public sector, and through the Central and State Public Sector Undertakings. The erstwhile Rule 58 of the Mineral Concession Rules, 1960 initially provided the statutory provision for reserving mineral bearing areas for exploitation in the Public Sector Rule 58, MCR, 1960 provided as follows:

“Reservation of areas for exploitation in the public sector etc. The State Government may, by Notification in the official gazette, reserve any area for exploitation by the Government Company within the meaning of section 617 of the Companies Act, 1956 (1 of 1956).”

However, after the provision of reservation was made part of the Mines and Minerals (Regulation and Development) Act, 1957, the Rule 58, MCR, 1960 was deleted vide GSR 449(E) dated 13.4.1988 are valid and these sustain indefinitely, till de-reserved.

In 1986, the Central Government inserted a new Section 17A of the Mines and Minerals (Development and Regulation) Act, 1957, under which, as per subsection (1) of Section 17A of the Act, the Central Government could, with a view to conserving any mineral and after consultation with the State Government, reserve mineral bearing areas. Similarly as per subsection (2) of Section 17A of the Act, the State Government could reserve mineral bearing areas for exploitation by the Public Sector Undertakings owned or controlled by it or by the Central Government.

In January, 1994, the Central Government inserted a new sub-section (1A) to Section 17A of the MMDR Act, 1957, under which the Central Government could, in consultation with the State



Government, reserve mineral bearing area for exploitation by the Central Public Sector Undertakings, while under amended Section 17A(2), the State Government could reserve mineral bearing areas with the approval of the Central Government for exploitation by State Public Sector Undertakings.

In order to take effective steps for prevention of illegal mining State Governments have been empowered to frame Rules under Section 23C of the MMDR Act, 1957. Regular meetings with State Governments have been conducted to review the progress made regarding framing of rules under Section 23C of the MMDR Act, 1957, constitution of Task Force/Flying Squads at State and district level having a representative of IBM and furnishing of quarterly returns on illegal mining and action taken thereon. So far 16 States have framed rules under Section 23C of the MMDR Act, 1957 and 20 States have constituted Task Force/Flying Squads.

1. Geological Survey of India (GSI)

Geological Survey of India (GSI) is the second oldest survey in the country after Survey of India. This institution has provided vital inputs into all facets of national economic development, both before and after independence.

Monitoring Mechanism in GSI:

The Government has evolved a mechanism for formulation and implementation of the programmes in the earth science area, with close co-ordination between GSI, other Central agencies and State Geological Departments to avoid duplication of work and to give priority to the programmes of the States, based on the availability of resources.

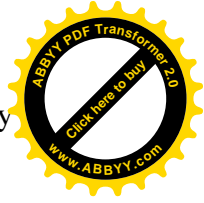
Programmes are formulated keeping in view national priorities, organisational goals, geo-scientific rationale, Government policies and identified thrust areas based on the global economic scenario and emerging market trends in the mineral sector.

The interaction with the States takes place through participation of State representatives in the various sub-committees, which are theme based.

Another level of State participation takes place during the State Geological Programming Board meeting. GSI representatives participate in the meetings and discuss with the States the future programmes in the concerned State and requests for reservation wherever required.

All the above interactions ensure that the prioritised needs of the States in the earth science domain are met.

After final scrutiny at Central Headquarters, GSI's programme documents, mostly State-wise and activity-wise, are placed before the Central Geological Programming Board (CGPB) for approval. CGPB is constituted with representatives from the Central / State Governments. / PSU/ Autonomous Institutions/ Private Sector and the recommendations of various subcommittees of the CGPB, demands of State Geological Programming Boards are given due consideration while finalising the Annual programme of GSI. CGPB coordinates all the programmes including those on mineral exploration.



The Ministry of Mines from time to time and during the quarterly reviews, interactions with the Planning commission, Parliamentary standing and consultative committee etc., provides guidelines in the activity domains of GSI.

Constant monitoring of the activities through stage reviews and mid-term reviews besides regular in-house supervision provide a time-tested mechanism for imparting mid-course corrections. The scientific officers of GSI are professionally competent and deeply involved from the inception to completion of the investigations.

2. Mineral Exploration Corporation Limited (MECL)

The Mineral Exploration Corporation Ltd., registered under Companies Act 1956, was formed on 21st October 1972. The Company was conceived to be the sole agency for exploration on behalf of Government of India and the task of detailed exploration of minerals throughout the country was assigned to MECL.

Now it is the premier exploration agency in the country and it carries out exploration activities under two major heads, viz.

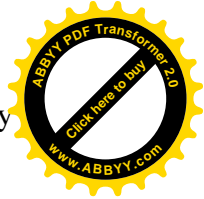
- Promotional work for coal, lignite and metallic minerals on behalf of and funded by Govt. of India as per national priorities .
- Contractual work on behalf of other agencies including Public Sector, Private Sector and State Governments as per contract executed by MECL with them.

Financial Restructuring : The Government of India has conveyed its approval vide its letter dated 8.8.06 and 17.8.06 for financial restructuring and wage revision in MECL. The same has been implemented.

As a part of financial restructuring & after approval of Ministry of Mines, Government of India the wage arrears for 2 years (2003-04 & 2004-05) has been disbursed during 2007-08 to the employees on role of MECL as on 31-3-2007

Sale of reports : The Government of India has finalised the pricing policy and modalities for dissemination of exploration data / sale of exploration reports prepared under promotional exploration programme . With the finalisation of pricing policy, now it is possible for interested agencies / organisation(s), to obtain the geological report of the potential minerals prospects for their perusal at a nominal price . It is expected to facilitate development of potential mineral prospects. So far, 10 Nos. of exploration reports of different minerals has been sold.

Budget for North East : It is our endeavour to take up exploration programme on continuous basis in the North Eastern States to facilitate development of mineral prospects leading to setting up of mineral based industries. MECL has been associated with mineral exploration activities and geo-technical studies for the development of mineral based industry in the North Eastern Region in last 26 years. It has completed exploration for coal in 11 blocks in the states



of Assam, Arunachal Pradesh, Nagaland, Meghalaya and Sikkim. Under its promotional programme funded by Ministry of Mines, it has completed eight schemes which includes for copper, sillimanite, glass sand, shell limestone and Ferro-Silicon grade quartzite in states of Assam, Meghalaya, Sikkim, Mizoram and Arunachal Pradesh. It has extended its services for geo-technical studies to Brahmaputra Flood Control Board in the state of Assam and Arunachal Pradesh and consultancy work for remote sensing studies in Tripura on behalf of Ministry of Mines.

Performance : During 2006-07 the company surpassed all previous peaks and registered an all time high turn over of Rs. 8529 lakhs since its inception as against turnover of Rs. 8259 lakhs in previous financial year. The company has achieved gross margin of Rs. 1126 lakhs and recorded a net profit of Rs. 388* lakhs (after tax) during the year.

*Excluding extra ordinary items i.e. waiver of interest on govt. loan of Rs. 5569 lakhs (net of tax)

3. Indian Bureau of Mines (IBM)

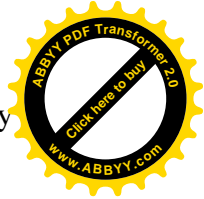
The Indian Bureau of Mines (IBM), a subordinate Organization under Ministry of Mines, is primarily responsible for the promotion of systematic and scientific development of mineral resources of the country, conservation of minerals and protection of environment in mines, other than coal, petroleum & natural gas, atomic minerals and minor minerals.

IBM performs regulatory functions through enforcement of Mineral Conservation and Development Rules, 1988, relevant provisions of the Mines and Minerals (Development and Regulation) Act, 1957, the Mineral Concession Rules, 1960 and Environmental Protection Act, 1986 & Rules made there under.

It also functions as a facilitator to the Mining Industry by providing consultancy services in mining, geology, protection of mine environment and ore beneficiation, and also as a data bank on mines and minerals. It also advises the Central and State Governments on all aspects of mineral industry, trade and legislation.

In BE 2007-08, the approved budget of IBM was Rs. 3411.00 lakhs comprising Rs. 1700.00 lakhs for plan and Rs. 1,711.00 lakhs for non-plan. Against this, the RE 2007-08 has been kept at Rs 3703.00 lakhs comprising Rs. 2,000.00 lakhs for plan and Rs. 1,703.00 lakhs for non-plan. BE 2008-09 has been kept at Rs. 3746.25 lakhs comprising Rs. 1900.00 lakhs for plan and Rs. 1846.25 lakhs for non-plan.

In order to monitor physical and financial performance, a month-wise, quarter-wise annual action plan is prepared and progress is closely monitored and a physical and financial performance report is sent to the Ministry every month. Quarterly performance is reviewed during QPR meetings in the Ministry. IBM has hosted a website (<http://ibm.gov.in>) linked with the site of Ministry of Mines. The website provides main functions and activities of IBM, status of mining plans/ schemes of mining, list of Recognized Qualified Persons authorized for preparation of mining plan/scheme, mineral information, mining laws, human resources, information mandatory to be published as per the provisions of RTI Act 2005, etc. and regularly updates the same for public information.



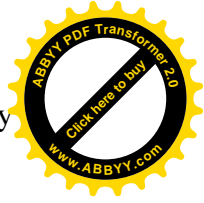
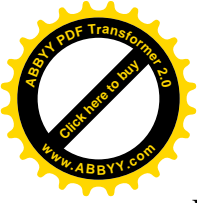
4. Hindustan Copper Limited (HCL)

The Hindustan Copper Limited, a Government of India Enterprise and the nation's only producer of primary copper from indigenous resources was incorporated in the Public Sector on 9th November 1967. The major activities of HCL are exploration, mining, beneficiation, smelting, refining and casting of finished copper metal into saleable products. HCL produces primary copper in the form of cathode/wire rod. Apart from copper, HCL also produces various by-products like Anode Slime and Sulphuric acid. The present smelting and refining capacity of HCL is supported by mining/beneficiation activity and import of concentrate to cover the short fall.

The company has its Head Office and Registered Office at 1, Ashutosh Chowdhury Avenue, Calcutta-700 019. The main operating units of the company are as under :

1. Khetri Copper Complex (KCC) at Khetri, Rajasthan.
Comprising of mining and metallurgical complex alongwith the by-product recovery plant with capacity to produce Copper Cathode of 31,000 TPA.
2. Indian Copper Complex (ICC) at Ghatsila, Jharkhand.
Comprising of metallurgical complex alongwith the by-product recovery plant with capacity to produce Copper Cathode of 16,500 TPA.
3. Malanjkhand Copper Project (MCP) at Malanjkhand, MP.
Comprising of open pit mine of 2 million tonne capacity of ore production per annum with a matching concentrator plant. The concentrate produced at Malanjkhand is sent to KCC and ICC for further processing.
4. Taloja Copper Project (TCP) at Taloja, Maharashtra.
This is a Continuous Cast Wire Rod Plant based on Southwire Technology for conversion of cathodes into wire rod. The capacity of the plant is 60,000 TPA..

Outlay for Capital Expenditure : An outlay of Rs 78.00 crore has been proposed in RE 2007-08 under plan expenditure out of which expenditure of Rs 61.88 crore has been committed till December, 2007. The entire amount of Rs 78.00 crore would be funded from internal accruals. The plan expenditure is on account of replacement and renewals of the existing plant and machinery for both mines as well as plants situated in different units across India. Replacement and renewal is a continuous process for achieving maximum utilisation of the existing capacity/facilities. Due to lack of sufficient fund, the company in the past could not replace the critical plant and mining equipment in time. As a result, the desired production from the existing facility could not be achieved. The proper and timely replacement/renewals of critical equipment in Smelter, Refinery, Milling House and various material handling equipments in mines is a pre-condition for achieving better capacity utilisation. The company has put up a higher target of MIC and Cathode Production at 34,400 MT and 45,000 MT respectively in the draft MOU 2008-09 as against 31,000 MT MIC and 40,000 MT of Cathode target for 2007-08.



Financial Restructuring : The financial restructuring of the company has been approved by Government of India vide letter dated 30.07.2007. The salient features of the approved Restructuring Package are :-

- i) Waiver of 7.5% non-cumulative redeemable preference share amounting to Rs 180.73 crore and its adjustment against accumulated losses.
- ii) Restructuring of capital through reduction of face value of equity share from Rs 10/- to Rs 5/- amounting to Rs 382.21 crore and its adjustment against accumulated losses.
- iii) Conversion of non-plan government loan amounting to Rs 50.00 crore (Rs. 25 crore each released in 2005-06 & 2006-07) in to equity.

Budget for Social Upliftment : HCL is fully aware of its Corporate Social Responsibility and has all along made efforts towards upliftment of the living conditions of local people where it has mines and other establishment. During the last few years, no major action could be initiated because of the unhealthy financial condition. With the change in the financial position, company is making specific efforts towards this area and action plans have been drawn taking into consideration the ambient conditions and the expectations of the people living in and around HCL's establishments like providing drinking water, rural healthcare, social forestry etc.

Review of physical performance

The actual production of Metal in Concentrate (MIC) and Copper Cathode vis-à-vis targets set during the year 2006-07 and 2007-08 (upto Dec'07) are given hereunder:

(Unit:Tonne)

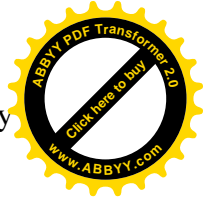
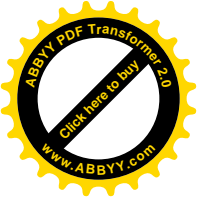
Particulars	2006-07		2007-08 (upto Dec'07)	
	Target	Actual	Target	Actual
Metal In Concentrate	29500	30231	22506	23590
Copper Cathode	42000	39785	30275	32601

Due to various pro-active actions initiated by the management, there has been a marked improvement in the operational areas with higher achievements recorded during 2006-07. During 2007-08 also, company is hopeful of surpassing the targets set. Till Dec'07, production of MIC and Cathode has surpassed the set targets.

The detailed plan expenditures undertaken during the abovementioned two years have also been highlighted in **Annexures I & II** respectively.

Review of financial performance

The actual financial performances vis-à-vis targets set during the year 2006-07 and 2007-08 (upto



Dec'07) are given hereunder:

Particulars	2006-07		2007-08 (Upto Dec'07)	
	Target	Actual	Target	Actual
Turnover	1077.22	1799.64	996.65	1312.38
Gross Margin	168.51	443.31	160.60	269.55
Gross Profit/(Loss)	147.80	366.68	141.51	227.54
Net Profit/(loss) Before Tax	118.35	331.83	126.05	204.61
Net Profit/(loss) After Tax	105.07	313.94	111.91	181.19

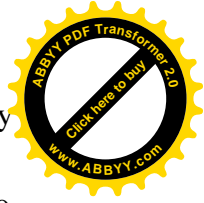
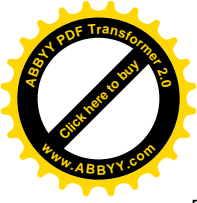
The improvement in financial performance for the year 2006-07 & 2007-08 (upto Dec'07) has been mainly on account of higher LME price and increased production of Metal In Concentrate.

5. National Aluminium Company Limited (NALCO)

The National Aluminium Company Ltd (NALCO), a Govt. of India Enterprise, under Ministry of Mines, was incorporated on 7th January, 1981, for setting up an Integrated Aluminium Complex, to produce bauxite, alumina, aluminium & power in the backward tribal areas of Orissa. The project was completed in the year 1985 - 1987 with installed capacity of 24,00,000 tpy of bauxite mine; 8,00,000 tpy of alumina refinery, 2,18,000 tpy of smelter and 720 MW of power plant.

In the year 1996-98, the company embarked upon 1st phase expansion to increase the installed capacity to 48,00,000 TPY for bauxite mines; 15,75,000 TPY for alumina refinery, 3,45,000 TPY for smelter and 960 MW for power plant. The 1st phase expansion was completed in the year 2001 & 2002 in phased manner. Further, company has also diversified its activities by going for value added products such as, detergent grade Zeolite with installed capacity of 10,000 TPY in the year 2004-05 and special grade alumina with installed capacity of 26,000 TPY commissioned in the year 2003-04. The company also acquired a Rolled Product Unit in the year 2000 and commissioned the plant in the year 2004-05 with installed capacity of 50,000 TPY.

The company is in process of implementing 2nd phase expansion with an approved estimated project cost of Rs.4091.51 Crore after receipt of Government of India approval on 26.10.2004 with a project completion schedule of 50 months, to increase the installed capacity to 63,00,000 TPY for bauxite mines; 21,00,000 TPY for alumina refinery, 4,60,000 TPY for smelter and 1200 MW for power plant. The project cost estimate has since been revised to Rs.5003 Crore considering impact of escalation, exchange rate variation, increase in taxes & duties and change in scope etc. As part of company's endeavor for backward integration to meet its critical raw material need, company has gone for acquiring coal mine block and got allotment from Government of India for Utkal - E Block on 27.08.2004. The coal mine project has been approved at estimated cost of Rs.215 Crore. As part of Company's endeavor for vertical enhancement of its capacity, the company is going for up-gradation of the capacity of fourth stream of Alumina plant from 5.25 lakh TPY to 7 lakh TPY. The estimated project cost of would be Rs.409 Crore. The project has been approved by the Board.



The company has projected plan outlay of Rs.1888.00 Crore to be spent in the year 2008-09 under different schemes, namely Addition, Modification & Replacement for Rs.241.00 Crore, 2nd phase expansion project for Rs.1600.00 Crore, Utkal Coal E Block for Rs.30 Crore, overseas smelter plant for Rs.3 Crore, up-gradation of alumina plant for Rs.5 Crore, Pottangi Mines for Rs.4 Crore and 3rd phase expansion project for Rs.5.00 Crore.

The measurement of final outcome for the operating Units has been set in terms of enhanced capacity in terms of quantity of finished products. The 2nd phase expansion will be commissioned in the last quarter of the year 2008-09. Accordingly, the outcome has been set. For projects i.e Utkal Coal E Mines and up-gradation of alumina plant, having longer gestation period, where the production can commence only on completion of the projects, the measurement of final outcome has been set in terms of physical/ financial progress of the project.

The company has surpassed physical targets set in the outcome budget 2006-07 for major products except alumina due to torrential rain and the actual expenditure has also surpassed the capital outlay set in 2006-07. The actual production of major products upto Dec'07 in comparison to our targets, set in the outcome budget 2007-08, is ranging from 64% to 77% and the actual expenditure upto Dec'07 in comparison to target set in 2007-08 is about 60%. Since 2nd phase expansion is in full swing, it is expected that the target for capital expenditure will be met by the year end.

The overall trend in expenditure vis-à-vis revised estimates for the last two years is satisfactory. The actual expenditure as compared to revised estimate is 101.95% in the year 2006-07 and 104% in the year 2006-07 and 60% in the year 2007-08 (up Dec'07).

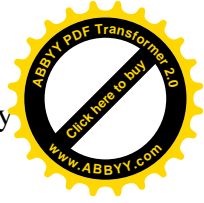
The company has an internal system to monitor physical and financial progress of various plan schemes. Regular review is being undertaken at Unit level as well as at corporate level on monthly basis. In case of any slippage or under utilization of capital outlay, suitable corrective measure is being taken. A status report on actual achievement -vrs- target / milestones in respect of 2nd phase expansion is being submitted to every Board Meeting. The review is also being conducted in Quarterly Progress Review(QPR) meeting at Ministry level. A status report on actual progress -vrs- various milestones set for each segment of the projects are being submitted to Ministry of Programme Implementation, Government of India. For 2nd phase expansion, the company has taken the help of renowned engineering consultant, M/s M N Dastur for both time & cost monitoring.

6. Science & Technology (S&T)

The necessity of continuous up-gradation of the technology and introduction of latest technology in minerals and non-ferrous metal sectors was recognized by the Ministry of Mines many years back. The Ministry of Mines has accordingly initiated a well organized effort in this regard.

Evaluation, Monitoring and Review of Science and Technology (S&T) projects

A Project evaluation and Review Committee (PERC) has constituted with the following terms of reference: -



- (i) To evaluate / appraise S&T project proposals before consideration of Standing Scientific Advisory Group (SSAG).
- (ii) To review and Monitor progress of Projects periodically.
- (iii) To review nearing completion/recently completed projects as regards targeted deliverables before considering release of the last installment of the grant-in-aid.

Standing Scientific Advisory Group

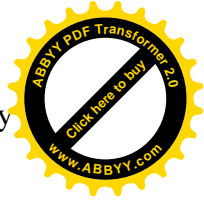
The S&T projects are approved by the Standing Scientific Advisory Group (SSAG) of the Ministry under the Chairmanship of Secretary (Mines). The representatives of research organizations, Department of Science and Technology, Defence Research and Development Organization and non-official experts provide the technical input in selection of the projects. The SSAG is basically an extended form of the Standing Finance Committee and can approve projects each costing up to Rs. 25 crores. SSAG has been recently reconstituted. The terms of reference of the SSAG are as follows:-

- (i) To identify and determine areas/missions where technological improvements are needed on priority.
- (ii) To draw up integrated action plan for technology improvement through an institutional mechanism providing for interaction with research laboratories and institutions.
- (iii) To draw up/approve MOU to be entered into with national labs./institutions for undertaking the measures indicated in the action plan.
- (iv) To evolve an integrated approach to examine, review and formulate R & D programme in the areas of geology, mineral exploration, mining and environment, beneficiation, metallurgy, bio leaching, Ground Control and Rock Mechanics and Bye-product recovery.
- (v) Any other issue related to R & D in mineral and non-ferrous metal sectors.

S & T Projects

The S&T projects are selected from (a) National requirement angle, (b) for enhancing competitive edge of the Indian mineral and non-ferrous metals sectors and (c) to solve site specific and organization specific problems. The projects in the category of 'a' are taken up with the grant in aid from the Ministry of Mines (MOM) and other Government Departments. The projects in category 'b' are financed by the grant in aid from MOM and contributions from other departments and industry. The projects in category 'c' are financed by the implementing organizations themselves.

Till date 161 projects have been approved and 5 projects are under implementation. Till now 139 projects have been completed.



Autonomous Institutes under Ministry of Mines

National Institute of Rock Mechanics:-

National Institute of Rock Mechanics was registered as a society in July 1988 to conduct research, render guidance and provide consultancy in mining and civil engineering sectors. NIRM has been accredited as ISO 9001 organization in August, 2002.

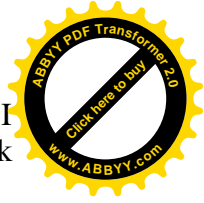
Jawaharlal Nehru Aluminum Research Development & Design Centre:-

Jawaharlal Nehru Aluminum Research Development & Design Centre (JNARDDC) was registered as a society in 1987. The objective of the Centre is to assimilate the technology available in the country for production of alumina and basic engineering.

National Institute of Miners' Health:-

National Institute of Miners' Health: was registered as an autonomous society in February, 1990 to address exclusively the Occupational Health problems of miners due to their long exposure to the mining environment. The Central laboratory of the Institute at JNARDDC campus Nagpur has become functional on 16th July 2002.

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CHAPTER - I

MANDATE, GOALS AND POLICY FRAMEWORK

Ministry of Mines

The Ministry of Mines is primarily responsible for the development and regulation of the mineral sector including the mining and metallurgy of all non-ferrous metals both in private and public sectors, but excluding Natural Gas, Petroleum, Coal and Atomic minerals.

Mineral resources are wasting assets. Conservation and their planned exploitation is therefore, of prime importance to the national economy. Besides providing the basic inputs to domestic industry, the mineral sector accounts for sizeable export and foreign exchange earnings.

Having regard to the extent and variety of mineral resources in the country, there is great potential for rapid growth in this sector. This calls for concerted action and coordination of a large number of tasks, including basic mapping (topographical and geological), exploration, evaluation, extraction processing and beneficiation of ore.

Organisational Set-up

At the Secretariat level the Ministry of Mines is mainly engaged in direction, supervision and co-ordination and has the following six divisions:-

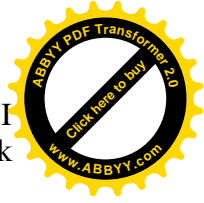
I. Survey and Exploration Division – deals with geological survey, mapping and exploration of both the land-mass and the sea-bed. The following are the principal agencies which implement the programmes of this division:-

- (a) Geological Survey of India;
- (b) Mineral Exploration Corporation Limited.

II Mines Division – deals with the administration of Mines and Minerals (Development and Regulation) Act, 1957 as amended from time to time and the rules and regulations framed thereunder. It has one Subordinate Office to implement the programmes of the division, viz. Indian Bureau of Mines.

III Metal Division - deals with the planning, exploitation, development, monitoring of programmes and research in respect of non-ferrous metals both in the public and private sectors. The following undertakings are engaged in the production of non-ferrous metals in the public sector:-

- (a) National Aluminium Company Limited (Aluminium)
- (b) Hindustan Copper Limited (Copper)



IV S&T Division -The activities under the Science and Technology Programme of the Minerals and Non Ferrous Metal Sector cover the field of Geology,Exploration, Mining and Environment, bioleaching, beneficiation Rock Mechenics, ground control and Non Ferrous Mettelargy. Under the S&T programme the following centres of excellence (autonomous bodies) are working under the Ministry of Mines:-

- (a) National Institute of Rock Mechanics
- (b) National Institute of Miners' Health
- (c) Jawaharlal Nehru Aluminium Research Development and Design Centre.

V General Administration Division – is mainly concerned with the establishment and administrative matter of the Ministry.

VI. Finance and Accounts Division- is concerned with the budget, financial Scrutiny of project and other proposals, rendering financial advice and maintenance and compilation of accounts.

The Ministry of Mines has two subordinate offices and four Public Sector Undertakings under its administrative control. There are three research institutions which are also funded by the Ministry of Mines. These are listed below:

Subordinate Offices

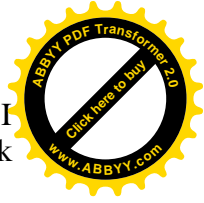
- (i) Geological Survey of India(GSI),Headquarters at Kolkata
- (ii) Indian Bureau of Mines(IBM), Headquarters at Nagpur.

Public Sector Undertakings(PSUs)

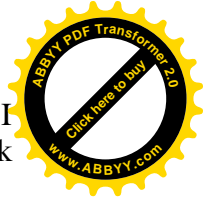
- (i) National Aluminium Company Limited(NALCO, Bhubaneswar.
- (ii) Hindustan Copper Limited(HCL), Kolkata
- (iii) Mineral Exploration Corporation Limited(MECL), Nagpur.
- (iv) Bharat Gold Mines Limited(BGML),Kolar Gold Fields, Karnataka.*
*BGML has been closed under Section 25(O) of the Industrial Disputes Act, 1947 from 1.3.2001.

Research Institutions

- (i) Jawaharlal Nehru Aluminium Research Development and Design Centre,(JNARDDC), Nagpur
- (ii) National Institute of Rock Mechanics,(NIRM),KGF, Karnataka.
- (iii) National Institute of Miners' Health (NIMH), Nagpur.



ORGANISATION CHART OF MINISTRY OF MINES



1. Geological Survey of India (GSI)

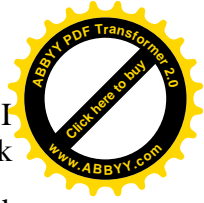
The Geological Survey of India (GSI) is responsible for collection, collation and dissemination of geological data and providing basic geological information essential for the successful implementation of practically all the developmental programmes in the country. The investigations carried out by this organization contribute directly to the discovery and evaluation of mineral resources, ensuring thereby, the continued and steady supply of vital raw materials to the core industrial sector. The results of the investigations aid in better understanding of the geological framework of the crust and the geological process at work which have a critical impact on other vital sectors such as agriculture, land use management, irrigation and power development, utilization of water resources, development of transport and communication, education and scientific management of environment.

Organisation Structure:

GSI, with the Director General as its head, functions under the Ministry of Mines (MOM). The Director General has the overall responsibility of planning, programming, financial and material management of the organisation. The responsibility of overall monitoring of scientific activities, dissemination of information and providing advice on earth science matters to the Government, public and private entrepreneurs also rests with the Director General. There are six Regions (geographically based), three specialised Wings (activity based) and Training Institute, besides the Central Headquarters. The Senior Deputy Directors General/Deputy Directors General (HAG/SAG level) are at the helm of affairs in these Regions/Wings and function as "Head of Department"(HOD). They oversee the formulation and implementation of annual programme of the regions/wings, exercise budgetary control, allocate the resources, determine the relative priorities, and effect executive and other controls on Divisions/Projects within the Regions.

Besides having functional Units in the respective headquarters, each of the Regions comprises State based Operational Units, which are mostly headed by SAG level officers. The specialised Wings also comprise sector-wise functional Units in addition to the headquarters set-up. The Training Institute, located at Hyderabad, has satellite-training centres in different parts of the country. A SAG level officer (Deputy Director General) co-ordinate the activities related to the programme formulation, administration and technical control and provide infrastructure support for implementation, operate the allocated budget, and coordinate the inter-disciplinary activities.

The primary functions of collecting the basic geological information is carried out by GSI through its Divisions/Projects spread all over the country. These are functional entities with well defined work schedule, time frame, manpower and material inputs. Clusters of such Divisions and Projects, normally headed by JAG level officers are located at the Regional and Operational offices and in many outlying stations, numbering a total of 33 cities/towns in the country. The officers heading these Divisions and Projects initiate actions for programme formulation, coordinate the approved project work, evaluate and analyse the data, interact with other disciplines and supporting streams and finalise the scientific and technical reports. These Divisions/Projects are normally provided with number of time-scale officers of one or more streams depending on the requirements, which constitute the field parties actually engaged in



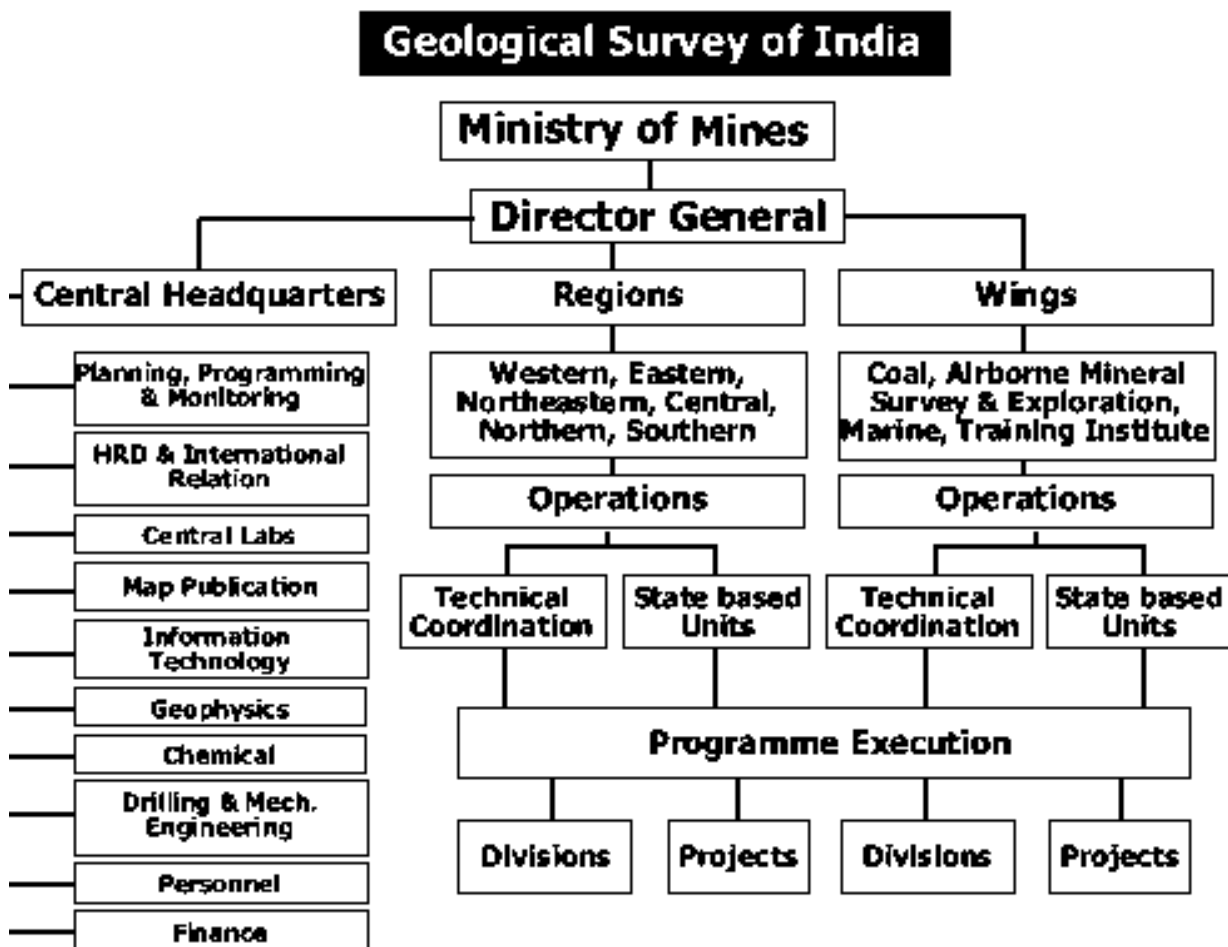
data collection at the ground level and in laboratories, synthesis and preparation of reports and publications.

