# ENVIRONMENTAL IMPLICATIONS OF FOREIGN DIRECT INVESTMENT IN INDIA'S MINING SECTOR, 1993-2011

*Dissertation submitted to Jawaharlal Nehru University*

*in partial fulfilment of the requirements*

*for award of the degree of*

**MASTER OF PHILOSOPHY**

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**2012**

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***Acknowledgement***

This work would not have been possible without the help and support of many.

First and foremost, I express my gratitude to my supervisor Dr. Amita Batra for her support and guidance. Her patience and understanding have an immense significance in the successful completion of this work. I thank all the professors in the South Asian division, for enriching my knowledge of the region.

Appa, thank you for the constant support and love. You are the best dad in the world and I know you are always with me.

Amma and Anna, you are my constant back up and support system in the most crucial and most unimaginable times. This work would not have been possible without your love and care. Thank you for giving me the freedom to pursue my dreams and trusting my decisions.

Special thanks go to Mr. Mayilsamy. K., Advocate, Supreme Court of India, for his constant support and help.

I also thank CSE library and TERI library, for helping me with the relevant literature, for this work.

I thank UGC for the grant of Junior Research Fellowship.

Of the many friends who helped me in this work, Kalai deserves special mention for just not his help in writing this dissertation but for being a good friend, throughout my stay in this campus.

Thank you, jalli onan and himuncle for sharing the same dissertation blues.

Himoni,Vijoyta, Mritunjay and Antariyami, thank you for the love, concern and for constantly reminding me to do my work.

Last but not the least, thank you Mona mour for being there with me all thorough, thank you for the constant doubts, the petty fights, the dubbing movies, good food, bad music, the love, care and concern. Thank you for everything.

## CONTENTS


Page No.

Acknowledgement

List of Abbreviations i

List of Tables and Figures ii

**Chapter - 1 : Introduction 1 - 20**

1.1 The Indian Economy before Liberalisation

1.2 The Economic Crisis of 1990

1.3 Foreign Direct Investment Trends in India

1.3.1 Pre-Economic Liberalisation FDI Inflows

1.3.2 Post Liberalisation FDI Inflows

1.3.3 Impact on the Mining Sector

1.4 Definition, Rational and Scope of the Study

1.5 Hypotheses

1.6 Methodology

1.7 Chapter Scheme

**Chapter - 2 : Environmental Laws for Mining in India 21 - 40**

2.1 Early Efforts at Environmental Legislation

2.2 Environmental Protection Act, 1986

2.3 The Amendment to the Mines and Minerals (Regulation & Development) Act, 1957

2.4 Mineral Concession Rules, (MCR) 1960

2.5 Mineral Conservation and Development Rules, 1998

2.6 The Need for Mine Closure Plan

2.7 Protection of Coast through Restriction of Mining Operations in Coastal Regulation Zone

2.8 The Significance of Environmental Auditing in Mining

2.9 Protection Given to Ecologically Fragile Areas

2.10 Forest (Conservation) Act, 1980 and its Application to Mining Operations

2.11 The Wildlife Protection Act, 1972

2.12 National Mineral Policy and its Relevance to Protection of Environment in Mines

2.12. 1 Forest Clearance for Mining Projects
2.13 The Requirements of Environment Impact Assessment
2.14 The Importance of the Impact Assessment Agency

**Chapter - 3 : Sustainable Mining and its Implications on the Availability of Resources** **41 - 59**

3.1 What is Sustainable Mining?
3.2 Iron Ore
3.2.1 Iron Ore Production in India
3. 2. 2 Export Oriented Production
3.3 Bauxite
3.4 Forests as a Resource
3.5 The Status of Forest Clearances

**Chapter - 4 : Environmental Issues in Foreign Direct Investment in Mining in India: an Analysis of Three Mining Projects** **60 - 80**

4.1 The POSCO Project: An Analysis of the Environmental Costs and Concerns
4.1.1 The Various Components of the Project
4.1.2 A Brief Discussion of Events
4.1.3 Progress after Signing the MOU
4.1.4 The Environmental and Social Cost of the Project
4.1.5 The Findings of the Committee: A Cause for Concern
4.1.6 Who is the Law Maker? Who is the Law Breaker?
4.1.7 The Loop Holes in the Verdict of the Ministry
4.2 The Rio Tinto Project: The Diamond Rush
4.2.1 Environmental Concerns
4.2.2 The Lack of Concern Displayed by the MoEF
4.2.3 Public Interest Litigation against Rio Tinto
4.3 The Joint Venture between OMC and Sterlite Ltd.: An Analysis
4.3.1 The Allegations of Non Compliance with FRA
4.3.2 The Findings of the Committee
4.3.2.1 The Ecological Costs of Mining
4.3.2.2 Violation of Forest Conservation Act
4.3.2.3 Violation of Environment Protection Act

4.3.2.4 Violations of the Conditions of Clearance Granted Under the EPA to the Refinery

4.3.3 The Recommendations of the Forest Advisory Committee

4.3.4 Observations of the Monitoring Report of the Eastern Regional Office

4.3.5 Action Taken by the MoEF

**Chapter - 5 : Conclusion** **81 – 86**

**References** **87 - 91**

## LIST OF ABBREVIATIONS

| | |
|---|---|
| CRZ | Coastal Regulation |
| EAC | Environment Appraisal Committee |
| EIA | Environment Impact Assessment |
| EPA | Environment Protection Act |
| EPZ | Exports processing Zone |
| FAC | Forest Advisory Committee |
| FDI | Foreign Direct Investment |
| FERA | Foreign Exchange Regulation Act |
| FIPB | Foreign Investment Protection Board |
| FRA | Forest Rights Act |
| GOI | Government of India |
| IAA | Impacts and Minerals Regulation and Development |
| MCDR | Mineral Conservation and Development |
| MCR | Mineral Concession Rules |
| MIGA | Multi Related Investment Guarantee Authority |
| ML | Mining lease |
| MOEF | Mining of Environment and Forest |
| MRTP | Monopolies and Restrictive Trade Practices |
| PFI | Post Folio Investment |
| PL | Protecting Lease |
| PSU | Public Sector Undertaking |
| RP | Reconnaissance Permit |
| TOR | Terns Of Reference |

## LIST OF TABLES AND FIGURES

LIST OF TABLES


| | | Page No. |
|---|---|---|
| Table 1.1 | Foreign Direct Investment in India 1970 – 1982 | 11 |
| Table 1.2 | FDI Inflows after Liberalisation | 12 |
| Table 1.3 | Region wise FDI Inflows Received in Mining Sector | 17 |
| Table 3.1 | World Iron Reserves in Principal Countries | 45 |
| Table 3.2 | Selected State-wise Reserves/Resource of Iron Ore in India | 46 |
| Table 3.3 | Production of Iron Ore from 1987- 2010 | 47-48 |
| Table 3.4 | Export of Iron Ore as Percentage of Production | 48 |
| Table 3.5 | Selected State-wise Reserves/Resources of Bauxite in India | 50 |
| Table 3.6 | Bauxite Production in India | 51 |
| Table 3.7 | Export as Percentage of Total Production | 52 |
| Table 3.8 | Export of Ores and Minerals 2004 – 05 to 2008 – 09 | 52-53 |
| Table 3.9 | Status of Forest Clearance from 1980 to July 2011 | 54 |
| Table.3.10 | Forest Land Diverted for Developmental Purpose | 55 |
| Table 3.11 | Break Up of Forest Land Diverted for Development Purpose in the Last Five Year Plan | 55-56 |
| Table 3.12 | Sector Wise Break Up of Forest Land Diversion, Post Forest Conservation Act | 56 |
| Table 3.13 | Forest Land Diverted for Mining Since 1981 | 57 |
| Table 3.14 | Sector-Wise Water Allocation | 58 |


LIST OF FIGURES


| | | Page No. |
|---|---|---|
| Fig. 1 | Export of Iron Ore 1992 – 2005 | 49 |

# CHAPTER ONE: INTRODUCTION

India is a mineral-rich country. It has a vast geological potential of over 20,000 known mineral deposits, and is in the top ranks in production of some key minerals such as coal, iron ore, chromite and bauxite. According to the Geological Survey of India (GSI), the national exploring agency, the country is yet to tap its complete potential: it has huge reserves of important minerals awaiting exploration and exploitation. In order to maximize the potential of these industries foreign direct investments are greatly encouraged in iron and steel industry, mining and minerals industry, especially in resource rich states such as Orissa, Jharkhand etc. The mining sector in India has seen large-scale deregulation over the past 20 years. The country witnessed a spate of disinvestments by PSUs in mine-based industries (essentially producing aluminum and steel) during this period. The government divested its shares in NALCO, NMDC, Hindustan Zinc Limited and many other PSUs. Foreign and private investors were greatly encouraged by the changes in the mineral sector, which increased the scope for private investments.

The Mineral Policy of 1993 and the amendments to the Mines and Minerals Act 1957 brought about great changes in the scenario of mining. It allowed 50 percent investment by foreign companies in mining, opened all non-atomic and non-mining minerals to private investment, increased the validity period of prospecting licenses and mining leases and almost doubled the area under a single license.

In December 1999, the Act was renamed the Mines and Minerals (Development and Regulation) (MMDR) Act, 1957 and further changes were incorporated. It included introducing a provision for reconnaissance permits, raising the cap on foreign direct investment to 100 percent and giving the states the right to grant leases for exploiting 15 minerals, while the other major minerals, still remaining in the hands of the central government.

This resulted in an increased spurt of growth in the mining industry and it has grown at more than 10 percent in the post-reforms period (between 1993 and 2003), as the mining sector was opened up for private and foreign investments. In this period 73 foreign direct investment mining project proposals have been cleared[1]. From April 2000 to October 2011 the Foreign Direct Investment inflow in mining sector in India

[1] Banerjee,m.z.h.s and Bhushan, Chandra(2008), *Rich Lands Poor People:'is sustainable mining possible?',New Delhi:CSE.*

is 0.62% of the total inflows amounting to 932.71 million dollars[2]. Some of the major companies include POSCO, De Beers, BHP Billiton, Mittal and Rio Tinto.

It is important to note that India's major mineral-producing districts are characterized by large forest covers and the most abundant river systems. The rapid increase in investments has led to increase in the amount of forest land diverted for mining. Between1980-97, forest clearances were granted for only 317 mines with a total diversion of 34,527 ha. Between1998-2005, the Ministry of Environment and Forest (MoEF) cleared 881 mining projects in forest areas diverting 60,476 ha of forest area. This means that during 1998-2005, on an average, 216 mining projects were granted forest clearance annually – as against 19 clearances annually during 1980-97. Similarly, the total forest area diverted annually for mining during 1998-2005 is four-fold higher than what was diverted every year during 1980-97[3].

If mining is not done under stringent environmental regulations, it can have a heavy toll on the environment and the ecological balance. It can devastate lands, pollute the air, deplete water resources and wipe out the wild life. Due to reduction in the forest cover and pollution, mining can alter the hydrological profile of the region and result in water scarcity. The extraction and processing of materials need to be closely monitored for pollution. The mineral wastes produced in mining can pollute the land and water resources if not recycled properly. Today mining is happening even in ecologically sensitive areas such as, – in and around reserve forest, wildlife sanctuaries and protected areas. The natural resources such as minerals and metals are non renewable resources; hence mining has to be undertaken keeping this in mind. Mindless mining can also lead to the rapid depletion of non renewable resources which will lead to resource shortages in the future. Minerals and metals are indispensible in the establishment and growth of many important industries today but if there is a shortage in the availability of these resources it will adversely affect a number of industries and even day to day life. So minerals have to be mined in order to meet the demands of today without compromising the ability of the future generations to meet their own.

[2] *Fact Sheet on Foreign Direct Investment(FDI) from April 2000 to October 2011.* URL : http://dipp.nic.in/English/Publications/FDI_Statistics/2011/india_FDI_October2011.pdf, accessed August 12, 2012.

Environmental permits and assessments increase the time, costs and risks associated with bringing a mine into production. Costs may arise because of expenditure on permitting and environmental assessment as it may entail changes in the project design that the compliance process may require. Investment in cleaner technology for controlling pollution and reducing wastage will also mean increased costs in the short term. There is also the added cost of time lapse in the bureaucratic bottle necks for permits and clearances. So, the foreign investors are in search of investment opportunities, where swift processing of proposals is guaranteed along with minimum hurdles in the form of environmental laws and regulations, which impede the operationalisation of mining projects. So, for the swift processing of foreign direct investment proposals much attention is not paid to environmental laws and regulations by the government institutions and the foreign investors. Moreover, the amount of investment and the scale of operation and the quantity of mineral extracted is huge. So, these projects have also come under criticism for mindless exploitation of resources which will lead to shortage of resources in the future.

Some of the major controversies involving environmental damage in mining are in the foreign direct investment project in the country. The South Korean POSCO project in Orissa, the VEDANTA bauxite mines etc. are only some of the examples. The POSCO project is a proposal for prospecting the Khandadhar mines (Sundergarh) for iron ore spread over an area of 13000 acres, which includes1253.225 ha forest land. It also includes the construction of a captive steel plant, a captive port and railways connecting the steel plant and the port. The project will also lead to acute water shortage in the region as12000 to 15000 crore liters of water will be directed from Jobra barrage river Mahanadi. It is feared that the Khandahar waterfall will dry up due to mining in the region. The proposed site for the port is also the nesting site of the endangered olive ridley turtles. There were various discrepancies in the Environment Impact Assessment and other clearances needed to build the steel plant and port. The orders and directions given by the MoEF were not complied and this came under serious criticism from environmental activists.

