

12 | Sustainable Development Framework

12.1 The Mining sector in India has shown tremendous scope for growth keeping in view the fact that the country has sizeable potential for mineral wealth and demand from manufacturing sector continues to expand. It is however recognized that mining, unless properly regulated can have serious adverse environmental and social consequences. On one hand, mining disturbs the soil, water and ecological regimes and on the other hand, unless accompanied by proactive measures to promote inclusiveness through social, education, health and other interventions, it can lead to alienation of the local population, and assume socially unacceptable dimensions. This has necessitated fresh thinking on policy approaches and systems that ensure that Mining is done in a way that causes least damage to the natural resources such as air, water, soil, biomass, and also benefits local communities in the most appropriate way.

12.2 One of the greatest challenges facing the mining sector today is integrating economic activity with environment integrity, social concerns and effective governance systems. The goal of that integration can be seen as more sustainable development. This requires a robust framework based on an agreed set of broad principles, an understanding of the key challenges facing the sector at different levels and in different regions and the action needed to meet or overcome them; a process for responding to these challenges for protecting the rights and interest of all involved, ability to set priorities, ensure that action is taken at appropriate levels, and an integrated set of institutional and policy instruments to ensure minimum standards of compliance as well as responsible voluntary actions. It also requires variable measures to evaluate progress and enable consistent improvements.

12.3 A High Level Committee which was set up under the chairmanship of Shri Anwarul Hoda, Member, Planning Commission in the year 2005, to review the National Mineral Policy recommended that apart from introducing best practices in implementation of environment management, there was also a need to take into account the global trends in sustainable development. The High Level Committee specifically studied the impact of mineral development with the need to develop principles in mining, best practices, and reporting standards which may be measured objectively. The Committee held that some of the challenges facing the Indian mining sector to develop in a sustainable manner would be to identify the appropriate use of land within a Land Planning framework through a democratic decision making process on the basis of integrated assessment of ecological, environmental, economical and social impact. The High Level Committee also held that mining should contribute to economic, social and cultural well-being of indigenous host population and local communities by creating stakeholder interest in mining operations for the Project affected Persons (PAP).

12.4 In their assessment the High Level Committee delved quite extensively into the Sustainable Development Framework (SDF) modelled by the International Council of Mining and Metals (ICMM)/ International Union for the Conservation of Nature and Natural Resources (IUCN). The High Level Committee recommended development of an SDF specially tailored to the Indian context. The said SDF, it was envisaged, would be composed of principles, reporting initiatives and good practice guidelines for the three sectors of Indian Mining i.e. SME, Captive and large

stand alone sectors. Such a SDF would be applicable to mining operations in India, and would be monitored through a regulatory mechanism. The recommendations of High Level Committee have been accepted by the Government.

12.5 The National Mineral Policy, 2008, which gave effect to the High Level Committee recommendations recognized the fact that extraction of minerals closely impacts other natural resources like land, water, air and forest and that areas in which minerals occur often have other resources presenting a choice of utilisation of the resources. The Mineral Policy holds that it is necessary to take a comprehensive view to facilitate the choice or order of land use keeping in view the needs of development as well as needs of protecting the forests, environment and ecology. Both aspects have to be properly coordinated to facilitate and ensure a sustainable development of mineral resources in harmony with environment. In doing so the Policy lays emphasis on the need to address issues pertaining to prevention and mitigation of environmental problems like land degradation in opencast mining and land subsidence in underground mining, deforestation, atmospheric pollution, pollution of rivers and streams, soil erosion due disposal of solid wastes like overburden and so on, all affecting the ecological balance of the area. The Policy enunciates that guiding principle shall be that a miner shall leave the mining area in better ecological shape than miner found it.

12.6 The Policy stipulates that as far as possible, reclamation and afforestation will proceed concurrently with mineral extraction. The Mineral Policy recognizes the significance of Rehabilitation and Resettlement of local host populations and enunciates that apart from compensation as an important aspect of the Sustainable Development Framework, models of stakeholder interest for the local host populations in the mining operation shall be encouraged. A mechanism will be evolved which would actually improve the living standards of the affected population and ensure for them a sustainable income above the poverty line. The Policy also lays stress on effective mine closure that

not only addresses restoration of ecology and regeneration of bio mass but also takes into account the socio-economic aspects of such closure.