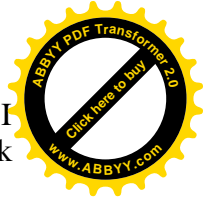
The support activities related to the geological investigations are provided by independent set-ups, in the complementary disciplines like geophysics, chemistry, drilling, mechanical engineering, materials management, finance and administration. Each of these establishments is based at Regional or Operational offices and is headed by an officer of the level of Dy. Director General/Director/ Time Scale officers.

The present structure ensures availability of technical guidance and supervision from different disciplines as necessary. However, more lateral interaction is envisaged for smooth functioning/implementation of GSI's programmes by the way of 'projectisation'. This will also ensure smooth transformation from a hierarchy type of structure to a matrix type organisation. Periodical review mechanisms at different management levels ensure effective monitoring and programme implementation in order to achieve desired objectives of various geological investigations.

A generalised organisation structure of GSI is illustrated in the Fig - 1

Fig – 1: Organisation Structure of GSI





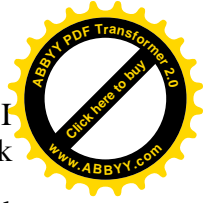
Schemes of Work:

The activities of GSI have been classified into the following Schemes:

<u>Schemes</u>	<u>Components/Activites</u>
1. Survey & Mapping :	Specialised Thematic Mapping, Geochemical Mapping, Geophysical Mapping, Systematic Geological Mapping, Airborne and Marine Surveys.
2. Mineral Exploration :	Exploration for coal (including lignite), gold, basemetal, diamond and other minerals.
3. Specialised Investigation :	Geotechnical, environmental, landslide studies, earthquake geology and seismology, glacial, geothermal and desert geological studies.
4. Research & Development and Explorations:	Research work on Petrology, palaeontology, geochronology, chemical, geophysical and photo-geology and remote sensing other studies & Antarctic studies
5. Information/Dissemination:	Map compilation, Publication on various earth science subjects, Information Technology
6. Human Resource Development:	Training
7. Modernisation	Acquisition and replacement of instruments/equipments

Mandate:

- Preparing and updating geological, geophysical and geochemical maps of the country and its offshore area.
- Exploring and assessing mineral and energy resources of the country and its offshore areas.
- Systematically exploring the shallow subsurface domain of the country and developing and maintaining national drill core libraries and documentation centres.
- Conducting research in earth sciences and promoting application of the new knowledge for effecting management of the earth system and its resources.
- Fostering and promoting the understanding of geological knowledge to reduce risk to life and property from geological hazards and addressing societal issues to enhance quality of life.
- Creating and maintaining earth science databases and acting as the national repository of earth science data generated by various organizations and disseminating these in public domain for developmental, educational and societal needs.
- Holding, protecting and maintaining collections of rare and representative geological materials as national geological monuments, museums and parks.
- Representing India in international bodies, participating in international collaborative scientific projects and developing data sharing net works with other countries.



- Providing consultancy services and undertaking commercial projects in the country and abroad.
- Undertaking such other activities, including training, as may become necessary in the light of developments in the field of earth and planetary sciences and related subjects.

Goals and Objectives

- GSI is predominantly involved in four broad work domains, viz. Basic Earth Science Data Generation, Natural Resources Surveys, Environment and Earth-System studies and Dissemination of Information.

2. Mineral Exploration Corporation Limited (MECL)

The Mineral Exploration Corporation Ltd., registered under Companies Act 1956, was formed on 21st October 1972. The Company's registered office is at Nagpur, Maharashtra State, India and manages its functions at projects, the main production centres, through a 2 tier system from the Corporate Office at Nagpur. To facilitate the prompt maintenance of plants and machineries deployed at various projects, three Regional Maintenance Centres at Ranchi, Nagpur and Hyderabad 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, Nagpur and Hyderabad. The commercial activities of the Company is being looked after by Business Development and Planning Division, in addition two Business Development Centers are in operation at Delhi and Kolkata.

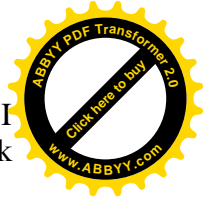
The Company was conceived to be the sole agency for exploration on behalf of Government of India and the task of detailed exploration of minerals throughout the country was assigned to MECL. The Company went into operation in right earnest in early 1973 and at the outset, it pressed into service, the nucleus of personnel and equipments drawn from GSI. Simultaneously, it sculptured its own structure by suitable additions of new plants, machineries and skilled technical manpower to boost its production and to meet the requirements of various clients by providing quality services.

Mission:

- "To provide high quality, cost effective and time bound geo-scientific services for exploration and exploitation of minerals".

Objectives:

The basic aim of MECL is to bridge the gap between preliminary exploration of mineral prospect and its commercial exploitation. To achieve this aim and accomplish its Mission, the Company has the following objectives.



- i) To plan, promote, organise and implement programmes for detailed mineral exploration and to perform functions assigned by the Government from time to time within and outside the country.
- ii) To carry out geological, geo-technical, geophysical survey, remote sensing & environmental studies and IT enabled services for exploration of minerals.
- iii) To carry out exploratory drilling and developmental mining operations, to prove and estimate the reserves of various minerals/ores.
- iv) To take up projects for exploration, developmental mining and related activities in association with MNC's through MOU/bilateral agreement routes.
- v) To undertake jobs on commercial basis in various fields of mineral exploration as well as for purposes other than mineral exploration, such as geo-technical, mine constructions and commercial mining of minor minerals.
- vi) To offer consultancy services for obtaining prospecting license, mining lease, exploitation by mining and beneficiation for different types of minerals, rocks and ores.
- vii) To obtain prospecting license and mining lease for different types of minerals, in India and elsewhere for the purpose of mining and processing.

Vision:

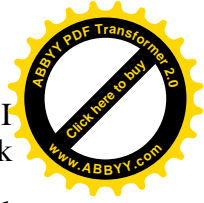
- The vision is “MECL to be the leader in natural resources by 2020” .

3. Indian Bureau of Mines (IBM)

The Indian Bureau of Mines (IBM), established in 1948, is a subordinate Organization under Ministry of Mines, engaged in promotion of scientific development of mineral resources, conservation of minerals and protection of environment in mines, other than coal, petroleum & natural gas, atomic minerals and minor minerals. Towards this end it performs regulatory functions, namely enforcement of Mineral Conservation and Development Rules, 1988, relevant provisions of Mineral Concession Rules, 1960 framed under MM(DR) Act, 1957, and as a facilitator, it undertakes scientific and techno-economic research oriented studies in various areas such as geological appraisal, mining, ore-beneficiation, environmental protection, mineral resources data of the country and functions as a data bank of mines and minerals. It also advises the Central and State Governments on all aspects of mineral industry, trade and legislation.

Charter of Functions/Mandates/goals and objectives:

- To promote systematic and scientific development of mineral resources of the country (both onshore and offshore)
- To approve mining plans, schemes and mine closure plans having regard to conservation of minerals and protection of mines environment.
- To collect, collate and maintain database on exploration, prospecting, mines and minerals and to bring out publications / bulletins highlighting the problems and prospects of mining industry.
- To play a pro-active role in minimizing adverse impact of mining on environment by undertaking environmental assessment studies on regional basis.



- To conduct *suo moto* techno-economic field studies in mining, geology, mineral processing and environmental aspects including analysis of ore and minerals and to promote R & D activities in these areas.
- To provide technical consultancy services on promotional basis within the country and abroad in the field of mining, geology, mineral processing and environment.
- To provide training to the scientific, technical and other cadres of the department and persons from the mining industry and other agencies for human resource development.
- To advise the Government on matters in regard to the mineral industry, relating to environment protection and pollution control, export and import policies, trade, mineral legislation, fiscal incentives and related matters.
- To promote awareness about conservation, systematic and scientific development of mineral deposits and protection of environment including restoration and rehabilitation of mined out areas through exhibitions and audiovisual media.
- To promote and monitor community development activities in the mining areas.
- To undertake any such other activity as may become necessary in the light of the developments in the field of geology, mining, mineral beneficiation and environment.

Organizational Set-up

IBM is organized into six functional divisions, namely :

- (i) Mines Control and Conservation of Minerals Division.
- (ii) Ore Dressing Division
- (iii) Technical Consultancy, Mining Research and Publication Division.
- (iv) Mineral Economics Division
- (v) Mining and Mineral Statistics Division.
- (vi) Planning and Co-ordination Division having two sub-divisions :
 - a) Administration, Establishment matters (including training),
Accounts with all other administrative and financial matters and;
 - b) Planning and Co-ordination.

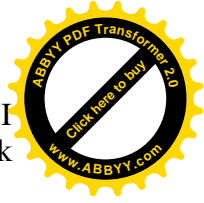
IBM has its headquarters at Nagpur and 12 Regional Offices at Ajmer, Bangalore, Bhubaneswar, Chennai, Dehradun, Hyderabad, Jabalpur, Kolkata, Margao, Nagpur, Ranchi and Udaipur and 2 sub-regional offices at Guwahati and Nellore.

IBM has well equipped Ore Dressing Laboratories and Pilot Plants at Nagpur, Ajmer and Bangalore.

Major Programmes / Schemes

During 10th plan various general and S&T schemes of IBM were merged with analogous programmes and grouped into following four schemes which are being continued in the 11th Plan :

1. Inspection of mines for scientific and systematic mining, mineral conservation and mines environment
2. Mineral beneficiation studies – utilization of low grade and sub grade ores and analysis of environmental samples



3. Technological upgradation & Modernization
4. Collection, processing, dissemination of data on mines and minerals through various publications

In addition, two new schemes, namely Scheme No. 5 - Management of Solid Waste from Mining in India, and Scheme No.6 - Computerised Online Register on Mining Tenement System, are being taken up for completion during 11th Plan itself, subject to approval of the Standing Finance Committee.

Policy Framework and Vision:

The Charter of Functions of IBM fulfills in a large part, the objectives of the National Mineral Policy. Functions of IBM like Development of Mineral Resources with an eye on conservation, acting as a regulator and facilitator for mineral development, R & D for promotion of mineral development, imparting training for human resources development and to strive for the amelioration of pollution from mining; etc. are implementation of this policy.

Towards this end, the IBM functions to promote and facilitate rapid and sustainable development of national mineral sector, continuing with efforts for systematic and scientific development of mineral deposits, conservation of minerals, protection of mining environment by regulating mining activities and their closure, to update mineral inventory, utilization of waste and low grade resources by technology development, implementation of apt mining methods, monitoring of community development in and around mining areas and to develop and implement mineral information system for collection, collation, retrieval and dissemination of data on mines and minerals.

Action Areas :

Inspection of Mines :

- To ensure systematic and scientific development of mineral deposit, conservation of minerals and protection of environment by enforcement of Mineral Conservation and Development Rules, 1988

Mineral Inventory :

- Preparation and quinquennial updation of national minerals inventory as per United Nations Framework Classification (1999).

Mineral Beneficiation :

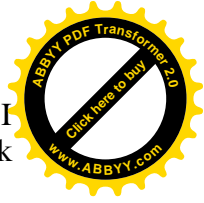
- Technology developments to use the available low-grade ores and minerals.
- Suitable use of mine wastes and recovery of associated minerals and metals.
- Conducting in-plant studies in order to improve the productivity of mineral beneficiation plants.

Legislation and Guidelines :

- Simplification of procedures for mineral concession and required clearances, framing of legislation for development of off-shore mineral resources, promoting foreign investments and technical collaborations with joint ventures.

Information System :

- Acceleration of the process of dissemination of Geological information, mineral maps with forest overlays and environment data, status of mineral deposits through implementation of Computerised Online Register on Mining Tenement System, mining



and mineral industry data on production, uses, marketing information, latest technology developments etc. for user agencies.

Sustainable Development :

- Devising environmental standards applicable to mining areas and norms for reclamation and rehabilitation of mined out areas and eco-friendly management of solid waste/rejects from mining.

Industrial Promotion :

- Technology up-gradation and R & D activities in mining and ore beneficiation.

4. Hindustan Copper Limited (HCL)

Hindustan Copper Limited a Govt. of India Enterprise and the nation's only producer of primary copper from indigenous resources was incorporated in the Public Sector on 9th November 1967. The major activities of HCL are exploration, mining, beneficiation, smelting, refining and casting of finished copper metal into saleable products. HCL produces primary copper in the form of cathode/wire rod. Apart from copper, HCL also produces various by-products like Anode Slime and Sulphuric acid. The present smelting and refining capacity of HCL is supported by mining/beneficiation activity and import of concentrate to cover the short fall.

5. National Aluminium Company Limited (NALCO)

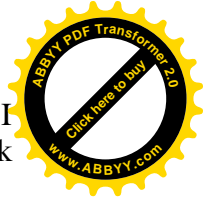
The National Aluminium Company Limited (NALCO), an integrated multi-locational Aluminium Complex, was incorporated on 7th January, 1981 to implement the Bauxite, Alumina and Aluminium Project in the backward tribal areas in Orissa, in the Public Sector.

Finance

The authorized capital of the Company is Rs.1300 Crore. Vide letter dated 09.3.99, Govt. of India approved a capital restructuring proposal of the Company aimed at reduction in capital. Accordingly, 50% of paid up equity capital of Rs.1288.62 Crore was first converted to redeemable secured debentures which were repaid on 25.03.2005. The paid up equity capital after restructuring continues to be at reduced level of Rs.644.31 Crore, out of which Govt. of India's holding is Rs.561.50 Crore(87.15%).

The original Project cost was partly financed by external commercial borrowings from a consortium of International Bankers, French Credit facilities and partly by equity subscribed by Govt. of India. The entire Foreign Currency loan had been repaid by 30.9.98 and Nalco thus became a 'Zero Debt Company' from Sept'98. In 1999, 50% of Equity Capital amounting to Rs.644.43 Crore was converted into debt through a scheme of capital restructuring which has since been repaid in full, making the company again a debt free company.

Further, to meet 1st Phase Expansion expenditure, the Company borrowed Rs.300 Crore in the year 2001-02 and for pre-payment of foreign currency loan of US\$ 33.831 million taken from EFIBANCA, Italy, BY ERSTWHILE IAPL which was taken over by NALCO on amalgamation



of IAPL with NALCO, the company borrowed Rs.140 Crore in the year 2001-02. The loan was liquidated in the year 2004-05 and since then, the NALCO is a Zero-debt company.

Vision

- To be a Company of global repute in Aluminium Sector

Mission

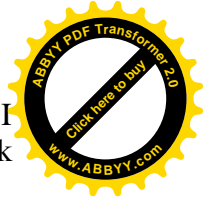
- To achieve growth in business with a global competitive edge providing satisfaction to the customers, employees, share holders and community at large.

Objective

- To maximise capacity utilisation, optimise operational efficiency and productivity.
- To maintain the highest international standards of excellence in product quality, cost efficiency, customer service and provide steady growth in business by technology up-gradation, expansion and diversification.
- To have global presence and earn foreign exchange through export turnover of 50% of total sales and to have around 1/3rd domestic market share.
- To continue to remain the lowest cost producer of Alumina in the world and to strive to become low cost aluminium producing Global Company *in five years time*. (The benchmark for attaining this status will be provided next year).

To become the 6th largest Company in the world in Alumina production.

- To complete 2nd phase Expansion within 50 months from the Zero Date.
- To promote a result-oriented organisational ethos and work culture that empowers employees and helps realisation of individual and organisational goals and maximise internal customer satisfaction.
- To foster high standards of health, safety and environment-friendly products and to develop a strong R&D base and increase business development activities and explore the feasibility of emission trading.
- To strive for production of value added down stream products.
- To participate in peripheral development of the area.



Existing Operations:-

- (i) 4.8 million TPY Bauxite mine at Panchpatmali in Koraput District(Orissa) including 2.4 Million TPY bauxite Mine capacity added by way of 1st phase expansion .
- (ii) 15.75 lakh TPY Alumina Plant at Damanjodi, Koraput District (Orissa) that includes 7.75 lakh TPY of Alumina capacity added by way of de-bottlenecking/ expansion.
- (iii) 3,45,000 TPY Smelter Plant at Angul, Angul District (Orissa) which includes capacity addition of 1,15,000 TPY by way of expansion.
- (iv) Captive Power Plant at Angul, Angul District (8 units of 120 MW each) to supply power to Smelter Plant including two units of 120MW each added by way of 1st phase expansion to cater the increasing energy needs of the company in view of the present expansion.
- (v) Port Handling facilities at Visakhapatnam (Andhra Pradesh) to handle export of Alumina & Import of Caustic Soda.
- (vi) Special Grade Alumina Plant was commissioned in the month of March'04 with installed capacity of 26,000 tpa of Special Grade Hydrate and Alumina
- (vii) Zeolite was commissioned in the year 2004-05 with installed capacity of 10,000 tpa.
- (viii) Rolled Product Unit: The Company had taken over International Aluminium Products Limited (IAPL) with an Installed capacity of 50,000 TPY of Aluminium Alloy Coil Sheets. IAPL has since been merged with NALCO after obtaining requisite approvals from Govt. of India as a separate unit, Rolled Product Unit(RPU).

6. Science & Technology(S&T)

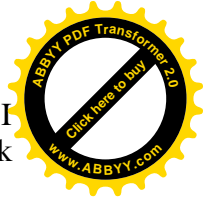
The Science and Technology programme of the Ministry of Mines was initiated in 1978 with the view to encourage research and development of indigenous technology in the minerals and non-ferrous metal sectors.

Structure

Project proposals from various Government institutions, public sector undertakings, universities and other research organizations engaged in the mineral and mining sectors are peer reviewed by a Group of Experts constituting the Project Evaluation and Review Committee (PERC), Suitable projects are forwarded to a high level Standing Scientific Advisory Group (SSAG) of the Ministry of Mines under the Chairmanship of the Secretary (Mines) for approval.

Projects

Project formulation is a continuous process involving interaction with the industry for identification of the problems and availability of suitable implementing organizations. Selection of the projects is done on the basis of,



- (a) National requirement angle
- (b) For enhancing competitive edge of the Indian mineral and non-ferrous metals sectors
- (c) To solve site specific and organization specific problems

The project in the category of (a) are taken up with the grant in aid from the Ministry of Mines (MOM) and other Government Departments. The project in category (b) are financed by the grant in aid form MOM, other Departments, contribution from industry and from implementing organization. The project in category (c) are financed by the implementing organizations themselves.

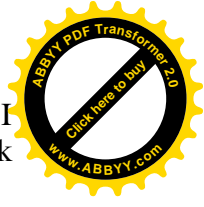
Mandate

The underlying principle behind this programme had been the utilization of the available mineral recourses in a judicious, economically efficient and environmentally sustainable manner. An important component of this programme had been the selection of research and development projects relevant to the National priorities.

Goals and Objectives

Emphasis is being given to the projects related to the exploration of ore deposits of concealed nature or of strategic importance, development of technology for the up gradation of the lean ores, beneficiation techniques for winning metals from mine wastes, plant tailings and ores as by products. Research related to the development of more environment friendly techniques in the mining sector will be given preference.

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CHAPTER –II

OUTLAYS, OUTPUTS AND OUTCOMES

This chapter relates to Non-Plan and Plan Budget of the Ministry of Mines for 2008-09.

Non-Plan Budget

The Non-Plan Budget of this Ministry is Rs..245 crore . Out of which Rs. 10.12 crore for Secretariat Proper, Rs. 211.58 crore for GSI, Rs. 17.86 crore for IBM, Rs. 2.01 crore as grant to BGML, Rs. 2.80 crore for payment of salary to three autonomous bodies, Rs.0.28 crore for contribution to International bodies, Rs. 0.35 crore for holding National Mineral Awards have been provided.

Plan Budget

The Planning Commission has approved the Plan Budget of this Ministry at Rs. 2160.00 crore consisting of Rs. 200.00 crore through Gross Budgetary Support(GBS) and Rs. 1960.00 crore through internal and extra budgetary resources(IEBR). Rs. 1888.00 crore for NALCO through their IEBR, Rs. 160.00 crore for GSI through GBS, Rs. 19.00 for IBM through GBS, Rs. 60.00 crore for HCL through IR, Rs. 20.00 crore for MECL(Rs. 12.00 crore for promotional work through GBS and Rs. 8.00 crore through their IR). Rs. 7.00 crore for S&T(Rs. 3.00 _crore from GBS and Rs. 4.00 crore through their IEBR and Rs. 6.00 crore(GBS) for construction of residential and official building of GSI and IBM, have been provided.

The detailed financial outlays, projected physical output and projected/budgeted outcomes(intermediate/partial & final for year 2008-09 as the case may be) organization for the Ministry of Mines are given in **Annexure-I**.

1.Geological Survey of India (GSI)

The Financial Plan Outlay (BE) for the FY 2008-09 for GSI is Rs. 16000.00 lakhs (excluding Construction Budget of Rs. 500.00 lakhs). Under this budget grant, only a token provision could be earmarked towards the procurement of Replacement Vessel, which has been approved by the Union Cabinet. The expression of interest (EOI) for engagement of foreign consultant has been floated. Hence, additional funds may be required during FY 2008-09 as per the demands placed by the Indian (Shipping Corporation of India) and Foreign Consultants and the milestones specified in the EFC document.



In case of GSI, the Projected Physical Outputs or Quantifiable Deliverables Targets are considered as the likely physical targets to be achieved through its various geo-scientific activities during the course of the specified period.

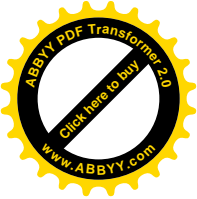
- Thrust has been given to Mineral Exploration and Survey and Mapping. A total of 94 items are included of which 72 are under ores and minerals and 22 belong to coal and lignite. Among these 72 projects, 23 are for gold, 22 base metals, 8 for platinum group of metals, 6 ferrous minerals, 6 diamond and 7 other minerals (including strategic, limestone and industrial minerals).
- Next priority remains on Survey & Mapping: Systematic Mapping, Specialised Thematic Mapping (STM), followed by Geochemical (GCM) and Geophysical Mapping (GPM) constitutes the core activity in recent years. A total of 97 items of investigations are included under Survey and Mapping. GCM tops the list with 34 projects, followed by STM with 29 and GPM with 10 items. The rests are Airborne and Marine surveys.
- Engineering, Earthquake, Landslide and Environmental Geology are grouped under Special Investigations and there are about 91 projects included.
- There has been a decrease of about 15% of manpower in the total strength of working geologists through the process of retirement, ageing and promotion from that of last year. Nevertheless, about 54% of GSI's manpower is to be deployed for working in the three major heads of Mineral Exploration, Survey & Mapping and Special Investigations. Another 17% of human resources are to be engaged in Research & Development, necessary partly to supplement the different investigations. About 23% of manpower is deployed for Information Dissemination that includes map, publication and information technology while 6% manpower will be deployed for HR and training.

Objectives of each scheme / programmes, with financial outlays and projected physical output / outcomes are furnished in the Outcome Budget for the year 2008-09 at **Annexure-I**

2. Mineral Exploration Corporation Limited (MECL)

Financial Outlays 2008-09:

Outlay for Promotional Exploration Programme : The promotional mineral exploration programme are being carried out by MECL on behalf of and funded by Ministry of Mines. The exploration schemes are prepared in conformity with the national priorities assigned by the different working groups on mineral exploration. The results of regional exploration carried out by Geological Survey of India in different part of the country forms the basis for formulation of the schemes for detailed exploration. The schemes are examined by the Technical Sub-Committee of Standing Committee of Promotional Projects (SCPP) and are finally approved by the SCPP. To facilitate full utilisation of annual allocated fund, to take care unforeseen law & order situation affecting implementation / non commencement of scheme(s) and the time taken in



obtaining the forest clearance before commencement of exploration, it has been decided to have shelf of exploration proposals in hand. The SCPP meets periodically for review and monitor the performance of the on going projects and approve additional scheme(s). A provision of Rs. 1200.00 lakhs has been kept in (BE) 2008-09 to carry out promotional mineral exploration programme.

Outlay for capital expenditure : For replacement / procurement of new plants & machineries on routine basis annual outlay for capital expenditure is also approved by the Ministry of Mines. For the year 2008-09 a provision of Rs. 8 crores (IEBR) has been made in BE-2008-09 for capital expenditure.

The details of financial outlay under both the heads along with anticipated out puts and the final outcomes for 2008-09 are given in **Annexure-I**.

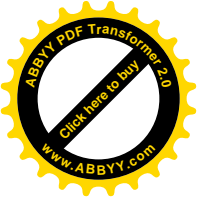
The financial outlay for the year 2006-07, 2007-08 & 2008-09 are tabulated below :

Particulars for the Year 2006-07, 2007-08 & 2008-09	Capital (Rs. Lakhs)		Promotional (Rs. Lakhs)
	BS	IEBR	
2006-07 Outlay			
BE	-	800.00	1700.00
RE	-	800.00	1400.00
Actual	-	189.00	1400.00
2007-08 Outlay			
BE	-	800.00	1100.00
RE	-	800.00	1100.00
Anticipated	-	800.00	1100.00
2008-09 Outlay			
BE	-	800.00	1200.00
Anticipated	-	800.00	1200.00

3. Indian Bureau of Mines (IBM)

During 10th plan, the various general and S&T schemes of IBM were merged with analogous programmes and grouped into four schemes and these schemes are being continued in the 11th plan. In addition, two new schemes, namely Scheme No. 5 - Management of Solid Waste from Mining in India, and Scheme No.6 - Computerised Online Register on Mining Tenement System, are being taken up for completion during 11th Plan itself, subject to approval of the Standing Finance Committee. The objectives and functions of these schemes are derived from the charter of functions of IBM.

Objectives of each schemes/programme, with financial outlays and projected physical outputs/outcomes during 2008-09 are furnished at **Annexure – I**.



4. Hindustan Copper Limited (HCL)

HCL while submitting Xth plan capital expenditure, was advised to submit two years' projection only i.e. 2002-03 & 2003-04 due to the fact that as per disinvestment plan, the company was expected to be completely disinvested by the end of 2003-04. The annual plan outlay during the first two years of the Xth Five Year Plan period had been restricted to replacements and renewals only and the schemes which were considered in the IXth Plan period had been dropped from the Xth Plan period. Further since HCL had been incurring losses for several years, this resulted in deficiency in working capital and accumulation of liabilities. In order to liquidate a part of the pressing liabilities and to continue the operation govt had sanctioned an additional amount of Rs. 60 crore in 2002-03 and Rs. 93.84 crore in 2003-04 besides plan fund. The govt also extended guarantee of Rs 250 crore for raising working capital loans from the market. Due to the increasing trend of LME price of copper and various cost cutting measures taken by the company, HCL posted Profit Before Tax (PBT) of Rs 52.06 crore in 2004-05 after a lapse of eight years. The mine development activity was kept in abeyance till 2003-04 due to serious financial constraint. From 2004-05 mine development activity has been identified as a thrust area and necessary fund has been allocated from internal resources. The company has posted a Profit After Tax (PAT) of Rs 313.94 crore during 2006-07 and Rs 181.19 crore during the first nine months of 2007-08. During the XIth Plan Period (2007-12), the company has proposed to meet its entire plan expenditure of Rs 268 crore from its internal accruals and no budgetary support is sought for. Accordingly, the plan expenditure as per RE 2007-08 of Rs 78 crore towards Replacement & Renewals has been proposed to be met out of its internal resources.

Year-wise BE, RE and actual expenditure (Xth. Five year plan 2002-2007) and 2007-08 (upto Dec.'07) of the XIth Five year Plan is placed as under:-

(Rs in Crore)

Year	Budget Estimate	Revised Estimate	Actual Expenditure	Physical target	Actual/Likely Achievement
Xth Plan					
2002-03	25.00	85.00	85.00	Replacement & renewal of the existing plant and machinery for achieving maximum utilisation of the same and for planning enhanced production in future.	
2003-04	20.00	113.84	113.84		
2004-05	40.00	40.00	40.00		
2005-06	40.00	Nil	Nil		
2006-07	30.00	28.50	28.50		
Total	155.00	267.34	267.34		
XIth Plan					
2007-08	50.00	78.00	61.88(upto Dec'07)		



Note:

- 1) Revised Estimate (RE) during 2002-03 includes Rs. 60 crore for payment of outstanding liabilities and balance Rs 25 crore on account of replacements and renewals of plant and machinery.
- 2) Revised Estimate (RE) during 2003-04 includes Rs. 93.84 crore for payment of L/C, govt guaranteed bonds and statutory liabilities and balance Rs 20 crore on account of replacements and renewals of plant and machinery.
- 3) Revised Estimate (RE) during 2007-08 is significantly higher than the Budgeted Estimate(BE) on account of proposed increased expenditure required in the mining/concentrator related areas for upgrading the machinery/equipments and procurement of new equipments.

Details of Outcome Budget for 2008-09

Replacement & Renewals :

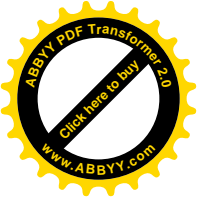
This is a continuous process for achieving maximum utilisation of the existing capacity/facilities. Due to lack of sufficient fund, the company in the past could not replace the critical plant and mining equipment in time. As a result, the desired production from the existing facility could not be achieved. The proper and timely replacement/renewals of critical equipment in mines, Smelter, Refinery, Milling House and various material handling equipments in mines and smelter is a pre-condition for achieving better capacity utilisation. Therefore, the company proposes a plan outlay of Rs. 60.00 crore in 2008-09 which has to be entirely funded out of own internal resource generation as per **Annexure I**. The company has put up a higher target of MIC and Cathode production at 34,400 MT and 45,000 MT respectively in the draft MOU 2008-09 as against 31,000 MT of MIC and 40,000 Cathode production targets for 2007-08.