Recently the union environment ministry has struck VEDANTA's application to expand its bauxite mines in Lanjigarh as the company did not comply with the environmental laws and regulations. The company has plans for Expansion of Alumina Refinery from 1 MTPA to 6 MTPA and Captive Power Plant of 72 MW to

285 MW. It has been found that a lot of work for the project had been completed even before the requisite permission in form of environment impact assessments and clearances were granted. The refinery is also criticized for dumping dangerous toxic wastes that threaten human health. The Amnesty international has come out with a report that the red mud pond at the existing aluminum refinery has toxic wastes that could seriously affect the local population. The news reports state that the toxins have also leaked into the nearby water bodies and the Vamsadhara River and thus polluting the water resources. The project came to light due to serious violation of law, which had not been taken up by the competent authorities responsible for enforcing environmental laws.

All these projects mentioned above came to the lime light, due to negligence in the enforcement of environmental laws and disregard for environmental damage in the sanctioning and operationalization of these projects. It has lead to agitation by the local population and environmental groups, which has caused unusual delays and hurdles. Such projects highlight the traditional approach to development, i.e., focusing mainly on economic growth, by India. The projects are also criticized for mindless mining which will lead to a shortage in the availability of resources in the future. Development at the cost of the environment may provide temporary relief but will not yield fruits in the long run.

This research work aims to look at how environment laws and regulations are undermined in foreign direct investment mining projects in India. It tries to analyze the reasons for disregarding the laid down laws and the part played by the administration and the investors. This study also aims to find out the various environmental challenges posed by mining, by looking at the various controversial mining projects in India. It tries to analyze if mining is carried out in a sustainable manner and look into the possible implications in the availability of these resources.

Before discussing the scope of this research work, the liberalization of FDI policy and its trends are discussed below, with special reference to the mining sector. Till the economic liberalization, foreign investment in India was highly regulated. It was also encouraged only in technology intensive or strategic sectors. FDI was welcome only if accompanied with technology transfer. In order to understand the importance that is placed on Foreign Direct Investment today, it is necessary to understand the shift in

the economic policy after economic liberalization. So, in order for that, an understanding of the model of development for Indian economy soon after independence, the factors leading to the economic crisis and the impact of economic liberalization on the flow of foreign capital is necessary. FDI is also welcomed due to the other growth linkages to the economy such as employment generation, infrastructure development and technology transfer.

The chapter does not attempt to question these assumptions regarding the "spill over" effects of FDI as it not within the purview of the study. Nor will this chapter attempt to analyze the economic benefits of FDI in the mining sector. There are conflicting opinions regarding the positive and negative economic impacts of foreign investments in the country as a whole and in the mining sector in particular. These debates and analysis are not dealt with in this chapter because the policies and agenda of the Indian government, regarding foreign investments are motivated by the idea of FDI as a vehicle of growth and development. This research work, on the whole will try to show how even within the assumed framework of growth and development, the environmental costs of FDI are very dear.

### 1.1 The Indian Economy before Liberalisation.

Foreign direct investments became an important agenda in the economic policy of India after the economic liberalization. In order to understand the importance given to it, it is necessary to trace the shift in the economic policy of the country. An understanding of the economic policy before and after the liberalization process is necessary to understand the emphasis given to foreign investments.

India's planning for industrialization was realized through the five year plans. The first plan was formulated in 1951. India after independence was characterized by a mixed economy with greater emphasis and role for the public sector and even the private sector was highly regulated by the government. The public sector was characterized by heavy and key industries, as they required huge investments and high gestation period and the private sector was characterized by consumer goods industries. The main purpose of the five year plans was self reliance and this was sought to be achieved through heavy industrialization and protecting the home market by high rates of tariff and other forms of restriction to discourage foreign competition.

This era is rightly called the license raj and licenses were required for every aspect of industrial production and development.

Import licensing was expected to encourage the production of domestic goods that could compete with imports. A large part of the resources was pulled into import – substitution, which was induced by high levels of tariff and unavailability of import licenses. India witnessed the acute problem of inadequate and low quality infrastructure. The public sector enterprises did not yield the desired results and had to be frequently bailed out by the government. This became a constant strain on the resources. The estimated overall real rate of return was not more than 2 % in the state owned manufacturing enterprises. By 1991 subsidies had reached 11.6% of the central govt. expenditure and 23% of GDP and loan to the states constituted additional 7.1% of expenditure and 14% of GDP[4].

The end result was that there was no hope for attaining a self reliant economy, under the existing policy regime as it did not lay much emphasis on the efficient use of resources namely labour and capital. The economy was dominated by the public sector undertakings steel, fertilizer, heavy chemicals, machine tools etc. apart from these sectors such as telecoms, railroads and infrastructure was in the government hands. The banks were nationalized and the public corporations had monopoly in activities such as insurance and importation of bulk consumer goods. So, the economy was dominated by the public sector undertakings and the private sector was also highly regulated by the government.

The public sector enterprises also suffered from the problem of over centralization of decision making power, especially in matters of investment, distribution control etc. this greatly reduced its commercial viability. Since, the home market was protected from any serious competition; the private enterprises did not feel the need to improve the quality of the products. A large amount of investment was spent in producing low grade products that could not compete in the international market. Thus the rigid control over the industrial sector and the foreign trade for the first four decades after independence resulted in the slow and inefficient growth of the Indian economy.

[4] Krueger,O.Anne(2002), *Economic Policy Reforms and the Indian Economy,* University of Chicago.

### 1.2 The Economic Crisis of 1990

During the gulf war India faced an economic crisis, due to increasing fiscal deficit, growing inflation and depleting foreign exchange reserves. This created a balance of payments crisis. The reserves had dwindled to us $ 3.368 million in march 1990 and then to about rupees 2000 crore in June 1991 .i.e. equivalent to us $ one billion at the time. India sought help from the IMF, which gave it an assistance of us $ 2.2. billion, to cover 18 months of balance of payments and imposed certain conditionalities on macroeconomic policies and structural adjustments[5]. It was widely believed that macro economic imbalances and micro economic inefficiencies had fed on one another leading to the crisis.

Unlike earlier reforms, the New Industrial policy of 1991 sought to bring about major structural changes and sought to liberalise the economy through reducing the government intervention and regulation of thee economy. Temporary measures such as reduction of fiscal deficit, devaluation of the rupee was also undertaken. Sector reforms such as trade policy reforms, public sector reforms, financial sector reforms, tariff reforms, polices for attracting foreign direct investment and administrative reforms for faster approvals through RBI. The rigours of acts like FERA and MRTP were also relaxed. The import licensing requirements for most of the items were removed, tariffs were reduced and exports were boosted through decanalisation.

### 1.3 Foreign Direct Investment Trends in India

The policy measures for inviting Foreign Direct Investments in India, was very gradual. Before 1991 FDI was allowed only upto 40%. It is only in 1991 that the automatic route was introduced and FDI was allowed upto 51% equity participation, in thirty five priority industries in mainly manufacturing sector. The system of automatic approval up to 51% has eased the pressure on the bureaucratic apparatuses in terms of processing the applications. In 1997, further liberalization was attempted by allowing 100% investment in some sectors and investment upto 74% or 51% or 50% in other hundred and eleven sectors. Major reforms were attempted in 2000 by allowing investment up to 100% in most of the sectors, excepting a few. In 2000 more

5 Krueger,O.Anne(2002), *Economic Policy Reforms and the Indian Economy*, University of Chicago.

sectors were opened up and the FDI cap in other sectors was also increased. The procedures for investment were also simplified.

### 1.3.1 Pre-Economic Liberalisation FDI Inflows

The first survey of India's international assets was undertaken by the RBI in 1948 and the stock of foreign investment stood at 2,560 million rupees, which consisted mainly of investment from United Kingdom[6]. This was concentrated in raw materials, extractive or service sectors.

In the foreign investment policy made in 1949 foreign investment was considered necessary for supplementing Indian capital and for securing the scientific technical and industrial knowledge. The foreign exchange crisis of 1957-58 led to a favorable attitude of the government towards the FDI. The government set up investment centre in major investor countries and extended a host of incentives and concessions. In the third plan, the government even announced a list of industries (which were earlier reserved for GoI) where foreign investment was to be welcomed.

The local manufacture was heavily protected in India and this was an important locational advantage for market seeking FDI. In the late 1950's and early 1960's multinational enterprises started showing serious interest in India. For example, the drug manufactures exporting to India, set up their subsidiaries in India. Between 1948 and 1964, the FDI stock almost doubled to Rs Rs.5,655 from Rs.2,560. The share of FDI in manufacturing sector also rose from 20% to 40% for the same reason. Consumer goods industries such as food and beverages (13.2%), medicine and pharmaceuticals (10.9%), textile products (7.2%) and intermediate and capital goods such as metal products (14.4%), electrical goods (7.9%), chemicals and allied products (16%), machinery and machine tools (6.9%) and transport equipment (6.5%) accounted for the bulk of FDI[7].

[6] Kidron,Michael(1965:3),*Foreign Investments in India*, London: OUP. Quoted in Kumar, Nagesh (2005), "Liberlization, Foreign Direct Investment flows and Development: India's Experience in the 1990's ", *Economic and Political Weekly*, 40 (14):pp1459-69.

[7] Kumar, Nagesh (2005), "Liberlization, Foreign Direct Investment flows and Development: India's Experience in the 1990's ", *Economic and Political Weekly,* 40 (14):pp1459-69.

The Foreign Investment Board (FIB) was created in 1968 to deal with foreign investments and collaboration up to 40% equity and the cabinet committee took care of investments with more than 40% foreign ownership. For investments without technology transfer a restrictive attitude was taken. This period saw a streamlined and restrictive attitude towards FDI as the local skills and capabilities could not stand in competition in the international arena and so they needed some sort of infant industry protection. The government also sought to protect the domestic base of industrial and technological infrastructure that was created by the government investment.

A set of guidelines was evolved for permissible range of loyalty payments and duration of technology transfer agreements for different items. It also required that the foreign collaborations exclusively use Indian consultancy services wherever available. The renewal of foreign collaboration agreements were also restricted by the government. The new patent act which was enacted in 1970 abolished 'product' patent in foods, drugs and chemicals and it also reduced the processing time of patents. The FERA also came into forced requiring required that foreign companies operating in India, as branches of companies incorporated abroad, to register themselves as Indian companies. Moreover, Indian companies were also asked to dilute their foreign equity to a maximum of 40% and exceptions were made only in high priority, technology intensive or export oriented industries.

The Technical Evaluation Committee was set up in 1976 to provide professional input into deciding if FDI proposals under evaluation brought technology not available locally to the country or not. These restrictions led to stagnation and FDI increased just by 163 million[8]. As the government took over certain activities in the petroleum sector, insurance sector etc., there was a lot of liquidation of FDI stock in non-manufacturing sector and most of the fresh inflows were directed to the manufacturing sector and FDI stock in manufacturing sector went up to 86.9% in 1980.

[8] Kumar, Nagesh (2005), "Liberlization, Foreign Direct Investment flows and Development: India's Experience in the 1990's ", *Economic and Political Weekly,* 40 (14):pp1459-69.

The technology intensive sector such as electrical goods, machinery and machine tools and chemicals and pharmaceuticals allied products accounted for nearly 58% of the total FDI in manufacturing sector[9].

There was increasingly receptive attitude towards FDI during the eighties and the focus was to streamline the foreign collaboration approvals. The rules regarding payment of royalites and lump sum technical fees were also relaxed and tax rate on royalties was reduced from 40.1% to 30% in 1986. On the basis of merit, individual investment proposals were given certain degree of flexibility in terms of foreign equity participations and exceptions from the general ceilings of 40%[10].

The procedures for opening liaison offices in India, remittances of royalties, technical fees and dividends etc. were streamlined. The 'fast channel' was set up in 1988 to expedite clearances of FDI proposals from major investing countries like Japan, US, UK etc. but these reforms were not comprehensive enough to make a significant change. The easing of the restriction resulted in the tripling of the FDI stock in the eighties.

**Table 1.1 Foreign Direct Investment in India 1970 - 1982**

| Year | FDI Net inflows (US$ in Million) | PFI Net inflows (US$ in Million) | Total foreign investment* | FDI Net Inflows (Per cent of GDP) |
|---|---|---|---|---|
| 1970 | 46.00 | 0.00 | 46.00 | 0.03 |
| 1971 | 48.00 | 0.00 | 48.00 | 0.02 |
| 1972 | 18.30 | 0.00 | 18,30 | 0.05 |
| 1973 | 38.2 0 | 0.00 | 38.20 | 0.04 |
| 1974 | 57. 00 | 0.00 | 57.00 | 0.06 |
| 1975 | 85.30 | 0.00 | 85.3O | 0.09 |
| 1976 | 51.70 | 0.00 | 51.70 | 0.05 |
| 1977 | -36.00 | 0.00 | -36.00 | -0.03 |
| 1978 | 18.00 | 0.00 | 18.00 | 0.01 |
| 1979 | 49. 00 | 0-00 | 49.00 | 0.03 |
| 1980 | 79.00 | 0.00 | 79.00 | 0.04 |
| 1981 | 92.00 | 0.00 | 92.00 | 0.05 |
| 1982 | 72 .00 | 0.00 | 72.00 | 0.04 |

[9] Kumar, Nagesh (2005), "Liberlization, Foreign Direct Investment flows and Development: India's Experience in the 1990's ", *Economic and Political Weekly,* 40 (14):pp1459-69.