12.7 The existing Mining regulations i.e, the Mineral Concession Rules, 1960 and the Mineral Conservation and Development Rules, 1988, stipulate that mining operations are required to be done as per an approved Mining Plan and after extraction of minerals the mines are required to be reclaimed as per an approved Mine Closure Plan. The Mine Closure Plan is required to comprise a Progressive Mine Closure Plan prepared for the five yearly periods of the successive mining schemes and a Final Mine Closure plan. Mine Closure Plan are expected to address issues relating to environment protection including on air, water and land protection, management of top soil and overburden reclamation and rehabilitation of lands, control on ground vibration, surface subsidence and restoration of flora. These plans are approved by the Indian Bureau of Mines and, in case of 23 minerals the powers have been delegated to the State Governments.

12.8 An issue that poses a challenge to the mining Industry is that of abandoned mines. In the 14th meeting of Indian Bureau of Mines Advisory Board held at Bangalore on 22nd March 2003, on the issue of closed or abandoned Mines, the Indian Bureau of Mines was advised to prepare a National Level Inventory of disused/abandoned or orphaned mines and to evolve an action plan for their restoration in consultation with the State Governments. The Indian Bureau of Mines, accordingly, identified 297 mine sites for reclamation /rehabilitation/ restoration, and has prepared a comprehensive project proposal for a total of 106 abandoned mine sites (36 sites held earlier by PSUs and 70 sites held by private sector). The 106 mining sites were shortlisted on the basis of the fact that in these sites, there was significant alteration in landscape, unused pits and shafts, non-usability of land due to loss of soil, abandoned tailing dumps, change in ground water regime, contaminated soil, sediments, subsidence, changes in vegetation etc. Even out of these sites, since interest had been shown for reopening

of mining activities in 16 mining sites (due to improved market conditions, availability of technology for beneficiation/ ore recovery etc), reclamation and rehabilitation was required only for 90 mines. As per the latest assessment, the total estimated cost of reclamation of the 90 mining sites covering an area of 428.62 ha, would work out to Rs. 64.2 crores.

12.9 In accordance with the reconstitution of the Central Geological Programming Board, a Committee (Committee no. XII on Geoscience for Sustainable Development) has been constituted to facilitate integration of geoscience into policy making for environmental issues and to transmit the concepts to potential interest groups including policy makers, non-governmental environmental agencies and general public, and to help develop a framework and methodology for promoting sustainable development strategies (including optimum land use) through best use of geoscientific data gathered in the course of survey and exploration by GSI and other geoscientific organizations in the country. The Committee will also assist nodal agencies concerned by developing new areas for geoscientific data collection, particularly spatial data such as geomorphology to help them analyse ecosystem functions and make informed planning decisions. Two meetings of the Committee No.XII (Geoscience for Sustainable Development) have been held on 12th August, 2009 and 18.1.2010 and major recommendations include:

- (i) Joint study by GSI and CGWB of (i) Trace elements in Groundwater, (ii) Variation of temperature in Groundwater, (iii) Geogenic part of the minerals in the Groundwater, (iv) Offshore aquifers below the seabed, (v) and resistivity and deep seismic surveys.
- (ii) use of Hyperspectral mapping of clay minerals rich in Potassium and other elements for use in agriculture on specific request in a limited area as a pilot project.
- (iii) Creation of National Geological Congress proposed which is to be funded by the Government and will cater to the annual meetings.

(iv) Climate change studies etc.

12.10 The Ministry constituted a Committee under the chairmanship of Special Secretary (Mines) on 4th March, 2009 for overseeing the preparation of Sustainable Development Framework for the Indian Mining sector. The committee includes representatives of Ministry of Environment of Forest, Indian Bureau of Mines, Geological Survey of India, Federation of Indian Mineral Industries National Environment Engineering Research Institute. (NEERI). In order to prepare a draft Sustainable Development Framework, the Ministry invited bids for consultancy from known experts in the field, and after a process of evaluation has selected M/s ERM India Private Limited as the consultant for preparing the draft Sustainable Framework Development document. The effective date for the commencement of the contract for preparation of the draft Sustainable Framework Development document is 10th December 2009, and it is expected that the consultant would be able to complete the exercise of preparing a draft Sustainable Framework Development in a period of six months. The Ministry has parallelly initiated consultations with Civil Rights Groups and NGOs in this matter, and invited comments of the public on its website.