5. National Aluminium Company Limited(NALCO)

The Details comprising of financial outlays, projected physical outputs and projected budget outcomes are furnished as per the prescribed format at **Annexure-I** . The brief note of various schemes and programme are given hereunder:

Addition, Modification and Replacements (AMR) :

The original project which was commissioned in phases during 1985-86 to 1987-88 has become quite old. To overcome obsolenace of the old plant and machinery constant up gradation of core and non-core technologies have become imperative. To maintain the capacity at the rated level and achieve the target in the budget period a provision of Rs.241.00 Crore has been kept in BE 08-09.



Target for major products for BE 2008-09 are as under

Bauxite	:	48,00,000	MT
Alumina	:	15,75,000	MT
Aluminium	:	3,52,000	MT
Power	:	5671	MU

IInd Phase Expansion:

The second phase expansion proposal with a projected capital outlay of Rs. 4091.51 Crore (revised to Rs.5003 Crore) was approved by the Government of India on 26th October, 2004. The project is scheduled to be completed by 26th December, 2008 i.e. in 50 months from Zero date. The capacities of various project segments after completion of project will be as under;

Mine	:	6.30 MMTPY Bauxite
Alumina Plant :		2.10 MMTPY Alumina
Smelter	:	4,60,000 TPY Aluminium
CPP	:	10 x 120 MW power
Port Facility	:	Alumina for export: 1.216 MMTPA Caustic soda import: 0.293 MMTPA

Keeping the delivery schedule, orders already placed and orders likely to be placed, capital outlay of Rs. 1600 Crore has been kept for 2008-09. The project is scheduled to complete during the last quarter of 2008-09. Accordingly, quantifiable physical output has been set as under.

Bauxite	:	125,000	MT
Alumina	:	45,000	MT
Aluminium	:	7,000	MT
Power	:	55	MU

Captive Coal Mines (Utkal-E-Block)

As a part of Company's endeavor for backward integration to meet its critical raw materials need, the Company has planned to have its own coal mines. The approval by the Government of India for allotment of a Coal block has been received on 27.08.2004. Considering that the mining operation will be done by NALCO departmentally, the capital cost for this project has been approved by Board at Rs. 215.00 Crore. A sum Rs.30.00 Crore is kept in BE 2008-09 towards detailed exploration, land acquisition, Forest and Environment clearance etc.



Greenfield overseas Smelter Project:

As a part of Company's endeavor for diversification and value addition to enhance wealth of shareholders of the company and to maximize the profitability, the company is exploring to set up Greenfield smelter project in India and overseas so as to take advantage of cheap gas to reduce the energy cost of smelter plant and effective utilization of surplus alumina of 1.2 million available after 2nd phase expansion. In Indonesia, the site selection has been completed and the draft PFR is expected by January'09.

An *ad hoc* sum of Rs.3.00 Crore is kept in 2008-09 for preparation of PFR and other associated work.

Upgradation of Alumina Plant:

As part of Company's endeavor for vertical enhancement of its capacity, it has taken action for obtaining the improved technology from Aluminium Pechiney, France so as to extend the capacity of fourth stream of Alumina plant from 5.25 lakh TPY to 7 lakh TPY. The detail report has been submitted by M/s Engineers India Ltd. The project cost has been approved by Board at Rs.409 Crore and the project is scheduled to be taken up in 2008.

An ad hoc sum of Rs.5.00 Crore is kept in annual plan 2008-09 for preparation of mines plan and environment clearance, consultancy fee etc.

Pottangi Mines:

The Panchpatmali Bauxite deposit will last for about 26 years after 2nd phase expansion of Bauxite Mines (beyond March'09). The capacity of Mines after 2nd Phase expansion will become 63 Million TPY. In case NALCO upgrades the 4th stream capacity to 7.00 lakhs TPY and installs a 5th stream in future, the Mines capacity will become 8.925 Million TPY and the life will come down to about 14 years beyond March, 2014.

Keeping this in view, NALCO has earlier applied for Mining lease over Pottangi Bauxite Deposit, which has been agreed by Government of Orissa in principle. It has been planned to develop this mine gradually at an estimated investment of about Rs.400 Crore.

The capacity of these mines can be about 2.4 to 3.0 Million TPY, which can be achieved in a gradual way.

An *ad hoc* sum of Rs.4.00 Crore is kept in 2008-09.

III Phase Expansion Project:

5th stream of Refinery and 5th Pot line in Smelter along with Mines & CPP expansion.



The process of finalization of capacity and proposed technology is underway. On completion of this process, the technology supplier will be selected and DPR is to be prepared. An adhoc sum of Rs.5.00 Crore is kept in 2008-09.

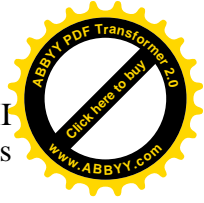
6. Science & Technology (S&T)

The Plan Outlay for the FY 2008-09 is Rs. 7.00 crore(Rs. 3.00crore from GBS & Rs.4.00 crore from I&EBR). The On-going Schemes/programmes for 2008-09 and New S&T proposals received from various organizations is at **Appendix-II & III respectively..** These will be placed to the newly constituted PERC before submission to the SSAG for approval.

North-Eastern Region

The following S&T projects in the North-Eastern Region are at various stages of completion.

S.No.	Name of the Organization	Name of the Project	Likely date of completion
1.	National Metallurgical Laboratory, Jamshedpur.	Pilot scale smelting and pre-feasibility studies on nickel-chromium-cobalt bearing magnetite ores of Nagaland for an economically viable plant.	November, 2009
2.	North East Institute of Science and Technology (NEIST), Jorhat (ASSAM) (Formerly Regional Research Laboratory, Jorhat).	Characterization & upgradation of some limestone deposits of North Eastern Region, India for value addition and rational utilization.	Final report of the project has already been received by this Ministry during the month of June, 2006.
3.	North East Institute of Science and Technology (NEIST), Jorhat (ASSAM) (Formerly Regional Research Laboratory, Jorhat).	Characterization, beneficiation and utility study of some Graphite deposits from Arunachal Pradesh.	2010

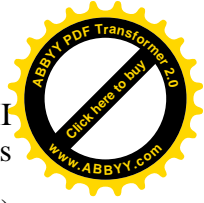


CHAPTER - III

REFORM MEASURES AND POLICY INITIATIVES

Consequential amendments in the Rules have also been notified in the Rules. Some of the important amendments in Mineral Concession Rules, 1960 and Mineral Conservation & Development Rules, 1988 are as under:-

1. Time limit for disposal of complete application for Reconnaissance Permit/ Prospecting Licence/Mining Lease has been prescribed in MCR, 60. In case of delay beyond the prescribed limit, the same has to be explained in writing.
2. Time limit for disposal of Mining Plan has also been prescribed in MCR, 1960.
3. Panel provision have also been provided for violation of provisions of MCDR, 1988.
4. Marble Development & Conservation Rules, 2002 have also been notified for conservation & systematic development & scientific mining to conserve the marble resources and to prescribe a uniform framework with regard to systematic and scientific exploitation of marble throughout the country.
5. Royalty rate/Dead Rent of major minerals (other than Coal, lignite & sand for stowing) have been revised vide Gazette Notification dated 14.10.2004.
6. Offshore Areas Mineral (Development & Regulation) Act, 2002 has been notified on 31.1.2003. The said Act provides for development and regulation of mineral resources in the territorial waters, continental shelf, exclusive economic zone and other maritime zones of India and to provide for matters connected therewith or incidental there to.
7. The concept of Final Mine closure Plan & Progressive Mine Closure Plan has been introduced in the Rules which provides for rehabilitation of area under Mining Lease after its abandonment.
8. Minimum size of Mining Lease has also been prescribed in MCR, 1960 for ensuring scientific & systematic mining.
9. Unified National Framework Clarification (UNFC) has been adopted for estimation of mineral reserves in the country.
10. Rule 66A providing for special provisions for Atomic Mineral has been amended.



11. Offshore Areas Mineral Concession Rules,2006 have been notified vide GSR 691(E) dated 4/11/2006.

It has been the endeavour of the Ministry of Mines to encourage greater investment in exploration and mining, there is a need to make sustained efforts to increase the same and remove bottlenecks which hinder the productivity and efficiency of this sector. Recognising this need and to further improve the investment climate for mining in the country, the Planning Commission set up a High Level Committee under the Chairmanship of Shri Anwarul Hoda, Member, Planning Commission, to review the National Mineral Policy and recommend possible amendments to the MMDR Act. The High Level Committee submitted its report to the Government on 20th July,2006 with recommendations on changes in the National Mineral Policy to attune it to the present requirements of the world economy for evolving of mining code adapted to the best international practices, streamlining and simplifying of procedures for grant of mineral concessions to reduce delays, strengthening the infrastructure for mining activities and recommendations on other issues for improving the environment for investment in the mining sector.

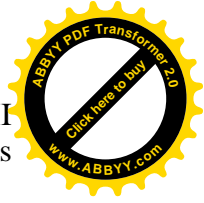
A draft National Mineral Policy based on the recommendations of the Hoda Committee and consultations with State Governments and inter-ministerial consultation is under consideration of the Government

Policy measures and initiatives of the PSUs and Subordinate Offices

1. Geological Survey of India(GSI)

Major initiatives taken:

- The Cabinet has approved the acquisition of a new deep sea going research vessel for Geological Survey of India at an estimated cost of Rs. 448 crores for carrying out seabed surveys and exploration of non-living resources. Procurement action for the Research Vessel is on.
- Geological Survey of India is acquiring heliborne survey system fitted with sensors for improving the quality of exploration and for tapping deep seated mineral resources, in addition to updating the techniques for ground geological and geophysical survey, precision analytical instruments and deep capacity drills. MOU has been signed between Pico Enviortech Inc., Canada and Geological Survey of India for the purchase of the heliborne system.
- GSI Enterprise Information Portal went live in the Internet (<http://www.portal.gsi.gov.in>) and can be accessed by any user. It envisages providing real time data to various stakeholders and users, including entrepreneurs, academicians and common public.



- A disaster management control room has been created at GSI, New Delhi to be in operation on 24x7 modes and to be connected to the Disaster Management Support Network, NDMA.
- Geological Survey of India (GSI) have reported that most of the glaciers of the Himalayas as well as in the other parts of the world are receding and this may be due to subnormal snowfall, higher temperature during summer, less severe winter or a combination of all of these. It may also be due to global warming, which is a debatable issue.
- The Union Cabinet decided for Setting up of a High Power Committee to thoroughly review the functioning of Geological Survey of India and assess its capacity to meet the emerging challenges taking into consideration the organization's technological and manpower resources.

2. Mineral Exploration Corporation Limited (MECL)

Financial Restructuring :

The Government of India has conveyed its approval vide its letter dated 8.8.06 and 17.8.06 for financial restructuring and wage revision in MECL. As a part of financial restructuring & after approval of Ministry of Mines, Government of India the wage arrears for a period from 1-4-2003 to 31-3-2005 has been disbursed during 2007-08 to the employees on role of MECL as on 31-3-2007. The same has been implemented.

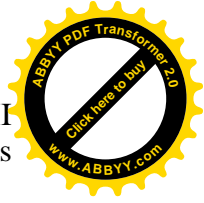
Sale of reports :

The pricing policy and modalities for dissemination of exploration data / sale of exploration reports prepared under promotional exploration programme has been finalised by Ministry of Mines. Accordingly the details of all the prospects explored have been put on the MECL web site and as and when the queries are received, for any of the deposits, the perspective clients are being informed in brief about the potential mineral prospects explored by MECL and they have been referred to make use on the data available on web site.

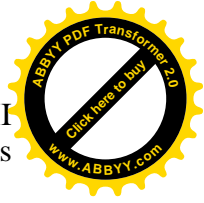
3. Indian Bureau of Mines (IBM)

Major policy decisions and steps taken:

- The recommendations of the Hoda Committee are under active consideration of the Government and IBM is likely to be entrusted with greater responsibilities after the pronouncement of new mineral policy.
- In view of the additional activities under the charter of functions of IBM, a detailed proposal for strengthening of IBM has been submitted to the Ministry for consideration.



- A proposal on requirement of additional resources if IBM is empowered for prevention and control of illegal mining, was submitted to the Ministry for consideration.
- A proposal for exemption of scientific and technical posts in IBM from Annual Direct Recruitment Plan brought out by DoPT for implementation, was submitted to the Ministry so as to maintain existing level of scientific and technical manpower. Supplementary information as desired by the Ministry was furnished for preparation of Cabinet Note.
- A Study Group was constituted by the Ministry of Mines vide their O.M. dated 24.08.2006 for revision of rates of royalty and dead rent on major minerals (other than coal, lignite & sand for stowing) and to make appropriate recommendations to the Government. The report of the Study Group has been finalized in the Ministry of Mines on 24/09/2007.
- Updation of National Mineral Inventory as on 1.4.2005 adopting UNFC was completed. By adopting UNF Classification, the mineral reserves/ resources have been expressed in terms of International standards which permit foreign multi-nationals/entrepreneurs to take the investment decisions in the Indian Mining sector.
- Titanium Minerals and Zircon have been omitted from the list of Prescribed Substances under Atomic Energy Act, 1962 with effect from 1.1.2007.
- Online facility for registration of public grievances has been provided by linking IBM's website with the grievance portal of DoPT "Central PGRAMS".
- IBM has taken up the task of preparation of multi-mineral maps along with forest overlays which will facilitate dissemination of detailed information to investors on mineral resources locked up within forest. Regional development and also socio-economic upliftment can be assessed through the newly proposed project on Computerized Online Register of Mine Tenement System. Since the environment is an important factor in sustainable development of mineral resources, these mineral maps will allow planning for mineral development with the measures specifically designed for the area.
- Considering environmental related problem arising from generation of waste rocks incidental to mining operations in different geo-morphological situations, IBM has proposed a project on Management of Solid Waste from mining in India to extract possible residual mineral from rejects and to use the waste for society's benefit. This will also address the environmental issues in better manner.
- The result of test work/investigations carried out on (i) low grade mineral resources (low and sub grade mineral deposits) and (ii) mine and process rejects like waste dumps, tailing, slimes etc. are brought out in the form of Reports of Investigations (R.I). These reports contain process details with flow-sheets/flowchart, grade and recoveries of concentrates with tolerance limit of impurities along with mineralogy and chemical



analysis. These reports would help entrepreneurs/sponsor parties to ascertain the possibility of exploitation and effective utilization of the particular ore/mineral deposits or wastes/ rejects for valuable mineral recovery/additional recovery of values. The information is very vital for knowing the technology involved, subsequently assessment of economic viability for commercial application before taking investment decision. IBM will find out the need of the industry for the utilization of low grade minerals and ores and will carry out R&D studies for technological upgradation of minerals/ ores for the industry to contribute accelerated economic growth of the nation.

- IBM maintains data on RPs granted to the applicants. This will facilitate to keep track of conversion from RP to PL to ML and also about the progressive surrender of the area.

4. Hindustan Copper Limited (HCL)

The company implemented various reform measures aimed at facilitating the process of optimum decentralisation and achievement of optimum level of transparency. It has been made mandatory that all procurement action should be processed through web hoisting in respect of individual item of more than Rs 1 lakh and Rs 2 lakh in group of items. The company is in the process of implementation of e-procurement and e-payment. All these activities are likely to make the procurement process more transparent and expected benefits are as follows:

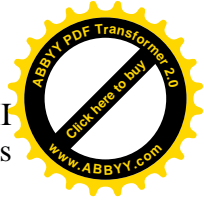
1. Enhance confidence level of the supplier
2. Wider participation
3. Competitive rate
4. Minimise scope of grievance / dispute

Company has duly complied with the provision of Right to Information Act and all the necessary data/information in this regard have been posted in the web site for easy accessibility of the general public. Public Information Officer/Asstt Public Information Officer has been duly appointed and particulars duly posted on the web site.

Decentralisation: In order to take higher responsibility with greater autonomy in day-to-day functioning by the unit heads, the existing powers delegated to them have been reviewed in a consolidated manner and delegated power has been enhanced. By this process company will be benefited by avoiding delay in decisions making, taking timely action for production process.

5. National Aluminium Company Limited (NALCO)

NALCO is a manufacturing organization producing Bauxite, Alumina, and Aluminium and generating Power; the measurement of the final outcome will be in terms of production quantity of the finished products. For large growth projects like Utkal Coal – E and up gradation of alumina Plant which has a longer construction period, production will commence only on completion of Projects. Quantifiable physical output can not be set on for 2008-09 in respect of these projects except in terms of physical/ financial progress on the project.

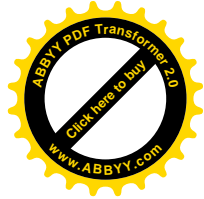


6. Science & Technology (S&T)

Major initiatives

Identification of areas for technological upgradation and development of new technology are initiated.

In development of a National Facility for Semi-solid forming at Indian Institute of Science, Bangalore. It would be first of its kind in India and would cater to the needs of transport, construction, packaging, aero-space engineering industries and strategic defence applications.



CHAPTER - IV

REVIEW OF PAST PERFORMANCE

1. Geological Survey of India(GSI)

The GSI has achieved more than 90% of the envisaged physical targets for the F.Y. 2006-07 in respect of most of its activities. However, some of reasons for shortfall are as follows:

Survey and Mapping:

Geophysical Mapping: Diversion of manpower to Outside Annual, Programme and Shortage of manpower.

Geochemical Mapping: Inapproachability in Arunachal Pradesh, Mizoram, Meghalaya and Sikkim; Law and order problem in Bihar, Orissa.

Marine Survey: Shortfall in bathymetry, magnetic due to rough sea condition and shortage of time for collection of ONGC samples . Low progress due to breakdown of the power module of Bathy 2000 Echosounder. Other factors like dry docking, repairing – maintenance of R.V. Samudra Manthan and non-availability of Muiltimeam Echosunder are responsible for shortfall

Mineral Exploration:

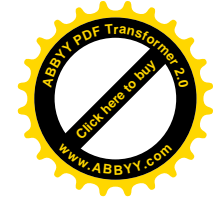
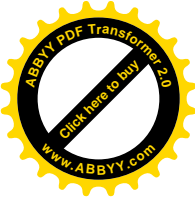
LSM: Based on need thrusts have been given on the programmes of Detailed Mapping. It has resulted excess in Detailed Mapping (DM) and apparent shortfall in Large Scale Mapping (LSM).

Drilling : Delay in getting/non-availability of forest clearance; major shifting of the drilling units and machinery breakdown; Shortage of manpower.

The envisaged targets for F.Y. 2007-08 are on course for achievement in full. However, there was an acute shortage of DTE fund in the first half of the F.Y. 2007-08 which may cause for shortfall in some of the field based targets. In Marine Survey, it is proposed to conduct cruises subjected to availability of RV Samudra Manthan in seaworthy condition after mandatory repairs. Alternative programmes will be taken up through boat cruises in the coastal areas with revised targets for the period of non availability of RV Samudra Manthan.

Twin Otter Airborne Survey operation will commence shortly after the procurement of certain essential aircraft spares, required to be fitted in the aircraft VT-ELX.

The actual physical performances of GSI during 2006-07 and 2007-08 (till Dec'07.) along with reasons for variations are furnished in **Annexure II and III.**



Outcome of 2006-07: The scheme-wise activities carried out by GSI have generated the following outcome:

1. Scheme: Survey & Mapping:

Creation and updating of national geoscientific information and knowledge base through ground, marine and airborne surveys is the primary function of GSI. Growing emphasis has been given on concept oriented thematic geological mapping on progressively larger scales, geochemical and geophysical mapping on 1:50,000 scale. Superposition of maps already produced by Systematic Geological Mapping items on maps that are to be produced by systematic and country-wide Geochemical Mapping (GCM items) and Geophysical Mapping (GPM items) on 1:50,000 scale will enable more precise mineral targeting.

- 8043 sq km of thematic mapping was carried out.
- Aero-geophysical multi-sensor data have been acquired over an area of 28777 Ikm.
- 24215 sq.km has been covered by Geochemical mapping in various states.
- 16833 sq.km has been covered by ground geophysical mapping in different States.
- Through Samudra Manthan cruises, attained the targets set for ONGC sponsored projects along with GSI's own jobs.
- 840 sq km was covered under the seabed-mapping programme within Territorial Waters.

2. Scheme: Mineral Exploration:

Mineral Finds

- The investigation of gold at Parasi, Ranchi district, **Jharkhand** has established a resource of 1.51 million tonnes (m.t.) of gold ore with an average grade of 2.47 g/t gold.
- In Pahardia block, West Singhbhum District, **Jharkhand**, gold ore resources have been established to 0.58 m.t. with an average grade of 3.65 g/t Au.
- Gold ore resource of 0.293 m.t. with average grade of 2.00 g/t over a width of 1.79m has been estimated in Ajjanahalli East Block, Tumkur District, **Karnataka**.
- Processing of 184 tonnes of weathered material from TK-4 kimberlite pipe, Timasamudram village, Anantapur district, **Andhra Pradesh**, yielded a total number of 350 gem quality diamonds weighing 82.19 carats. The biggest crystal weighs about 2.035 carats. The size of the kimberlite body is very small.
- Two Kimberlite pipes (MNK- 3, 4) were identified near Kottala village and two more suspected bodies (MNK-5, 6) were identified near Chilakaladona and east of Buduru villages in Ibrahimpur – Mantralayam area, eastern Dharwar craton, Kurnool district; in **Andhra Pradesh**.
- Newly discovered kimberlite body (P-15) is located at about 300m north of P-2 kimberlite body of Wajrakarur – Lattavaram of **Andhra Pradesh**.
- In **Karnataka**, investigation for Platinum Group Elements (PGE) mineralization at Hanumalapura Block of Tavaregere – Masanikere - Magyathahalli area in the Shimoga schist belt, Davanagere district has established a resource of 0.294 m.t. of PGE ore with average grade of 1.79ppm Pt and Pd over a width of 1.43m. This is the second occurrence of PGE in the country in addition to the Baula Nausahi in Orissa.
- Iron ore body of maximum 200m strike length and width varying between 10m to 15m having Fe content from 60.78 % to 65.50% has been located in North-Western

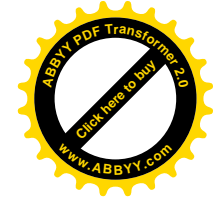


part of Tomka-Daitari belt around Pathuriapenth-Patherguda area in Kendujhar district, **Orissa**.

- In North- western part of Tomka- Daitari belt around Burhipada- Madhyapur, Kendujhar district, **Orissa**, two massive hard laminated iron ore bands in Burhipada (100m x 8m) and in Pangaposi (300m x 50m) were identified having Fe content varying from 64.88% to 66%.
- Selected free hold areas for Iron ore, in the NMDC blocks, in parts of Sandur schist belt, Bellary district, **Karnataka** have revealed a BIF band (lateritic and biscuity) of 3.8 km strike length and width varying from 100m to 150m.
- Coal and lignite resources have been augmented by 2228.75 million tonnes and 417.59 million tonnes respectively.

3. Scheme: Specialised Investigation:

- 48 items of geotechnical and engineering geological studies through 251 investigations were undertaken related to Civil Engineering projects for Water Resource Development, creation of communication network, River Linking Projects, transport and other infrastructural facilities in almost all the States of the country.
- Landslide Hazard Zonation mapping in Sikkim Himalaya; Lunglei town area, Mizoram; along the NH-39 between Kohima (Nagaland) and Imphal (Manipur); Ramganga Basin and Ranikhet Town of Chamoli and Almora District, Uttaranchal; Ravi Basin, Chamba District and Shimla, Himachal Pradesh etc..
- Landslide inventories of several landslides in Sikkim Himalaya, Darjeeling Himalaya, in Meghalaya, Mizoram, Nagaland, Manipur, Arunachal Pradesh, Assam, Tripura, Madhya Pradesh and Maharashtra were prepared.
- Site specific Landslide studies in Sonapur in Meghalaya and Paglajhora in Darjeeling District, West Bengal.
- First level Delhi microzonation studies completed and report/ map made public.
- Seismic microzonation studies were carried out in Mumbai, Chandigarh (including Panchkula and Mohali); Jamnagar, Puduchery and Visakhapatnam cities.
- Active fault studies along Thaljhora scarp and adjoining areas has been carried out in Jalpaiguri District; along Patharia-Dhumdangi-Daspara sector, Darjeeling and North Dinajpur District, West Bengal; in the Himalayan Frontal Belt between Kosi and Gaula Rivers in Nainital District, Uttaranchal; and in the foothills of Bhutan Himalaya in Kokrajhar district, Assam (A 30 km long East – West trending active fault has been identified out of which 18 km. has been traced in the eastern part in Assam).
- GSI has two Broad Band Seismic (BBS) Observatory at Jabalpur and Nagpur, which were continuously engaged in monitoring worldwide seismic activity by acquisition of data, registering the database and analysis. DST, New Delhi allotted one unit of Strong Motion Accelerograph to the GSI observatory, Jabalpur. 31 geo-environmental investigations were taken up comprising geoenvironmental appraisal, geoenvironmental impact assessment and studies on public health hazards and geomorphic processes in addition to 12 items of Syn-Exploration Baseline Data Generation.
- Detailed glaciological studies on Hamtah glacier, Lahul and Spiti district, Himachal Pradesh have shown negative mass balance for the fifth year in succession. Snout of the glacier showed a recessional trend.



- Coal Based Methane study on samples of coal seams intersected at different boreholes in Rajmahal – Birbhum Master Basin has indicated that the gas content ranges from 1.39 to 8.6 cum/ton.

4. Scheme: Information Dissemination:

- ❖ GSI Net and PORTAL remains one of the thrust areas in the field of IT.
- ❖ Project Digital Archive remained one of the thrust areas during this period. Geological maps on 1:50K are under the process of digitisation after compilation for seamless integration in future. Out of a total compilable 4751 sheets of geological maps on 1:50,000 scale covering the entire country, 4696 Nos. of sheets have been compiled.

5. Scheme: Human Resource Development (Training):

31 training programmes encompassing Orientation Course for Geologists, Basic Courses, Refresher Courses, Workshops, Advanced Course, INDIGEO Programmes, and ISRO and DST sponsored programmes were successfully completed. So far GSITI since its inception in 1976, has conducted 610 training programme and has trained 12,418 officials out of which 10,732 were from GSI, 1,565 from other organisation, 79 from ESCAP countries, 38 from Bhutan and 4 from Bostwana.

6. Scheme: Modernisation & Replacement:

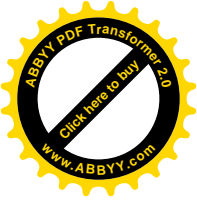
The state-of-the-art technology has been inducted in some of the areas in the various laboratories of the organization and in the ground survey areas. Acquisition of heliborne geophysical survey system, ocean going research vessel and geotechnical vessel did not materialise during FY 2006-07. However, the processing part has progressed satisfactorily.

OUTCOME of 2007-08 (upto Dec '07): The scheme-wise activities carried out by GSI has generated the following outcome:

1. Scheme : Survey & Mapping:

Creation and updating of national geoscientific information and knowledge base through ground, marine and airborne surveys is the primary function of GSI. Growing emphasis has been given on concept oriented thematic geological mapping on progressively larger scales, geochemical and geophysical mapping on 1:50,000 scale Superposition of maps already produced by Systematic Geological Mapping items on maps that are to be produced by systematic and country-wide Geochemical Mapping (GCM items) and Geophysical Mapping (GPM items) on 1:50,000 scale will enable more precise mineral targeting.

- 395 sq km of systematic geological mapping (1:50000 scale) was carried out.
- 2606 sq km of thematic mapping (1:25000 scale) was carried out.
- 12967 sq.km has been covered by Geochemical mapping in various states.
- 13406 sq.km has been covered by ground geophysical mapping in different States.



- 3124 sq km was covered under the seabed-mapping programme within Territorial Waters.

2. Scheme : Mineral Exploration :

Mineral Finds

Coal & Lignite

- An additional resource of 2290.14 million tonnes of coal has been assessed during 2006 -2007 (up to June, 07).
- The geological resource of coal stands at 257.38 billion tonnes and lignite at 38.75 billion tonnes as on 01.04.2007.

Gold

- Exploration for gold in Ajjanahalli central and northern sectors, Tumkur district, **Karnataka** led to the estimation of additional resource of about 0.48 million tonne of gold ore with grade varying from 1.65 g/t Au to 1.70 g/t Au.
- Exploration for gold in Bangargatti block, (North & South sector), Dharwar district, **Karnataka** has been carried out. Bedrock and trench samples from BMQ bands have indicated gold values from 0.03 to as high as 35.00 g/t.
- Exploration for gold-copper mineralisation in three blocks of Bhukia Gold belt, Banswara district, **Rajasthan** led to the augmentation of gold ore resource of 7.32 million tonnes with average grade of 1.30 g/t gold. A total resource of gold ore in the area is 55.22 million tonnes with 1.87 g/t Au (total gold metal content is 103.26 tons).

Diamond

- Two kimberlite (host rock for diamond) pipes each have been located near Chagapuram (CGK- 1&2) Mahboonagar district and Timmasamudram area (TK- 5&6) Anantapur district, **Andhra Pradesh**.

Platinoid Group of Elements (PGE)

- Investigation for PGE mineralisation was continued in Hanumalapura area of **Karnataka** over 1.8 km strike length and resource of 0.546 million tonne of PGE ore with (Pt + Pd) values ranging from 0.50 ppm to 2.93 ppm has been augmented.

Basemetal

- In the Nim-Ka-Thana Copper prospect, Sikar district, **Rajasthan** a resource of 46.26 million tonnes has been estimated from four blocks. The main three contributing blocks being Dokan (25.56 mt), Baniwala-Ki-Dhani (13.17mt) and Dokan North (5.6 mt) with 0.38%, 0.45% and 0.30 % Cu respectively.
- Investigation for basemetals in Thanewasna and Dubarpeth- Karanji block, Chandrapur District, **Maharashtra** led to the estimation of 1.13 million tonnes of copper ore with average grade of 1.1% copper and 0.35 million tonnes of Cu ore with 0.67 % copper respectively.

Bauxite

- From Kadalía, Kendujhar districts, **Orissa**, a resource of 1.97 million tonnes bauxite with an average grade of 48.34% Al₂O₃ has been estimated.

Iron Ore

- Investigation for iron ore in four blocks in Namakhal district, **Tamil Nadu**, was carried out. A resource of 14.03 million tonnes of magnetite ore with Fe content of 31 to 37% has been assessed.
- In NMDC block, in parts of Sandur Schist belt, Bellary district, **Karnataka** a resource of 8 million tonnes of iron ore with > 55% Fe has been assessed.



- Good quality iron ore have also been recorded from Ghutang and Pathargada area, Kendujhar District, **Orissa** and Aridongri area, Kanker district, **Chhattisgarh**.