[10] Kumar, Nagesh (2005), "Liberlization, Foreign Direct Investment flows and Development: India's Experience in the 1990's ", *Economic and Political Weekly,* 40 (14):pp1459-69.

| | | | | |
|---|---|---|---|---|
| 1983 | 6.00 | 0.00 | 6.00 | 0.00 |
| 1984 | 19.00 | 0.00 | 19.00 | 0.01 |
| 1985 | 106.00 | 0.00 | 106.00 | 0.05 |
| 1986 | 118.00 | 192.00 | 31 0.00 | 0.05 |
| 1987 | 212.00 | 0.00 | 212.00 | 0.08 |
| 1988 | 91 .00 | 56.00 | 147.00 | 0.03 |
| 1989 | 252.00 | 168.00 | 420.00 | 0.08 |
| 1990 | 162.00 | 105.00 | 267.00 | 0.05 |
| 1991 | 74. 00 | 0.00 | 74. 00 | 0.03 |

Note: * Total foreign Investment is the Sum of foreign direct investment and portfolio investment net inflows (US$ in million).
Source: World Bank indicators Database

The amount of foreign investment, including FDI and PFI was quite low and formed a very small part of the GDP. In the initial years after of economic liberalization, no significant increase is seen in the amount of inflow and but an increase is seen in its contribution to the GDP formation. The contribution of foreign investment has risen from less than 10% in the seventies to nearly 25% in 1998[11].

### 1.3.2 Post Liberalisation FDI Inflows

In the south Asian region, India is the major recipient of FDI, amounting to 75% of total FDI inflows to this region

**Table 1.2 FDI Inflows after Liberalisation**

| **Foreign Direct Investment (FDI) Inflows (1991-1992 to 2011-2012-Upto February 2012) (Rs. in Crore)** | |
|---|---|
| **Year** | **Amount of FDI Inflows** |
| 1991-92$ | 409 |
| 1992-93 | 1094 |
| 1993-94 | 2018 |
| 1994-95 | 4312 |
| 1995-96 | 6916 |
| 1996-97 | 9654 |
| 1997-98 | 13548 |
| 1998-99 | 12343 |
| 1999-00 | 10311 |
| 2000-01 | 10733 |

[11] Nayer, Raj Baldev(2001), "Opening UP and Openness of Indian Economy", *Economic and Political Weekly*, 36(37): 3529-3537.

| | |
|---|---|
| 2001-02 | 18654 |
| 2002-03 | 12871 |
| 2003-04 | 10064 |
| 2004-05 | 14653 |
| 2005-06 | 24584 |
| 2006-07 | 56390 |
| 2007-08 | 98642 |
| 2008-09 | 123025 |
| 2009-10# | 123120 |

Source : Ministry of Commerce and Industry, Govt. of India. & Lok Sabha
Unstarred Question No. 535, dated 24.02.2009,
Compiled by Indiastat. URL:http:// http://www.indiastat.com/minesandminerals/23/stats.aspx

Comparing table 1.1 and table 1.2 shows that even in the initial years after liberalisation, the amount of FDI was not significant but it touched the ten thousand crore mark in 1998 – 99. The growth has very significant since 2005.

The liberalisation process brought about great changes in the industrial policy regime. The industrial approval system had been abolished except for 18 strategic industries. If certain norms were satisfied then FDI upto 51% was automatically approved in 34 high priority industries. It was not necessary that FDI proposals had to be accompanied by technology transfer agreements. 100% foreign equity was permitted in the power generation sector. International companies were allowed to explore non-associated natural gas and to develop the gas fields. They were also permitted to lay down pipelines and set up LPG projects. 100% export oriented projects and companies in EPZ were given a new package.

Most importantly, a foreign investment promotion board (FIPB) was set up in the prime minister's office to invite and facilitate international investment in India. India became a signatory to the MIGA for protection of foreign investments. Companies with more than 40% equity were treated at par with Indian companies and permission was given to existing companies to raise foreign equity levels to 51% in case of proposed expansion in priority industries. Sectors such as banking, mining, telecommunication, highways, construction and management were thrown open to foreign investors.

### 1.3.3 Impact on the Mining Sector

The various laws regarding mining that were legislated till economic liberalization was keeping in tune with that of the pre – liberalization economic policy, which

emphasis given to the Public Sector Units, and government control and regulation. The earliest legislation regarding mining and the development of mineral is the entry 54 of list I of the seventh schedule and entry 23 of list II in the seventh schedule. While the former empower the central government to regulate its mining and mineral development, the latter gave power to the state government to frame rules and regulations for the same, subject to the provisions of list I.

The industrial policy of 1956 clearly demarcated the role of the private and public sector, by putting major minerals such as coal, iron ore etc. in schedule A and other minor minerals in schedule B. Schedule A was solely reserved for the public sector and the private sector was allowed to participate in Schedule B.

The parliament enacted the Mines and Minerals (Regulation and Development) Bill, 1957 for regulating the sector. It demarcated the ownership of the minerals. The state government was the owners of the minerals found within the boundary of the respective state and the center owned those that were found in the territorial waters of the country and the exclusive economic zones. Even the central government had the power to grant prospecting license and mining lease for all minerals except minor minerals and atomic minerals. The state government could grant permission for the mining of only minor minerals. The act was amended in 1972 to increase the government control over mining. This was mainly due to the large – scale accidents in privately held coal mines. Some of the measures stipulated by this amendment are: premature termination of mining leases, lowering of ceilings on individual holdings, removal of ceiling of royalty charged on minerals, including the provision of dead rent as part of the act, the power to central government to undertake prospecting and mining operations in certain areas, power to modify mining leases.

The act was further amended in 1986. This amendment increased the number of minerals for which prior approval was needed from the central government from 27 to 38. It made mining plan approval necessary and the central government was given the power to reserve areas for Public Sector Undertakings. In 1988, revisions were made to enable the Indian Bureau of Mines to monitor and regulate mining activity. The mining sector was highly dominated by PSUs like NALCO, HINDALCO etc.

Thus it is very evident that government control and regulation was very high in this sector. This scenario completely changed with the opening up of the sector during

economic liberalization. It has been noticed for the period between 1993 and 2003, the sector has grown at more than 10% and as many as 73 FDI mining proposals have been cleared in this period[12]. POSCO, De Beers, BHP Billiton and Rio Tinto are some of the major players involved in mining in India.

The mining sector was opened up for private investment by the mineral policy of 1993 and through the amendments to the Mines and Mineral Act of 1957. These Acts

- deregulated the mining sector by allowing 50% investment of foreign companies in mining
- opened all atomic and non-atomic minerals to private investment
- increased the validity period of mining leases and prospecting licenses
- almost doubled the area under a single license

In 1996 the concept of Large Area Prospecting License(LAPL) was introduced and guide lines were issued to increase the area under a single prospecting license for aerial prospecting from 25 Sq.Km to 5,000 sq.km. with a proviso stating the aggregate held by a single party shall not exceed 10,000 sq.km. The coal nationalization Act, 1973 was also amended in 1999, facilitating the entry of private players in the sector.

In spite of these changes private investment was not high as anticipated and a committee was constituted to look into the reasons behind it. Based on the recommendations changes were made in the MMDR Act,1957 in 1999 and the MCR and MCDR in 2000.

The key changes were :

- introduction of a provision for reconnaissance permit(RP) as a separate stage prior to prospecting and it replaced the LAPL
- the RP holder was also given priority in the grant of Prospecting Licenses, subject to certain conditions
- it also delegated the powers to the state government to renew lapsed mine leases, prospecting licenses, prospecting licenses and to grant RP/PL/ML for the areas that were not compact or contiguous.

[12] Banerjee, M.Z.H.S and Bhushan, Chandra(2008), *Rich Lands Poor People:'is sustainable mining possible?', New Delhi:CSE.*

- It made the area restrictions of RP/PL/ML by making the restriction applicable state wise.
- giving the states the right to grant leases for 15 minerals but other major minerals were still under the control of the central government.

In 1999, the foreign exchange rules were also modified to allow repatriation of profits.

The Indian government also formulated the guidelines for FDI in mining and mineral sector in 2000.

- This allowed 74% FDI in the exploration and mining of minerals through the automatic route and for proposals with higher 745 of FDI, the clearance was through the FIPB.
- It allowed 100% FDI in the exploration and mining of silver, gold and minerals other than diamonds and precious stones, metallurgy and processing.
- It also allowed 100% FDI for processing of minerals and metallurgy through the automatic route.
- In the petroleum sector FDI is allowed between 51 to 100% depending on the type of activity and maximum 51% of FDI is allowed for petroleum product.
- 74% of FDI is allowed for setting up of mines for captive consumption in the coal and lignite sector and 50% of investment is allowed on the condition that it should be more than 49% of the equity of a Public Sector Unit.
- 74% of FDI is allowed for certain activities such as mining and mineral separation and value addition and integrated activities, in the case of atomic minerals.

In 2006, the mining sector was opened to 100 % FDI for non atomic and non fuel minerals through the automatic route. In the table 1.3, there is drastic change in the amount of Inward FDI after the measure. From a negligible 9.92 million USD in the year 2004 – 2005(April – March), it has gone upto 415.93 million USD in 2007 – 2008(April – December).

**Table 1.3. Region wise FDI Inflows Received in Mining Sector**

| **RBI Region Office-wise Foreign Direct Investment (FDI) Inflows Received in Mining Sector (With State Covered) in India (2004-2005 to December, 2007)** | | | | | | |
|---|---|---|---|---|---|---|
| **(Amount in US$ Million)** | | | | | | |
| **Regional Offices of RBI** | **States Covered** | **2004-05*** | **2005-06*** | **2006-07*** | **2007-08$** | **Cumulative Total** |
| Hyderabad | Andhra Pradesh | 0.08 | 0 | 0.04 | 0 | 0.12 |
| Guwahati | Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura | 2.91 | 0 | 0 | 0 | 2.91 |
| Kochi | Kerala, Lakshadweep | 2.17 | 0 | 0 | 0 | 2.17 |
| Mumbai | Maharashtra, Dadra & Nagar Haveli, Daman & Diu | 1.26 | 2.22 | 0.4 | 7.74 | 11.62 |
| Chennai | Tamil Nadu, Pondicherry | 0.27 | 0 | 0 | 0 | 0.27 |
| Kolkata | West Bengal, Sikkim, Andaman & Nicobar Islands | 0.18 | 0 | 0.02 | 378.62 | 379.83 |
| New Delhi | Delhi, Part of UP and Haryana | 2 | 2.2 | 6.16 | 4.24 | 14.6 |
| Region Not Indicated | - | 0.04 | 1.73 | 0 | 25.33 | 27.1 |
| **Grand Total** | **-** | **9.92** | **6.15** | **6.62** | **415.93** | **438.62** |

1 : Includes 'equity capital component' only.
2 : The above State-wise inflows are classified as per RBI's Region-wise inflows furnished by RBI, Mumbai.
* : April-March. $ : April-December.
Source: Rajya Sabha Unstarred Question No. 4079, dated on 05.05.2008.
Compiled by Indiastat. URL:http:// http://www.indiastat.com/minesandminerals/23/stats.aspx.

Many efforts are taken to invite inward FDI in the mining sector. The huge investments coupled with the technology transfer, is seen as a source of developing the unutilized potential of the mining sector. When there has been a slump in the investments or when the rate of investments is not as expected, there has always been a new set of incentives or new promotion package that has been announced. India‘s completely set on its agenda for welcoming FDI in this sector. So, it becomes very important to look at the various costs and benefits, especially from the point of view

of the environment. The environment is closely intertwined with the quality of human life and health and it is the poorest of the poor who are the worse affected due to environmental damage. This should be one of the deciding factors in assessing the negative and positive consequences of FDI.

### 1.4. Definition, Rational and Scope of the Study.

Foreign direct investment is a type of investment that involves the injection of foreign funds into an enterprise that operates in a different country of origin from the investor. Investors are granted management and voting rights if the level of ownership is greater than or equal to ordinary shares. Shares ownership amounting to less than the stated amount is termed portfolio investment and is not categorized as foreign direct investment. This does include foreign investments in the stock market. Instead foreign direct investment refers more specifically to the investment of foreign assets into domestic goods and services[13]. Foreign direct investment is termed inward or outward depending on the direction of flow of money. Inward foreign direct investment occurs when foreign capital is invested in local resources. The factors propelling the growth of inward foreign direct investment include tax – breaks, low interest rates and grants. Outward foreign direct investment also referred to as "direct investment abroad" is backed by government against all associated risk. Sustainable mining is "meeting today's demands for minerals without compromising the ability of the future generations to meet their own[14]".

Foreign direct investment in mining project has come to the lime light for environmental damage and for infringing environmental laws and regulations. This research work will look into the established system of environmental laws for mining in India and then analyze how they have been infringed by looking at different projects. The work will also try to understand the manner in which mining is carried out in these projects and enumerate its implications for the availability of resources.

Environmental concerns would cover a lot of issues like sustainable mining, air, and water and land pollution, threat to wild life, damage to Eco system, human health and property. Various controversial projects, which have come under criticism, will be

[13] Definition given by Economy watch, URL: http://www.economywatch.com/. accessed on 06.02.2012.