12.11 As per the Terms of Reference for the consultant, the draft Sustainable Development Framework would cover the following aspects among other, with regard to all non-coal, non-fuel minerals (both major and minor minerals):

- Factors and parameters influencing sustainable and scientific mining (and indicators thereof).
- Broad criteria beyond which mining may not be deemed sufficiently sustainable and for scientifically manageable.
- Systemic measures needed to be taken or built in to increase sustainability of mining operations considering its entire life cycle inter-alia:-
 - a) Ensuring minimal adverse impact on quality of life of the local communities.

- b) Protecting interests of affected persons including host populations.
 - c) Create new opportunities for socio-economic development including for sustainable livelihoods.
 - d) Mineral conservation (both in terms of mining technologies/practices and mineral beneficiation).
 - e) Reduction in waste generation and related waste management practices.
 - f) Minimizing and mitigating adverse environmental impacts particularly on surface as well as ground water (both in terms of its quality and availability as resource), air, ambient noise and land.
 - g) Ensuring minimal ecological disturbance, in terms of bio-diversity, flora, fauna and habitat.
 - h) Promoting restoration and reclamation activities so as to make optimal use of mined out land for the benefit of the local communities.
- Systems to devise measurable indicators of sustainable development and draft contours of Sustainable Mining Management System.
 - The regulatory and other mechanisms to ensure that the systemic measures are in place and are working.
 - Consultative mechanisms with stakeholder groups right from pre-mining stages (including exploration) through the life cycle and upto post closure stages to ensure that the stakeholder groups involvement and participation in identifying and addressing the sustainability issues, in developing the broad contours of the approaches to the sustainable management of all the activities including formulation of the measureable indicators and monitoring mechanisms for the purpose.
 - A system of public disclosure of mining related activities and environmental parameters including indicators and mechanisms to facilitate formal and informal sustainability audits.
 - Measures to ensure industry acceptance and adoption of the SDF including indicators for benchmarking the nature and extent of SDF adoption.
 - Roll out mechanism for adoption of the SDF at the grassroots level including the training, publicity, conducting workshops, handholding etc and time frames for the Roll-out.

Conservation of Minerals

12.12 Minerals are finite and depleting resources. It is essential that all out effort is made to stretch out the available resources for as long as they can last. The NMP 2008 lays stress on conservation, as a concept leading to augmentation of reserve base, through better mining, beneficiation and utilization of low grade ore and rejects and recovery of associated minerals. The NMP 2008 has laid specific stress to make the regulatory environment conducive to private investment in mineral exploration, prospecting and transparency in seamless grant of mineral concessions, with security of tenure.

12.13 The statutes have provided for all aspects of conservation, which are being implemented by IBM, through study of exploration and prospecting reports submitted to IBM; inspections for mining plan approval for grant of leases, by inspection of working mines; through mineral beneficiation studies, drawal of samples from reject and waste dumps for study and also through maintenance of inventory of minerals at IBM.

12.14 The efforts mainly comprise of complete exploration for minerals, systematic mining of minerals to ensure full economic extraction of the minerals with use of available technology, use of latest beneficiation techniques to ensure optimum recovery of the value from the ores, upgradation of low grade ores and minerals if they cannot be blended and used with the

high grade mineral, minimum generation of mineral rejects, proper stacking of mineral rejects for their future upgradation when technology becomes available. Review of the available technology in exploration, mining, beneficiation and metal extraction technology is undertaken from time to time, to set the threshold value of minerals for which exploration must be done and mineral inventories maintained in internationally understood formats.

Threshold Values of Minerals

12.15 During mining operations three mineral fractions are generated, these are in the decreasing order of tenor / grade or concentration viz. (i) marketable or saleable grade fraction (ii) sub grade ore (iii) mineral waste. The sub grade ores are those mineral materials which can not be sold in a particular region, at a particular period and at that stage of technological development, but can be made saleable in the future, through advancement of beneficiation and utilization techniques.

12.16 The threshold value is a component to mineral conservation as it decides the lower limit of sub-grade ore in a mineral deposit. The threshold value of a specific mineral decides the mining waste as distinct from utilizable/marketable fraction of ore zone.

12.17 This value is of dynamic point. The threshold value defines the limiting content of the valuable constituent in an ore zone above which the excavated material will attract the provisions of rule 16 & 18 of MCDR, 1988. Under this provision the lessee is required to stack and preserve unsaleable sub-grade ore, which are generated during mining.