Manganese

- Exploration for manganese in Lasarda (Bolani) block, Bonai-Keonjhar belt, Kendujhar district, **Orissa**, was continued. A resource of 2.47 million tonnes manganese ore has been estimated with an average grade of 24.61% Mn. Resources estimated from the adjacent blocks explored earlier is 4.73million tonnes with average grade ranging from 22.27% to 26.15% Mn.

Limestone

- A resource of 33.74 million tonnes marginal cement grade limestone has been assessed in Vridhacahalam sub-basin, Cuddalore District, **Tamil Nadu**.
- Additional resource of 280.80 million tonnes of limestone of various grades has been estimated in Jaintia Hills district, **Meghalaya**.

Graphite

- A resource of 0.76 million tonne of graphite (average grade of 13% FC) has been estimated for a strike length of 1 km in Arasanur block, Sivaganga District, **Tamil Nadu**.

3. Scheme : Specialised Investigation:

- GSI has been declared the Nodal Agency for Landslide Hazard Risk Mitigation in the country and is preparing the National Disaster Management Policy and Guidelines on Landslides for fast and effective natural disaster management.
- Geoscientific inputs have been provided to major civil engineering projects, River Valley Projects, Landslide Hazard Zonation (LHZ) on different scales along important route corridor passing through landslide prone hilly terrain etc. GSI is also engaged in Active Fault Studies, which is a key element of Seismic Hazard Assessment (SHA) to identify and characterize seismic source zones in Himalayan frontal belt. Work on seismic hazard microzonation for number of urban centres is also in progress towards earthquake disaster mitigation.
- Global warming has become an issue which is worrying mankind across the world. Reports of recession of glaciers, changes in volume of water flowing along major rivers have sent warning signals to scientists and administrators. Geological Survey of India is actively engaged in the field of glacier regimes studies involving glacier mass balance, glacier flow, hydrometry, suspended sediment transport, microclimatic parameters, secular movement and geomorphology of selected representative glaciers in the states of Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh. These studies would help to monitor the possible effects of warming, if any. Detailed glaciological studies for last six years (2000-2006) on Hamtah glacier, Lahaul-Spiti districts, H.P. indicated that it has evacuated an area of 0.0259 sq. km with an average value of 0.0043 sq. km /year.

4. Scheme: Research & Development and Other Exploration:

Antarctica Studies

Geological Survey of India has been participated in 26 Indian Antarctic Programmes since its inception during the austral summer of 1981-82. During F.S. 2006-07 the monitoring of



Dakshin Gangotri (DG) glacier snout and the western polar front of the Schirmacher Oasis suggested a retreat of 0.6 m. The 27th Indian Antarctic Expedition has launched in Dec'07.

Research and Development

One of the most exiting discoveries by GSI is a rare fossil snake from the Lameta Formation of Kheda district, Gujarat. This well-preserved specimen, about 70 million years old, not only represents the oldest snake in the world, but enhances our knowledge on the origin and evolution of snake also. It's occurrence in association with sauropod dinosaurian eggs and hatchlings provides a unique evidence of predation of Mesozoic snakes on dinosaur eggs.

Petrological researches not only remained confined to the study of terrestrial rocks but extend its domain to the extraterrestrial materials also. In the field of meteoritics, study of the primitive Ca-Al inclusions (CAI) in un-metamorphosed Indian chondrites, constrained the formation age of chondrules within one million year in collaboration with PRL, Ahmedabad.

For societal benefits, investigation on the arsenic toxicity in ground water was continued. Geo-remedial measures to mitigate the risk of arsenic toxicity in ground water in parts of Nadia district, W. Bengal has established the occurrence of Pleistocene "orange sand" in depth range of 40 to 50m, which is known to yield arsenic free ground water. This will solve to a large extent the problem of getting arsenic free waters for domestic use for the people residing in the east of the Ganges in W. Bengal.

5. Scheme: Information Dissemination :

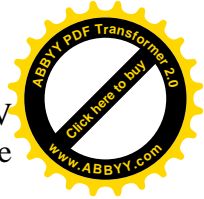
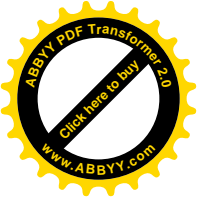
Geological Survey of India is the custodian for geological maps and geoscientific database of India and adjoining countries. Being the repository for huge volume of geoscientific information of the country, GSI has not only been continuously generating information but also compiling and developing huge databases. A programme of digitisation of maps of the 1:50,000 Geological Map Series, mineral map series, and others are underway and will progressively be placed in the public domain.

6. Scheme: Modernisation & Replacement:

The state-of-the-art technology has been inducted in some of the areas in the various laboratories of the organization and in the ground survey areas.

The Cabinet has approved the acquisition of a new deep sea going research vessel for Geological Survey of India at an estimated cost of Rs. 448 crores for carrying out seabed surveys and exploration of non-living resources. Procurement action for the Research Vessel is on.

Geological Survey of India is acquiring heliborne survey system fitted with sensors for improving the quality of exploration and for tapping deep seated mineral resources in addition to updating the techniques for ground geological and geophysical survey, precision analytical instruments and deep capacity drills. MOU has been signed between Pico Enviortech Inc., Canada and Geological Survey of India for the purchase of the heliborne system.



2. Mineral Exploration Corporation Limited (MECL)

The review of promotional mineral development exploration programme is as under:-

Promotional Mineral Exploration Programme :

Year	Scheme	Outlay (Rs. Lakhs)	Utilised/ Released (Rs. Lakhs)	%	Remarks
2006-07	Promotional	1400.00	1400.00	100	i) Non commencement of Ghatkuri East for iron ore in Jharkhand, Dholamala for Copper in Rajasthan, Maruda & Timaranmata for Gold, in Kerala & Rajasthan respectively for want of forest clearance.
2007-08 (Upto Dec-07)	Promotional	1100.00	759.00	69	It is expected to utilise the approved outlay fully.

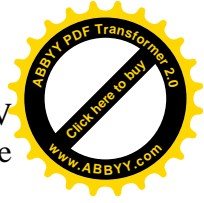
During the year 2006-07 the exploration in 6 schemes namely Dona Temple for gold in Andhra Pradesh, Kolari Bhanori for lead-zinc in Maharashtra, Saipum for limestone in Mizoram, Ramachandrapahar for copper in Jharkhand, Latio-ka-Khera and Bajtha Central both for lead-zinc in Rajasthan was continued from 2005-06. In addition, exploration in the new schemes namely Dariba Akola, Devtalai Phase-II & Sanganer all for copper in Rajasthan, Garhi Dongri for gold / Copper in Madhya Pradesh, Central Sub Block for lead-zinc in Rajasthan, Banskhapa-Piparia (Sub block-I) for lead-zinc in Madhya Pradesh & Bhukia (East) for gold in Rajasthan were taken up.

The exploration on approved schemes for iron ore at Ghatkuri East, Jharkhand, for gold at Timran Mata, Rajasthan & Maruda, Kerala and for copper at Dholamala, Rajasthan could not commence for want of forest clearance.

The exploration of bauxite at Lupungpat, Jharkhand was abandoned while for copper at Intervening Block, Jharkhand could not be taken due to law & order problem.

The outlay for 2006-07, quantifiable / physical, projected outcomes along with process / timeliness are given in **Annexure-II**.

During the year 2007-08, exploration in 6 schemes namely Dariba Akola, Devtalai Phase-II & Sanganer all for copper in Rajasthan, Garhi Dongri for gold in Madhya Pradesh, Central Sub block for lead-zinc in Rajasthan, Banskhapa-Piparia for copper in Madhya Pradesh, and Bhukia



East for gold in Rajasthan, are being continued from the previous year. In addition, the exploration of 4 new schemes namely Dhani Basri & Satkui for copper in Rajasthan, Dhobani Mine for copper in Jharkhand & Parasi for gold in Jharkhand have been taken up.

However, the exploration for iron ore at Ghatkuri East, for gold at Timran Mata & Maruda, for copper at Dholamala & at Intervening Block could not commence for want of forest clearance / prevailing law & order situation. MECL proposes to take up the work on these scheme as soon as forest clearance is received / law & order situation improves.

Capital Expenditure :

During the year 2006-07, an outlay of Rs. 800 lakhs was approved as IEBR out of which a total of Rs. 189 lakhs was utilised. The less utilisation is attributed to non availability of specialised plant & equipment needed for exploration work, off the shelf.

For the year 2007-08, an outlay of Rs. 800 lakhs (IEBR) has been approved , out of which expenditure of Rs. 318.00 lakhs has been incurred till December, 2007. So far, MECL has procured one Kores (India) high-tech drill machine, having capacity to drill up to 2000 m , four KME - 1000 drills with capacity to drill upto 1000m and two rotary drill DR-2500 with capacity to drill upto 760 m in NQ Size. It has also procured eight Nos. of RD-395 Duplex Reciprocating Pumps. Further orders for supply of one state-of-the-art geophysical logger has been placed. In addition, MECL has floated global tender for procurement of 14 Nos. of drills having capacity to drill upto 900 m in NQ size and processing for the same is in progress. The other plants and equipments to be procured during the year have been identified and action initiated for procurement of the same and the fund allocated is expected to be utilised in full.

For the year 2008-09, an outlay of Rs. 800 lakhs (IEBR) has been proposed in BE 2008-09. It will be MECL's endeavour to utilise the outlay.

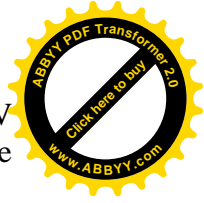
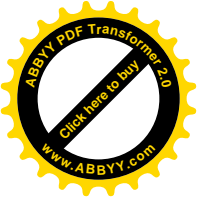
3. Indian Bureau of Mines (IBM)

Scheme wise physical performance

The programmes and achievements under various schemes during the last year 2006-2007 and in the current year 2007-2008 are given below: -

Scheme No. 1 : Inspection of Mines for Scientific and Systematic Mining, Mineral Conservation and Mines Environment:

The achievements during the year 2006-2007 & 2007-2008 (upto December 2007) vis-a-vis targets in respect of inspections & studies of mines for promoting systematic and scientific development of mineral deposits, conservation of mineral resources, protection of environment,



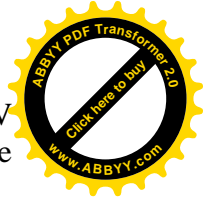
approval of mining plans and administration of MCDR, 1988 are as below: -

Item	2006-07		2007-08	
	Target	Achievement	Target	Achievement (upto Dec. 2007)
Inspection of Mines for administration of MCD Rules, 1988, approval of mining plans, schemes and mine closure plans.	2,500	2,765	2,500	1,985
Mining Geological Studies covering Community Development aspects	12	12	12	12 in progress
Updation of data in respect of Reconnaissance Permits (RP) and Prospecting Licences (PL) / Mining leases (ML) granted out of RP areas and monitoring the progress.	\$	135 RP / PL documents	\$	142 RP / PL documents

\$ As and when data received from RPs / PLs holders

Consequent to inspections and studies, during the year 2007-08 (upto Dec.. 2007), 1505 violations of various provisions of MCDR, 1988 were pointed out in respect of 764 mines and 1016 violations were rectified. Twenty two prosecution cases were launched in various courts, 01 case was decided and 12 cases were compounded. Besides, mining operations suspended under Rule 13 (2) of MCDR, 1988 in respect of 02 mines were revoked. The suggestions and recommendations offered to the mine owners led to conservation of mineral resources, promotion of scientific mining, improvement in performance of mining operation, protection of environment, etc.

During the year 2007-08 (upto Dec. 2007), 430 mining plans were approved & 20 not approved, 253 mining schemes were approved & 24 not approved, and 28 final mine closure plans were approved & 04 not approved. Registration of Recognized Qualified Persons (RQP) was granted in 78 cases.



Scheme No.2 - Mineral Beneficiation Studies - Utilization of Low Grade and sub-grade Ores and Analysis of Environmental Samples:

Targets and achievements during 2006-2007 & 2007-2008 in respect of Regional Ore Dressing Laboratories at Ajmer, Bangalore and Modern Mineral Processing Laboratory & Pilot Plant at Nagpur are summarized below: -

Item	2006-07		2007-08	
	Target	Achievement	Target	Achievement (up to Dec. 07)
1. Ore Dressing Investigations	70	73	70	55
2. Chemical Analysis (No. of radicals)	50,000	50,579	50,000	35,440
3. Mineralogical Studies	2,300	2,409	2,300	1,774
4. In-plant Studies	@	21	@	07

@ As and when required

Scheme No. 3 - Technological upgradation and modernization:

Updation of National Mineral Inventory (NMI)

The IBM undertakes preparation and quinquennial updation of inventory of mineral resources of the country. These cover leasehold as well as freehold areas in which the mineral resources have been ascertained through regional or detailed exploration.

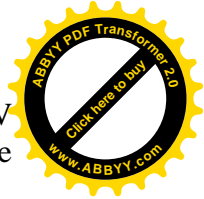
During the year 2006-07, the work of updation of NMI adopting UNFC as on 01/04/2005 was continued. Data sheets in respect of 4,986 freehold and public sector mineral deposits were updated. Computerization was in progress and summary outputs for 43 minerals generated.

During the year 2007-08 (upto Dec.2007), updating of NMI as on 1.4.2005 adopting UNFC was completed in all respects and summary outputs for all the 65 minerals were generated. Preparation of analytical notes and qualitative analysis for 42 minerals was also completed.

Preparation of multi-mineral maps

The IBM prepares the mineral maps of leasehold and freehold areas with forest overlays to supplement the efforts of maintaining the National Mineral Inventory as an aid in planning mineral exploitation on a regional basis.

During the year 2006-2007 preparation of 113 multi-mineral leasehold maps on a scale of 1:50,000 along with corresponding forest overlays in respect of Karnataka was completed.



During the year 2007-2008 (upto Dec. 2007), preparation of multi-mineral leasehold maps on a scale of 1:50,000 with forest overlays in respect of Maharashtra and Tamil Nadu (part) was in progress. So far, 73 multi-mineral leasehold maps on a scale of 1:50,000 alongwith corresponding forest overlays were prepared and 47 maps were at various stages of completion.

Technical Consultancy Services

Technical Consultancy Services were provided to the mining industry at prescribed charges and on promotional basis.

Targets and achievements for the year 2006-2007 & 2007-2008 are as below: -

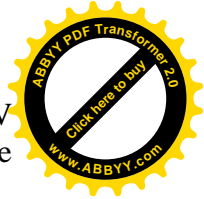
Item	2006-07		2007-08	
	Target	Achievement	Target	Achievement (upto Dec.07)
Preparation of Mining Feasibility/ Mining Scheme / EMP Study Reports and conducting Preliminary Geological Appraisal of mineral deposits/survey assignments, etc. (No. of assignments)	07	09	07	07

During the year 2006-2007, 09 assignments were completed and reports submitted to the concerned parties.

During the year 2007-2008 (upto Dec. 2007), 07 consultancy assignments on (i) Reconnaissance of Muraripura (99.15 Ha.) and Jaisinghpur (36.00 Ha.) Iron ore Mines for M/s Bellary Steel & Alloys Ltd, Bellary. (ii) Cost evaluation of deepening of shaft at Beldongri Manganese Mine for M/s MOIL (iii) Mining Plan and Progressive Mine Closure Plan of Ajitaburu Lease of Manoharpur Iron Ore Mines for M/s. SAIL.(iv) Mining Plan and Progressive Mine Closure Plan of Budhuburu (Maclellan) Lease of Manoharpur Iron Ore Mines for M/s. SAIL.(v) Monthly excavation measurement for May 2006 to May 2007 at 35 LBCM at Malanjkhanda Copper Project for M/s. HCL.(vi) Vetting / validation of Geological Report on availability of Iron ore resources in Bellary - Hospet for M/s. J.S.W. Steel Ltd. and (vii) Revalidation of reserves at Jaisinghpur area in Bellary dist. Karnataka State for M/s. Bellary Steel and Alloys Ltd were completed, reports prepared and sent to the concerned parties. Besides, 06 other assignments were in progress.

Mining Research

Applied mining research is carried out on various mining aspects so as to help in systematic development of mines and improvement in productivity in mines through evolution of suitable norms. Industry sponsored assignments on Environmental aspects and Geo-technical investigations, on charge basis are also carried out.



During the year 2006-2007, 07 assignments were completed and reports submitted to the concerned parties.

During the year 2007-2008 (upto Dec. 2007), 08 assignments viz (i), Study of Ground Vibration due to blasting at Kheiljheri Limestone mine for M/s Meghalaya Cements Ltd. in Jaintia Hills, Meghalaya. (ii) Study of Ground Vibration due to blasting at Bodai Daldali Bauxite Mine for M/s BALCO in Kabirdham dist. Chattisgarh. (iii) Environmental monitoring at Copila Gaichem Paul (Shigao) Iron Ore mine for M/s. Fomento Industries Ltd. for the year 2006. (iv) Expert opinion note on selection of location for proposed new vertical shaft at Gumgaon Manganese ore mine for M/s. MOIL. (v) Environmental monitoring at Sanjem Iron Ore Mine for M/s. Sociedade de Fomento Industrial Pvt. Ltd., Goa for the year 2006. (vi) Geo-technical investigation for assessment of shrinkage cracks developed on stacks on Area - III. of Cuddegal Iron Ore Mine for M/s. Minería National Limitade, Goa. (vii) Study on Ground Vibration due to blasting at Jettipalam Limestone Mine for M/s. Parasakti Cements Industries, Gundur, A.P. and (viii) Study on Ground Vibration due to blasting at Deolgaon Iron Ore Mine in Gadchiroli district for M/s. Tawakkal Stores, Nagpur were completed, reports prepared and sent to the concerned parties. Besides, 06 assignments were in progress.

S & T Project on Attenuation of Hexavalent Chromium in Sukinda Chromite Belt by Bio-Remediation Technology

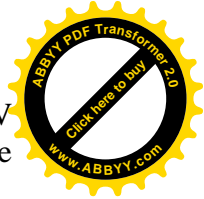
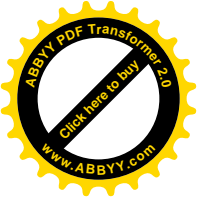
This project at a cost of 30.00 lakhs was approved by the SSAG in its 31st meeting held on 15 May 2002 and administrative approval of Ministry of Mines was received in October 2002. The project was taken up for implementation during 2003-2004 in collaboration with Utkal University, Bhubaneswar for attenuation of Hexavalent Chromium in the mines discharge water from a group of Chromite mines in Sukinda area, Jajpur district, Orissa. Field study was completed in March 2007. The report on the project was prepared by Utkal University in association with IBM The final report is under examination in IBM.

New Scheme on Management of Solid Waste from Mining in India

In principal approval of the project proposal was received vide Ministry's letter dt. 12.04.2007. Draft Expression of Interest for appointing Global Consultant was submitted to Ministry on 17/08/2007. A project proposal in the proforma for consideration of Standing Finance Committee (SFC) was also sent to the Ministry vide letter dt. 24/08/2007. Approval is awaited.

New Scheme on Computerized Online Register of Mining Tenements System

In principal approval of the project proposal was received vide Ministry's letter dated 12.04.2007. Draft Expression of Interest for appointing Global Consultant was submitted to Ministry on 26/06/2007. A project proposal in the proforma for consideration of Standing Finance Committee (SFC) was also sent to the Ministry vide letter dated 24/08/2007. Approval



is awaited. In a meeting of the Study Group constituted by Ministry of Mines, it was decided that the existing leases will be digitized by Survey of India and new leases will be surveyed by IBM using GPS.

Generation of Revenue through Promotional Activities

IBM generates revenue through its promotional activities. No targets for revenue generation have been fixed as per the decision taken during the 13th meeting of IBM Advisory Board. During 2006-07, a revenue of Rs. 163.79 lakhs was generated by taking up consultancy work in mining, geology, ore processing and mining research work, training, processing of mining plan/scheme of mining and through sale of publications, mineral inventory etc.

During 2007-08 (up to Dec., 2007) a revenue of Rs. 156.35 lakhs was generated by taking up consultancy work in mining, geology, ore processing and mining research work, training, processing of mining plan/scheme of mining and through sale of publications, mineral inventory etc.

Work Done in North-Eastern Region

Sub-regional office of IBM at Guwahati continued to undertake inspection of mines/studies on development of resources of the North-Eastern region.

During the year 2007-08 (upto Dec.2007), 19 mines / areas were inspected for enforcement of MCDR, 1988 and for processing of mining plans. One consultancy assignment on Ground vibration study due to blasting at Kheilijhri limestone mine for M/s. Meghalaya Cements Ltd. in Jaintiya Hills District, Meghalaya was completed and report submitted to the party. Besides, one training programme on MM (D&R) Act, 1957, MCR, 1960 and MCDR, 1988 was conducted at Shillong, in which 12 officials from North-Eastern region participated. Equipment/instruments worth Rs. 142.50 lakhs were identified for providing to various NE States. Procurement action is in progress.

Outcome/Target in the outcome budget

Details of Physical Achievements vis.a.vis. Intended Outcomes as indicated in the Outcome Budget 2006-07 and Details of Physical Achievements vis-à-vis Intended Outcomes as indicated in Outcome Budget 2007-08 are enclosed as **Annexure - II and III** respectively.

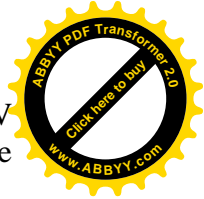
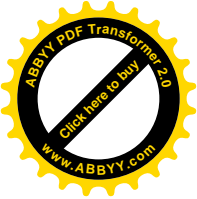
4. Hindustan Copper Limited (HCL)

The actual production of Metal In Concentrate (MIC) and Copper Cathode vis-à-vis targets set during the year 2006-07 and 2007-08(upto Dec'07) are given hereunder:

(In Tonne)

Particulars	2006-07		2007-08(Upto Dec'07)	
	Target	Actual	Target	Actual
Metal In Concentrate	29500	30231	22506	23590
Copper Cathode	42000	39785	30275	32601

Due to the various initiatives taken by the company, both mine production and production of finished goods have increased appreciably during 2007-08 compared to 2006-07, in addition to



achievement of production over targets. During 2007-08 also, company is going to achieve the targeted production. Till December'07, cumulative production of both Metal-In-Concentrate and Cathode is higher than the target.

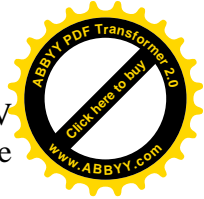
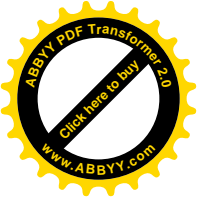
The detailed plan expenditures undertaken during the abovementioned two years have also been highlighted in **Annexures-II & III** respectively.

5. National Aluminium Company Limited (NALCO)

The achievement of quantified deliverable/ physical output for the year 2006-07 mentioned in the outcome budget 2006-07 is furnished at **Annexure-II**. However, summarized achievement is given hereunder:

(Rs. In crore)						
Sl. No.	Name of the Scheme/ programme (Product)	Target of deliverable / physical output (MT)	Actual of deliverable/ physical output (MT)	Outlay(Rs ./Cr) BE:2006-07	Outlay(Rs./Cr) RE : 2006-07	Actual Expenditure (Rs./Cr.)
1.	Addition & Modification			95.00	95.45	75.80
a)	Bauxite Mine (Bauxite)	48,00,000	46,23,278	-	-	-
b)	Alumina Plant (Alumina)	15,75,000	14,75,200	-	-	-
c)	Smelter Plant (Aluminium)	3,45,000	3,58,734	-	-	-
d)	CPP	6391 MU	5968 MU	-	-	-
2	2 nd Phase Expansion			520.97	524.47	567.61
3	Utkal E Coal			5.17	5.17	6.36
4	Greenfield Smelter			1.00	0.00	0.00
	Total :			622.14	625.09	649.77

As may be observed the actual production/ output has surpassed the physical target set in the outcome budget 2006-07 for the major products, such as Bauxite, Alumina and Aluminium. As regards to the Capital outlay the actual expenditure has surpassed the capital outlay set for the year 2006-07.



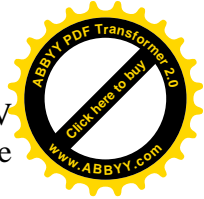
The achievement of quantified deliverable/ physical output for April to Dec-2007 vis-à-vis targets set in the outcome budget 2007-08 is furnished at **Annexure-III**. However, summarized achievement is given hereunder:

Achievements upto 31st Dec.,2007 in Outcome Budget 2007-08

(Rs. In crore)

Sl. No.	Name of the Scheme/ programme	Target of deliverable/ physical output (MT) for BE 0708	Target of deliverable/ physical output (MT) for RE 0708	Achievement of deliverable/ physical output (MT) up to Dec'07	Outlay (Rs./Cr) (BE: 2007-08)	Outlay (Rs./Cr) (RE:2007-08)	Actual Expenditure (Rs./Cr.) April-Dec07
1.	Addition & Modification						
a)	Bauxite (MT)	48,00,000	4,800,000	3042864			
b)	Alumina Hydrate (MT)	15,75,000	1,575,000	1155200	165	150	62
c)	Metal (MT)	348,241	352,000	267967			
d)	Power (MU)	5864 MU	5600 MU	4197			
2.	2 nd Phase Expansion				1401	1200	749
3.	Utkal E Coal				60	5	1
4.	Green field Smelter				5	1	0
5.	Pottangi Mine				1	1	
6.	Up-gradation of Alumina Plant & Mine				1	1	
	Total :				1633	1358	812

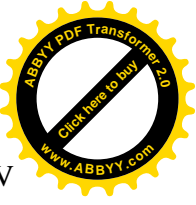
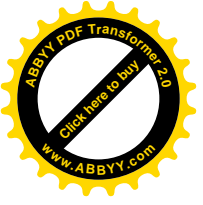
As may be observed the actual production upto Dec-07 of major products compared to annual target is ranging from 64% to 77% of Annual Targets. As of Dec'07, the commitment of around 81% of Project cost has been made which will in turn help in improvement of spending under capital outlay.



6. Science & Technology (S&T)

Review of past performance financial year 2006-2007 and 2007-2008 (up to December, 2007)

S. No.	Name of the Organization	Name of the Project	Date of completion of the project
1.	CMRI.	Flyrock prediction and control in opencast metal mines in India for safe deep-hole blasting near habitats – a futuristic approach	Final report of the project has already been received by this Ministry during the month of October, 2006.
2.	IBM, Nagpur	Research and Development in enhanced gravity and magnetic separation studies for recovery of values from Plant tailing and ore slimes.	Final report of the project has already been received by this Ministry during the month of November, 2006.
3.	RRL, Jorhat	Characterization & upgradation of some limestone deposits of North Eastern Region, India for value addition and rational utilization.	Final report of the project has already been received by this Ministry during the month of June, 2006.
4.	RRL, Bhopal	Recovery of values from waste of base metal industries.	Final report of the project has already been received by this Ministry during the month of June, 2007.
5.	JNARDC, Nagpur	Development of Rapid Analytical Procedure for Bauxite and Semi-quantitative Analysis of Scrap Aluminium.	Final report of the project has already been received by this Ministry during the month of May, 2007.
6.	I.I.Sc., Bangalore	National Facility for Semi- solid forming.	Final report of the project has already been received by this Ministry during the month of November, 2007.



Chapter-IV
Review of Past Performance



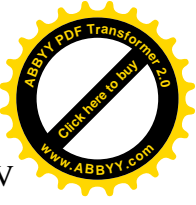
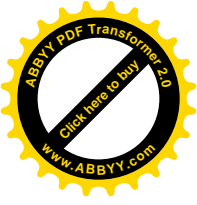
CHAPTER – V

FINANCIAL REVIEW

A. Financial review covering overall trends in expenditure vis-à-vis budget estimates /revised estimates

In BE 2007-2008 the approved Budget of this Ministry was Rs 389.70 crores comprising Rs. 154.00 crores (Plan) and Rs. 235.70 crores (Non-Plan). Against this, the RE 2007-2008 was Rs. 989.53 crores comprising of Rs 191.00 crores (Plan) and Rs. 798.53 crores (Non-Plan). BE 2008-2009 is being kept at Rs. 439.00 crores comprising Rs. 194.00 crores (Plan) and Rs. 245.00 crores (Non-Plan).

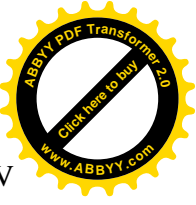
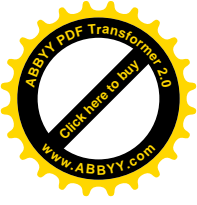
The schemewise and object head wise classification and overall trend in expenditure has been given in tabular form in the following pages.



Object Head-wise Classification

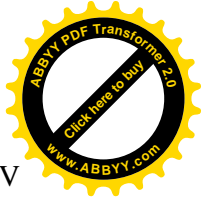
(Rs. in crores)

		BE 2007-2008			RE 2007-2008			BE 2008-2009		
		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
	1	2	3	4	5	6	7	8	9	10
1.	Direction & Administration (Secretariat Proper) Ministry of Mines)		9.66	9.66		9.66	9.66		10.12	10.12
2.	Non-Ferrous Metals									
(i)	National Aluminium Company Limited									
	(a) Investment in equity									
	(b) Loan									
	Sub Total									
	Total : Aluminium									
(ii)	Hindustan Zinc Limited									
	(a) Investment in equity							-	-	-
	(b) Loan									
	Total : Zinc & Lead									
(iii)	Hindustan Copper Limited									
	(a) write down of equity					562.94	562.94*	-	-	-
	(b) Conversion of Loan into equity				0.01	-	0.01			
	(c) Non-Plan Loan									
	Total : Copper				0.01	562.94	562.95			
	Total : Non-Ferrous Metals				0.01	562.94	562.95			
	*Netted against the receipts					-562.94	-562.94			

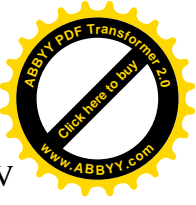
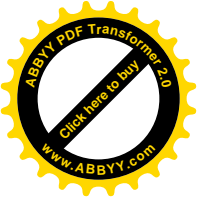


Chapter-V
Financial Review

	BE 2007-2008			RE 2007-2008			BE 2008-2009		
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
1	2	3	4	5	6	7	8	9	10
3. Other Mining and Metallurgical Industries									
Mineral Exploration Corpn. Ltd.									
(a) Investment in equity									
(b) Loan									
(c) Non-Plan Loan									
Total : Other Mining & Metallurgical Industries									
4. Survey, Exploration, Regulation & Development of Mines									
(i) Geological Survey of India									
(a) Revenue	59.10	204.14	263.24	93.10	203.71	296.81	97.00	211.58	308.58
(b) Capital	51.60		51.60	51.60	-	51.60	47.00	-	47.00
Total (a)+B	110.70	204.14	314.84	144.70	203.71	348.41	144.00	211.58	355.58
(ii) Indian Bureau of Mines									
(a) Revenue	14.00	17.11	31.11	17.00	17.03	34.03	16.70	17.86	34.56
(b) Capital	1.30		1.30	1.30	-	1.30	0.40	0.00	0.40
Total (a) + (b)	15.30	17.11	32.41	18.30	17.03	35.33	17.10	17.86	34.96
(iii) Grants to MECL	11.00		11.00	11.00	-	11.00	12.00	-	12.00
(iv) Grants to BGML	-	1.46	1.46	-	1.86	1.86	-	2.01	2.01
(v) Science & Technology	3.00	2.70	5.70	2.99	2.70	5.69	3.00	2.80	5.80
(vi) International Cooperation	-	0.28	0.28		0.28	0.28		0.28	0.28



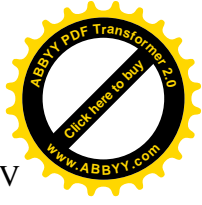
		BE 2007-2008			RE 2007-2008			BE 2008-2009		
		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
	1	2	3	4	5	6	7	8	9	10
	(vii)National Mineral Awards	-	0.35	0.35		0.35	0.35		0.35	0.35
	Total: Survey, Exploration, Regulation & Development of Mines	140.00	226.04	366.04	176.99	225.93	402.92	176.10	234.88	410.98
5.	Lump sum provision to North Eastern Region & Sikkim									
	(i) Geological Survey of India	12.30		12.30	12.30		12.30	16.00		16.00
	(ii) Indian Bureau of Mines	1.70		1.70	1.70		1.70	1.90		1.90
	Total: Lump sum provision to North Eastern Region & Sikkim	14.00		14.00	14.00		14.00	17.90		17.90
	Grand Total :	154.00	235.70	389.70	191.00	798.53	989.53	194.00	245.00	439.00



ANNUAL PLAN 2008-2009

The PSUs/Organisation-wise distribution of Approved Outlay for Annual Plan 2008-09 showing Internal Resources (IR), Extra Budgetary Resources(EBR), Gross Budget Support (GBS), Net Budget Support(NBS)and NER is given below:-

S.No.	Orgnisation	OUTLAY	IR	EBR	G.B.S.	Rs. in Crore	
						N.B.S.	NER
1	National Aluminium Company Ltd.	1888.00	1738.00	150.00	0.00	0.00	
					0.00	0.00	
2	Hindustan Copper Ltd.	60.00	60.00				
3	Mineral Exploration Corporation Ltd.						
	- Promotional	12.00			12.00	12.00	
	- Capital	8.00	8.00		0.00	0.00	
4	Geological Survey of India	160.00			160.00	160.00	16.00
	Construction	5.00			5.00	5.00	
5	Indian Bureau of Mines	19.00			19.00	19.00	1.90
	Construction	1.00			1.00	1.00	
6	Science & Technology	7.00	3.62	0.38	3.00	3.00	
	Total :	2160.00	1809.62	150.38	200.00	200.00	17.90



B Position of utilization certificates

As on 31.12.2007, there are 3 pending Utilisation Certificates(Ucs) amounting to Rs.45.70 lakhs.