[14] Bruntland commission on Environment and Development. URL:http://www.un-documents.net/

analyzed to understand how the laws have been infringed and how these issues have been dealt. The research work will also try to locate the cause for such infringement, which is if negligence is on the part of the administrative institution are the foreign investors are both. This research work will help in understanding the impact of foreign direct investment in its non-economic aspects and nuances. A multi dimensional approach is necessary to fully assess the positive and negative consequences of foreign direct investments. At a juncture when foreign direct investments have become an important agenda in the economic policy of India, this work will highlight the need to revisit the practice and administration of environmental laws in India.

The period from1993 to 2011 will be the time line for this study. The Mineral Policy of 1993 is an important juncture in the mining history of India as it allowed 50 percent investment by foreign companies in the mining sector and opened all non-atomic and non-mining minerals to private investment. It also sought to ease the bureaucratic processes by increasing the validity period of prospecting licenses and mining leases and almost doubled the area under a single license. It is after this act that foreign investments in the mining sector in India increased considerably and the industry has seen a growth of about 10 % after these reforms.

Against the above background, this dissertation undertakes to examine the following hypotheses.

### 1.5 Hypotheses

1. Environmental laws and regulations are not strictly enforced and followed in the incoming foreign direct investment in the mining sector India.

2. Mining undertaken by the foreign direct investment projects will lead to rapid depletion of the resources as the mining undertaken is not sustainable in nature.

### 1.6 Methodology

The research is empirical but theoretically informed and it uses inductive method in arriving at the hypothesis. It looks into the administration of environmental laws and regulations in foreign direct investments, by looking into various projects in the India. The research is based mainly on the analysis of the primary and secondary data. The

primary data sources include laws (environmental, mining and industrial), amendments and other related legislation, official communication and research reports. The secondary data sources include articles, books, commentaries and criticisms etc. There is a lack of uniformity in the availability of data, for the research period undertaken for the period of this study. So, the available data is used in a theme specific manner, in pursuing the various objectives of the study.

### 1.7. Chapter Scheme

The chapter scheme of the dissertation is organized under five chapters as follows

The first chapter provides a brief introduction of the concern, method and design of the research work. This chapter will also trace the shift in the economic policy of India, and emphasise the initiatives taken to attract Foreign Direct Investments. The focus will be on the investments made in the mining sector in India. The second chapter Environmental Laws for Mining in India looks at the existing apparatus of laws and regulations that have been set up for mining in India, which also apply to the Foreign Direct Investments. The third chapter Sustainable Mining and The Implications for The Availability of Resources analyses if mining is carried out in a sustainable manner in the Foreign Direct Investment projects by looking at the increase in the rate exploitation of the resources after opening up the mining sector for foreign investment. The fourth chapter Environmental Issues in Foreign Direct Investment in Mining in India looks at the various environmental issues that have come up in foreign direct investment mining projects in India. The focus is on issues that have come up due to non compliance of environmental laws and regulations. The fifth chapter Conclusion summarises the findings of the research work and try to suggest remedies for the environmental concerns posed by FDI in mining.

# CHAPTER 2: ENVIRONMENTAL LAWS FOR MINING IN INDIA

This chapter traces the history of environmental legislation in India. Mining is an operation that is undertaken in stages. In all these stages, the environment is considerably disturbed and the existing system of laws should be comprehensive enough to mitigate the extent and impact of environmental damage. The initial stages of mining such as prospecting and exploration for resources, involves disturbing the different layers of the topography and the forest cover to a considerable extent. Mining, transportation of the ore and extraction of the resource from the ore also cause considerable damage to the environment. This activity also deals with finite resources and every mine has a finite life period, so environmental reclamation and rehabilitation is very important. So, laws have to be in place to deal with the environmental concerns posed, at all these various stages.

This chapter specifically looks at legislation relating to environmental protection in mines and the extent of application of other legislation to mining. This chapter will provide a brief description of the various rules and procedures prescribed by law, for the different stages of mining. This chapter does not attempt to look at how effective or relevant these laws are, due to constraints of time and lack of expertise in the field. Rather, this chapter will take a descriptive approach towards the system of existing laws and create an understanding of the various mechanisms and apparatuses for environmental protection.

## 2.1 Early Efforts at Environmental Legislation

The earliest of environmental legislation in India was The Factories Act of 948, which had considerable provisions for the control of environmental pollution. It required that effluents, gases and fumes generated in the manufacturing process should be treated before disposal so that their adverse effects are minimized. Though this did not apply specifically to mines, it was applicable to mineral benefaction plants and mineral based industries.

In accordance with the Stockholm conference in 1972, India also came out with the Water (Prevention and Control of Pollution) Act, 974 and The Air (Prevention and Control of Pollution) Act, 1981. The forty second amendment act of 1976 amended the article 48 of the constitution, by inserting

48A : “Protection and improvement of environment and safeguarding of forests and wild life”, making the protection of environment and the safeguarding of the forest and wild life, an obligation and duty for the state.

Entry “17-A Forests” and entry “17-B Protection of wild animals and birds”, has been inserted in the concurrent list III of the seventh schedule, to make this act effective. In the fundamental duties inserted in the forty second amendment, along with Protection and improvement of natural environment including forest, lakes, rivers and wild life, compassion for living creatures has also been included in the list of fundamental duties of every citizen of India.

The very first step in trying to formulate and enunciate the environmental concerns with the mining of mineral resources, was a working group on “Mining and the Environment” set up under the environment division of the Department of Science and Technology. This was later converted into a fully fledged ministry namely the Ministry of Environment and Forests. The recommendations titled “Environmental management of Mining Operations” was submitted in 1981.

**2.2 Environmental Protection Act, 1986**

The first comprehensive environmental protection act was passed in 1986, namely Environmental Protection Act 1986, this act recognized air, water and land as three important constituents of the environment and further that the physical, chemical and biological conditions of these constituents as the direct measure of environmental pollution. Natural resources are also found along the coast and in the sea beds, mining activity in such areas has considerable impact on the coast line and its constituent eco systems. This act also has specific provisions relating to the operation of the mines in the coastal zones, which is discussed separately later in the chapter.

“Under Sec.10 and 11 of the Act, the Central Government has empowered the Controller General, Chief Controller of Mines, Regional Controller of Mines and Deputy Controller of Mines of IBM to enter any mine, examine and test and seize any equipment, industrial plant record, register, document, take samples of air, water, soil or other substances, for the purpose of administering the various provisions of the Act in mines, Vide S.O. 83(E) and S.O. 84(E) respectively dated 6$^{th}$ February, 1987Under Sec. 12 of the Act, the Central Government has recognized the IBM as one of the

environmental laboratories vide Gazette Notification No. S.O. 803 (E) dated 23.9.92 issued by the CPCB, New Delhi, for testing of sample of air, water, soil and other substances[15]."

This act was further amended in 1987 and the Environment (Protection) Amended rules contained certain provisions relating to mines. This act gave power to the officers of Indian Bureau of Mines to inspect mines and mineral benefaction plants for the purpose of sampling and analysis to check if they are complying with the necessary provisions. They also had the power to investigate and verify records and documents etc. It also stipulated the permissible standards of emission in certain industries related to mining.

The various operations in a mine such as extraction and processing is also accompanied by large amounts of harmful wastes. So, the first ever comprehensive legislation relating to mines focused on its operational aspects. It dealt directly with the harmful effects on the environment namely pollution control and prevention. . The laws and regulations laid down by a government, need respective administrative institutions and agencies to enforce it. Thus the act gains significance, for making the government an effective enforcer of environment related laws and norms, by giving investigational authority to the administrative institutions, namely the Indian Bureau of Mines.

### 2.3 The Amendment to the Mines and Minerals (Regulation & Development) Act, 1957

In 1986, the Mines and Minerals (Regulation & development) Act, 1957 was amended to include provisions relating to environment protection in mines. This act had provisions for premature termination of prospecting and mining licenses for the protection of natural environment and the control of pollution. This amendment also required that a mining plan be incorporated for the fresh grant or renewal of licenses. Important provisions that dealt with mine environment are

"Sec.4.A(1) : Where the Central Government, after consultation with the State Government, is of opinion that it is expedient in the interest of regulation of mines

[15]Indian Bureau of Mines (2005), *Environmental aspects of mining Area*, Ministry of Mines, New Delhi.

and mineral development, preservation of natural environment, control of floods, prevention of population, or to avoid danger to public health or communications or to ensure safety of buildings, monuments or other structures or for conservation of mineral resources or for maintaining safety in the mines or for such other purposes, as the Central Government may deed fit, it may request the State Government to make a premature termination of a prospecting license or mining lease in respect of any mineral other than a minor mineral in any area or part thereof, and, on receipt of such request, the State Government Shall make an order making a premature termination of such prospecting license or mining lease with respect to the area or any part thereof.

Sec.4.A(2) : Where the State Government, after consultation with the Central Government is of the opinion that it is expedient in the interest of regulation of mines and mineral development preservation of natural environment, control of floods, prevention of pollution or to avoid danger to public health or communications or to ensure safety of buildings, monuments or other structures or for such other purposes, as the state Government may deem fit, it may by an order, in respect of any minor mineral, make premature termination of prospecting license or mining lease with respect to the area or any part thereof covered by such license or lease.

Sec.5(2) : No mining lease shall be granted by the State Government unless it is satisfied that – (b) there is a mining plan duly approved by the Central Government or by the State Government , in respect of category of such mines as may be specified by the Central Government, for the development of mineral deposits in the area concerned.

Sec. 18(1): It shall be the duty of the Central Government to take all such steps as may be necessary for the conservation and systematic development of minerals in India and for the protection of environment by preventing or controlling any pollution which may be caused by prospecting or mining operations and for such purposes the Central government may, by notification in the Official Gazette, make such rules as it thinks fit.

Sec.18 (2): In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely.

(k) The disposal or discharge of waste slime of tailings, arising from any mining or metallurgical operations carried out in a mine.

(i) The manner in which and the authority by which directions may be issued to the owners of any mine to do or refrain from doing certain things in the interest of conservation or a systematic development of minerals or for the protection of environment by preventing or controlling pollution which may be caused by prospecting or mining operations"[16].

This act further strengthened the effectiveness of the enforcement by giving the government the power to terminate leases for non compliance with the given laws. The act also took into consideration not only the harmful effects of pollution on the immediate natural environment but also other aspects such as harm to human population, historical monuments, natural disasters etc. Thus the far reaching implications of mining operations were taken into consideration. The co ordination between the state governments and the central government was also sought to be strengthened by specifying the authority of each, in terms of termination of the leases. The systematic development of the resources was also aimed at by specifying the requirement for a mine plan for the first time and the clauses for the termination of the leases also included this provision.

### 2.4 Mineral Concession Rules, (MCR) 1960

These rules were framed under the MM (R&D) Act, 1957 and this explicitly stated the requirements of the mining plan that is, the plan was required to show the water courses, limits of reserved and other forest areas, density of trees etc. It was required an assessment of mining activity on the forest, land, air and water and the level of pollution and detailed schemes for restoration through afforestation, land reclamation, use of pollution control devices and other measures directed by the state and central government. These aspects formed the Environment Management Plan, which was an important part of the mining plan. This act engaged in the long term and short term implications of the mining activity, by detailing the various aspects of the mining plan. It looked at not just the operations during the active life period of a mine but

[16] Indian Bureau of Mines (2005), *Environmental aspects of mining Area*, Ministry of Mines, New Delhi.

also took into consideration the forest reclamation and other rehabilitation processes after the closure of the mine. Thus it could be called the precursor to the mine closure plan, which is discussed later in the chapter.

### 2.5 Mineral Conservation and Development Rules, 1998

These rules were also framed under the parent MM (R & D) Act and pertained specifically to leases that were already granted under the parent act and MCR. These set of rules replaced the earlier rules of 1958. Under these rules an environmental baseline data and environment management plan had to be generated before the commencement of prospecting operations. This management plan had to incorporate proposals for reclamation and rehabilitation of land disturbed by prospecting operations and also proposals for the prevention and control of air, water and land pollution.

There are as many as eleven provisions in the chapter devoted to and entitled " Environment" and these provisions discuss in detail about storage and utilization of topsoil, storage of overburden, waste rock, etc. , reclamation and rehabilitation of lands, discharge of toxins, precaution against air and noise pollution, precautions against ground vibration, control of surface subsidence and the restoration of flora.

The officers of the IBM are authorized to monitor the implementation of these provisions through regular inspections. In case of non compliance, prosecutions are launched to secure compliance.

In earlier legislations the harmful effects of mining on the environment were sought to be mitigated but it in this act a comprehensive plan, namely the environmental management plan was devised. By making it a pre requisite for mining operations, the impact on the environment could be better assessed and mitigated. It sought to manage and protect the environment in a planned manner.

### 2.6 The Need for Mine Closure Plan.

Unlike other industries mining deals with the extraction of finite resources and thus a mine also has only a finite life. So, mine closure becomes an important aspect of environmental concerns posed by a mine. After closure, the areas disturbed by mining activities should be sufficiently rehabilitated and the forest has to be reclaimed. In

India, the mines are located in environmentally fragile areas and so the measures for mine closure require greater attention. Most importantly the use of proper techniques and management policies have to be focused on as the land degradation due to mining is caused mainly by dumping of waste material and quarrying. So, the mining infrastructure has to be developed with respect to their effect on forest growth, agriculture and water resources.