12.18 During the year 1989-90 the IBM pioneered to fix up the threshold values of 13 minerals. Considering the present advancement of ore beneficiation techniques as well as changing scenario of the consumption pattern of different minerals, IBM took the lead to review and revise earlier fixed threshold value of 13 minerals, and to expand the perspective of this review by including the additional 10 minerals which are produced in bulk quantity and are of

importance to the national economy. Thus total of 23 minerals, namely 1. Iron Ore (Hematite/Magnetite) 2. Manganese Ore 3. Chromite 4. Graphite 5. Bauxite 6. Limestone 7. Dolomite 8. Magnesite 9. Kyanite 10. Sillimanite 11. Apatite 12. Rock Phosphate 13. Fluorite 14. Gypsum 15. Wollastonite 16. Talc/Steatite/Soapstone 17. Barytes 18. Base metals (Cu, Pb, Zn, Ni, Sb), 19. Gold 20. Ilmenite 21. China clay 22. Fireclay 23. Bentonite, were under consideration.

12.19 In exercise of the powers conferred on Controller General, IBM under Rule 54 of the Mineral Conservation and Development Rules 1988 and in consultation with State governments and with previous approval of the Central Government, in the interest of systematic development of mineral deposits and conservation of minerals, IBM has notified new the threshold values of 12 minerals vide Notification No. T-45031/CGBM/2007 (PF) dated 16.10.2009. Earlier and New threshold values of those 12 mineral are mentioned in **Table 12.1**.

Conservation for Sustainable Mining

Mine closure

12.20 Mines abandoned or closed without taking necessary measures can have serious environmental and social consequences. In India, abandonment of a mine, after completion of its useful life, has always been regulated under the provisions of Rule 23 of MCDR 1988, requiring a lessee to give notice of intention to abandon operations and submit plans and section setting forth the measures intended to be taken for protection of the abandoned mine, before surrender of lease. Since April 2003, this Rule has been strengthened to provide for preparatory works to be progressively undertaken for closure of the mine from the opening stage itself. The introduction of Rule 23A now requires the lessee to submit a **Progressive Mine Closure Plan (PMCP)** as a part of the mining plan, approved for grant of the mining lease.

The PMCP includes proposals for backfilling/reclamation/dump stabilization/afforestation etc. which are carried out simultaneously with the

Table 12.1
Threshold Value of Minerals

Sl. No.	Name of the Mineral	Old threshold value	New threshold value
1	Iron Ore	(A) For Goan Iron Ore:- i) Siliceous ore:- 40% Fe ii) Hematitic Iron Ore (both lumpy & powdery) :- 55% Fe (B) For Bellary Hospet Region :- 58% Fe (provisional)	i) Siliceous ore-35% Fe ii) Hematitic iron ore (both lumpy & powdery)-45% Fe
2.	Chromite	- Not Fixed earlier-	Chromite Ore having 10% Cr ₂ O ₃ content
3.	Bauxite	i) For Eastern ghats:-Al ₂ O ₃ < 35%, SiO ₂ >5 %, Module<9.8 ii) Westernghat, Inland high level plateau & Hillocks of Central India, etc:- Al ₂ O ₃ < 44%, SiO ₂ >4.5%, Module<9.8 iii) Coastal Plains:- Al ₂ O ₃ < 42%, SiO ₂ >4.5%, Module<9%	i) For aluminous laterite-Al ₂ O ₃ <20% ii) For Bauxite- Al ₂ O ₃ -30% & silica (reactive) >5%
4.	Limestone & Dolomite	i) For Western & Northern states:- CaO:- 34% (min), MgO:- 4% (max), SiO ₂ :- 18% (max), Alkalies:- 0.5% (max) ii) For Southern States:- CaO:- 35% (min), MgO:- 4% (max), SiO ₂ :- 18% (max), Alkalies:-0.5% (max)	i) Deposits in Rajasthan & Gujarat & Central India:- CaO-34% (max), MgO-4% and Lime saturation Factor-34%. ii) Deposits of Jharkhand & Orissa & Southern states :-CaO-35% (max), MgO-4% (max), SiO ₂ -18% (max) & Alkalies-0.5% (max) Dolomite :- MgO-15% (max), SiO ₂ -6% (max), Total Insolubles-12% (max)
5.	Wollastonite	Wollastonite content- 40%	Wollastonite content-35%
6.	Magnesite	a) For Tamil Nadu:- MgO - 35% (min) CaO-1.8 % (max) b) For deposits of U.P MgO-35% (min), CaO- 6 % (max)	For deposits of south Indian states and Uttaranchal state:- MgO -35% (min) CaO-3% (max) Fe ₂ O ₃ -3% (max)
7.	Talc/Steatite/soapsone	For Talc & Soapstone:-Whiteness : 68 % (min); Carbonate content : 25 % (max); talc content 40 % (min)	No threshold value is recommended.