C.Unspent balances with the State Government and other implementation agencies as on 31.12.2007

Part-A Unspent balance with State Governments

(Rs. in crore)

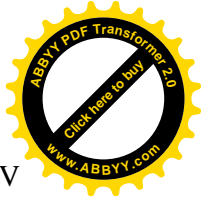
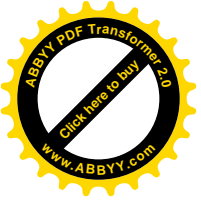
Item as shown in the Statement of Budget Estimates (Exp. Budget Vol. II)	Name of the State							
	AP	....	....	....	....	West Bengal	NCT of Delhi	Pondichery
NIL								

Part-B Unspent balance with State Governments

(Rs. In crore)

Item as shown in the Statement of Budget Estimates (Exp. Budget Vol. II)	Name of the State							
	AP	....	....	....	....	West Bengal	NCT of Delhi	Pondichery
NIL								

Note: The “Implementation Agencies here would refer to those entities other than State Government, which received the funds directly from the Ministry/Department.



Part-C Unspent balance with State Governments

However there are some PSU to whom grant/equity/loan are given:-

(Rs. in crore)

	Unspent balance grant of last years	Grant released in 2007-08	Unspent balance for quarter ending 31.12.2006
Grant to HCL(Non-Plan Expenditure)	Nil	Nil	Nil
HCL(renewal and replacement- Plan Expenditure	Nil	Nil	Nil
Grant to BGML	69.95*	Nil	4.65
MECL (Equity)	Nil	Nil	Nil
MECL (Promotional)	Nil	7.59	3.00

- includes Rs.67.80 crores released in March,2007 for settlement of employees under STBP schemes and Rs 1.61 crores released under BE 2006-07



CHAPTER -VI

REVIEW OF PERFORMAMNCE OF STATUTORY AND AUTONOMOUS BODIES

Centre of Excellence

Three Centers of excellence viz (a) National Institute of Rock Mechanics (Ground Controls and Rock Mechanics) (b) Jawahar Lal Nehru Research Development and Design Centre (Bauxite, Alumina and Aluminium) and (c) National Institute of Miner's Health have been setup. Their activities are highlighted below:

National Institute of Rock Mechanics(NIRM):

National Institute of Rock Mechanics:- was registered as a society in July 1988 to conduct research, render guidance and provide consultancy in mining and civil engineering sectors. NIRM has been accredited as ISO 9001 organization in August, 2002.

NIRM has been carrying out quality research work through both government-funded and industry-sponsored S&T and consultancy projects. The Institute has been extending its R&D support to the mining sector (both coal and metal mine), hydroelectric and tunneling sector, and other civil construction projects pertaining to infrastructure development. The support to these industries are primarily confined to the following areas :

- Geotechnical studies
- Ground control investigations
- Geophysical investigations for site characterisation
- Numerical modelling and
- Laboratory testing of samples.

Apart from them, support is also extended in the discipline of environmental studies, exploitation of dimensional stones and seismological studies.

Geotechnical investigations are required in all major projects where rock excavation is involved in complex geological settings like in dam foundation, tunnel construction, cavern construction, underground and open cast mining, and slope stabilization. During the year, ins-situ investigations involving parametric determination of horizontal and vertical stresses, deformability and shear parameters were determined at the following sites : -

1. Punatsangchhu hydroelectric project, Bhutan
2. Palamaneri hydroelectric project, Uttranchal
3. Dibang multipurpose project, Arunanchal Pradesh, and
4. Malana hydroelectric project, Himachal Pradesh



In all these cases plate load test was carried out to arrive at the deformability curve and empirical relationship was derived for horizontal and vertical stresses vs. depth.

Ground Control Investigations are required for the design of any excavation in the mining or civil engineering industry where it is essential to know the type and nature of the rock being dealt with. The first step in this direction is the application of appropriate rock mass classification systems. During the year, the institute carried out mapping of discontinuities, design the support measures, stability analysis and feasibility studies on innovative mining techniques under difficult geomining conditions.

In one of the prominent project of the South Asia LPG Company Private Limited (SALPG) at Visakhapatnam, NIRM carried out investigations with extensive mapping of rock joints and discontinuities. The permanent support system was recommended for the operation Shaft and access Shaft as well as all associated construction for them like water curtain galleries, access ramps, cavern main galleries, for both the shafts based on rock mass classification system.

In coal mines, investigations were made at the SCCL and WCL for varieties of technology intensive projects involving optimization of pillar dimensions in steeply inclined seams, caveability of the roof strata in longwall panels, introduction of continuous miners and stability of rhombus shaped pillars. In all these cases, recommendations were made based on the analysis of continuous monitoring of strata behaviour and numerical modelling. Studies were also carried out to design the support system in various mines of SCCL where adverse roof fall problems were encountered.

In addition, instrumentation and monitoring was done for a series of excavations in mining and hydel projects for their stability analysis. Prominent among them include ground stability studies in the Hutti Gold Mines, longwall, blasting gallery, wide-stall and bord & pillar Depillaring panels in the coal mines of SCCL and underground excavations at the Larji Hydel project, HP. A Strata Monitoring Data Bank is under preparation for statistical analysis of strata behaviour under various subsurface conditions. In addition, slope stability studies were carried out for designing the ultimate angle of the pit slopes in the opencast mines of of the Mysore Minerals Ltd. (MML), in Sandur taluk, Bellary district, Karnataka.

In the area of engineering geophysical investigations, mapping of the subsurface using refraction, reflection, sounding and cross-hole tomographic techniques are done. During the period, investigations were continued for mapping subsurface profile at tunnel portals and bridge abutments for Katra-Quazigund rail-link project of Northern Railway. Seismic survey was laso done for mapping bed rock profile at Tessta State-II and Stage-VI project in Sikim. In total 35km of profiling was done during the year.

In one of the important areas of NDE, 3.2, mapping of oil leak flow path in the HGIL area of MRPL using GPR in which the GPR survey was carried out from the exit point and oil flow was traced back at various benched within the MRPL boundary.

In yet another landmark work, seismic tomography was carried out for mapping subsurface along the axis of the diaphragm wall at Teesta Satge-III HEP, Sikkim, The results of seismic tomography showed that the geological profile is hard rock is shallower than what projected in GSI. It was suspected that there might be some shear plane in the area for which shear wave survey was recommended.

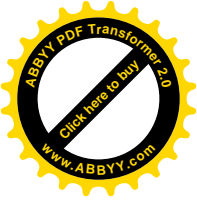


In the area of seismological investigations, monitoring in the KGF mining regime was continued with the broad-band station under DST project. During last year, 374 events were recorded by the strong motion seismograph. Under S&T project of DST, source parameters of Seismic events in Kolar Gold Fields were studied in which over hundred rockburst signal from different mining regions were digitized. Under environmental geotechnological studies, two in-house projects were completed on the feasibility of making bricks from hazardous mill tailings of KGF and assessment of dust and meteorological parameters at NIRM premises. Investigation is in progress on Study on blasting dust management system in an open cast coal mine under a coal S&T project. In the area of dimensional stone technology, the Institute is assisting the industry in quarrying, optimum recovery and economic exploitation of granite and other dimensional stones. In this year, the Institute conducted a training Programme on Scientific Quarrying & Production at Madurai and at NIRM. In addition, technical assistance was provided in setting up of a Test House at Jaipur. Technical assistance was also provided to the quarrying industries at Karnataka

In the area of numerical modelling, the Institute has expertise in the stress analysis and support design for tunnels, large underground excavations, storage caverns, rock-liner interaction analysis for pressure shafts, coupled thermo-hydro-mechanical analysis of the rock mass, dynamic analysis including seismic and liquefaction behavior Stability analysis of earth dams and slopes by using 2D and 3D software. Apart from this, studies were also carried on the instrumentation and monitoring of prestigious excavations for their stability analysis. Important of them include instrumentation, monitoring and Data Analysis of Underground Powerhouse Complex, Desilting Chambers of Tala Project, Bhutan, where monitoring was done for five years for all major excavations. Similarly, deformation monitoring was carried out for the underground powerhouse cavern of the Sardar Sarovar Project, Gujarat to monitor the wall movement, for machine hall and desilting Complex of NJHEP, SJVNL, Shimla for calibrating the predicted model and for analysing the stability of the cavern. In the machine hall and transformer cavern of PUSHEP, TNEB, Chennai, the instrumentation results showed that there was no movement of the walls and no buildup of pore water pressure at any locations.

The Institute provides solutions to challenging problems in blasting for various mining and civil engineering projects to optimise blast design parameters for surface and underground excavations. During the year, the Institute assisted in executing some of the major controlled blasting operations. As regards services, rock testing was done as per ISRM standarda for a number of user industries including RITES, India Cements, L& T Limited, Vijayanagar Minerlas Pvt.Ltd, Bellary, Hydro Engineering , Nepal, Advanced Mining Technolgy, Sri Vishnu International., SCCL and SECON. Material testing on wire-rope and in-situ NDT testing was done using ultrasonic detectors.

During the year 2005-06, the Institute registered an external cash flow of Rs. 358.00 lacs in the year 2005-06. During this period, R&D work was carried out in 10 S&T projects and 40 industry sponsored projects. By the end of the year, investigations were completed for 25 projects and the work is continuing for other 20 projects. In total, 15 technical papers were published during the year and NIRM organized two training courses. Besides, Scientists were invited to deliver talks and lectures at different fora.



Finance

A provision of Rs. 52 lakhs under plan and Rs. 105 lakhs under Non-plan has been made for the year 2007-08.

Jawaharlal Nehru Aluminum Research Development & Design Centre (JNARDDC):

JNARDDC was registered as a society in 1987. The objective of the Centre is to assimilate the technology available in the country and abroad for the production of alumina & aluminum including aluminium alloys as well as develop technical know-how for the basic engineering process and downstream areas. The centre also provides technological support for setting up Alumina refinery in the country. Furthermore the Centre caters to the R&D needs of Primary Producers.

With a total strength of 48 employees (including 20 Scientists), during April-December, 2007 the Centre has completed five national projects. Subsequently five projects are under implementation. The Centre has been awarded an International Thermography Project by Aquaba Container Terminal, Jordan. JNARDDC has also got excellent response in the field of organizing Training Programmes. The Centre is successfully providing Training on “Aluminium Technology” for NALCO, Angul Operators. The Training programme is expected to generate about Rupees One Crore revenue to the Centre over the next two years.

The Scientists of the Centre have published technical papers in 4 international & 5 national journals. One Senior Scientist was nominated by United Nations as a UNIDO expert for setting up a Metallurgical Laboratory in Libya, May,2007. Another Scientist was nominated as a member for Editorial Board and a peer reviewer, for Journal of Chromatographic Science, USA.

JNARDDC has been nominated as the nodal agency from India for activities on red mud utilisation and high silica bauxite in the seven nation Asia-Pacific Partnership Programme (AP-7).

Several projects are under negotiation with international companies like RUSAL-VAMI Russia, BHP Billiton Australia, SECAT-USA etc.

Finance

An income of Rs. 105.00 lakhs was generated till December, 2007. This is the highest internal revenue generation by the Centre during the last five years. During 2007-08, a budget support of Rs. 100 lakhs (Plan) and Rs. 120 lakhs (Non-Plan) has been provided.

National Institute of Miners' Health(NIMH):-

National Institute of Miners' Health: was registered as an autonomous society in February, 1990 to address exclusively the Occupational Health problems of miners due to their long exposure to the mining environment. The Central laboratory of the Institute at JNARDDC campus Nagpur has become functional on 16th July 2002. Pursuing its vision of “Safe Mines



and Healthy Miners”, the Institute has carried out following work in the year 2007-08 with total staff strength of 16 (including 2 administrative staff):

I Environmental Monitoring studies in Mines

During the year 2007-08, NIMH has conducted Environmental Monitoring studies in 1 mine of National Mineral Development Corporation Limited (NMDC), 1 mine of National Aluminium Company Limited (NALCO), 1 mine of NLC and 2 mines of ACC Limited. The Institute has collected and analyzed 53 samples of dust, noise and whole body vibration from an opencast coal mine for environmental risk assessment under S & T project sponsored by the Ministry of Mines.

During the above studies, NIMH had collected and studied 105 samples for respirable dust concentration and free silica analysis, 78 samples for Area Noise survey and Personal Noise Dozimetry and 57 samples for Whole Body Vibration. The total number of samples collected and analyzed was 240.

The Institute carried out a study on the noise hazard of chain firecrackers used extensively during festivals. The study was sponsored by Citizen Forum of Nagpur.

Findings of the all the above studies sponsored by the clientele organization have been submitted to the respective organizations. Preparation of the report of S & T Project is in progress.

II S & T project of Coal - Phase I

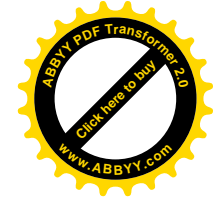
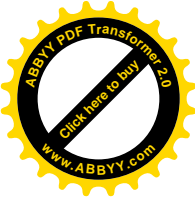
The project on coal started at Western Coal Fields Limited (WCL). Baseline data of 1553 employees working in Nagpur area of WCL was collected and compiled. On the basis of the baseline studies, detailed medical examination of a sub-sample of 280 employees for audiometric, spirometry, hematology and biochemical variables has been completed.

Data analysis and interpretation of respirable dust survey, area noise monitoring, personal noise dose monitoring and human whole body vibration samples collected from Kamptee opencast mine of WCL has been completed.

The remaining phase of the project will focus on the environmental and health aspects in Aluminium and Zinc Mines.

III Human Resource Development and consultancy services

1. NIMH provided consultancy services including training to the staff of M/S Startech 2Laboratories, Hyderabad in observing statutory regulations while monitoring environmental parameters in mines.



2. B.B. Mandal, Senior Research Officer of NIMH delivered lecture on invitation at the Visvesvaraya National Institute of Technology (VNIT), Nagpur on “Human response to mechanical vibration” in March 2007
3. Dr. Anand Kamavisdar participated in G8 UNESCO World Forum on “Education, research and Innovation: New partnership for sustainable development in Trieste, Italy from 10th to 12th May 2007.
4. During the year, NIMH staff participated in training workshops, seminars, symposia on ILO Classification 2000 of chest radiographs, Biomedical Communication, Ion Chromatography, & Environmental Health and Safety.

IV Publications

5. Anand Kamavisdar, Rajmani Patel and Shitkanth R. Khanwalkar, Physico-chemical characteristics of water samples from iron ore mining belt of Central India, 41st IUPAC Congress Torino (Italy) August 5-10, 2007.
6. Mandal B.B. and Thote N.R. Environmental health risk due to vibration exposure in mining and analytical tools for assessment of its severity. Proceedings of National Seminar on Future of coal - Integrated approach. CIROWA, Nagpur. April 2007.
7. Mandal B.B. and Thote N.R., 2007 (September). Health impact assessment of vibration exposure in the context of technology up gradation in mining industry. Proceedings of the National seminar on emerging trends in mining technology, Department of Mining Engineering, VNIT, Nagpur.
8. Zade P.D. and Dharmadhikari D.M. Structural and electrical properties of mercury ferrite (in detail). Proceedings of International Conference on Material Science and Technology, MS & T 2007, Cobo Centre, Michigan, USA. May-2007.
9. Zade P.D. and Dharmadhikari D.M. and Kulkarni D.K. Structural and electrical properties of mercuric ferrite. Proceedings of National conference on Material Research and Advanced Technology, (NCMRAT- 2007), Dept. of Physics, Aurangabad University, Aurangabad, MS, India. January-2007
10. Zade P.D. and Dharmadhikari D.M. Removal of arsenic as arsenite from groundwater/wastewater as stable metal ferrite. Accepted in Journal of Environmental Science and Health- Part A, USA. June-2007.
11. Narwadiya S.C, Saoji S.V, Dhumne U. L, Sahare K.N, Meshram V.G, Tumane P.M. Activity against Mycobacterium tuberculosis of plants extracts from Indian habitat to treat tuberculosis. Diamond jubilee celebrations and National Conference on Current Trends in Biochemistry, Nagpur University, Nagpur. (27-29 Dec. 2007)
12. Narwadiya S.C, Dhumne U. L, Meshram V.G, Tumane P.M. Occurrence of Enzyme level changes in Tuberculosis patient after Chemotherapy. Diamond jubilee celebrations and National Conference on Current Trends in Biochemistry, Nagpur University. Nagpur (27-29 Dec. 2007).

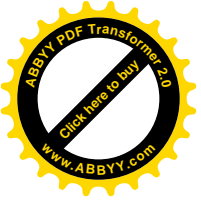


V Projects in Pipeline

1. Respirable dust survey with free silica analysis - Work Order for second season received from Donimalai Iron-ore Mines of NMDC
2. Respirable dust survey with free silica analysis - Work Order for second season received from Rajanka Limestone Mines of NMDC
3. Respirable dust survey with free silica analysis - NIMH has received project offers from
 - a. Wadi Limestone Mines,
 - b. Lakheri Cement works
 - c. Madhukarai lime stone mines and
 - d. Keymore Cement Works of ACC Limited.
4. Institute has received offers for conducting occupational health studies of employees working in NALCO and in Lakheri cement works of ACC Limited.

VI Finance

A provision of Rs. 20 lakhs under plan and Rs. 45 lakhs under Non-plan has been made for the year 2007-08.



Annexure-I

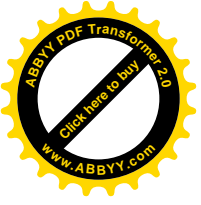
OUTCOME BUDGET 2008-09

(Rs. in lakhs)

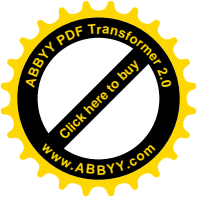
S. No.	Name of Scheme/ Programme	Objective/ Outcome	Outlay 2008-09			Quantifiable Deliverables/ Physical Outputs	Projected Outcomes	Processes/ Timelines	Remarks/ Risk Factors
			4(i) Non-Plan	4(ii) Plan	4(iii) Complementary Extra Budgetary Resources				
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
1.	Geological Survey of India								
	(i) Survey & Mapping	Creation and updating of national geoscientific information and knowledge base through ground, marine and airborne surveys	-	4515.00	-	(i) Systematic Geological Mapping(in sqkm.) 600 (ii) Specialised Thematic Mapping(in sq.kms.) 6000 (iii) Geochemical Mapping(in sq.kms.) 25000	Furnished in Appendix.-I item(a)	Continuation of Schemes from the last Financial Year (2007-08) and the quantified outputs will be completed as per schedule.	There may be shortfall due to following reasons: ➤ Age of the Blue Water Research Vessel and Geotechnical Vessels



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						(iv) Geophysical Mapping (in sq.kms.) 20000 (v) Multisensor Survey (in lkm.) 28000 Marine Survey: Parametric Studies within EEZ & beyond a) Bathymetry (lkm) 10000 b) Magnetic (lkm) 10000 (vi) Systematic Coverage within TW (Sqkm) 2500+ Parametric Surveys			<ul style="list-style-type: none"> ➤ MOD & DGCA clearance for Airborne Surveys ➤ Forest Clearance ➤ Change of Thrust Areas, if any, as per the Govt. directives
	(ii) Mineral Exploration	Identification as well as preliminary assessment of the mineral resources.		2170.00		(i) Large Scale Mapping (sqkm) 1000 (ii) Detailed Mapping (sqkm) 35 (iii) Drilling (m) 75000	Furnished in Appendix.-I item (b)	-do-	
	(iii) Specialised Investigation	Geoscientific input to water resource development, transport and miscellaneous civil engineering		272.00		(in nos.) 90	Furnished in Appendix.-I item (c)	-do-	



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		<p>projects. Geo-environmental investigations for both regional and site specific studies. Greater emphasis on natural hazard studies and disaster management including earthquake and landslide zonation studies.</p>							
	(iv) Research & Development and other Exploration	<p>Study of Antarctic Continent Petrology, Palaeontology, Geochronology, Photo Geology and Remote Sensing etc. for support to</p>		637.00		<p>(in sq.km. (1:50,000 scale) 1000 (in nos.)65</p>	Furnished in Appendix.-I item(d)	-do-	



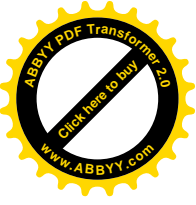
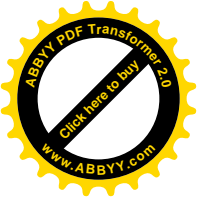
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		various ongoing projects and to sort out the identified problems.							
	(v) Information Dissemination	Computerised archival, analyses, retrieval of geoscientific data and creation of theme-based relational database. Dissemination of data through maps, publications, customization etc.		1396.00		(in nos.)40	Furnished in Appendix.-I item (e)	-do-	
	(vi)Human Resources Development	Training in specialised fields for upgradation of technology and expertise.		260.00		(No. of Types/No. of courses)30 (35courses)	Furnished in Appendix.-I item(f)	-do-	
	(vii)Modern	Modernisation		5150.00		-	Furnished in	-do-	



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	-isation and Replace-ment	and expansion of laboratories and survey facilities aiming at refurbishing and upgrading the in-house capabilities of GSI.					Appendix.-I item(g)		
	(vii)Pro- vision for NER	Development of North Eastern Areas		1600.00		1.Survey Mapping :i)Systematic Geological Mapping (sq.km.) 665 ii) Specialised Thematic Mapping (in sqkm) 375 iii) Geochemical Mapping (in sqkm)1992 iv) Geophysical Mapping (in sqkm) 1400 2.Mineral Exploration (i)Large Scale Mapping (sq.km)3.00 (ii)Detailed Mapping (sq.km.)1.00 (iii)Drilling			



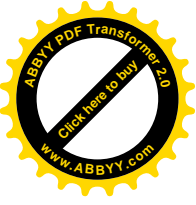
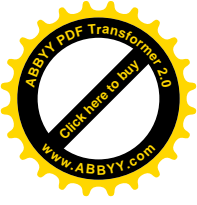
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						(metre)1000			
		Total: (GSI) Plan		16000.00					
	This is for maintaining basic administrative expenses of GSI.		21158.00						
		Total:(GSI) Non-Plan	21158.00						
		Total: GSI	21158.00	16000.00					
2	Mineral Exploration Corporation Ltd.								
	(i) Promotional	Proving of Mineral Reserves		1200.00		i) Drilling : 15500 mts ii)Associated geological activities (mapping, survey, sampling, analysis, geological	Preparation and submission of Geological reports incorporating delineation of structure of ore	1 to 1.5 years for physical work & submission of report.	Wherever, the mineral prospects are located in forest area and the exploration shall be taken up



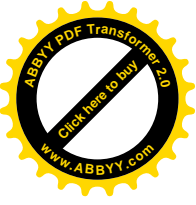
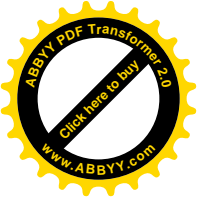
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						report and ore body modelling.	body along with geological reserves.		subject to necessary forest clearance.
	(ii)Capital				800.00	Replacement of plants & equipment.	To improve the productivity and performance.	One year	Action initiated for gainful utilisation of fund.
		Total: MECL		1200.00	800.00				
3	Indian Bureau of Mines								
	1.Inspection of mines for scientific and systematic mining, mineral conservation and mines	To ensure systematic and sustainable development of mineral resources, promotion of conservation of minerals,		623.00		For enforcement of MCDR and approval of Mining Plans/Scheme of Mining, 2000 mines will be inspected and 12 Regional Mining Geological Studies will be carried out. Outcome of this scheme is systematic & scientific	It is a continuous process for achieving scientific & systematic mining, mineral conservation, community development	Inspection of 2000 mines and 12 Regional Mining Geological Studies will be completed	All the activities under various schemes/ programmes of IBM are in accordance with its charter of functions notified by the Government on



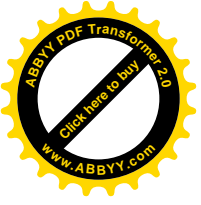
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	environ- ment.	protection of mine environment through statutory enforcement of MM(D&R) Act 1957, MCDR 1988 and relevant portions of MCR 1960 and community development in mining areas, by carrying out regular inspections/studies of mines, other than coal, petroleum & natural gas, atomic minerals & minor minerals				development of mineral deposits, conservation of minerals, protection of environment and sustainable closure of mines. For this purpose mining plans, scheme of mining & mine closure plans, prepared by the lessees are being approved by IBM and are being monitored for their effective implementation. Community development activities carried out by the mining industry in the mining areas will also be covered during inspections/ studies of mines.	and protection of mines environment, through progressively better compliance of statutory provisions.	during the year 2008-09.	6 th March 2003. Fulfillment of the target is subject to the availability of existing strength of inspecting officers, throughout the year.
	2.Mineral beneficia-	To ensure value addition		531.00		The activities under this scheme are carried	It is a continuous	All these activities	Fulfillment of the target is



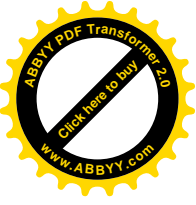
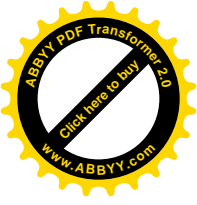
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	tion studies utilization of low grade and sub grade ores and analysis of environmental samples	to the low grade ores, which are otherwise going as wastes and to help directly or indirectly to the mineral industry for optimum exploitation of mineral resources of the country. Further, analysis of air, water, solid wastes etc. for monitoring of mine effluent parameters are also being carried out.				out in IBM's 3 laboratories and pilot plant situated at Nagpur, Ajmer and Bangalore. In these three laboratories 60 Ore Dressing Investigations, 40,000 Chemical Analysis and 2,000 Mineralogical Examinations will be conducted. Besides, in-plant studies will be carried out as and when required. Clay testing laboratory at Kolkata will be made functional. S & T Project on "Recovery of ilmenite, rutile, zircon, sillimanite and garnet from beach sand" will also be taken up. Most of the mineral deposits found in nature fall short of the grade required by consuming industries and therefore needs	process for upgrading low grades minerals and assist the industry particularly the small mine owners and monitoring of mine effluent parameters.	except S&T Project on "Recovery of ilmenite, rutile, zircon, sillimanite and garnet from beach sand" will be completed during the year 2008-09.	subject to the availability of existing strength of officers & staff, throughout the year.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						upgradation by ore dressing process to suggest ways & means for their economic utilization, as a part of conservation studies.			
	3.Technological upgradation & Modernization	To estimate the National Mineral Reserves & Preparation of Mineral Maps with forest overlays, to ensure development of new mining methods, scientific and systematic development of mineral resources, including environmental management of mines, to develop human resources and infrastructure.		312.00		Updation of NMI as on 1-4-2005- Handbook on National Mineral Inventory as on 1-4-2005 will be prepared. Updation of data on RP areas granted & monitoring progress of PL/ML granted 100 Multi-Mineral Maps along with forest overlays in respect of Rajasthan will be prepared. Technical Consultancy Services - 5-7 Mining/Geological Assignments will be completed. Mining Research Assignments : 02 Environmental/ ground vibration studies and 02 geo-technical investigations	Updated NMI as per UNFC will facilitate planners to formulate plans and strategies for exploration & exploitation of mineral deposits and entrepreneurs to make investment decisions. Mineral maps with forest overlays will have special significance for chalking out all future plans for ecological sustainable development. Consultancy/ Mining research	All these activities will be completed during the year 2008-09.	Completion of multi mineral leasehold maps along with forest overlays is subject to the timely availability of forest maps from Forest Survey of India.