With great developments in technology and insights into conservation, it is now possible to exploit the mineral resources in an eco friendly manner through proper reclamation and rehabilitation measures. With purpose in mind the central government amended the Mineral Concession Rules, 1960 and Mineral Conservation and Development Rules, 1988. These amendments required that mining leases had to submit a "progressive mine closure plan" along with financial securities within 80 days from the date of notification. One year before the closing of the mine a "final mine closure plan" was expected to be submitted. Both these plans had to be in the format and in accordance with the guidelines of the Indian Bureau of Mines.

Rehabilitation after mine closure should the restore the physical, chemical and biological quality of the environment disturbed by the operations of the mine and it should not become a burden on the society but rather it should aim at creating a self sustained ecosystem. As mine closure operation is a continuous series of operations starting from the very day of the mining operation it is an additional chapter on the mining plan and it is reviewed every five years.

The final mine closure plan will have to be approved at least nine months prior to the date of the closure of the mine and proposals for all activities that take place after the production of the mineral from the mine is included in this final mine closure plan.

Thus the mine closure plan aims to consider the long term impacts of mine operation, in the context of forest lands and hopes to mitigate it through rehabilitation and reclamation processes.

### 2.7 Protection of Coast through Restriction of Mining Operations in Coastal Regulation Zone

Section 3(2)(v) and section 3(1)of the environment (protection) act, 1986 and rule 5(3) (d) of the environment (protection) rules 1986 declared coastal stretches as

coastal regulation Zone and imposed restrictions on the operations of industries in this zone in 1990. According to this coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters that are influenced by tidal action( in the landward side) up to 500 meters from the High Tide Line (HTL) and the land between Low Tide Line (LTL) has been declared as coastal regulation zone (CRZ) and certain restrictions were imposed on setting up and expansion of industries such as mining of sands, rocks and other substrata material excepting those minerals that are not available outside these areas. Activities such as dredging and blasting in and around coral formations were also not permitted. The coastal states were advised to prepare coastal management plans.

Corrosion or reduction in the area of the coast line has serious implications, such as the sea moving land wards, contamination of the ground water, salinity in the aquifers and reduction in the fertility of the soil. Apart from these, it poses serious threat to the ecosystem too. Thus the provisions took stock of these impacts and sought to protect the coast line through the constitution of a management plan and the mining activities were restricted for those minerals, which could be found elsewhere too.

**2.8 The Significance of Environmental Auditing in Mining**

The international chamber of commerce defines environmental audit as "a management tool comprising systematic, documented, periodic and objective evaluation of how well environmental organisations, management and equipment are performing with the aim of helping to safeguard the environment by

(a) Facilitating management control of environmental protection

(b) Assessing compliance with company policies which would include muting regulatory requirements. "

In the notification GSR 386(E) dated April 22 1993 the Ministry of Environment and Forests issued the list of industries which required environment auditing. This notification applies to every person carrying on an industry, operation or process that requires consent to operate under the section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981), or both, or authorization under the Hazardous Wastes (Management and Handling) Rules, 1989 issued under the

Environment Protection Act of 1986. As per this notification, an environmental statement for the current financial year has to be submitted before the State Pollution Control Board before the 30th September of the same year.

An environmental audit for a mine, should address the following concerns and aspects namely, if the water coming from the mines is the seepage of waste water from processing, regenerating the degraded land by means of a proper rehabilitation programme, dust nuisance, disposal or utilization of the solid waste generated, health and safety audit, reviewing the major regulations connected with mines and minerals

The environmental audit for a mining site is required to be processed in three stages, namely Pre-audit activities, On-site activities and Post-audit activities.

Sporadic investigations to check compliance alone is not enough but periodic evaluation of the compliance and the compliance mechanism itself is very necessary to facilitate environmental management in a plan. The environmental audit designed with this in mind, makes the environmental statement a necessity. By this, it is not just the responsibility of the designated officials, but it actively engages the mine operators also by making it their duty to submit an environmental statement. This boosts up the enforcement mechanism. The audit activities look into the compliance of the mine operations with all environmental laws, but particular attention is paid to those dealing with pollution and safety. The audit, thus is a mechanism for ensuring compliance during the active life of a mine, i.e. during the operations of a working mine.

### 2.9 Protection Given to Ecologically Fragile Areas

The government of India has identified a list of areas including ecosystems that are not generally recommended for mining as they are ecologically very fragile.

This initiative requires special mention as it seeks to protect the wild life wealth of the country. Mining operations take a long time even a few decades before the reserves of the particular mine is exhausted. During this long period, disturbance to the forest cover, in terms of depletion of a particular kind of tree or plant will have long term impacts for the organisms that are dependent on it and thus on the entire ecosystem. After the mining operations, even if the forest covers is regained through rehabilitation. It is not necessary that the organisms of that particular ecosystem could

also be restored. So, discouraging mining operations in extremely sensitive ecological areas is the most effective solution.

### 2.10 Forest (Conservation) Act, 1980 and its Application to Mining Operations

Forest is an important resource not only for the people dependent on it directly for food, firewood and other needs but also for the entire country. Forests are home to the wild life and have an important impact on the weather conditions. The amount of rainfall in a given area is greatly influenced by the tree cover. It also prevents soil erosion, thus maintaining the fertility of the soil and gives protection against natural disasters such as storms and floods. So, the Forest Conservation Act, an important legislation in this regard has detailed provisions with reference to the operation of mines in forest areas.

The Act which was amended in 1988 provides that the forest land or any portion thereof may be used for any non-forest purpose only with the prior approval of the Central Government as stated under Sec 3 of the Act. It also empowers the Central Government to constitute an advisory committee that shall advise the government on the grant of approval and other matters pertaining to the conservation of forests. The Sec 29 under the Forests Act explains the requirements that should be met for declaring an area as a wildlife sanctuary or as a national park. a)The state government can declare any forest land or waste land which is the property of the government, but not a reserve forest by official notification, b) The forest land or waste land comprised in the notification shall be termed “protected forest” and c)This shall be preceded by ascertaining the nature and extent of the rights of the government and of private persons over the forest land/waste land and this shall be recorded at a survey or settlement.

In case such an enquiry would occupy a protracted length of time then the government can declare such land to be protected forest pending such enquiry and record. However this shall be done so as not to affect or abridge the rights of individuals and communities. In the case of forests and lands which are not the property of the government, Sec 35 entails the protection of these forests for special purposes by allowing the state government through an official notification the regulation and prohibition of activities such as the breaking up of land for cultivation, pasturing of cattle and the firing and clearing of vegetation.

The special purposes for which these regulations are imposed are: protection against storms, winds, floods, avalanches etc., for preserving the soil on the ridges and slopes in valleys or hilly tracts, the prevention of landslide and formation of ravines and the protection of land against erosion, for the protection of infrastructure such as roads, bridges, railways and lines of communication etc for maintaining the supply of water in springs, rivers and tanks the preservation of public health.

Changes have been made in the Forest Conservation Act, 1980 for de reserving the forests. The central government is entrusted with the entire control of forests and the permission should be obtained before the land could be permitted for non-forest purposes. The Forest Conservation Act, 1980 defines "non-forest purpose" as the breaking up or clearing of any forest land or portion thereof for the cultivation of tea, coffee, spices, rubber, palms, oil bearing plants, horticultural crops or medicinal plants; any purpose other than re-affoerstation but does not include any work relating or ancillary to conservation, development and management of forests and wildlife, namely, the establishment of check posts, fire lines, wireless communications and construction of fencing, bridges and culverts, dams, waterholes, trench marks, boundary marks, pipelines or other like purposes.

Mining comes under non – forest use. The provisions affecting the diversion of land use for mining are as follows:

Since mining includes underground mining, a non forest activity prior permission has to be taken from the central government for the granting and renewal of mining leases in any forest areas. Mining leases involving more than 20 hectares of forest land shall also require environmental clearances.

The proposals for diversion / de reservation of more than 20 hectares of forest land and also for clearing naturally growing trees are sent to the regional offices of the MOEF in the concerned state or union territory.

The chief conservator of forests of the concerned regional offices is competent to disposes proposals involving diversion/deregulation up to 5 hectares, except for proposals regarding regularization of encroachments and mining and renewal of mining leases.

So, all such proposals pertaining to mining need the clearance of MOEF and the mining of minor minerals such as stone and boulder etc. from river bank is prohibited, if it is a national park or wild life sanctuary except those undertaken for the benefit of forest and wild life. Minor minerals can be extracted from the middle of the river bed leaving one fourth of river bed or each bank untouched.

Forest area that is required for the safety of the mining zone should not be included in the forest area proposed for diversion but it has to be indicated in the proposal. This area shall be fenced at the cost of the project authority and in addition the project authority also has to deposit funds for the protection and regeneration of such safety zone areas and also bear the cost of afforestation over one and half times of safety zone area elsewhere in the degraded forest.

Compensatory afforestation one of the most important conditions for afforestation is done over the equivalent area of non forest land and twice in respect of degraded forest land.

Thus the Forest Conservation Act ensures the protection for forest by clearly demarcating the various activities that are allowed and prohibited in the forest area. In terms of mining, this act ensures protection, through prior permission and the process of granting permission is also stream lined based on the area of forest land that shall be diverted. Taking into consideration, the ill effects of large scale diversion of forest land on the environment; it stipulates that they shall be granted clearance directly by the MoEF itself. It does not stop with just making permission mandatory, it also ensures that the forest is not damaged beyond repair by ensuring necessary provisions for afforestation and reclamation.

### 2.11 The Wildlife Protection Act, 1972

The wild life protection act, 1972 includes any animal, bees, butterflies, crustacean, fish and moths and aquatic or land vegetation which forms part of any habitat. The wild life wealth and bio diversity of the world in general and the country in particular, are fast becoming depleted. In this context, this act gains significance. This act has application to the mining activities too as it prohibits mining in the habitat of endangered species and endemic species, if a considerable threat is posed to their survival.

## 2.12 National Mineral Policy and its Relevance to Protection of Environment in Mines

The two important aspects of the national mineral policy are the environment clearance and the forest clearance. This act discusses in detail the various requirements for securing these clearances. This act prohibits mining in ecologically fragile and biologically rich areas and also strip mining in forests. It permits the latter if accompanied by a time bound reclamation programme. In addition it requires that the environment management plan should have adequate measures for minimizing environmental damage and restoration of mined areas and afforestation. Reclamation and afforestation are continuous processes which will proceed concurrently with mineral extraction.

Environmental clearance and mining clearance are important for the securing of mining leases. Mining is listed in the list of industries that need to get environmental clearance from the central government. Mining leases for areas exceeding 5.0 hectares have to obtain site clearance and environment clearance from the ministry of Environment and Forest. The same is required for extension and modernization. Site clearance is required for prospecting licenses of areas more than 500 hectares. Site clearance is required for site specific projects. The EIA and EMP have to be submitted for getting the clearance. For getting the project clearance risk analysis report( if necessary), NOC for air and water from the state pollution control boards and the concerned panchayat boards, environmental appraisal, copy of the approved mining plan, comprehensive rehabilitation plan ( if more than 100 people will be displaced) should be submitted along with the EIA/EMP has to be submitted. A technical presentation also has to be made before the appraisal committee for getting the final environmental approval for the project. The IAA can give exemptions for EIA to projects if necessary justifications are provided by the project proposal (i.e. unlikely to cause any serious or significant damage to the environment).

The mines and minerals (development and regulation) act, 1957 amended in 1999 states that mining lease shall not be granted by the state government if the mining plan is not approved by the state government or the state government( in respect of such categories of mines specified the central government. According to the MCDR (amended in 2000) rule no.9 no person shall commence mining operations except in

accordance with the mining plan and rule 13 stipulates that mining operations to be carried out in accordance with approved mining plans and as discussed earlier the mine plan includes necessary management provisions against environment pollution and for environmental protection.

Thus the act focuses on clearances to ensure that mining is approved in only certain areas. It does not stop with that, it also makes sure that even mining that is approved is done, keeping in mind the environmental costs and the mechanism to mitigate to those harmful impacts. This is ensured through the EIA and the EMP. So, the assessment and management plan are two key features expected to protect the environment. By making this pre requisite, the authorities responsible for granting clearance can meticulously weigh the positive and negative impacts of the project, before granting the clearance. Unlike other legislations, this one seeks to protect the environment right from the conception of a proposal for mining. As it is commonly believed prevention in better than cure, so, completely assessing the environmental costs and rehabilitating efforts even before operation of a mine is more prudent.

### 2.12. 1. Forest Clearance for Mining Projects

The forest act applies not only to the surface area but also underground mining area. The diversion of forest land is granted for a period coterminous with the mine lease but it is not granted for more than thirty years.

Rule 4 of forest (conservation) rules, 1981 amended in 1992 stipulates that the state government or other authority seeking approval should send the proposal to the central government.

The divisional forest officer should certify that the forest land required for the project is the minimum requirement. The construction of infrastructure such as office buildings, residential colonies should be located outside the forest area. Efforts should be taken to locate the mines as far away from the national parks, wildlife sanctuaries and water courses. It also requires the framing the proposal and compiling a detailed land schedule of the project and listing of these to which each of these land is to be placed.

The scheme for afforestation should clearly indicate the cost – norm, the implementing agency and the monitoring mechanisms.(prepared by the divisional forest officer)

The proposal for the forest clearance should have the following particulars namely a) a clear map depicting the various components of the mining project like the mining area, top soil dump, roads etc. it should show all the forest blocks in the mining area and the other forest blocks in whose vicinity it falls. The divisional forest officer shall check that no forest land is omitted or wrongly placed on the map and then authenticates the map, b) Species wise and diameter class – wise list of trees (down to 30 cms girth at breast height) to be felled for the mining project, c) present and future requirement of forest land, d) cost benefit analysis i.e. economic and social gains weighed against ecological and environmental loss and socio economic distress to people, e) the cost of the compensatory afforestation should be built into the project cost and the project authority should also take steps to transfer the non – forest land to the forest department for necessary afforestation.