Threshold values in respect of following five minerals remain unchanged.

Sl. No.	Name of the Mineral	Old threshold value	New threshold value
1.	Manganese Ore	Manganese Ore having 10%	Manganese Ore having 10%
2.	Graphite	i) Flaky variety: 2 % FC ii) Amorphous variety: 10 % F.C.	i) Flaky variety: 2 % FC ii) Amorphous variety: 10 % F.C.
3.	Apatite & Rock Phosphate	P ₂ O ₅ -5%	P ₂ O ₅ -5%
4.	Fluorite	CaF ₂ -5%	CaF ₂ -5%
5.	Barytes	BaSO ₄ -50% (min), Sp. Gravity-3.5 (min).	BaSO ₄ -50% (min), Sp. Gravity-3.5 (min).

progressing mining operations in such a way, that the mine site is ready for rehabilitation at the time of abandonment/closure. The Rule also provides for submission of a **Final Mine Closure Plan** (FMCP) to be submitted for approval atleast one year before the ceasure of mining operations.

This was for completion of all the PMCP measures and prepare the mine for taking up and completing the final mine closure requirements, once the operations ceased. The lessee can ask for acceptance of surrender of mining lease, once closure work was completed satisfactorily and produced a certificate to that effect from the Indian Bureau of Mines, to the state government (Rule 29A, MCR 1960). To ensure that the lessee completes the work of mine closure as approved for his mine, the Rule 23F also provides for submission of a valid **Financial Assurance** in the form of an encashable bank guarantee. As on November 2009, financial bank guarantees for a value of Rs 252,6531728 have been collected and certificates under Rule 29A of MCR 1960 have been issued for 45 cases of partial/full surrender of lease. The amendment to the MMDR Act proposes to include provisions for setting up a mineral fund for improvement of local infrastructure for the socio-economic purposes, maintenance of community assets and human resource development of local populations for creating jobs.

R&D in Mineral Beneficiation

12.21 The Ore Dressing Division of Indian Bureau of Mines has been engaged in carrying out R&D studies in the field of mineral beneficiation since its inception in 1960. The Ore Dressing Division of Indian Bureau of Mines is carrying out R&D studies for development of beneficiation process flow sheet/process know-how of low grade ores and minerals in Laboratory and Pilot Plant scale to generate process data / parameters for design of commercial concentrates. The major sponsors of the investigation are Public Sector Undertakings, Central and State Governments as well as many private mining companies and consultancy firms.

12.22 Since 1960, nearly 2700 reports of investigations have been brought out by Ore Dressing Division for

various types of ores and minerals, the major sponsors being Public Sector Undertakings, Central and State Governments as well as many private mining companies. IBM also carried out investigations for many foreign agencies from China, Bhutan, Senegal, South Africa etc.

12.23 On many occasions data generated through O.D. investigations by IBM have compared well with those generated at reputed foreign laboratories like Lurgi (Germany), BRGN (France), Metkem (Canada), BGRIMM (China) etc., which has increased confidence in this field, apart from achieving international credibility.

Corporate Social Responsibility for Sustainable Mining

12.24 Minerals of a region are a valuable resource and measure of the potential for economic and industrial growth. Most of the minerals are located either in tribal areas or in forest areas or both, and hence any mining associated activity would have to address issues relating to the impact on the environment and socio-economic life of the tribals. Many initiatives have been taken by the industry voluntarily as part of Corporate Social Responsibility (CSR).

12.25 Indian Mining Industry is becoming increasingly aware of its corporate responsibility towards the society. There is a considerable expectation both from the Government and the society that mining industry accepts its role in the development of socio- economic status in the rural and tribal areas. A number of mining companies have taken the responsibility by amalgamating environmental concerns and community development in their corporate policy.

12.26 The Federation of Indian Mineral Industries (FIMI), has instituted four Environment Awards, two Corporate Social Responsibility Awards and one Excellence Award which are given annually. The Ministry of Mines is represented on the committee making the recommendations for the CSR award.