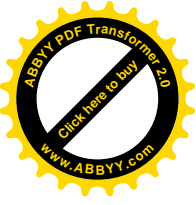
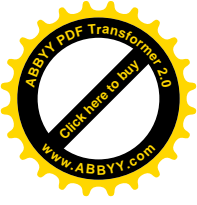
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						<p>will be completed. Training - 16 courses will be conducted . The outcome of this scheme is to benefit mineral industry through its scientific, techno-economic, research oriented studies and training on various aspects of mining, geology, ore beneficiation and environment to ensure R&D efforts on sustainable mine development with protection of environment & pollution control. Further, the outcome for this scheme is to update the National Mineral Reserves & Preparation of Mineral Maps with forest overlays for their proper exploration & exploitation..</p>	<p>assignments will ensure scientific and systematic development of mineral resources including environmental management of mines. Training programmes on various aspects of mining, geology, ore beneficiation and environment will improve the skill and knowledge of those engaged in the mineral industry. .</p>		



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	4.Collection processing, dissemination of data on mines and minerals through various publications	To collect data on mines and minerals through statutory returns and other means with a view to process, analyze and disseminate the data through various statistical and technical publications.		134.00		Following publications will be prepared / released : i) Monthly Statistics of Mineral Production - 12 issues (Jan-Dec.2008) ii) Indian Mineral Industry at a Glance - 01 issue. iii) Statistical Profile of Minerals - 01 issue. iv) Bulletin on Mineral Information - (Oct. 06- March 07 and April-Sept.07) v) Bulletin on Mining Leases, P.L. & RPs, 2007. vi) Directory of Mines as on 31.3.2008. vii) Directory of Mining Leases as on 31.3.2008. viii) Indian Minerals Year Book 2007. ix) Directory of Mineral Consumers in India. x) Monograph on chromite.	It is a continuous process for dissemination of data on mines and minerals through various statistical and technical publications.	All these publications will be prepared / released during the year 2008-09.	In addition to collection of data from statutory sources, IBM also collects data from other sources like all State Govts., DGCI & S, Kolkata, Coal Controller, Kolkata, Ministry of Petroleum & Natural Gas, Ministry of Commerce & Industry, Ministry of Steel, New Delhi, DGMS etc.. Therefore completion of these publications are subject to timely receipt of data from these sources.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						<p>xi) Bulletin on Recent Developments in Explosives & Blasting Technology.</p> <p>xii) Bulletin on Application of Rock Mechanics in surface and underground excavations.</p> <p>xiii) Market survey on Copper, Lead & Zinc. (Drafting will be initiated)</p> <p>The outcome for this scheme is to create database on mines and minerals and to disseminate data through various statistical and technical publications, which are very much useful for planning and taking policy decision by Govt. and mineral industry. The entire mining industry and concerned Govt. departments look to IBM as the agency for providing statistical &</p>			



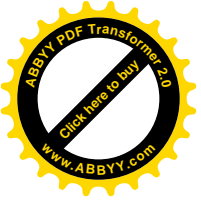
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	5. Management of Solid Waste from Mining in India	To consider environmental related problems in different geo-morphological situations to bring out economically viable solutions of managing wastes.		60.00		<p>other related information on mining and mineral industries in the Country. IBM has also been recognized as one of the sub-system of National Information system of science and technology (NISSAT).</p> <p>Preliminary work connected with mines site visit by IBM - Global Consultant, site visit by IBM - Global Consultant, training abroad for IBM officials, equipment selection, calling quotations, preparation of format to obtain information on solid waste and waste characterization, initiation of activities for procurement of equipment and satellite imagery, mine site broad inventory &</p>	Development of human resources for management of solid waste in different geo-morpho-logical situations, inventory on mining waste, etc.	Scheme is to be completed in 36 months from the kick off date.	Discussions are in progress for finalization of expression of interest for appointing Global Consultant as submitted to the Ministry for approval. Further, SFC approval is awaited.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	6.Computer -ised Online Register on Mining Tenement System	To develop an Online National Mineral Information System by linking Central and State Govt. organizations engaged in administration of mineral resources (excluding atomic minerals, oil and natural gas) in the Country.		50.00		waste stream characterization. Procurement and installation of hardware and basic software, development of software and linking the same with existing data base system (TMIS) available with IBM. Digitization of village maps of mineral rich states, displaying the information pertaining to mining tenements in graphical form and other details in textual form.	Development of an online National Mineral Information System.	Scheme is to be completed in 30 months from the kick off. date.	Discussions are in progress for finalization of expression of interest for appointing Global Consultant as submitted to the Ministry for approval. Separate discussions are also going on for making available land records in digitized format. Further, SFC approval is awaited.



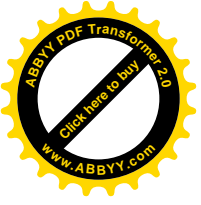
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	7.Provision for NER	Development of mineral sector in NER		190.00		Following activities will be carried out in NE Region: (i) Inspection of Mines for enforcement of provision of MCDR. (ii) Beneficiation tests on low grade ores and minerals. (iii) Extend consultancy services to mining industry as and when request received. (iv) Impart training to personnel of mining industry and State Govts. (v) Providing instruments/ equipment to the state governments of NE States to strengthen	These activities will help to develop the mineral sector in NE Region.	All these activities will be carried out during 2008-09	The outlay is 10% of the annual Plan Budget, and the implementation depends on the requirements as received from the NE States.



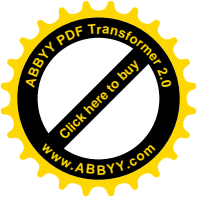
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						their capabilities for development of minerals in their states			
		For maintaining basic administrative expenses of IBM		1786.00					
		Total (IBM Non-Plan)	1786.00	1900.00	-				
		Total (IBM)	1786.00	1900.00	-				
4	Bharat Gold Mines Ltd. For meeting expenses on maintenance of essential services.		201.00			As BGML was closed, therefore, no quantifiable deliverables.			
		Total:BGML	201.00		-				
5	Hindustan								



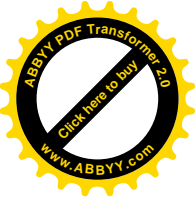
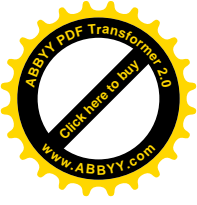
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
.	Copper Ltd.								
	Replace-ment & Renewals	For achieving Maximum utilization of the existing plant and mines machinery by replacement and renewals.			6000.00	The following are the major equipment which have been proposed to be purchased:- 1.Battery Locomotive 2.DTH Machine 3.LHD 4. Major repair of Flash Furnace 5. Rectifier 6. Dumper 7. Engine Transmission 8. Tertiary Crusher 9. Thickened Tailing System.	The replacement and renewal expenditure would be undertaken to maintain the existing level of production/ targetting higher production by maintaining the availability of equipment/ services at mines and plants. HCL has also fixed up higher production targets during 2008-09 at 34400 MT of MIC and 45000 MT	2008-09	Without R&R, the overall production target can not be achieved.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
							of Copper Cathode production as compared to 31000 MT MIC and 40000MT Copper Cathode during 2007-08. With steady operation, efficiency parameters like, recovery, yield and specific consumption of inputs would also improve.		
		Total:HCL			6000.00				
6	Other Programmes: S&T								



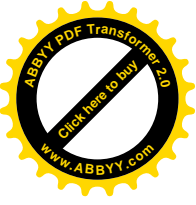
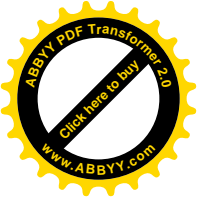
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		Research & Development work on mining & non-ferrous metals.		700.00*		R&D Projects catering to the national requirements and for building the capabilities and strength of the mineral & non-ferrous metals.		Continuous nature of research work.	*(Rs.300.00 lakhs from GBS & Rs.400.00 lakhs from I&EBR)
		Total : (S&T) Plan		700.00					
	For meeting of the salary of three autonomous bodies(JN ARDDC, NIRM & NIMH and for National Mineral Awards.		343.00						
		Total : (S&T) Non-Plan	343.00	700.00					



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
7	National Aluminium Company Ltd.								
	A.Schemes aimed at Maximizing Benefits: Additional/ Modifications/ Renewals/ Replacements (AMRs)	To maintain the production/productivity in different segments of the Company			24100.00	Rated capacity is to be maintained at each of the following major plant Units. Target for major products; Bauxite : 4800000 MT, Alumina : 1575000 MT Aluminium: 352000 MT Power: 5671 MW.		Major addition and replacement of the existing Plant, expected to be completed in the same financial year 2008-09 Major addition and replacement of the existing Plant, expected to be comple-	



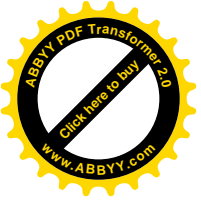
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
								ted in the same financial year 2008-09	
	B.New Schemes: 1.Phase-II Expansion : i) Alumina -4th Stream, ii) Aluminium - 4th Pot Line, iii) IX and X units of CPP	Increase in Capacity : Bauxite Mines 4800000 to 6300000 MT, Alumina Refinery : 1575000 to 2100000 MT Smelter : 345000 to 460000 MT, CPP : 960 MW (120 MW x 8) to 1200 MW (120MW x			160000.00	The project will be completed during the last quarter of the year 2008-09. Production at the following major plant Units :- Bauxite: 125000MT, Alumina:45000MT, Aluminium:7000MT, Power:55MW		Schedule start up date from zero date (26.10.04) Bauxite Mines : 42 Months, Alumina Refinery 46 Months, Smelter : 50 Months, CPP : 47 months.	



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		10)							
	2. Utkal E-Coal	Allotment of a new captive coal mine by GOI to cater to coal requirement of 9th, 10th, 11th and 12th Units of CPP.			3000.00	The project is under implementation and is scheduled to be completed during 2009-10. After completion of the project the coal production will be 2.00 MTPY		The project is scheduled to be completed in FY 2009-10.	
	3. Green field smelter project	Exploring for setting of a Smelter plant to produce Aluminium in the energy rich energy rich countries (Saudi Arabia, Indonesia, South africa Iran) region by utilizing Cheap Gas in setting-up a power plant and utilizing surplus alumina of 1.2			300.00	Only meant for DPR		Completion of project will be known only after preparation of DPR, site selection, feasibility report, PIB clearance, etc.	



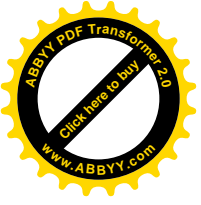
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		Mil.Ton available after 2nd phase expansion.							
	4. Upgradation of Alumina plant	To expand the fourth stream of alumina plant capacity from 5.25 to 7.0 Lakh ton by improving in technology taken from Alumina Pechiney.			500.00	Only meant for preproject activities		Project is likely to be completed by 33 months from Nov.2007.	
	5. Pottangi Mines	To cater the bauxite requirement of the Alumina Refinery when the production from fourth stream is taken off.			400.00	Only meant for preproject activities.		Completion of project will be known only after firm allotment of Mines.	



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	6. IIIrd Phase project	To expand the capacity of Mine, alumina and Smelter by adding another stream and power plant.			500.00	Only meant for preproject activities		Completion of project will be known only preparation of DPR., feasibility report, PIB clearance etc.	
	Total: NALCO				188800.00				
8	Construc-tion	Building construction in Indian Bureau of Mines & Geological Survey of India		600.00		GSI: i)Construction of Training Institute Complex,Bandlaguda, Hyderabad ii)Constr.of Chemical Lab complex including Auditorium-cum-Conference Hall,Guest House and Post Office at Bangalore iii)Constr.office-cum-Lab complex at Shillong			



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						iv) Constr. of Office Buldg. of OP: Tamilnadu, Pondicherry & Kerala v) Purchase of land for office of Guwahati Project, Sikkim IBM :- Constr. of Office Buldg. at Bhubaneswar, Guwahati			
9	Secretariat Proper This provision is for Secretariat expenditure of the Ministry		1012.00	-	-				
		Total: (Sectt. Proper) Non-Plan	1012.00	-	-				
		Grand Total:	24500.00	20000.00	196000.00				

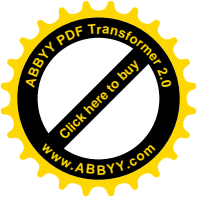


Annexure-I

OUTCOME BUDGET 2008-09

(Rs. in lakhs)

S. No.	Name of Scheme/ Programme	Objective/ Outcome	Outlay 2008-09			Quantifiable Deliverables/ Physical Outputs	Projected Outcomes	Processes/ Timelines	Remarks/ Risk Factors
			4(i) Non-Plan	4(ii) Plan	4(iii) Complementary Extra Budgetary Resources				
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
1.	Geological Survey of India								
	(i) Survey & Mapping	Creation and updating of national geoscientific information and knowledge base through ground, marine and airborne surveys	-	4515.00	-	(i) Systematic Geological Mapping(in sqkm.) 600 (ii) Specialised Thematic Mapping(in sq.kms.) 6000 (iii) Geochemical Mapping(in sq.kms.) 25000	Furnished in Appendix.-I item(a)	Continuation of Schemes from the last Financial Year (2007-08) and the quantified outputs will be completed as per schedule.	There may be shortfall due to following reasons: ➤ Age of the Blue Water Research Vessel and Geotechnical Vessels



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						(iv) Geophysical Mapping (in sq.kms.) 20000 (v) Multisensor Survey (in lkm.) 28000 Marine Survey: Parametric Studies within EEZ & beyond a) Bathymetry (lkm) 10000 b) Magnetic (lkm) 10000 (vi) Systematic Coverage within TW (Sqkm) 2500+ Parametric Surveys			<ul style="list-style-type: none"> ➤ MOD & DGCA clearance for Airborne Surveys ➤ Forest Clearance ➤ Change of Thrust Areas, if any, as per the Govt. directives
	(ii) Mineral Exploration	Identification as well as preliminary assessment of the mineral resources.		2170.00		(i) Large Scale Mapping (sqkm) 1000 (ii) Detailed Mapping (sqkm) 35 (iii) Drilling (m) 75000	Furnished in Appendix.-I item (b)	-do-	
	(iii) Specialised Investigation	Geoscientific input to water resource development, transport and miscellaneous civil engineering		272.00		(in nos.) 90	Furnished in Appendix.-I item (c)	-do-	



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		<p>projects. Geo-environmental investigations for both regional and site specific studies. Greater emphasis on natural hazard studies and disaster management including earthquake and landslide zonation studies.</p>							
	<p>(iv) Research & Development and other Exploration</p>	<p>Study of Antarctic Continent Petrology, Palaeontology, Geochronology, Photo Geology and Remote Sensing etc. for support to</p>		637.00		<p>(in sq.km. (1:50,000 scale) 1000 (in nos.)65</p>	Furnished in Appendix.-I item(d)	-do-	



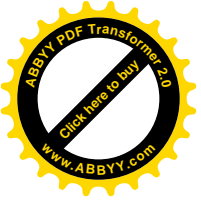
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		various ongoing projects and to sort out the identified problems.							
	(v) Information Dissemination	Computerised archival, analyses, retrieval of geoscientific data and creation of theme-based relational database. Dissemination of data through maps, publications, customization etc.		1396.00		(in nos.)40	Furnished in Appendix.-I item (e)	-do-	
	(vi)Human Resources Development	Training in specialised fields for upgradation of technology and expertise.		260.00		(No. of Types/No. of courses)30 (35courses)	Furnished in Appendix.-I item(f)	-do-	
	(vii)Modern	Modernisation		5150.00		-	Furnished in	-do-	



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	-isation and Replace-ment	and expansion of laboratories and survey facilities aiming at refurbishing and upgrading the in-house capabilities of GSI.					Appendix.-I item(g)		
	(vii)Pro- vision for NER	Development of North Eastern Areas		1600.00		1.Survey Mapping :i)Systematic Geological Mapping (sq.km.) 665 ii) Specialised Thematic Mapping (in sqkm) 375 iii) Geochemical Mapping (in sqkm)1992 iv) Geophysical Mapping (in sqkm) 1400 2.Mineral Exploration (i)Large Scale Mapping (sq.km)3.00 (ii)Detailed Mapping (sq.km.)1.00 (iii)Drilling			



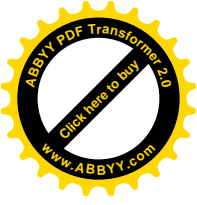
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						(metre)1000			
		Total: (GSI) Plan		16000.00					
	This is for maintaining basic administrative expenses of GSI.		21158.00						
		Total:(GSI) Non-Plan	21158.00						
		Total: GSI	21158.00	16000.00					
2	Mineral Exploration Corporation Ltd.								
	(i) Promotional	Proving of Mineral Reserves		1200.00		i) Drilling : 15500 mts ii)Associated geological activities (mapping, survey, sampling, analysis, geological	Preparation and submission of Geological reports incorporating delineation of structure of ore	1 to 1.5 years for physical work & submission of report.	Wherever, the mineral prospects are located in forest area and the exploration shall be taken up



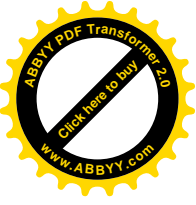
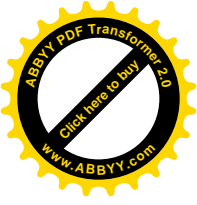
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						report and ore body modelling.	body along with geological reserves.		subject to necessary forest clearance.
	(ii)Capital				800.00	Replacement of plants & equipment.	To improve the productivity and performance.	One year	Action initiated for gainful utilisation of fund.
		Total: MECL		1200.00	800.00				
3	Indian Bureau of Mines								
	1.Inspection of mines for scientific and systematic mining, mineral conservation and mines	To ensure systematic and sustainable development of mineral resources, promotion of conservation of minerals,		623.00		For enforcement of MCDR and approval of Mining Plans/Scheme of Mining, 2000 mines will be inspected and 12 Regional Mining Geological Studies will be carried out. Outcome of this scheme is systematic & scientific	It is a continuous process for achieving scientific & systematic mining, mineral conservation, community development	Inspection of 2000 mines and 12 Regional Mining Geological Studies will be completed	All the activities under various schemes/ programmes of IBM are in accordance with its charter of functions notified by the Government on



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	environ- ment.	protection of mine environment through statutory enforcement of MM(D&R) Act 1957, MCDR 1988 and relevant portions of MCR 1960 and community development in mining areas, by carrying out regular inspections/studies of mines, other than coal, petroleum & natural gas, atomic minerals & minor minerals				development of mineral deposits, conservation of minerals, protection of environment and sustainable closure of mines. For this purpose mining plans, scheme of mining & mine closure plans, prepared by the lessees are being approved by IBM and are being monitored for their effective implementation. Community development activities carried out by the mining industry in the mining areas will also be covered during inspections/ studies of mines.	and protection of mines environment, through progressively better compliance of statutory provisions.	during the year 2008-09.	6 th March 2003. Fulfillment of the target is subject to the availability of existing strength of inspecting officers, throughout the year.
	2.Mineral beneficia-	To ensure value addition		531.00		The activities under this scheme are carried	It is a continuous	All these activities	Fulfillment of the target is



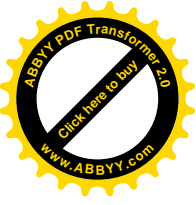
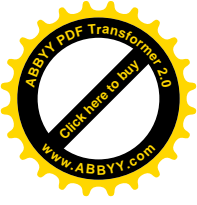
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	tion studies utilization of low grade and sub grade ores and analysis of environmental samples	to the low grade ores, which are otherwise going as wastes and to help directly or indirectly to the mineral industry for optimum exploitation of mineral resources of the country. Further, analysis of air, water, solid wastes etc. for monitoring of mine effluent parameters are also being carried out.				out in IBM's 3 laboratories and pilot plant situated at Nagpur, Ajmer and Bangalore. In these three laboratories 60 Ore Dressing Investigations, 40,000 Chemical Analysis and 2,000 Mineralogical Examinations will be conducted. Besides, in-plant studies will be carried out as and when required. Clay testing laboratory at Kolkata will be made functional. S & T Project on "Recovery of ilmenite, rutile, zircon, sillimanite and garnet from beach sand" will also be taken up. Most of the mineral deposits found in nature fall short of the grade required by consuming industries and therefore needs	process for upgrading low grades minerals and assist the industry particularly the small mine owners and monitoring of mine effluent parameters.	except S&T Project on "Recovery of ilmenite, rutile, zircon, sillimanite and garnet from beach sand" will be completed during the year 2008-09.	subject to the availability of existing strength of officers & staff, throughout the year.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						upgradation by ore dressing process to suggest ways & means for their economic utilization, as a part of conservation studies.			
	3.Technological upgradation & Modernization	To estimate the National Mineral Reserves & Preparation of Mineral Maps with forest overlays, to ensure development of new mining methods, scientific and systematic development of mineral resources, including environmental management of mines, to develop human resources and infrastructure.		312.00		Updation of NMI as on 1-4-2005- Handbook on National Mineral Inventory as on 1-4-2005 will be prepared. Updation of data on RP areas granted & monitoring progress of PL/ML granted 100 Multi-Mineral Maps along with forest overlays in respect of Rajasthan will be prepared. Technical Consultancy Services - 5-7 Mining/Geological Assignments will be completed. Mining Research Assignments : 02 Environmental/ ground vibration studies and 02 geo-technical investigations	Updated NMI as per UNFC will facilitate planners to formulate plans and strategies for exploration & exploitation of mineral deposits and entrepreneurs to make investment decisions. Mineral maps with forest overlays will have special significance for chalking out all future plans for ecological sustainable development. Consultancy/ Mining research	All these activities will be completed during the year 2008-09.	Completion of multi mineral leasehold maps along with forest overlays is subject to the timely availability of forest maps from Forest Survey of India.



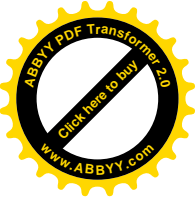
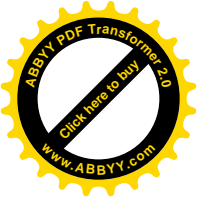
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						<p>will be completed. Training - 16 courses will be conducted . The outcome of this scheme is to benefit mineral industry through its scientific, techno-economic, research oriented studies and training on various aspects of mining, geology, ore beneficiation and environment to ensure R&D efforts on sustainable mine development with protection of environment & pollution control. Further, the outcome for this scheme is to update the National Mineral Reserves & Preparation of Mineral Maps with forest overlays for their proper exploration & exploitation..</p>	<p>assignments will ensure scientific and systematic development of mineral resources including environmental management of mines. Training programmes on various aspects of mining, geology, ore beneficiation and environment will improve the skill and knowledge of those engaged in the mineral industry. .</p>		



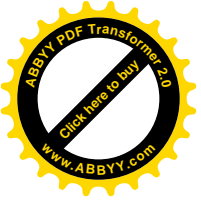
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	4.Collection processing, dissemination of data on mines and minerals through various publications	To collect data on mines and minerals through statutory returns and other means with a view to process, analyze and disseminate the data through various statistical and technical publications.		134.00		Following publications will be prepared / released : i) Monthly Statistics of Mineral Production - 12 issues (Jan-Dec.2008) ii) Indian Mineral Industry at a Glance - 01 issue. iii) Statistical Profile of Minerals - 01 issue. iv) Bulletin on Mineral Information - (Oct. 06- March 07 and April-Sept.07) v) Bulletin on Mining Leases, P.L. & RPs, 2007. vi) Directory of Mines as on 31.3.2008. vii) Directory of Mining Leases as on 31.3.2008. viii) Indian Minerals Year Book 2007. ix) Directory of Mineral Consumers in India. x) Monograph on chromite.	It is a continuous process for dissemination of data on mines and minerals through various statistical and technical publications.	All these publications will be prepared / released during the year 2008-09.	In addition to collection of data from statutory sources, IBM also collects data from other sources like all State Govts., DGCI & S, Kolkata, Coal Controller, Kolkata, Ministry of Petroleum & Natural Gas, Ministry of Commerce & Industry, Ministry of Steel, New Delhi, DGMS etc.. Therefore completion of these publications are subject to timely receipt of data from these sources.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						<p>xi) Bulletin on Recent Developments in Explosives & Blasting Technology.</p> <p>xii) Bulletin on Application of Rock Mechanics in surface and underground excavations.</p> <p>xiii) Market survey on Copper, Lead & Zinc. (Drafting will be initiated)</p> <p>The outcome for this scheme is to create database on mines and minerals and to disseminate data through various statistical and technical publications, which are very much useful for planning and taking policy decision by Govt. and mineral industry. The entire mining industry and concerned Govt. departments look to IBM as the agency for providing statistical &</p>			



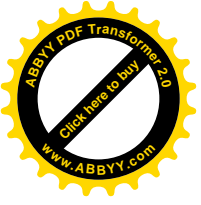
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	5. Management of Solid Waste from Mining in India	To consider environmental related problems in different geo-morphological situations to bring out economically viable solutions of managing wastes.		60.00		<p>other related information on mining and mineral industries in the Country. IBM has also been recognized as one of the sub-system of National Information system of science and technology (NISSAT).</p> <p>Preliminary work connected with mines site visit by IBM - Global Consultant, site visit by IBM - Global Consultant, training abroad for IBM officials, equipment selection, calling quotations, preparation of format to obtain information on solid waste and waste characterization, initiation of activities for procurement of equipment and satellite imagery, mine site broad inventory &</p>	Development of human resources for management of solid waste in different geo-morpho-logical situations, inventory on mining waste, etc.	Scheme is to be completed in 36 months from the kick off date.	Discussions are in progress for finalization of expression of interest for appointing Global Consultant as submitted to the Ministry for approval. Further, SFC approval is awaited.



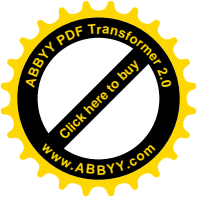
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	6.Computer -ised Online Register on Mining Tenement System	To develop an Online National Mineral Information System by linking Central and State Govt. organizations engaged in administration of mineral resources (excluding atomic minerals, oil and natural gas) in the Country.		50.00		waste stream characterization. Procurement and installation of hardware and basic software, development of software and linking the same with existing data base system (TMIS) available with IBM. Digitization of village maps of mineral rich states, displaying the information pertaining to mining tenements in graphical form and other details in textual form.	Development of an online National Mineral Information System.	Scheme is to be completed in 30 months from the kick off. date.	Discussions are in progress for finalization of expression of interest for appointing Global Consultant as submitted to the Ministry for approval. Separate discussions are also going on for making available land records in digitized format. Further, SFC approval is awaited.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	7.Provision for NER	Development of mineral sector in NER		190.00		Following activities will be carried out in NE Region: (i) Inspection of Mines for enforcement of provision of MCDR. (ii) Beneficiation tests on low grade ores and minerals. (iii) Extend consultancy services to mining industry as and when request received. (iv) Impart training to personnel of mining industry and State Govts. (v) Providing instruments/ equipment to the state governments of NE States to strengthen	These activities will help to develop the mineral sector in NE Region.	All these activities will be carried out during 2008-09	The outlay is 10% of the annual Plan Budget, and the implementation depends on the requirements as received from the NE States.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						their capabilities for development of minerals in their states			
		For maintaining basic administrative expenses of IBM		1786.00					
		Total (IBM Non-Plan)	1786.00	1900.00	-				
		Total (IBM)	1786.00	1900.00	-				
4	Bharat Gold Mines Ltd. For meeting expenses on maintenance of essential services.		201.00			As BGML was closed, therefore, no quantifiable deliverables.			
		Total:BGML	201.00		-				
5	Hindustan								



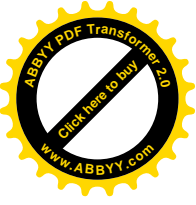
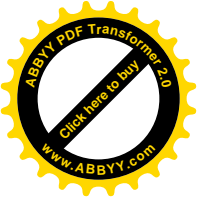
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
.	Copper Ltd.								
	Replace-ment & Renewals	For achieving Maximum utilization of the existing plant and mines machinery by replacement and renewals.			6000.00	The following are the major equipment which have been proposed to be purchased:- 1.Battery Locomotive 2.DTH Machine 3.LHD 4. Major repair of Flash Furnace 5. Rectifier 6. Dumper 7. Engine Transmission 8. Tertiary Crusher 9. Thickened Tailing System.	The replacement and renewal expenditure would be undertaken to maintain the existing level of production/ targetting higher production by maintaining the availability of equipment/ services at mines and plants. HCL has also fixed up higher production targets during 2008-09 at 34400 MT of MIC and 45000 MT	2008-09	Without R&R, the overall production target can not be achieved.



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
							of Copper Cathode production as compared to 31000 MT MIC and 40000MT Copper Cathode during 2007-08. With steady operation, efficiency parameters like, recovery, yield and specific consumption of inputs would also improve.		
		Total:HCL			6000.00				
6	Other Programmes: S&T								



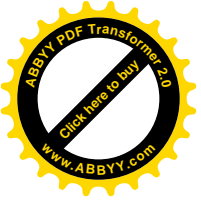
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		Research & Development work on mining & non-ferrous metals.		700.00*		R&D Projects catering to the national requirements and for building the capabilities and strength of the mineral & non-ferrous metals.		Continuous nature of research work.	*(Rs.300.00 lakhs from GBS & Rs.400.00 lakhs from I&EBR)
		Total : (S&T) Plan		700.00					
	For meeting of the salary of three autonomous bodies(JN ARDDC, NIRM & NIMH and for National Mineral Awards.		343.00						
		Total : (S&T) Non-Plan	343.00	700.00					



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
7	National Aluminium Company Ltd.								
	A.Schemes aimed at Maximizing Benefits: Additional/ Modifications/ Renewals/ Replacements (AMRs)	To maintain the production/productivity in different segments of the Company			24100.00	Rated capacity is to be maintained at each of the following major plant Units. Target for major products; Bauxite : 4800000 MT, Alumina : 1575000 MT Aluminium: 352000 MT Power: 5671 MW.		Major addition and replacement of the existing Plant, expected to be completed in the same financial year 2008-09 Major addition and replacement of the existing Plant, expected to be comple-	



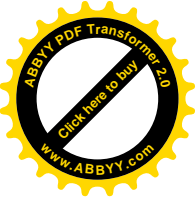
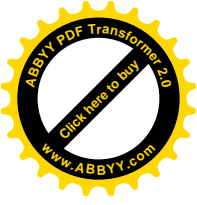
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
								ted in the same financial year 2008-09	
	B.New Schemes: 1.Phase-II Expansion : i) Alumina -4th Stream, ii) Aluminium - 4th Pot Line, iii) IX and X units of CPP	Increase in Capacity : Bauxite Mines 4800000 to 6300000 MT, Alumina Refinery : 1575000 to 2100000 MT Smelter : 345000 to 460000 MT, CPP : 960 MW (120 MW x 8) to 1200 MW (120MW x			160000.00	The project will be completed during the last quarter of the year 2008-09. Production at the following major plant Units :- Bauxite: 125000MT, Alumina:45000MT, Aluminium:7000MT, Power:55MW		Schedule start up date from zero date (26.10.04) Bauxite Mines : 42 Months, Alumina Refinery 46 Months, Smelter : 50 Months, CPP : 47 months.	



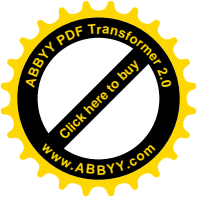
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		10)							
	2. Utkal E-Coal	Allotment of a new captive coal mine by GOI to cater to coal requirement of 9th, 10th, 11th and 12th Units of CPP.			3000.00	The project is under implementation and is scheduled to be completed during 2009-10. After completion of the project the coal production will be 2.00 MTPY		The project is scheduled to be completed in FY 2009-10.	
	3. Green field smelter project	Exploring for setting of a Smelter plant to produce Aluminium in the energy rich energy rich countries (Saudi Arabia, Indonesia, South africa Iran) region by utilizing Cheap Gas in setting-up a power plant and utilizing surplus alumina of 1.2			300.00	Only meant for DPR		Completion of project will be known only after preparation of DPR, site selection, feasibility report, PIB clearance, etc.	