If non forest land is not available near the project, then twice the area of degraded forest should be afforested and handed over to the forest department. The same is valid for extraction of minor minerals from the riverbed. Compensatory afforestation is not required in case of diversion of forest land upto one hectare(planting ten times number of trees likely to be felled), in case of renewal of mining lease for forest land already broken and used for mining and related activities and for mining leases that were in operation before the enactment of forest act 1980, and renewed after enactment with approval from central government without afforestation as necessary requirement. The proposals are considered by the advisory committee constituted under section 3 of the FCA and shall tend advice regarding the proposals.

The proposal for forest clearance has been framed with ensuring a detailed understanding of the forest lay out for assessing the environmental costs of a particular project. Most importantly it makes compulsory aforestation an important component of the clearance. The costs and efforts of aforestation have been made the sole responsibility of the project authority. Thus it actively engages the project authorities in the efforts to conserve and improve the environment. It is interesting to see that waste land is also sought to be forested through such efforts of a forestation.

This deserves special notice as the forest land directly affected by the mining operations will be reclaimed through the EMP and the mine closure plan through suitable rehabilitation processes.

### 2.13 The Requirements of Environment Impact Assessment

The environment impact assessment was made statutory in the environment protection act of 1986. This was amended in 2000 and this made EIA statutory for 30 activities, including mining.

The cycle and procedure of EIA include the phases of screening, scoping and consideration of alternatives, baseline data collection, impact prediction, assessment of alternatives, delineation of mitigation measures and environmental impact statement, public hearing, environmental management plan, decision making, and monitoring of the clearance conditions.

Screening decides if a project requires environmental clearance, scoping details the term of reference of EIA based on the guidelines published by MOEF for various sectors. Baseline data describes the existing environmental status of the identified area. Impact predicts the environmental consequences of the project on air, water, land, biological aspects and socio economic aspects. It cannot be predicted with certainty.

The possible alternatives in terms of location and process technologies i.e. choosing the best environmental option for optimum economic benefits to the community, is considered. A mitigation plan is drawn up for the selected option and should be supplemented with EMP for environmental improvements.

The EIA should present the environmental scenarios with project, with project alternatives and without project. The public hearing gives opportunity to the public an opportunity to know about the project requiring EIA and also to voice the concerns, suggestions and objections. The EIA amendment made in 1997 made public hearing mandatory. The concerned public is given an opportunity to submit their oral/written suggestions to the state pollution control board. The EIA and EMP is evaluated to reach a conclusion. The clearance conditions are monitored to ascertain if the impact levels exceeded the predictions and so to prescribe corrective actions and also to monitor and review the conditions for the implementation of EMP.

The Environment Impact assessment has been constituted very meticulously and in a stage wise manner to make the process comprehensive and effective. Thus it gives scope to the MoEF to stipulate conditions for the protection of the environment based on the assessment of the impacts. The provisions of monitoring the clearance conditions, makes assessment more meaningful, as true assessment of the actual impact can be made only after operationlisation of the project. In case of the actual impact exceeding the assessment, the corrective measures ensure that environment is sufficiently protected against the unforeseen impacts. For this purpose, a specific body namely the Impact Assessment Agency has been constituted and its functions are discussed below.

### 2.14 The Importance of the Impact Assessment Agency

The IAA evaluates and asses the EIA and shall prepare a list of recommendations and conditions for implementation and also responsible for monitoring during the implementation and operation of the project. The EAC was created as a recommending authority for the environmental clearance by the MOEF, constituted from the department of environment, forest and wildlife, MOEF. The committee examines the environmental aspects of the mining projects and also the EMP. It also suggests mitigative measures and pollution control devices and monitor if the recommendations are effectively implemented.

Currently the following category of mines is referred to the EAC namely new mining projects of central public sector with capital investment above 50 core, expansion or modernization of existing mines, if the total capital investment will exceed 50 crores after this, mining projects of public and private sector which are financed wholly or partly by international funding agencies, and mining projects of public and private sector needing forest clearances.

The EAC calls for the report of the mine with baseline data on environment and EIA and EMP. The central government rejects or approves the proposal after considering the advice of the committee and other such necessary inquiries.

In large mining projects forest clearance is required prior to the approval of central government and environment clearance after due recommendations of the EAC. So, in

order to minimize delays a single window clearance has been adopted, that is process both the applications simultaneously.

The main purpose of the EIA is to completely understand the proposed action including the men, material and time frame, to identify the environmental parameters that would be affected by the action and to project the proposed action into future and thus to determine the possible impacts on the environmental indicators in the long run.

The system of environmental law specific to mining operates at different levels. Earlier the legislations dealt mainly with prevention and control of pollution in the mines, which covered only the operation stage of the mining. As mining happens in three levels namely, prospecting, mining of ore and extraction of resource from the ore, the need for relevant legislation for environment protection was felt. The later legislations were suitably formulated to cover these various aspects of mining and also environmental aspects relating to the closure of a mine were also addressed. Authority is also given to agencies like the Indian Bureau of mines to carry out investigations and enquires to find out if the prescribes norms and procedures are being followed. Efforts are taken to actively engage the project authority in the protection and conservation of the environment by stipulating conditions of compulsory aforestation and submission of environmental statement.

Provisions for clearances namely environment clearance and forest clearance have become the most important legislations today, as they are the most important components for bringing a mine into operation. These clearances require assessment of the impacts, which could result from bringing a mine into operation and decide if a project should be allowed to operate. But unfortunately the assessment is done by the project authority themselves, and not the government agencies. This reduces the effectiveness of the entire process, as it is possible that the investors with hold information or misrepresent facts, in order to get clearances. As seen in the case studies discussed in chapter four, there is a trend of faulty EIA especially in large scale projects. So, an effective apparatus has to be put in place to remedy this. Apart from this other monitoring agencies have to be put in place to not only ensure compliance during mining operations but also during the clearance processes. An effective system of penalising the rule breakers should also be evolved in order to make compliance more effective. At present, the punishment for offenders is mainly

termination of leases but in a scenario where, illegal mining is rampant this will not have much impact.

Another cause for concern is that, the process of impact assessment and reclamation is undertaken in a comprehensive manner only for mining operations. It is not dealt in detail for prospecting operations. Prospecting operations also tend to impact the forest cover and the topography of the land, though in a much lesser level in comparison to the mining operations. An effective mechanism to ensure that the forest cover disturbed during the prospecting operations is also rehabilitated should come into place.

# CHAPTER 3 – SUSTAINABLE MINING AND ITS IMPLICATION ON THE AVAILABILITY OF RESOURCES.

Mining deals with finite resources, which means that every mine has a finite life. In India, the Foreign Direct Investments involve large scale investment and also the scale of the operations, in terms of, mining the ore and mineral extraction are huge. This is one of the key reasons for inviting foreign investments in the sector. It is felt that, the Public Sector Enterprises involved in mining do not have the investment for large scale operations, which is considered essential for realising the potential of the industry. This means that over a short period of time, vast quantities of the resources being extracted. This is implications not only on the availability of the extracted resources but also on other resources, for ex., there is vast quantity of water, electricity etc. used in the refineries for processing the ore. Mining also affects the environment by removing the forest cover and polluting air, water and land. So, this also has an indirect and direct effect on the ecosystem, rain fall patterns, water sheds etc.

This chapter proposes to undertake two sets of enquiries. First, to understand the concept of sustainable mining, looking into the debates surrounding sustainable mining and next, to look at the implications of large scale mining operations on the availability of the resources mined and other resources, that are involved in mining operations. India is rich in a number of minerals and metals, but in this chapter the production and consumption of iron ore and bauxite will be discussed as these are two resources mined in the case studies discussed in chapter 4. One of the case studies in the next chapter also deals with the mining of diamond but here the rate of production and consumption of diamond will not be looked into, as the Foreign Direct Investments engaged in this are still in the prospecting stage. Mining when it takes place in forests also require the clearing or diversion of forest land. This chapter will also look into the depletion of forest cover, as it is a vital resource for maintaining ecological balance.

### 3.1 What is Sustainable Mining?

The world commission on Environment and Development, popularly known as the Brundtland commission defines sustainable mining "to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs"[17]. This term sustainable mining itself considered an oxymoron because

[17] Bruntland commission on Environment and Development. URL http//: www.un – documents.net

mining deals with finite resources and so continuous mining will lead to the depletion of the resources at some point in time. Hence, it is felt that sustainable mining is not possible.

But sustainable mining does not have to imply making the resources last for eternity rather it means that the resources have to be used in an optimum way and the most efficient technology and methods have to be employed to extract the highest amount of mineral from the ore. The very fact that these resources are finite, calls attention to the need for sustainable development of mining and extraction of minerals. When the ore is processed to extract the minerals, a large amount of waste material ensues which are dumped. Using better technologies mean that the amount of waste produced is less and also that the waste or by product of the processing state is also usable. Use of froth floatation process for non ferrous metal sulfide ores, cyanide heap leaching ores for gold ores etc., has added to the number of economically mineable resources. Most importantly the concept of sustainable mining also includes the efforts taken to minimise the adverse effects of mining on the environment. Mining occurs in stages and considerable damage to the environment is caused in all the stages from prospecting to the transportation of the extracted mineral/metal.

Another factor that indirectly contributes to the sustainability of mining is the recyclability of the metals and minerals. More than 90 percent of copper mined so far is still in use and more than sixty percent of the silver that has been extracted so far is in use. This is true of many other minerals and resources So the term sustainable mining would mean that mining has to be undertaken with the purpose of fulfilling the needs of the current generation without compromising on the ability of the future generations to meet their needs and demands and it should also be undertaken in a manner causing the least amount of damage to the environment, human health and safety. The economic and materials benefits due to mining should not come at the cost of a safe and clean environment.

According to International Institute for Sustainable Development, the idea of sustainable mining is create a net human and environmental benefit. The fact that mining deals with finite resources is irrelevant to the question as the long statistical record of continued mineral output at relatively constant prices has set the concerns aside. Rather the focus should be on mining as an activity and its implications for the

communities and the renewable resources in which they are embedded. The mining activity itself may have a finite life span but the implications of the activity are bound to be much longer than the mining operations itself. Hence, the efforts should be directed at making this a net positive impact for human society and the enveloping ecosystem[18].

Focusing on better technologies and cleaner production alone is not enough for sustainable mining. It should also focus on the prudence of mining operation in itself as stated by. The issue of sustainable mining has mainly centered on the questions of how and not on the questions of "if" and "where". Consideration of values and beliefs are also very important and as critical as technical matters in carrying forward the idea of sustainable mining. Industry self initiation and government action is very important for taking forward the agenda of sustainable mining. There should also transparent mechanisms and procedures, regarding waste disposal, pollution levels etc. this would be possible only with the combined initiative of the government and the investors.

### 3.2. Iron Ore

Around 5.6 % of the earth's crust is composed of iron and it is a naturally magnetic element. Iron ore is basically classified into three types or grades, depending on the content of iron in it, namely, Hematite, (70% iron), Magnetite, (72 % iron) and Taconite which has up to 30% Magnetite and Hematite. Tactonite is a low grade iron ore. Steel is an alloy of iron and so iron ore constitutes the basic raw material for iron and steel industry. Iron ore is generally extracted through smelting; a process in which oxygen is removed from the ore and it is combined with other chemicals such as carbon. This results in pig iron, which is essential for making steel. The excess carbon content is removed from it and materials such as nickel, manganese and chromium are added to give desired qualities such as strength, hardness etc.

The primary use of iron ore is in the making of pig iron, steel and sponge iron. Iron and steel is very important for the development of roads, rail ways, buildings and other infrastructure. It is used in making automobiles and machinery to the most insignificant things like nuts and bolts. It would not be exaggeration to say that it has penetrated every aspect of human life and civilization.

[18] International Institute of Sustainable Development (2002), *seven questions to sustainability*, IISD.

According to USGS Mineral commodity survey the world reserve base of crude iron is estimated to be 160 billion tones, with a base iron content of 770 billion tones. Brazil, china, Russia, Australia and India are some of the major producers of iron and steel.

**Table 3.1. World Iron Reserves in Principal Countries**

**( in Tonnes )**

| Country | Reserves | |
|---|---|---|
| | Crude ore | Iron content |
| **World : Total (rounded)** | 160000 | 77000 |
| **Australia** | 20000 | 13000 |
| **Brazil** | 16000 | 8900 |
| **Canada** | 1700 | 1100 |
| **China** | 22000 | 7200 |
| **India*** | 7000 | 4500 |
| **I r a n** | 2500 | 1400 |
| **Kazakhstan** | 8300 | 3300 |
| **Mauritania** | 700 | 400 |
| **Mexico** | 700 | 400 |
| **Russia** | 25000 | 14000 |
| **South Africa** | 1000 | 650 |
| **Sweden** | 3500 | 2200 |
| **Ukraine** | 30000 | 9000 |
| **USA** | 6900 | 2100 |
| **Venezuela** | 4000 | 2400 |
| **Other countries** | 11000 | 6200 |

Source: Mineral Commodity Summaries, 2010.
*India's resources of iron ore as per UNFC system as on 1.4.2010 (P) are estimated at 28.53 billion tonnes.