Corporate Social Responsibilities of NALCO

12.27 NALCO has attempted to address the problems of rehabilitation of displaced families with adequate compensation, housing and employment to the extent feasible. Creation of infrastructure in the surrounding villages for communication, education, health care and drinking water gets priority in the periphery development plans of the Company. Community participation in innovative farming, pisciculture, social forestry and sanitation programmes apart, encouragement to sports, art, culture and literature are all a part of NALCO's involvement as a responsible corporate citizen. As a policy, NALCO has been allocating 1% of its net profit of the year for peripheral development activities of the succeeding year. Out of this allocable fund; 40% is for Damanjodi (Mines and Refinery) sector; 40% is for Angul (Smelter) sector; and 20% is for Bhubaneswar & rest of Orissa.

12.28 The CSR activities of the Company mostly cover the peripheral villages of smelter & power complex, Angul and mines & refinery complex, Damanjodi and the district head quarters of Angul and Koraput. The Govt. of Orissa has constituted Rehabilitation and Peripheral Development Advisory Committee (RPDAC) for Damanjodi and Angul separately under the chairmanship of concerned Revenue Divisional Commissioner (RDC). The RPDAC finalizes the annual

peripheral development projects and its estimates. The RPDAC also decides the projects to be executed by the District Administration and by NALCO.

The details of amount contributed on such activities by NALCO for the financial years 2004-05 to 2008-09 is given in **Table 12.2**.

12.29 During the current financial year (i.e. 2009-10), the total allocation for CSR activities by the NALCO is Rs. 1272.27 Lakhs. Out of this, as per Company's policy, an amount of Rs. 508.91 Lakhs each for mines & refinery complex, Damanjodi and smelter & power complex, Angul has been allocated and conveyed for finalization for projects in the RPDAC meeting.

12.30 NALCO is also considering to establish a Corporate Social Responsibility Foundation for taking up various peripheral development activities over and above the activities being undertaken through RPDACs. The company has approved in principle for allocation of another 1% of its profit to be spent by this Foundation. Amount spent on CSR activities by NALCO from 1985-86 to 2008-09 is given in **Table 12.3**.

Corporate Social Responsibility of HCL

12.31 HCL is engaged in various CSR activities such as promotion of community development and improving health care infrastructure and increasing environmental



Flagging off new vehicle funded from NALCO's CSR fund for Orissa Police



Hand pump installed as part of NALCO's CSR activities

Table 12.2
Amount contributed by NALCO for Peripheral Development Activities (2004-05 to 2008-09)

(Rs. in lakhs)

Year	Total allocable for the company (1% Net Profit of preceding year)	Fund contributed for M&R Complex, Damanjodi (40% of column 2)	Fund contributed for S&P Complex, Angul (40% of column 2)	Fund contributed for corporate level (20% of column 2)
2004-05	737.37	294.95	294.95	147.47
2005-06	1234.84	493.93	493.93	246.98
2006-07	1562.20	624.88	624.88	312.44
2007-08	2381.38	952.55	952.55	476.28
2008-09	1631.52	652.61	652.61	326.30
Total	7547.31	3018.92	3018.92	1509.47

Note: The sanctioned amount are conveyed to RPDAC who decide the detailed project lists and estimates according to the sanctioned amount. Since the amount earmarked is project wise, sanctioned amount is considered as spent for that particular year irrespective of completion of the work during a particular financial year.

Table 12.3
Amount Spent on CSR Activities by NALCO from 1985-86 to 2008-09

(Rs. in lakhs)

Activity	Bhubaneswar & Other Places	Angul	Damanjodi	Total
Road Infrastructure	26.00	1779.35	2347.09	4152.44
Drinking Water	26.52	1832.50	184.50	2043.52
Education	98.04	906.80	610.69	1615.53
Community Development, Public Building, Parks etc.	666.50	455.55	836.91	1958.96
Culture, Sports & Social Welfare	653.23	327.85	174.31	1155.39
Health & Sanitation	146.60	306.70	212.50	665.80
Plantation/Environment	46.81	41.16	12.02	99.99
Total	1663.70	5649.91	4378.02	11691.63

consciousness. The Company has adopted five villages within the vicinity of project sites for undertaking CSR activities.

12.32 Initiatives undertaken by the Company are as under:

- Training Centers – Sewing and Embroidery opened to form Self Help Groups (SHG's).
- Regular Health Check-up Camps & Mobile dispensary.

- Referral Linkage for Marketing of local produce.
- Plantation Projects (Jatropha Plantation) and increasing green cover by plantation involving local people.
- Vermi-compost - Production of organic manure.
- Water Recharge Programs/Practices.

12.33 Expenditure on CSR activities during the year 2007-08, 2008-09 & 2009-10 has been Rs. 1.95 lakhs, Rs.44.67 lakhs & Rs.9.95 lakhs respectively.