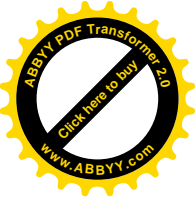
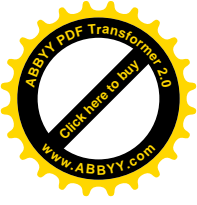
1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
		Mil.Ton available after 2nd phase expansion.							
	4. Upgradation of Alumina plant	To expand the fourth stream of alumina plant capacity from 5.25 to 7.0 Lakh ton by improving in technology taken from Alumina Pechiney.			500.00	Only meant for preproject activities		Project is likely to be completed by 33 months from Nov.2007.	
	5. Pottangi Mines	To cater the bauxite requirement of the Alumina Refinery when the production from fourth stream is taken off.			400.00	Only meant for preproject activities.		Completion of project will be known only after firm allotment of Mines.	



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
	6. IIIrd Phase project	To expand the capacity of Mine, alumina and Smelter by adding another stream and power plant.			500.00	Only meant for preproject activities		Completion of project will be known only preparation of DPR., feasibility report, PIB clearance etc.	
	Total: NALCO				188800.00				
8	Construc-tion	Building construction in Indian Bureau of Mines & Geological Survey of India		600.00		GSI: i)Construction of Training Institute Complex,Bandlaguda, Hyderabad ii)Constr.of Chemical Lab complex including Auditorium-cum-Conference Hall,Guest House and Post Office at Bangalore iii)Constr.office-cum-Lab complex at Shillong			



1	2	3	4(i)	4(ii)	4(iii)	5	6	7	8
						iv) Constr. of Office Buldg. of OP: Tamilnadu, Pondicherry & Kerala v) Purchase of land for office of Guwahati Project, Sikkim IBM :- Constr. of Office Buldg. at Bhubaneswar, Guwahati			
9	Secretariat Proper This provision is for Secretariat expenditure of the Ministry		1012.00	-	-				
		Total: (Sectt. Proper) Non-Plan	1012.00	-	-				
		Grand Total:	24500.00	20000.00	196000.00				



Annexure -II

**DETAILS OF ACTUAL ACHIEVEMENTS VIS.A.VIS. INTENDED OUTCOMES INDICATED IN
OUTCOME BUDGET 2006-07**

(Rs. lakhs)

Sl. No.	Name of the Scheme/ Programme	Objectives/ Outcome	Outlay 2006-07 (BE)	Outlay 2006-07 (RE)	Quantifiable Deliverables	Processes / Timeliness	Achievements	Remarks
1	2	3	4	5	6	7	8	9
1	Geological Survey of India							
	(i) Survey & Mapping	Creation and updating of national geoscientific information and knowledge base through ground, marine and airborne surveys.	3800.00	3770.00	(i) Specialised Thematic Mapping (in sqkm) 8341 (ii) Systematic Geological Mapping (in sqkm) 570 (iii) Geochemical Mapping (in sqkm) 26015.60 (iv) Geophysical Mapping (in sqkm) 18012.05 (v) Multisensor Survey (in lkm) 28000	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs completed as per schedule	(i) Specialised Thematic Mapping (in sqkm) 8043 (ii) Systematic Geological Mapping (in sqkm) 590 (iii) Geochemical Mapping (in sqkm) 24215 (iv) Geophysical Mapping (in sqkm) 16833 (v) Multisensor Survey (in lkm) 28777	Reasons for shortfall in achievement of physical targets: Marine Survey: Shortfall in bathymetry, magnetic due to rough sea condition and shortage of time for collection of ONGC samples. Low progress due to breakdown of the power module of Bathy 2000 Echosounder. Other factors like dry docking, repairing – maintenance of R.V. Samudra Manthan and non-availability of Multibeam Echosounder are responsible for shortfall.



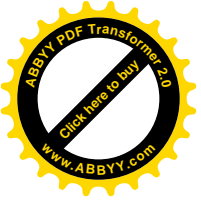
1	2	3	4	5	6	7	8	9
					(vi) Marine Survey : Parametric studies within EEZ & beyond (a)Bathymetry(1km) 10000 (b)Magnetic(1km) 22800 Systematic Coverage within TW(sqkm) 1365		(vi) Marine Survey : Parametric studies within EEZ & beyond (a)Bathymetry(1km) 2631 (b)Magnetic(1km) 2191 Systematic Coverage within TW(sqkm)840	Drilling: Delay in getting/non- availability of forest clearance; major shifting of the drilling units and machinery breakdown; Shortage of manpower.
	2.Mineral Exploration	Identification as well as preliminary assessment of the mineral resources.	2100.00	2083.00	(i)Large Scale Mapping (sqkm)1508.88 (ii)Detailed Mapping(sqkm)26.8835 (iii)Drilling (m)84236.382	Continuation of Schemes from the last Financial Year (2006- 07) and the quantified outputs completed as per schedule	(i)Large Scale Mapping (sqkm)1393.55 (ii)Detailed Mapping(sqkm) 31.957 (iii)Drilling (m)70425.55	Mineral Exploration: LSM: More thrusts have given on the programmes of Detailed Mapping. It has resulted excess in Detailed Mapping (DM) and shortfall in Large Scale Mapping (LSM).



1	2	3	4	5	6	7	8	9
								<p>Geophysical Mapping: Diversion of manpower to Outside Annual, Programme and Shortage of manpower.</p> <p>Geochemical Mapping: Inapproachability in Arunachal Pradesh, Mizoram, Meghalaya and Sikkim; Law and order problem in Bihar, Orissa.</p> <p>Specialised Thematic Mapping (STM): Manpower diverted to priority work of Mineral</p>



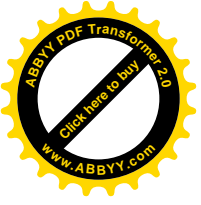
1	2	3	4	5	6	7	8	9
								Exploration Programme.
	3.Specialised Investigation	Geoscientific input to water resource development, transport and miscellaneous civil engineering projects.Geo-environmental investigations for both regional and site specific studies. Greater emphasis on natural hazard studies and disaster	500.00	500.00	(in nos.)92	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs completed as per schedule	(in nos.)92	



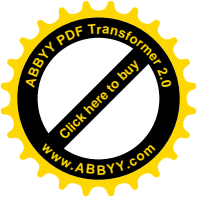
1	2	3	4	5	6	7	8	9
		management including earthquake and landslide zonation studies.						
	4.Research & Deveopment and other Exploration	Study of Antarctic Continent	800.00	800.00	(in sq.km.)(1:50,000 scale) 1000	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs completed as per schedule	(in sq.km.) 50+250*** *** In Antarctic Research, Thematic Mapping taken up on 1:25,000 scale instead of 1:50,000 scale.	
Petrology, Palaeontology, Geochronology, Photo Geology and Remote Sensing etc. for support to various ongoing projects and to sort out the identified problems.	(in nos.)66	(in nos.)66						



1	2	3	4	5	6	7	8	9
	5.Information Dissemination	.Computerised archival, analyses, retrieval of geoscientific data and creation of theme-based relational database. Dissemination of data through maps, publications, customization etc.	2100.00	1954.00	(in nos.)50	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs completed as per schedule.	(in nos.)50	
	6.Human Resources Development	Training in specialised fields for upgradation of technology and expertise.	300.00	257.00	(No..of Types/No.of Courses) 32(41 courses)	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs completed as per schedule	(No. of Types/No.of Courses)31(40 courses)	



1	2	3	4	5	6	7	8	9
	7.Modernisation & Replaceent	Modernisation and expansion of laboratories and survey facilities aiming at refurbishing and upgrading the in-house capabilities of GSI.	6950.00	3436.00	-	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs completed as per schedule.	-	



1	2	3	4	5	6	7	8	9
	8.Provision for NER	Development of North Eastern Areas	1655.00	1418.00	1. Survey Mapping i)Syst.Geological Mapping(Sq.km)570 ii)Specialised Thematic Mapping(in sq.kms)60 iii)Geochemical .Mapping(sq.km) 3892.80 iv)Geophysical Mapping(sq.km)1736 2.Mineral Exploration (i)Large Scale Mapping(sq.km)76.52 (ii)Detailed Mapping(sq.km)2 (iii)Drilling(m)1600 3.Specialised-19 items 4.R&D- 3 items 5.Information Dissemination- 3 items 6.HRD- 3 items		Survey Mapping: i)Syst.Geological Mapping(Sq.km)590 ii)Specialised Thematic Mapping(in sq.kms)60 iii)Geochemical .Mapping(sq.km) 3026 iv)Geophysical Mapping(sq.km)1120 Mineral Exploration: (i)Large Scale Mapping(sq.km)52.5 (ii)Detailed Mapping(sq.km)1.5 (iii)Drilling(m)1499.60 3.Specialised-completed 4.R&D- completed 5.Information Dissemination-completed	
		Total: GSI (Plan)	16550.00	12800.00				



1	2	3	4	5	6	7	8	9
		Total: GSI (Non-Plan)	19771.00	19702.00				
2.	Mineral Exploration Corporation Limited							
	(i)Promotional	Proving of Mineral Reserves	1700.00	1400.00	(i) Drilling: 24365 mts. (ii)Dev. mining :634m (iii)Associated geological activities (mapping, survey, sampling analysis, geological report and ore body modeling).	One year	i) Drilling : 19192 mts ii)Dev. Mining: 265 m. iii) The exploration was carried out on 14 schemes. Out of which six were continued from 2005-06, while exploration work on eight new schemes namely for copper Dariba-Akola, Devtalai Ph-II & Sanganer, Rajasthan; for gold at Garhi-Dongri, Madhya Pradesh & Bhukia East, Rajasthan and for lead-zinc at Central Sub Block, Rajasthan & Bhanskapa in	<ul style="list-style-type: none"> • Exploration on approved scheme for iron ore at Ghatkuri East and for gold at Timran Mata, Maruda & for copper at Dholamala could not commence for want of forest clearance. • Exploration of bauxite at Lupungpat was abandoned while it could not be taken up at



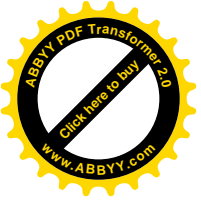
1	2	3	4	5	6	7	8	9
							<p>Madhya Pradesh and for bauxite at Lupungpat, Jharkhand was taken up.</p> <p>iv) Eight Geological Reports for Copper, Zinc & Gold deposit were submitted establishing 26.394 million tonnes of reserves. The details are as under:</p> <p>1.Dhadkidih block, Eastern sector, Jharkhand : 7.10 million tonnes of copper ore reserves with 1.01 % copper at 0.5% cut off has been estimated. Out of this 2.26 million tonnes of reserves with 0.94% Cu has been estimated over 360 m strike length and 100 m depth from surface, which could be potential for open cast mining.</p>	<p>Intervening block due to law & order problem.</p>



1	2	3	4	5	6	7	8	9
							<p>2.Nandup East, Jharkhand : 2.47 million tonnes of copper ore reserves with 1.04 % Cu at 0.50% cut off has been estimated.</p> <p>3.Bajata Central block, Ajmer dist, Rajasthan : 0.62 million tonnes of Zinc ore reserves with 1.45 % lead & 3.37% Zinc at 2% TMC cut off(Lead + Zinc) over 400 m strike length and 200m vertical depth between 330 MRL & 130 MRL has been established.</p> <p>4.Dona Temple block, Kurnool Dist. Andhra Pradesh : 1.242 million tonnes of gold ore reserves with 2.60 g/tonne gold at 1 g/t gold cut off over 690 m strike length and upto</p>	



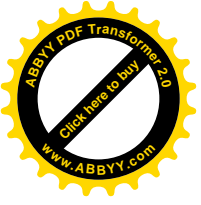
1	2	3	4	5	6	7	8	9
							<p>vertical depth of 300 m from surface has been established.</p> <p>5.Ramachandra pahar block, Jharkhand. Established 2.031 million tonnes of reserves with average grade of 0.88 % Cu at 0.5% cut off over 800 m strike length and 175 m vertical depth from surface.</p> <p>6.Kolari-Baonari block, Zinc, Nagpur, Maharashtra. Established 3.14 million tonnes of reserves with 7.93 % Zn over a strike length of 900 m and upto a depth 260 m.</p> <p>7.Saipum block, Shell limestone dist. Kolasib, Mizoram, Established 215475 tonnes of shell limestone reserves</p>	



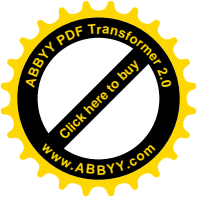
1	2	3	4	5	6	7	8	9
							<p>over an area of around 0.13 sq.km.</p> <p>8.Latio-Ka-Khera, lead-zinc, Rajasmond, Rajasthan. Established 14.64 million tonnes of reserves with total TMC of 5.62 % (1.2% Pb + 4.42%Zn) over a strike length of 850m and upto a depth 430 m.</p> <p>v) The entire outlay of Rs.14.00 Crores was fully utilised.</p>	
	(ii) Capital	Replacement of old plants & equipment.	800.00 (I&EBR)	800.00 (I&EBR)	Replacement of old plants & equipment.	During the year	Rs. 1.89 crores were utilised while the expenditure for Rs. 3.99 crores were committed.	Less utilisation of fund is attributed to non availability of specialised plant & equipment needed for exploration work, off the shelf.



1	2	3	4	5	6	7	8	9
				.01*				*A token provision provided for conversion of loan into equity.
	Total: MECL		2500.00	2201.00**				**For carrying out accounting adjustment viz. waiver of interest of Rs.51.56 and penal interest Rs.7.28 as on 31.3.2005. This will be netted by receipt.
3.	Indian Bureau of Mines	.						
	(i) Inspection of mines for scientific and systematic mining,	To ensure systematic and sustainable development of mineral resources,	494.00	664.00	Inspection of Mines for enforcement of MCDR and approval of Mining Plans/ Scheme of Mining - 2500 Mining Geological Studies covering the aspects of community development in	Annual Pro-gramme : Inspection of Mines - 2500 Mining	During the period 2765 mines were inspected and 12 Mining Geological Studies (MGS) completed.	Consequent to inspection of mines, 2,541 violations were pointed out to the mine owners &



1	2	3	4	5	6	7	8	9
	mineral conservation and mines environment.	promotion of conservation of minerals, protection of mine environment through statutory enforcement of MM (D&R) Act 1957, MCDR 1988 and relevant portions of MCR 1960 and monitoring of community development in mining areas, by carrying out regular inspections/ studies of mines, other than coal, petroleum & natural gas, atomic			mining areas - 12 Mining plans, scheme of mining & mine closure plans, prepared by the lessees are being approved by IBM and are being monitored for their effective implementation.	Geological Studies - 12		during this period 1,501 violations were rectified; 33 prosecutions launched; 7 cases decided and 27 compounded. Besides, mining operations suspended in 06 mines. 448 mining plans and 323 schemes of mining approved. Incidentally, revenue of Rs.20.41 lakhs was generated. These activities have contributed to systematic & scientific development of mineral deposits, conservation of



1	2	3	4	5	6	7	8	9
		minerals & minor minerals						minerals, protection of environment and monitoring of community development
	(ii) Mineral Beneficiation Studies – Utilization of low grade and sub grade ores and analysis of environmental samples.	To ensure value addition to the low grade ores, which are otherwise going as wastes and to help directly or indirectly to the mineral industry for optimum exploitation of mineral resources of the country. Further, analysis of air, water, solid wastes etc. for monitoring of mine effluent parameters	574.00	518.00	The activities under this scheme are carried out in IBM's 3 laboratories and pilot plants situated at Nagpur, Ajmer and Bangalore. Ore Dressing Investigations -70 Chemical Analysis - 50,000 Mineralogical Examinations -2,300. Setting up of clay testing laboratory at Kolkata regional office - Action for procurement of equipment.	Annual Programme : Ore Dressing Investigations - 70 Chemical Analysis - 50,000 Mineralogical Examinations - 2,300	During the period 73 Ore Dressing Investigations, 50,579 Chemical Analysis and 2409 Mineralogical Examinations were carried out. In addition, 21 in-plant studies/ plant visits were carried out. Equipment procured were sent to the clay testing laboratory in Kolkata Regional Office.	These activities have ensured value addition to low/sub-grade ores and optimum recovery of ores and minerals. Environmental parameters could be monitored through analysis of environmental samples. Incidentally, revenue of Rs. 96.45 lakhs was generated.



1	2	3	4	5	6	7	8	9
		are also being carried out.						
	(iii) Technological up-gradation and Modernization	To estimate the National Mineral Reserves & Preparation of Mineral Maps with forest overlays. To ensure development of new mining methods for scientific and systematic development of mineral resources including environmental management of mines. To develop the Human resources and infrastructure	651.00	387.00	Updation of NMI as on 1-4-2005 for remaining 33 minerals out of 65 and generation of summary outputs for remaining 50 minerals. Preparation of 100 multi-mineral maps along with forest overlays in respect of TN and part of Karnataka . Mining/Geological Consultancy assignments- 5 to 7 Mining Research : Environmental assessment studies on regional basis – one study of a mineral belt having cluster of mines & 1-2 rock mechanic studies/ ground vibration studies. Training courses - 16 Completion of S&T project on “Attenuation of Hexavalent Chromium by bio-remedial technology.”.	All these activities completed during the year 2006-07	Updation of NMI as on 1.4.2005 : i) Data for 4986 freehold and public sector deposits finalized & data entry of 14,865 deposits completed. ii) Summary outputs for 43 minerals generated. Preparation of multi-mineral maps: Preparation of 113 multi-mineral maps along with forest overlays was completed. TC Assignments : 9 mining / geological assignments completed. Mining Research Assignments: 7 assignments completed.	Updated NMI has facilitated planners to formulate plans & strategies for exploration and exploitation of mineral deposits and entrepreneurs to make investment decisions. Multi-mineral maps enable to chalk out future plans for ecological sustainable development of mineral deposits. Consultancy/research oriented studies on mining,



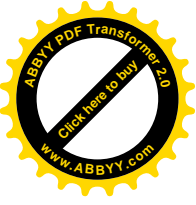
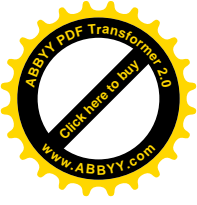
1	2	3	4	5	6	7	8	9
							<p>Training : 16 courses conducted.</p> <p>S&T Project on Attenuation of Cr6 : Final report was under preparation.</p>	<p>geology, environment etc. have benefited mineral industry for carrying out scientific and systematic development of mineral resources including environ-mental management of mines.</p> <p>124 IBM officials and 266 industry personnel were benefited through these training. Incidentally, revenue of Rs. 38.23 lakhs generated through above activities. Completion of</p>



1	2	3	4	5	6	7	8	9
								<p>S & T project will help to determine efficacy of removal of Cr6 by bio-remedial process. The analysis showed encouraging results indicating reduction of hexavalent chromium to trivalent (which is not harmful) to the extent of permissible level in down stream water. It is further observed that most of the Cr6 is absorbed in the root region of plants and does not transmit to seed level.</p>



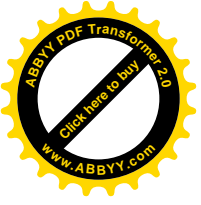
1	2	3	4	5	6	7	8	9
	(iv) Collection, processing, dissemination of data on mines and minerals through various publications .	To collect data on mines and minerals through statutory returns and other means with a view to process, analyze and disseminate the data through various statistical and technical publications.	431.00	131.00	Release of following publications :- 12 issues of Monthly Statistics of Mineral Production, Indian Mineral Industry at a Glance, Statistical Profile of Minerals, 2 issues of Bulletin on Mineral Information, Bulletin on Mining Leases, P.L. & RPs, Directory of Mines & Mining Leases as on 31.3.2006, Indian Minerals Year Book 2005, Directory of Mineral Consumers in India, Comparative Study of Mining Laws of India and 6 selected countries, Bulletins on Recent Developments in Blasting Technology, Application of Rock Mechanics in surface and underground excavations.	Release of all these publications during the year 2006-07.	During the period, following publications were released: i) 08 issues of MSMP (Jan- Aug. 06) ii) Statistical profile of minerals, 04-05. iii) 2 issues of Bulletin on mineral information (Oct 04-Mar 05 and Apr-Sep05) iv) Indian Mineral Year Book,2005. v) Indian Mineral Industry at a Glance 2004-05 vi) Bulletin on MLs & PLs, 2004 vii) Comparative study of mining laws in India and 5 selected countries. viii) Bulletin on Mineral Royalties. Besides, Directory of Mines as on 31.3.2006 & Directory of Mining Leases as on	Statistical & technical publications released have facilitated in disseminating data on mines and minerals. Incidentally, revenue of Rs.8.70 lakhs was generated through sale of publications / data.



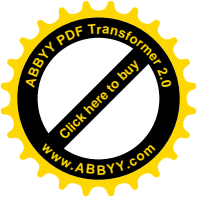
1	2	3	4	5	6	7	8	9
							31.3.2006 were generated.	
	5..Provision for NER	Development of Mineral Sector in NER Capital outlay	59.00 181.00	0.00 0.00	During the year 2006-07 (i)Inspection of mines for enforcement of provision of MCDR (ii) Beneficiation tests on low grade ores and minerals (iii) Extend consul-tancy services to mining industry as and when request received (iv) Impart training to personnel of mining industry. (v) Supply of equipment and instruments to the state government of NE States to strengthen their capabilities for development of minerals in their states.	All these activities to be carried out during 2006-07.	i) 08 mines/ areas were inspected ii) Nil iii) Field work for the study of ground vibration due to blasting at Kheilijhari limestone mine for M/s. Meghalaya Cements Ltd. was completed. iv) 3 Training programmes on. (i)Windows, MS Office etc. and (ii) Environmental monitoring in mines and (iii) UNFC were conducted. v) Instruments worth Rs. 124.44 lakhs were provided to various NE States.	08 mines/ areas inspected for enforcement of MCDR/ disposal of mining plans. Field work for one consultancy assignment was completed. Besides, 30 officials of NE region were benefited from the training programmes conducted by IBM exclusively for NE personnel . Equipment / instruments provided to NE States have strengthened their capabilities for development of minerals in NE States.



1	2	3	4	5	6	7	8	9
	6.Capital (Works Outlay)	-	10.00	0.00	Minor works	-	-	-
	Plan	Total: IBM	2400.00	1700.00				
	Non-Plan	For maintaining basic administrative expenses	1613.00	1641.00				
4.	Bharat Gold Mines Ltd. For meeting expenses on mainten ance of essential services		341.00	806.00	As BGML was closed, therefore, no quantifiable deliverables.			
		Total: BGML (Non-Plan)	341.00	806.00				
5.	Hindustan Copper Limited							



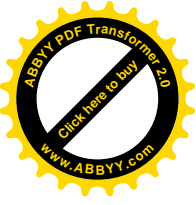
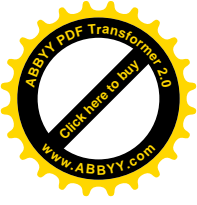
1	2	3	4	5	6	7	8	9
	1.Replace- ment & Renewals	For achieving maximum utilization of the existing plant and mines- machinery by replacement and renewals.	3000.00	2850.00	The following are the major equipment which have been purchased:- 1.Low Profile Dump Truck 2.Front End Loader 3.Engine/Transmission for heavy earth moving equipment. 4.Hydraulic Excavator 5.Strengthening Tailing Dam 7.Dozer 8.UG mining feasibility report 9.BEML 200 excavator with rock breaker attachment.		Replacement & Renewals is a continuous process to maintain the existing level of production and for planning enhanced production in future Target:MIC 29500T, Actual:MIC 30231T	
	Total:HCL (Plan)		3000.00	2850.00				
	2.For payment of debentures, HCL has been provided a Non-Plan Loan		2500.00	2500.00	Not quantifiable.			It is a loan of Govt. to PSU so it is a facilitative support.



1	2	3	4	5	6	7	8	9
	Total:HCL Non-Plan		2500.00	2500.00				
6.	Other Pro-grammes: S&T							
		Research & Development work on mining & non-ferrous metals.	805.00	604.00	R&D Projects catering to the national requirements and for building the capabilities and strengths of the mineral & non-ferrous metals.		Continuous nature of research work	
	Total: S&T		805.00	604.00				
7.	National Aluminium Company Ltd.							
	A.1-Schmes aimed at Maximising Benefits Additions/Modifications/Renewals/	To maintain the production/pr oductivity in different segments of the Company	9500.00	9545.00	Rated capacity is to be maintained of the following major plant Units Bauxite 4800000MT.Alumina, 1575000MT Aluminium 345000MT, Power 6391MW		Production at the following major plant Units Bauxite 4623278MT,Alumina 1475200MT, Aluminium 358734MT, Power 5968MW	



1	2	3	4	5	6	7	8	9
	Replacements (AMRs)							
	2.New Schemes: Phase-II Expansion 1.Alumina-4 th Stream 2.Alumini um -4 th Pot Line. 3.IX and X units of CPP	Increase in Capacity : Bauxite Mines 4800000 to 6300000 MT, Alumina Refinery : 1575000 to 2100000 MT Smelter : 345000 to 460000 MT, CPP : 960 MW (120 MW x 8) to 1200 MW (120MW x 10)	52097.00	52447.00	The project is under implementation and is scheduled beyond 2006-07. The Outcome during the year 2006-07is Nil. After completion of the project with approved outlay of Rs. 4091 Crore, the expanded output per year i.e. Bauxite of 63 lakh TPY, Alumina of 21 lakh TPY, Power of 1200 MW and Aluminium of 4.60 lakh MT is expected to be achieved in 2008-09. The cost is subsequently revised to 5003 Cr, pending for ministry approval.	Schedule start up date from zero date (26.10.2004) Bauxite Mines : 42 Months, Alumina Refinery 46 Months, Smelter : 50 Months, CPP : 47 months.		



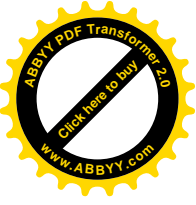
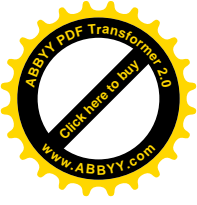
1	2	3	4	5	6	7	8	9
	3.Utkal E-Coal	Allotment of a new captive coal mine by GOI to cater to coal requirement of 9th, 10th, 11th and 12th Units of CPP	517.00	517.00	The project is under implementation and is scheduled beyond 2006-07	The completion schedule depends on the final capacity determination and investment decision.	At present various activities for environmental clearance, diversion of forest land, approval of Mining lease and land acquisition are underway.	
	4.Quatar project	Adhoc sum of Rs.1.00 Crore has been kept. However, since Quarter did not show much interest, the project is going to be closed	100.00	-	The nomenclature and content of the scheme is being changed for feasibility study of "Green Field Smelter"		The Quatar authorities did not show interest to proceed further.	
	Total: NALCO (I&EBR)		62214.00	62509.00				



1	2	3	4	5	6	7	8	9
8.	Construction (Plan GBS)	Building construction of IBM & GSI	900.00	533.00	GSI: Construction of Office Building at Agartala,(ii)Construction of Core Library at Bhubaneswar,(iii)Construction of Boundary Wall at Shillong,(iv)Other misc.projects. IBM:- Construction of residential and official building at Bhubaneswar, Dehradun, Chennai & Nagpur.	Continuation of Schemes from the financial year (2006-07).		
	Total: Construction	.	900.00	533.00				
9.	Sectt.Proper (Non-Plan)		886.00	901.00	Not quantifiable. This is for regulation of Mines and Development of Minerals under the control of Union.			



1	2	3	4	5	6	7	8	9
	Grand Total: (Plan)GBS		25000.00	19533.00				
	Grand Total: Non-Plan (GBS)		25402.00	31751.00				
	Grand Total: I&EBR		63369.00	63664.00				



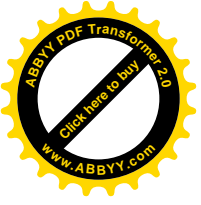
Annexure – III

**DETAILS OF ACTUAL ACHIEVEMENTS VIS-A-VIS INTENDED OUTCOMES INDICATED IN OUTCOME BUDGET, 2007-08
(Rs. Lakhs)**

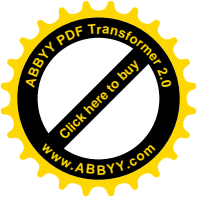
S. No.	Name of the Scheme/ Programme	Objectives/ Outcome	Outlay 2007-08		Quantifiable Deliverables	Processes / Timeliness	Achievements (April-Dec. 2007)	Remarks/Risks
			BE	RE				
1	2	3	4	5	6	7	8	9
1	Geological Survey of India							
	(i)Survey & Mapping	Creation and updating of national geoscientific information and knowledge base through ground, marine and airborne surveys.	2938.00	3887.00	i)Specialised Thematic Mapping(in sqkm)5597 ii)Systematic Geological Mapping(in sqkm)699 iii)Geochemical Mapping(in sqkm)24858.40 iv)Geophysical Mapping(in sqkm)20800 v)Multisensor Survey(in lkm)28050 Marine Survey: Parametric Studies within EEZ &	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs will be completed as per schedule.	i)Specialised Thematic Mapping(in sqkm)2606 ii)Systematic Geological Mapping(in sqkm)395 iii)Geochemical Mapping(in sqkm)12967 iv)Geophysical Mapping(in sqkm)13406 v)Multisensor Survey(in lkm)Nil Marine Survey: Parametric Studies within EEZ &	Reasons for shortfall in achievement of physical targets till Nov.'07 in respect of : . In Marine Survey, it is proposed to conduct cruises subjected to availability of RV Samudra Manthan in seaworthy condition after mandatory repairs. Alternative programmes will be taken up through boat cruises in the coastal areas with revised targets for the period of non availability of RV Samudra Manthan



1	2	3	4	5	6	7	8	9
					beyond (a) Bathymetry(1km) 13500 b) Magnetic (1km) 13500 vii) Systematic Coverage within TW(sqkm)2410		beyond (a) Bathymetry(1km) 3349 b) Magnetic (1km) 2015 vii) Systematic Coverage within TW(sqkm)3134	
	(ii) Mineral Exploration	Identifica- tion as well as preliminary assessment of the mineral resources.	1175.00	2328.00	(i) Large Scale Mapping (sqkm)1169.56 (ii) Detailed Mapping (sqkm)32.403 (iii) Drilling(m) 80832.20	Continuation of Schemes from the last Financial Year (2006- 07) and the quantified outputs will be completed as per schedule.	(i) Large Scale Mapping (sqkm)784.50 (ii) Detailed Mapping (sqkm)14.94 (iii) Drilling(m) 52298.68	
	(iii) Specialised Investigation	Geoscienti fic input to water resource develop- ment, transport and	31.00	614.00	(in nos.)91	Continua- tion of Schemes from the last Financial Year (2006- 07) and the quantified	(in nos.)91 commenced	



1	2	3	4	5	6	7	8	9
		miscellaneous civil engineering projects. Geo-environmental investigations for both regional and site specific studies. Greater emphasis on natural hazard studies and disaster management including earthquake and landslide zonation studies.				outputs will be completed as per schedule.		