Iron production in India dates back very early and India was one of the important centers of trade for iron smelting in the ancient times. In India iron ore is found in many of the states, as seen in table 3.2. The provisional resource of hematite in 2010 was 17,882 million tones and 45 % (8,093) of it is under the reserve category and 55% (9,789) of it is under the remaining resources category. The provisional estimate for total resource of magnetite is 10, 644 million tone and 10, 622 million tones are placed under the remaining resource category and only 22 million tones are placed under the reserve category.

**Table 3.2. Selected State-wise Reserves/Resource of Iron Ore in India**

| Selected State-wise Reserves/Resource of Iron Ore in India (As on 01.04.2005) | | | |
|---|---|---|---|
| (in 000 Tonnes) | | | |
| State | Reserves (Prov.) | Remaining Resources (Prov.) | Total Resources (Prov.) |
| Andhra Pradesh | 10044 | 1588064 | 1598408 |
| Assam | 0 | 27980 | 27980 |
| Bihar | 0 | 644 | 644 |
| Chhattisgarh | 559654 | 2091179 | 2650833 |
| Goa | 370550 | 432619 | 803169 |
| Jharkhand | 2477823 | 1506608 | 3984431 |
| Karnataka | 613362 | 8283704 | 8897066 |
| Madhya Pradesh | 32418 | 167588 | 200006 |
| Maharashtra | 16709 | 260711 | 277420 |
| Orissa | 1697396 | 2316240 | 4013636 |
| Rajasthan | 2008 | 539974 | 541982 |
| Uttar Pradesh | 0 | 38000 | 38000 |
| Kerala | 0 | 83435 | 83435 |
| Nagaland | 0 | 5280 | 5280 |
| Tamil Nadu | 0 | 481876 | 481876 |

Compiled from the statistics released by: Lok Sabha Unstarred Question No.1696, dated 08.08.2006.
Compiled by Indiastat. URL:http:// http://www.indiastat.com/minesandminerals/23/stats.aspx

### 3.2.1 Iron Ore Production in India

The production of iron ore has considerably increased after economic liberalization. As seen in table 3.3, the iron ore production was bordering around 5 million tonnes in the later part of the eighties and the first half of the eighties. After the reforms began to speed up, there is also considerable increase in the production of iron ore. As discussed in chapter 1, the mining sector was heavily dominated by the PSU s and private players were encouraged mainly after the reforms. There is a drastic change noticed in the participation of the public sector and private sector in iron ore mining. In the year 2009 – 10, 319 mines were reported and only 34 were in the public sector, the remaining 285 was in the private sector. The public sector's contribution to the total iron ore production is diminishing, in 2009 -09, the sector's contribution to total production was 30.4%. This reduced to 27.1% in 2009-10. The private sector's

contribution to the total production amounted to 72.9%, forming the major chunk of production[19].

Iron ore production is happening in a never before scale. It reached the hundred million mark in 2003 – 04 and in just four years the production has doubled touching the 200 million mark in 2007 – 2008, as seen in table 3.3. Compared with production level in 1990 – 91, the production has increased fourfold. The production amounted to just 54.339 million in 1990 – 91, which has crossed the two hundred million mark in 2009 – 10, a fourfold increase in just twenty years.

**Table 3.3. Production of Iron Ore from 1987- 2010**

| Year | Total production in Tonnes |
|---|---|
| 1987-88 | 15079 |
| 1988-89 | 49506 |
| 1989-90 | 51657 |
| 1990-91 | 54339 |
| 1991-92 | 57009 |
| 1992-93 | 53665 |
| 1993-94 | 57717 |
| 1994-95 | 50095 |
| 1995-96 | 65751 |
| 1996-97 | 65891 |
| 1997-98 | 72718 |
| 1998-99 | 70088 |
| 1999-00 | 72563 |
| 2000-01 | 77636 |
| 2001-02 | 84405 |
| 2002-03 | 96636 |
| 2003-04 | 109539 |

[19] Geological Survey of India (2010), Detailed Information Dossier on Iron Ore, GSI.

| | |
|---|---|
| 2004-05 | 141939 |
| 2005-06 | 155273 |
| 2006-07 | 176955 |
| 2007-08 | 205085 |
| 2008-09 | 222082 |
| 2009-10 | 218900 |

Note : - : Nil, Negligible or Not Applicable.
Source : Data as per Central Statistical Organisation (CSO), Compiled by Indiastat.
URL:http:// http://www.indiastat.com/minesandminerals/23/stats.aspx

### 3. 2. 2 Export Oriented Production

Looking at the production levels after reforms, a rosy picture evolves but a close attention reveals that "all that's rosy is not so healthy." Iron ore production is associated with domestic consumption, in avenues of infrastructure development, construction, heavy industries, manufacturing etc. and considered essential for development of the economy as a whole. The increasing production trends of minerals in India are also associated with increase in the amount of exports.

**Table 3.4 Export of Iron Ore as Percentage of Production.**

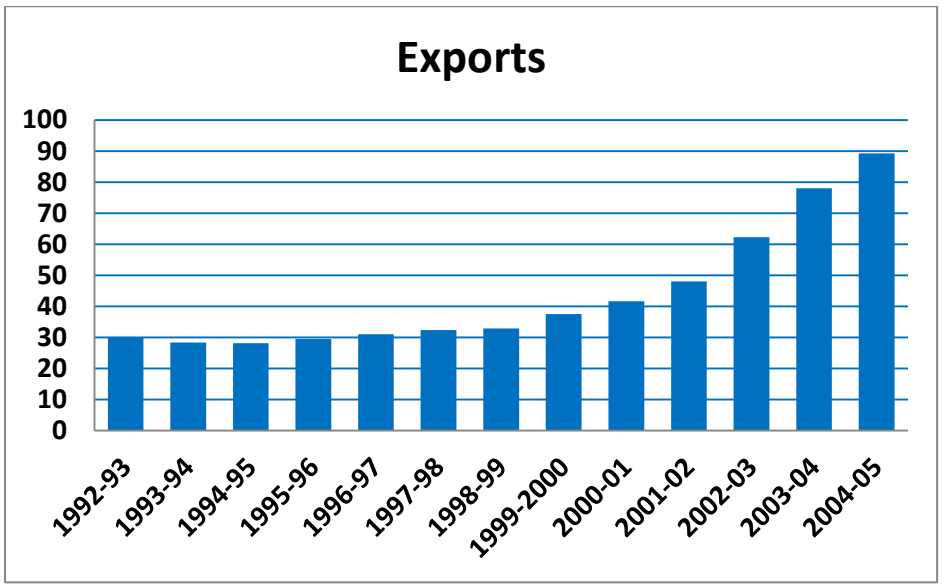
| Year | Production | (Y-o-Y Growth) (%) | Exports | (Y-o-Y Growth)(%) | Export as % (of Production |
|---|---|---|---|---|---|
| 1992-93 | 57.5 | | 26. 8 | | 46.6 |
| 1993-94 | 59.6 | 3.7 | 29.9 | 11.6 | 50.2 |
| 1994-95 | 64.5 | 8.2 | 28.3 | 5.4 | 43.9 |
| 1995-96 | 67.4 | 4.5 | 28.1 | 0.7 | 41.7 |
| 1996-97 | 68.2 | 1.2 | 29.5 | 5 | 43.3 |
| 1997-98 | 73.2 | 7.3 | 31 | 5.4 | 42.5 |
| 1998-99 | 77 | 5.2 | 32.4 | 4.2 | 42.1 |
| 1999-2000 | 74.9 | 2.7 | 32.9 | 1.5 | 43.9 |
| 2000-01 | 80.8 | 7.9 | 37.5 | 14 | 46.4 |
| 2001-02 | 86.2 | 6.7 | 41.6 | 10.9 | 48.3 |
| 2002-03 | 99.1 | 15 | 48 | 15.4 | 48.4 |
| 2003-04 | 120.6 | 21.7 | 62.2 | 29.6 | 51.6 |
| 2004-05 | 145 | 20.2 | 78 | 25.4 | 53.8 |

Source: Up to 2005-06 JPC and IBM, Nagpur.

In 2009 – 10, 226 million iron ore was produced, out of which 117.37 million tonne was exported, amounting to 51. 93% of the total iron ore produced[20]. India exports roughly half of the iron ore that is produced in the country.

**Fig. 1. Export of Iron Ore 1992 – 2005**

**(in tonnes)**




Source: Up to 2005-06 JPC and IBM, Nagpur.

An increase in production is not necessarily accompanied by an increase in domestic consumption. The rate of domestic consumption is very low in India. The per capita consumption of steel in India is 25 – 30 kg, where as it is 350 – 400 kg in the developed countries[21]. The developed countries have stopped exploiting their natural resources and have instead started exploiting these resources. Even china which 16 percent of the world s iron reserves has reduced its exports and is bent on imports. As India is supposed to be on a path of industrial development the much needed resource has to be cautiously used. Most of the resources are recycled and re used for meeting the needs of the future. If half of the iron ore is exported, it will also cut down the recyclable and re usability of the resource for meeting future domestic needs. If the current rate of increase in production continues then India s iron reserves will be finished within the next sixty years.

[20]Fact box, reuters . http://in.reuters.com/article/2011/08/15/idINIndia-58789320110815, Accessed on 12, February 2012.
[21] Centre for Science and Environment(2011),P*ublic Watch. New Delhi:CSE.*

### 3.3 Bauxite

Bauxite is a sedimentary rock containing aluminum hydroxide minerals, iron oxide, silica, aluminum silicate and other minor minerals. Approximately 85% of the total bauxite mined in the world is processed into aluminum oxide by the bayer's process and then reduced to the aluminum metal by the hall haroult process. Bauxite is the primary raw material for aluminum. Aluminum is used in a variety of industries like cement, cosmetics, packaging and chemicals. Aluminum is also widely recycled and re used.

India has the fifth largest bauxite reserves in the world. Bauxite is abundantly found in states like Chhattisgarh, Madhya Pradesh, Orissa, Andhra Pradesh, Maharashtra and Jharkhand.

**Table 3.5. Selected State-wise Reserves/Resources of Bauxite in India**

| **Selected State-wise Reserves/Resources of Bauxite in India (As on 01.04.2005)** | | | |
|---|---|---|---|
| **(In Million Tonne)** | | | |
| **States** | **Reserves** | **Remaining Resources** | **Total Resources** |
| Andhra Pradesh | 0.25 | 615.02 | 615.27 |
| Bihar | 0 | 4.11 | 4.11 |
| Chhattisgarh | 88.97 | 59.35 | 148.32 |
| Goa | 34.63 | 15.73 | 50.36 |
| Gujarat | 68.21 | 120.12 | 188.33 |
| Jammu & Kashmir | 0 | 2.02 | 2.02 |
| Jharkhand | 31.66 | 85.89 | 117.55 |
| Karnataka | 5.73 | 43.77 | 49.5 |
| Kerala | 0.06 | 14.04 | 14.1 |
| Madhya Pradesh | 16.84 | 117.23 | 134.07 |
| Maharashtra | 39.16 | 72.49 | 111.65 |
| Orissa | 608 | 1200.27 | 1808.27 |
| Rajasthan | 0 | 0.53 | 0.53 |
| Tamil Nadu | 5.89 | 20.95 | 26.84 |
| Uttar Pradesh | 0 | 18.91 | 18.91 |
| **India** | **899.4** | **2390.43** | **3289.83** |

Note. : Figures rounded off.
Source : Lok Sabha Unstarred Question No. 243, dated on 21.07.2009.
Compiled by Indiastat. URL:http://
http://www.indiastat.com/minesandminerals/23/stats.aspx

## Table 3.6 . Bauxite Production in India

| Year | Total in Tonnes |
|---|---|
| 1987-88 | 799 |
| 1988-89 | 4198 |
| 1989-90 | 4480 |
| 1990-91 | 4698 |
| 1991-92 | 4593 |
| 1992-93 | 8041 |
| 1993-94 | 5397 |
| 1994-95 | 3685 |
| 1995-96 | 5363 |
| 1996-97 | 5889 |
| 1997-98 | 5948 |
| 1998-99# | 6323107 |
| 1999-00# | 6806014 |
| 2000-01# | 7515769 |
| 2001-02# | 7515769 |
| 2002-03# | 8456442 |
| 2003-04# | 10365027 |
| 2004-05 | 11628 |
| 2005-06 | 11411 |
| 2006-07 | 15438 |
| 2007-08 | 23498 |
| 2008-09 | 15501 |
| 2009-10 | 14212 |

Note : # : Fig. in Tonne.
- : Nil, Negligible or Not Applicable.
Source : Data as per Central Statistical Organisation (CSO), Compiled by Indiastat.
URL:http:// http://www.indiastat.com/minesandminerals/23/stats.aspx

In the initial years of liberalization, bauxite production was roughly around 4.5 million tonne but comparing this with the production levels in 2009 – 10, a great increase is seen. The rate of production has gone from 4.69 million in 1990 – 91 to 14.2 million in 2009 – 2010, as seen in table 3.4. This accounts for more than threefold growth in less than two decades. Due to the lack of availability of data for the quantity of bauxite exported in the last two decades, it is hard to determine if there has been a corresponding increase in the rate of export.