1	2	3	4	5	6	7	8	9
	(iv)Research & Development and Other Exploration	Study of Antarctic Continent	396.00	722.00	(in sq.km.)(1:15,000 scale)1000	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs will be completed as per schedule.	Antarctica expedition launched in Nov.,2007 and the work in progress.	
		Petrology, Palaeontology, Geochronology,			(in nos.) 63		(in nos.) 63 (Commenced)	



1	2	3	4	5	6	7	8	9
		Photo Geology and Remote Sensing etc. for support to various ongoing projects and to sort out the identified problems.						
	(v) Information Dissemination	Computerised archival, analyses, retrieval of geosciences	894.00	1939.00	(in nos.)38	Continuation of Schemes from the last Financial Year (2006-07) and the quantified	(in nos.) 38 (Commenced)	



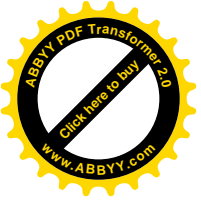
1	2	3	4	5	6	7	8	9
		-fic data and creation of theme-based relational database. Dissemination of data through maps, publications, customization etc.				outputs will be completed as per schedule.		
	(vi) Human Resources Development	Training in specialised fields for upgradation of technology and expertise.	100.00	344.00	(No. of Types/No. construction 32(32 courses)	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs will be completed as per schedule.	(No. of Types/No.. construction 22(34 courses)	



1	2	3	4	5	6	7	8	9
	(vii)Modernisation and Replacement	Modernisation and expansion of laboratories and survey facilities aiming at refurbishing and upgrading the in-house capabilities of GSI.	5536.00	5866.00	-	Continuation of Schemes from the last Financial Year (2006-07) and the quantified outputs will be completed as per schedule.	-	
	(viii)Provision for NER	Development of North Eastern Areas	1230.00		1.Survey Mapping i)Syst.Geological Mapping(Sq.km.)699 ii)Specialised Thematic Mapping(in sq.km)225 iii)Geochemical Mapping(sq.km) 2958.40 iv)Geophysical Mapping(sq.km.) 1560 2. Mineral Exploration: (i)Large Scale		1.Survey Mapping i)Syst.Geological Mapping(Sq.km.) 395 ii)Specialised Thematic Mapping(in sq.km)- 35 iii)Geochemical Mapping(sq.km) 884 iv)Geophysical Mapping(sq.km.) 700 2. Mineral	



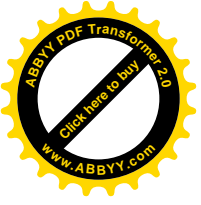
1	2	3	4	5	6	7	8	9
					Mapping(sq.km.) 3.37 (ii)Detailed Mapping (sq.km)1.37 (iii)Drilling(m) 8.32. 3.Specialised Investigation 12items 4.R&D 3 items 5.Inf.Dissemination - 5 items		Exploration: (i)Large Scale Mapping(sq.km.) 2.2 (ii)Detailed Mapping (sq.km)737.90 (iii)Drilling(m) 1.4 3.Specialised-All continuing 4.R&D- All continuing 5.Inf.Dissemination –All continuing .	
	Total: (GSI) Plan		12300.00	15700.00				
	GSI -Non-Plan	This is for maintain- ing basic	20414.00	20371.00				



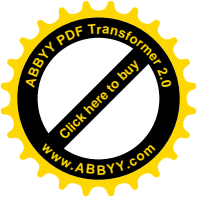
1	2	3	4	5	6	7	8	9
		Adminis- trative expenses of GSI.						
	Total: (GSI) Non-Plan		20414.00	20371.00				
2.	Mineral Explora tion Corpora tion Ltd. (MECL)							
	(i)Promotional	Proving of Mineral Reserves	1100.00	1100.00	i) Drilling : 24000mts ii) Dev. Mining: 1000m iii)Associated geological activities (mapping, survey, sampling, analysis, geological report and ore body modelling.	One year	i) Drilling : 10761 mts ii) The exploration was carried out on 10 schemes, out of which six schemes namely Dariba Akola, Devtalai Phase-II & Sanganer all for copper in Rajasthan, Garhi Dongri for gold in	• Exploration on approved scheme for iron ore at Ghatkuri East and for gold at Timran Mata, Maruda & for copper at Dholamala could not commence for want of forest clearance.



1	2	3	4	5	6	7	8	9
							Madhya Pradesh, Central Sub block for lead-zinc in Rajasthan, Banskhapa-Piparia for copper in Madhya Pradesh, and Bhukia East for gold in Rajasthan, was being continued from the previous year, while four new schemes namely Parasi for Gold & Dhobani for copper in Jharkhand, Satkui for copper & Dhani-Basri for gold in Rajasthan were commenced during the year. Exploration for gold at Timran Mata East, Rajasthan & Maruda in Kerala, for iron ore at Ghatkuri East, Jharkhand & for copper at	Exploration of bauxite at Lupungpat was abandoned while it could not be taken up at Intervening block due to law & order problem.



1	2	3	4	5	6	7	8	9
							<p>Dholamala, Rajasthan are proposed to be taken up on receipt of forest clearance. While Intervening Block (Copper) in Jharkhand would be taken up if law & order situation permits.</p> <p>iii) Four Geological Reports for multi-metal, Copper, gold & Lead-Zinc were submitted establishing 5.371 million tonnes of reserves. The details are given below in summary.</p> <p>iv) The entire revised outlay of Rs.11.00 Crores is expected to be fully utilised.</p> <p>v) The quantifiable deliverable in column 6 are as per the initial budget proposal of Rs.</p>	



1	2	3	4	5	6	7	8	9
							1700 lakhs which has now been reduced to Rs. 1100 lakhs.	
	(ii)Capital	Replacement of old plants & equipment	800.00 (IEBR)	800.00 (IEBR)	Replacement of old plants & equipment.	During the year	Rs. 3.18 crores have been utilised upto December '07 & the entire allocation is likely to be utilised during the year Rs. 3.18 crores have been utilised upto December '07 & the entire allocation is likely to be utilised during the year	
	Total: MECL		1900.00	1900.00				
3.	Indian Bureau of Mines (IBM) (i)Inspection of mines for scientific and systematic	To ensure systematic and sustainable development	600.10	770.00	For enforcement of MCDR and approval of Mining Plans/Scheme of Mining, 2500 mines will be inspected and	Inspection of 2500 mines and 12 Mining Geological Studies will	During the period 1985 mines were inspected and 12 Mining Geological Studies were at various stages of	All the activities under various schemes/ programmes of IBM are in accordance with



1	2	3	4	5	6	7	8	9
	mining, mineral conservation and mines environment.	ent of mineral resources, promotion of conservati on of minerals, protection of mine environme nt through statutory enforceme nt of MM (D&R) Act 1957, MCDR 1988 and relevant portions of MCR 1960 and monitorin g of communit y developm ent in mining areas, by			12 Mining Geological Studies will be completed as per the annual programme 2007-08. The out come of this scheme is systematic & scientific development of the mineral deposits, conservation of minerals, protection of environment and sustainable closure of the mines. For this purpose mining plans, scheme of mining & mine closure plans, prepared by the lessees are being approved by IBM and are being monitored for their effective implementation. Community Development Activities carried out by the mining industry in the mining areas will also	be completed during the year 2007-08.	completion.	its charter of functions notified by the Govt dated 6 th March 2003. Fulfillment of the target is subject to the availability of existing strength of inspecting officers, throughout the year.



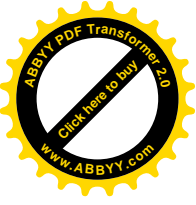
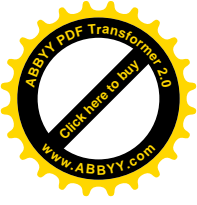
1	2	3	4	5	6	7	8	9
		carrying out regular inspections/ studies of mines, other than coal, petroleum & natural gas, atomic minerals & minor minerals			be covered during inspection/studies of mines.			
	(ii)Mineral Beneficiation Studies – utilization of low grade and sub grade ores and analysis of environmental samples	To ensure value addition to the low grade ores, which are otherwise going as wastes and to help directly or indirectly to the	504.05	505.00	The activities under this scheme are carried out in IBM's 3 laboratories and pilot plant situated at Nagpur, Ajmer and Bangalore. In these three laboratories 70 Ore Dressing Investigations, 50,000 Chemical Analysis and 2,300 Mineralogical Examinations will be conducted. Besides,	All these activities will be completed during the year 2007-08.	During the period 55 Ore Dressing Investigations, 35,440 Chemical Analysis and 1774 Mineralogical Examinations were carried out. In addition, 07 in-plant studies/ plant visits were carried out.	Fulfillment of the target is subject to the availability of existing strength of officers & staff, throughout the year.



1	2	3	4	5	6	7	8	9
		<p>mineral industry for optimum exploitation of mineral resources of the country. Further, analysis of air, water, solids wastes etc. for monitoring of mine effluent parameters are also being carried out.</p>			<p>in-plant studies will be carried out as and when required. Most of the mineral found in nature fall short of the grade required by consuming industries and therefore needs upgradation by ore dressing process to suggest ways & means for their economic utilization, as a part of conservation studies.</p>			
	(iii)Technological upgradation & Modernization	To estimate the National Mineral Reserves & Preparation of Mineral Maps with forest overlays,	297.45	497.00	Updation of NMI as on 1-4-2005 will be completed, summary out puts and analytical notes for all the 65 minerals will be generated.	All these activities will be completed during the year 2007-08.	Updation of NMI as on 1.4.2005. i) Summary output for all the 65 minerals generated . ii) Analytical notes for 42 minerals	Completion of multi- mineral leasehold maps along with forest overlays is subject to the timely availability



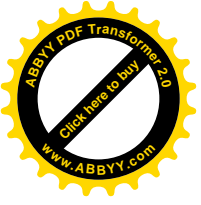
1	2	3	4	5	6	7	8	9
		<p>To ensure development of new mining methods for scientific and systematic development of mineral resources, including environmental management of mines. To develop the Human resources and infrastructure.</p>			<p>Qualitative revision of NMI as on 1.4.2005 and updation of data on RP areas will be done. 100 Multi-Mineral Leasehold Maps along with forest overlays in respect of Maharashtra & Tamil Nadu (part) will be prepared. Technical Consultancy Services - 5-7 Mining/ Geological assignments will be completed Mining Research Assignments : Regional Environmental Impact Assessment of one area, 2 Environmental/ ground vibration studies and 1-2 geo-technical investigations will be completed.</p>		<p>prepared. iii) Qualitative analysis for 42 minerals completed. Updation of RP/PL/ML data 142 documents received were processed and data incorporated. Preparation of multi-mineral maps 73 multi-minerals maps alongwith forest overlays were prepared and 47 were at various stages of completion. T.C. Assignments 07 mining/ geological assignments were completed. MR Assignments 08 assignments completed. Training : 12 courses</p>	<p>of forest maps from Forest Survey of India.</p>



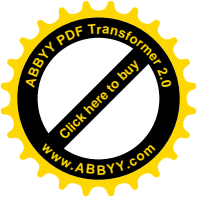
1	2	3	4	5	6	7	8	9
					Training: 16 courses will be conducted.		conducted.	
	(iv)Collection, processing, dissemination of data on mines and minerals through various publications	To collect data on mines and minerals through statutory returns and other means with a view to process, analyze and disseminate the data through various statistical and technical publications.	128.40	228.00	Following publications will be prepared/ released during the year 2007-08: i) Monthly Statistics of Mineral Production- 12 issues (Jan-Dec.2007) ii)Indian Mineral Industry at a Glance - 1 issue iii) Statistical Profile of Minerals- 1 issue iv) Bulletin on Mineral Information - 2 issues (Oct.06-March 07 & April-Sept.07) v) Bulletin on Mining Leases, P.L. & RPs, 2005 vi) Directory of Mines as on 31.3.07 (updaton) vii) Directory of Mining Leases as on 31.3.2007.	All these publications will be prepared/ released during the year 2007-08	During the period following publications were released : i) MSMP - 06 issues for Sept.06 to Feb. 07. ii) Statistical profile of minerals, 05-06. iii) 2 issues of Bulletin on mineral information (Oct.05-Mar,06 and April-Sept.06 issue). iv) Indian Mineral Year Book, 2006 v) Bulletin on MLs & PLs, 2005 vi) Comparative study of mining laws of India & Australia.	In addition to collection of data from statutory sources, IBM also collects data from other sources like all State Govts., DGCI &S, Kolkatta, Coal Controller, Kolkata, Ministry of Petroleum & Natural Gas, Ministry of Commerce & Industry, Ministry of Steel, New Delhi, DGMS etc. Therefore completion of these publications are subject to timely receipt of data from these sources. Besides, shortage of manpower in publication cell is



1	2	3	4	5	6	7	8	9
					viii) Indian Minerals Year Book 2006. ix) Directory of Mineral Consumers in India. x) Monograph on chromite. xi) Comparative Study of Mining Laws of India and Australia xii) Bulletins on Recent Developments in Blasting Technology. xiii) Application of Rock Mechanics in surface and underground excavations and xiv) Market survey on iron ore.		vii) Market Survey on Iron ore	a constraint for preparation / timely release of publications.
	7.Provision for NER Capital outlay	Developm ent of mineral sector in NER	49.00 121.00	- -	Following activities will be carried out in NE Region: (i) Mines will be inspected for enforcement of provision of MCDR (ii) Beneficiation	All these activities will be carried out during 2007-08.	i) 19 mines / areas were inspected. ii) NIL iii) Report on Study of Ground Vibration due to blasting at	The outlay is 10% of the Annual Plan Budget, and the implementation depends on the requirements as received from the NE States.



1	2	3	4	5	6	7	8	9
					tests on low grade ores and minerals available in NE States. (iii) Extend consultancy services to mining industry as and when request received from NER States. (iv) Impart training to personnel of mining industry of NE States (v) Providing instruments/ equipment to the state governments of NE States to strengthen their capabilities for development of minerals in their states		Khilijhari limestone mine of M/s. Meghalaya Cements Ltd. was submitted. iv) One training programme on MM (D&R) Act, 1957, MCR, 1960 and MCDR 1988 was conducted at Shillong. v) Instrument worth Rs. 142.50 lakhs were identified for providing to various NE States. Procurement action is in progress.	
	Capital Expenditure (Works outlay)		37.00					
	Plan	Total (IBM)	1700.00	2000.00				



1	2	3	4	5	6	7	8	9
	(IBM) Non-Plan	For maintain- ing basic administr- ative expenses	1711.00	1703.00				
4.	Bharat Gold Mines Limited (BGML) For meeting expenses on maintenance of essential services.		146.00	186.00	As BGML was closed,therefore, no quantifiable deliverables.			
		Total: BGML (Non- Plan)	146.00	186.00				



1	2	3	4	5	6	7	8	9
5.	<p>Hindustan Copper Limited (HCL)</p> <p>1.Replacement & Renewal</p>	<p>For achieving maximum utilization of the existing plant and mines-machinery by replacement and renewals.</p>	<p>5000.00 (I&EBR)</p>	<p>7800.00 (I&EBR)</p>	<p>The following are the major equipment which have been purchased/ordered:-</p> <p>1. Hydraulic Excavator</p> <p>2.DTH Machine</p> <p>3.MECON Debottlenecking</p> <p>4.Rock Shovel Loaders with spares.</p> <p>5Software for Mines</p> <p>6.ERP Hardware & Networks eetc.</p> <p>7.Dual Bus Bars</p> <p>8.Rock Shovel Loaders with spares</p> <p>9.Tailing Dam Work</p>		<p>Replacement & Renewals is a continuous process to achieve the BE production targets vis-à-vis are as under:</p> <p><u>Targets for 2007-08:</u></p> <p>MIC-31000T Cathode -40000 T</p> <p><u>Targets upto Dec/.2007:</u></p> <p>MIC-22506 T Cathode-30275 T</p> <p><u>Actuals upto Dec.,2007:</u></p> <p>MIC- 23590 T Cathode-32601 T</p>	



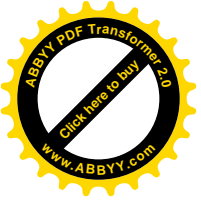
1	2	3	4	5	6	7	8	9
				1.00* (GBS)	10.G.B.Cass 11.CDSS Engines 12.Front End Loaders Buckets & Spare parts etc. 13.Installation of TTD system.			*A token provision for conversion of Loan into equity



1	2	3	4	5	6	7	8	9
	Total: HCL Plan		5000.00 (I&EBR)	7801.00				
	Total:HCL (Non-Plan)			562.94*				*For carrying out the necessary accounting adjustment viz.write down of preference share capital and equity against adjustment of losses. This will be netted by receipt.
7.	Other Programmes: S&T							
		Research & Development work on mining & non-	*729.00	*728.00	R&D Projects catering to the national requirements and for building the capabilities and strengths of the			*In BE this includes Rs.3.00 crore through budget support and Rs.4.29 crore through I&EBR.



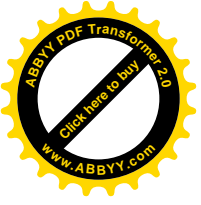
1	2	3	4	5	6	7	8	9
		ferrous metals.			mineral & non-ferrous metals.			*In RE this includes Rs.2.99 crore through budget support and Rs.4.29 crore through I&EBR.
	Total: (S&T) Plan		729.00	728.00				
	For meeting the salary of three autonomous bodies(JNARDD C,NIRM & NIMH) contribution to international bodies and for National Mineral Awards		333.00	333.00				
	Total :(S&T) Non-Plan		333.00	333.00				



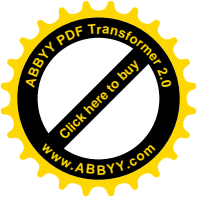
1	2	3	4	5	6	7	8	9
8.	National Aluminium Company Ltd. (NALCO)							
	A.Schemes aimed at Maximizing Benefits: Additional/Modifications/ Renewals/Replacement(AMRs)	To maintain the production /productivity in different segments of the Company	12500.00 (I&EBR)	15000.00	Rated capacity is to be maintained at each of the following major plant Units Bauxite : 4800000 MT, Alumina Hyd. : 1575000 MT Aluminium 348241 MT Power: 5864 MW		Rated capacity is to be maintained as each of the following major plant Units bauxite 3042864 MT. Alumina Hyd. 1155200MT Aluminium 267967 MT Power 4197 MW.	
	B.New Schemes: Phase-II Expansion 1. Alumina - 4th Stream, 2. Aluminium - 4th Pot Line, 3. IX and X units of of CPP.	Increase in Capacity : Bauxite Mines 4800000 to 6300000 MT, Alumina Refinery : 1575000	100000.00 (I&EBR)	120000.00	The project is under implementation and is scheduled beyond 200-08. The Outcome during the year 2007-08 is Nil. After completion of the project with approved outlay of Rs.4091 crore(revised project cost at Rs.5003 cr), the	Schedule start up date from zero date (26.10.2004) Bauxite Mines : 42 Months, Alumina Refinery: 46 Months, Smelter :		



1	2	3	4	5	6	7	8	9
		to 2100000 MT Smelter : 345000 to 460000 MT, CPP : 960 MW (120 MW x 8) to 1200 MW (120MW x 10)			expanded output per year i.e.Bauxite of 63 lakh TPY, alumina of 21 lakh TPY, Power of 1200MW and Aluminium of 4.60 lakh is expected to be achieved in 2008-09.	50 Months, CPP : 47 months.		
	3.Utkal E-Coal	Allotment of a new captive coal mine by GOI to cater to coal requireme nt of 9th, 10th, 11th and 12th Units of CPP	3000.00 (I&EBR)	500.00	The project is under implementation and is scheduled beyond 2008-09	The completion schedule depends on the final capacity determinatio n and investment		



1	2	3	4	5	6	7	8	9
	4.Green field Smelter project	To utilize surplus Alumina available after meeting Aluminium requirement of Smelter	100.00	100.00	Only meant for preproject activities.			
	5.Upgradation of Alumina plant	To expand the fourth stream of aluina plant capacity from 5570lakh ton by improving in technology taken from Alumina Pechiney	100.00	100.00	Only meant for preproject activities.			



1	2	3	4	5	6	7	8	9
	6.Pottangi Mines	To cater the bauxite requirement of the Alumina Refinery when the production from fourth stream is taken off.	100.00 (I&EBR)	100.00	Only meant for preproject activities.			
	Total: NALCO		*115800.00 (I&EBR)	135800.00				*This is funded through internal & extra budgetary resources.
9.	Construction	Building construction in the Geological Survey of India and Indian Bureau of Mines	600.00	500.00	GSI – (i)Construction of Residential Qtrs.at Lucknow,(ii)Construction of Auditorium and Guest House at WR,Jaipur,(iii)Construction of building for Museum at Siwalik,Fossil Park,Saketi,Nahan,Distt.Sirmaur(H.P)Auditorium	Continuing schemes.		



1	2	3	4	5	6	7	8	9
					<p>Buldg.(iv)Constr.of buldg.for Museumat Siwalik,Fossil Park,Saketi,Nahan,Distt.Sirmaur(H.P.)Office buldg.& exhibition hall,(v)Constr.of Auditorium and Recreation,Car Parking etc.at Shillong,(vi)Constr.of Office-cum-Lab Complex at Chennai,(vii)Constr.of Training Institute Complex at Bandlaguda,Hyderabad,(viii)Constr.of Laboratory Complex and auditorium at Bangalore,(ix)Constr.of Office-cum-Lab Complex at Shillong.</p> <p><u>IBM:</u> Constructions of office building at Guwahati, Bhubaneswar, Dehradun .etc.</p>			



1	2	3	4	5	6	7	8	9
	Total: (Construction) Plan		600.00	500.00				
9	Secretariat Proper: This provision is for Secretariat expenditure of the Ministry.		966.000	966.00	Not quantifiable. This is for regulation of Mines and Development of Minerals under the control of Union.			
	Total: (Sectt.Proper) Non-Plan		966.000	966.00				
	Grand Total: Plan(GBS)		16000.00	19600.00				
	Grand Total: Non-Plan(GBS)		23570.00	79853.00				
	Grand Total: (I&EBR)		122029.00	144829.00				



Appendix I

PROJECTED OUTCOME OF GSI: 2008-09

(a) Survey & Mapping	Basic earth-science data generation through systematic ground, aerial and marine survey, as a fundamental pre-requisite for the proper geo-scientific management for the earth system.
(b) Mineral Exploration	Generation of earth science data for (i) assessing resources of different mineral commodities (ii) finding new mineral resources of the country and (iii) updating of mineral resource database.
(c) Specialised Investigation	Generation of pertinent data for use in (i) major national constructions projects, (ii) major national power generation projects, (iii) providing environmental safeguards to the society. Increasing understanding of different issues of mining, urban development and natural hazards such as earthquake, landslide, avalanche, erosion and cyclone, (iv) studies on glaciers and geothermal energy.
(d) Research & Development & other Exploration	(i) Furthering research of fundamental nature for identification of new application tools and (ii) adding knowledge base for Antarctica
(e) Information Dissemination	(i) Dissemination of relevant part of earth science data for public use through GSIPORTAL, (ii) Development of inter connectivity between different offices of GSI through WAN for speedy implementation of programmes and (iii) customised database for end users.
(f) Human Resources Development	Creation of a system for providing trained manpower as per changing operational needs of GSI.
(g) Modernisation & Replacement	Improvement of capabilities in the field and laboratories for generating various types of earth science data and their processing for proper interpretation.

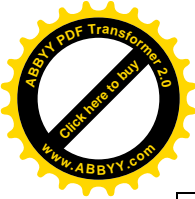


Appendix-II

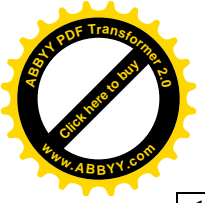
Ongoing schmes/programmes, with financial outlays for the year 2008-09

(Rs. in Crores)

S. No	Name of Project, cost	Year of Commencement	Expenditure upto March, 2007	Proposed in BE 2008-2009
A.	Continuing Scheme			
1.	NIRM (capital expenditure for modernisation of equipment and civil works)	--	--	0.47
2.	JNARDDC (Modernization for removal of obsolescence and civil works)	--	--	1.30
3.	NIMH (Capital Expenditure for equipment and civil works)	--	--	0.30
4.	National Facility for Semi – Solid Forming – I.I.Sc.,Bangalore. MOM – Rs.476 lacs, DST – Rs.92 Lacs, DRDO – Rs.25 lacs	2001	476	--
5.	RRL- Bhopal – Simulation assisted development of aluminium metal foam through liquid metallurgy route – R.R.L.,Bhopal – Rs.15 lacs, DoM –Rs.28 lacs, DST - Rs.20 lacs and DRDO – Rs.17 lac.	Jan. 2004 2 ½ years	25	--
6.	NML- Jamshedpur – Pilot scale smelting and pre-feasibility studies			



	on nickel-chromium-cobalt bearing magnetite ores of Nagaland for an economically viable plant. DoM –Rs.21 lacs, DST –Rs.21 lacs and DoS –21 lacs, Govt. of Nagaland Rs.15 lacs.	2005	8.39	---
7.	HCL – Bio leaching of lean sulphide (Chalcopyrite ore of MCP) – Rs.160 lakhs			0.55
	TOTAL - A			2.62
B.	New Schemes			
8.	Preparation of Strontium Hexa – Ferrite powders from Celestite ore and blue dust – Thapar Institute of Engineering & Technology, Patiala - Rs. 16.88 lakhs	2007	--	.06
9.	Characterization, Beneficiation and Utility Study of Some Graphite deposits from Arunachal Pradesh – RRL, Jorhat – Rs.26.30 lakhs	2007	---	.09
10.	Feasibility and Application of Bio-fuel as well as low Cost and Diluted ANFO (Ammonium Nitrate Fuel Oil) for cost effective and safe blasting practices in Open Cast metalliferous Mines in India. Central Institute of Mining & Fuel Research (CIMFR), Nagpur	-	-	.10
	Development of under			



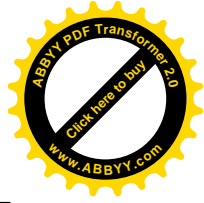
11.	ground stopping method for soapstone mining in Rajasthan, Deptt. of Mining Engineering, College of Technology & Engineering, Udaipur, Rajasthan	-	-	.10
12..	Characterization and dry beneficiation studies to enrich the Nickel content from the waste lateritic Nickel bearing chromite overburden materials of Sukinda, Orissa, Regional Research Laboratory (RRL), Bhubaneswar	-	-	.03
	TOTAL-B			.38
	TOTAL A+B			2.62 +.38 = 3.00

Six new projects have been added in the list of project to be funded by this Ministry for which a provision of Rs. 38 lakhs has been kept in BE 2008-09. This is so because the Projects at Sl. No. 8 & 9 have already been approved in the SSAG meeting. But rest of the Projects will be reconsidered in the ensuing SSAG meeting.

Non-Plan Expenditure

(Rs. in Crores)

S.No.	Name of Institute	Proposed for 2008-09
1.	NIRM	1.00
2.	NIMH	0.50
3.	JNARDDC	1.30
TOTAL		2.80



Appendix-III

NEW S&T SCHEMES RECEIVED FOR GRANT-IN-AID FROM MINISTRY OF MINES

NEW SCHEMES

1.Preparation of Strontium Hex Ferrite Powder from Celesite ore and Blue Dust, Thapar Institute of Engineering and Technology, Patiala, 3 years, Rs. 16.88 lakhs.

OBJECTIVE

To develop strontium hexa ferrite powder by converting Celesite ore and blue dust into strontium carbonate and iron oxides through chemical routes. These powders will be used as raw material for the preparation of strontium hexa ferrite sintered magnets.

JUSTIFICATION/BENEFITS

In India Celesite ore is available in Tiruchirapalli, Tamil Nadu and blue dust near Bailadila mines in Chattisgarh, which are discarded as waste. The fines of these ores are posing environmental problems. Presently strontium hexa ferrite magnets are made from imported pure chemicals. This proposal would lead to utilization of waste material and savings of foreign exchange.

2. Characterization, beneficiation and utility study of some graphite deposits from Arunachal Pradesh, Regional Research Laboratory, Jorhat, 3 years, Rs. 26.3 lakhs.

OBJECTIVE

Chemical, mineralogical characterization and beneficiation study of graphite deposits from La-Lamdak (Bopi) and Taliha, Arunachal Pradesh. It also includes the suitability of this graphite to various industries.

JUSTIFICATION/BENEFITS

Graphite is a useful industrial material. Successful completion of this programme would be useful for the development of North Eastern Region.

3.Feasibility and application of bio-fuel as well as low cost and diluted ANFO for cost effective and safe blasting practices in open cast metalliferous mines in India. Central Mining Research Institute, Nagpur, 3 years, Rs. 88.02 lakhs.



OBJECTIVE

Development of an economical ANFO type explosive, either by using bio-fuel or mixing polymer beads, without jeopardizing safety and environmental concerns. It would also involve replacement of fossil fuel (high speed diesel) by bio-fuel or other low cost petroleum products.

JUSTIFICATION/BENEFITS

In mining and construction, a huge amount of blasting agents and explosives are required for excavating rock and an expenditure of almost 150 crores is incurred annually. The fuel used in blasting agents and explosives is predominantly diesel and the possibility of the use of bio-fuel as its substitute is never explored. Development of this know-how would be highly beneficial for Indian industry.

4. Project for development of under ground stopping method for soapstone mining in Rajasthan to be implemented by Department of Mining Engineering College of Technology and Engineering, Rajasthan, 3 years, Rs. 20.60 lakhs.

OBJECTIVE

Techno-economic viability of the mining methods used for the exploitation of the soapstone and development cum operation of an experimental stop based on this study. Monitoring of wall rock behavior during and after stopping and application of the results for developing underground soapstone mines.

JUSTIFICATION/BENEFITS

Scientific method for maximum extraction of the soapstone would be developed. Higher extraction ratio would yield higher revenue to the mine operators and the State Government.

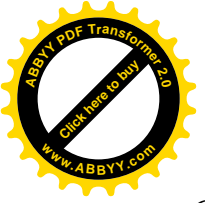
5. Survey, assessment of Water Quality and Scope for Harvesting Water in the Iron and manganese Ore mines of Orissa-Manganese Institute of Advance technology and Environment Studies, Bhubaneswar, Orissa. Institute of Advance Technology and Environmental Studies, 24 months, Rs. 8.90 lakhs.

OBJECTIVE

It is proposed to make a survey of various iron and manganese mines of Orissa to find out the potential water resources and the quantity and quality of water in different seasons.

JUSTIFICATION/BENEFITS

Harvesting of water resources. Utilization of harnessed water for irrigation, plantation, dust suppression in mine areas, pisciculture and various domestic purposes after necessary treatment.



6.Characterization and dry beneficiation studies to enrich the nickel content from the waste lateritic nickel bearing Chromite overburden material of Sukinda, Orissa, 24 months, RRL, Bhubaneswar Rs. 6.20 lakhs.

OBJECTIVE

To study the feasibility of recovering nickel present in the overburden materials of operating chromite mines of Sukinda by dry classification

JUSTIFICATION/BENEFITS

Recovery of nickel besides fruitful utilization of the waste overburden. Chromite would also recovered from coarse fractions as a value added product.

7.Bauxite technical data bank on the deposits of Goa, Karnataka, Tamil Nadu and Kerala, JNARDDC, 3 years, Rs. 29.30 lakhs and will be considered in the next SSAG meeting. .

OBJECTIVE

Compilation of the technical data on the bauxite deposits of the Western Ghats including their physical mineralogical, trace elemental and technological characteristics.

JUSTIFICATION/BENEFITS

This data bank can be utilized for starting new mines and for proving ores to the existing alumina plants. New deposits identified through this data can also be used for developing Greenfield alumina plants and extraction of trace metals.