**Table 3.7. Export as Percentage of Total Production**

| **Mineral** | **Million Tonnes** | | | **CAGR (Compound Annual Growth Rate) (%)** | | **Remarks** |
|---|---|---|---|---|---|---|
| | ***1970*** | ***1990*** | ***1998/99*** | ***1970-90*** | ***1970-98*** | |
| **Iron Ore** | 16.6 | 55.6 | 70.7 | 6.23 | 5.31 | 30-40% ore exported |
| **Bauxite** | 1.4 | 5 | 6.4 | 6.57 | 5.58 | 20-30% ore or alumina exported |
| **Chromite** | 0.27 | 0.94 | 1.4 | 6.44 | 6.05 | Ore exported |
| **Limestone** | 23.8 | 70.1 | 109.8 | 5.55 | 5.61 | 2% cement exported |
| **Coal** | 73.7 | 211.6 | 293.6 | 5.41 | 5.06 | Coking coal exported |
| **Copper Ore** | 0.5 | 5.2 | 4.2 | 12.42 | 7.9 | Copper metal or concentrate exported |

Source: Tata Energy Research Institute (TERI), 2001. Cited in Mehta, S Pradeep (2002), "The Indian Mining Sector: Effects on the Environment & FDI Inflows," OCED.

**Table 3.8 Export of Ores and Minerals 2004 – 05 to 2008 - 09**
**(Unit in Tonnes)**

| **Mineral** | | **All mineral** | **Abrasives (natural)** | **Alumina** | **Barytes** | **Bauxite** |
|---|---|---|---|---|---|---|
| **2004 – 2005** | q | ** | 34612 | 957704 | 483423 | 1016141 |
| | v | 70648 | 19 | 1321 | 78 | 134 |
| **2005 – 2006** | q | ** | 78635 | 1025023 | 555437 | 2355277 |
| | v | 79790 | 33 | 1773 | 101 | 305 |
| **2006 – 2007** | q | ** | 95697 | 916531 | 629518 | 5073894 |
| | v | 80931 | 46 | 1870 | 148 | 742 |
| **2007 – 2008** | q | ** | 145278 | 688044 | 564800 | 7120899 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | v | 95022 | 82 | 1017 | 133 | 1179 |
| **2008 – 2009** | q | ** | 156711 | 968245 | 843789 | 1708349 |
| | v | 108837 | 144 | 1582 | 298 | 371 |

Note : q- quantity , v – value. Source : Annual report, Ministry of mines, 2009.

Much of the mineral resource found in India, is also found in densely forested regions, crossed by river systems. So, mining operations in such areas entail the clearing of the forest cover. This happens not just during the operation of the mine but in all stages of the mining operation. Activities like construction of roadways and railways for the transportation of the ore, construction of refineries and other infrastructure for processing the ore also result in clearance of forest land. As discussed in chapter two, forest clearance is one of the pre requisites for beginning mining operations in the forest land. The recent trend has been the clearing of large area of forest land for high investment mining projects. The rate at which forest clearances are being granted and the amount of forest land diverted for mining is also alarming. According to the provisions of the Forest Conservation Act, forest clearance is granted only after careful deliberations and recommendations and conditions to ensure the rehabilitation and reclamation of the forest land. But at the rate at which the clearances are granted raise doubts as to how much impact could be mitigated by the provisions of the act and if the act itself is followed properly.

### 3.4. Forests as a Resource

Much of the mining operations take place in the states that have a thick forest cover. So, mining operations entail de forestation and a reduction in the forest cover. Forest is one of the most important natural wealth in any given region. Forests are the abundant source of timber, retainers of bio diversity, home to the wild life and are very important in determining the rain cycle and climate patterns of a region. They also have a significant influence on the ecosystem. Reduction in the forest cover has many adverse consequences like, reduction in rain fall, change in temperature and weather patterns. Even if the lost forest area is regained through a forestation schemes, the wild life wealth that will be lost is hard to regain. In India, forests are also home many tribal and other traditional forest dwelling communities. The forest,

to them is not just a habitat and a source of livelihood. In some sense, the forest defines their way of life and belief systems.

Most of these communities either depend on the forest land for agriculture or for other resources like timber, fire wood, etc. It is the only source of livelihood for them. In India, new states like Jharkhand and Chhattisgarh have been carved due to the demands of the tribal population. The number of people dependant solely on forest for sustenance is huge in mineral rich states like Orissa, Madhya Pradesh and Jharkhand. Hence reduction in the forest cover will result in unwanted changes in rain patterns and weather conditions but it also deprives a large section of population, of its only source of livelihood.

### 3.5. The Status of Forest Clearances

The forest conservation act was passed in 1980, to protect and conserve the forest land. In spite of legal protection, a huge amount of land has been diverted for mining and other non forest purpose. The rejection rate of proposals for forest clearance is very low. Looking at the rejection rates one would think that the proposals seeking clearance are justified in all aspects and are also in compliance with the established norms and procedures. The rejection is rate is very low, only 6% of the projects that applied for clearances were rejected.

**Table 3.9 Status of Forest Clearance from 1980 to July 2011.**

| | **Granted FC** | | **Rejected** | **Closed,** | **Pending** | **Total** |
|---|---|---|---|---|---|---|
| | **Final clearance** | **In principle clearance** | | **returned or withdrawn** | **with the government** | |
| **Number of projects** | 19003 | 3261 | 1769 | 3004 | 2143 | 29180 |

Source: CSE publication 2011

Mining involving large scale forest clearances are the norm of the day and at the rate at which forest land is being cleared has increased considerably after liberalization, especially in the last few years. In the year 2010 alone, as many as 1938 projects were granted clearance, making it highest number of clearance in a single year.

**Table.3.10 Forest Land Diverted for Developmental Purpose**

| Period/Year | Forestland diverted* (in ha] |
|---|---|
| **1981-92** | 198421.19 |
| **8th FYP (1992-97)** | 84587.07 |
| **9th , FYP(1997-2002)** | 147397.57 |
| **10th FYP (2002-2007)** | 196262.32 |
| **2007** | 22033.78 |
| **2008** | 28509.45 |
| **2009** | 87883.67 |
| **2010** | 43370.38 |
| **2011 (till August)** | 22627.78 |
| **11th FYP (20O7-2O12)** | 204425.06 |
| **Total Forest Land Diverted for Development Projects** | 830244 |

*For all projects excluding regularisation of encroachments
Source: CSE publication, 2011.

As seen in table 3.9, the amount of forest land diverted during the last five year plan alone around 2.04 lakh ha of forest land has been cleared for developmental purpose and this amounts to nearly 25% of forest land diverted for development purpose since 1981. In 2009, alone 87883.67 ha of forest land has been diverted, making it the highest forest diversion in a single year. Mining is one of the many development activities, along with its other allied activities such as refining and transportation. Looking specifically, at the diversion of forest land sector- wise/ purpose- wise gives better understanding of the area taken up by mining.

**Table 3.11 Break Up of Forest Land Diverted for Development Purpose in the Last Five Year Plan**

| | Forest area diverted (in ha] | Percentage of total forest diverted (%) |
|---|---|---|
| **Defence** | 13137.9 | 6.4 |
| **Social services, rehabilitation and human settlement** | 3405.8 | 1.7 |
| **Transport (road, railways)** | 24387.3 | 11.9 |
| **Power projects** | 18898.9 | 9.2 |
| **Hydel** | 5553.7 | 2.7 |
| **Thermal** | 2199.1 | 1.1 |
| **Wind** | 2760.4 | 1.4 |

| | | |
|---|---|---|
| **Transmission lines** | 8385.6 | 4.1 |
| **Mining** | 49904.6 | 24.4 |
| **Irrigation** | 26839.6 | 13.1 |
| **Others (including industries)** | 67851.1 | *33.2* |
| **Total area diverted** | 204425.01 | 100 |

Source: CSE publication 2011.

Mining alone has been allocated 24.4 % of the total forest land diverted during the last five year plan, amounting to 49904.6 ha. Power projects, transport and irrigation have also given significant share of the diverted forest land. It is possible that some of the construction and other infrastructure activities, could be induced by mining. Around 12.4 % of forest land has been diverted for mining since the forest conservation act, amounting to 148860 and in this 33.52% has been diverted in the last five years.

**Table 3.12, Sector Wise Break Up of Forest Land Diversion, Post Forest Conservation Act.**

| **Purpose/sector** | **Forest land diverted** | |
|---|---|---|
| | **Area (in ha]** | **Percentage** (%) |
| **Defence** | 46570 | 3.9 |
| **Regularisation of encroachment** | 368432 | 30.7 |
| **Social services** | 65089 | 5.4 |
| **Transport [Road, Railways)** | 63292 | 5.3 |
| **Power projects (Hydel Thermal, Wind & Transmission lines)** | 164128 | 13.7 |
| **Mining** | 148860 | 12.4 |
| **Irrigation** | 167237 | 14 |
| **Others (including industries)** | 175067 | 14.6 |
| **Total forestland diverted** | 1198676 | 100 |

Source: CSE publication 2011.

**Table 3.13 Forest Land Diverted for Mining Since 1981**

| Period / Year | Number of mining Projects granted FC | Forestland diverted for mining (in ha) |
|---|---|---|
| **1981-1992** | 138 | 13047 |
| **8th FYP (1992-97)** | 152 | 9683 |
| **9th FYP (1997-2002** | 494 | 47216 |
| **10th FYP (2002-2007** | 502 | 29010 |
| **2007** | 102 | 6644 |
| **2008** | 144 | 10529 |
| **2009** | 122 | 7295 |
| **2010** | 103 | 14505 |
| **2011 (till August)** | 61 | 10932 |
| **11th FYP (2007-till August 20011)** | 522 | 49905 |
| **Total** | 1808 | 148860 |

Source: CSE publication 2011.

It can seen from the above table that after the initiation of economic reforms and opened up the mining sector, the number projects that have been granted forest clearance and the area granted clearance has increased considerably. The number of projects granted clearance in 2010(the maximum number of clearances granted in a year) is less than the number of projects cleared in the decade (1981 – 1992) but that area diverted in 2010 is much more than the area diverted during 1981 – 1992. This illustrates the fact that large projects in terms of area and investment, especially foreign are the norm of the day and forest diversion is happening is a never seen before manner. As much as 1253.225 ha of land is being diverted for just one project, as in the case of the POSCO project.

In terms of environmental clearance for iron mines in the recent five year plan, 113 iron mines were given environmental clearance with a capacity of 162 MTPA and it uses 32,500 ha of land and 1.1. billion meter cube of water per year. During the same period 29 mines including capacity expansion were given environmental clearance. This covers a mine lease area of 11,500 hectares. The capacity for production of iron has been expanded by 75% and in the case of bauxite; it has been increased by 1.3 times. The expansion of capacity means increase in production and increase in the rate of exploitation of the mineral resources.

Mining operations also use other resources like water and electricity, which are essential for the functioning of everyday life. In order to attract huge investments, water and electricity is provided at a subsidized rate to the investors. Foreign investment projects involve huge investments, which mean that the capacity of the mine and the refineries and the relevant infrastructure is also going to be immense. So, other resources like water, land etc. is going to be greatly appropriated for its functioning. These are the same resources that are basic needs of the common man. The increase in demand by both would lead to resource crunch and disrupt the smooth functioning of various aspects of common life.

For example, the impact of allocation of resources for large scale projects has a negative impact on availability of resources like water. Clean water is one of the basic demands that are used in all walks of life, water is the main support system of human life as it is also used for irrigation. For example, The water department has reserved 10 MGD water from Jorba barrage for the POSCO project, which is also the source of drinking water for Cuttack, Bhubaneshwar and for irrigation purpose in Cuttack, jagatsinghpur, Khurda and Kendrapada. The mining sector has been allocated 90.43 million meter cube water per annum, which roughly equals the daily water needs of 2.71 lakh people[22].

**Table 3.14 : Sector-Wise Water Allocation**

| **Sector** | **Water [in million** m3/ annum) |
|---|---|
| **Cement** | 88.84 |
| **Coal mining** | 58.3 |
| **Iron and steel** | 1098.08 |
| **Thermal power plants** | 7000 |
| **Mining** | 90.43 |
| **Total** | 8335.65 |

Source: CSE publication 2011.

Such huge scale allocation of resources is going to create resource crunch and in the event of high demand and scarcity and scarcity, the common man gets the worst bargain. Industrial development, in this case mineral development should not come at the cost of basic and bare essentials of every day life.

[22] Centre for Science and Environment (2011), P*ublic Watch. New Delhi: CSE.*

As discussed in the earlier chapter, great efforts are undertaken in India to welcome FDI in the mining sector and some of largest projects in the mining sector are the FDI projects. The number of FDI proposals in this sector, are increasing by the day and this implies a corresponding increase in the amount of natural resources that are going to be mined. As of now, most of the resource production comes from ores and refineries with higher capacity. For example around 60 % of iron ore production in the year 2009 – 10, came from mines with capacity of more than 1MTPA[23]. Policy measures are being initiated to boost the production of resources in the country, and foreign direct investments are obvious choice because of high investments and better production capacities.

Two issues need to be focused on here. First, the rate of production of resources is very rapid but the amount of consumption is very low and next, that the rate of export of the resources is also increasing, which means that the resources cannot be recycled and reused. Because of the latter reason, the rate of exploitation of resource is bound to increase to meet future demands. In a country like India with a huge population the demand for resources in the present and the future will be very high. So, great care and caution had to be exercised in mining and eventually depleting the resources.

Though primary data is not available for the amount of resources produced and refined by the private/ foreign investors, the increase in the trends of production correspond to policy measures undertaken to open up the mining sector. The rapid increase in the foreign and private investments in the sector has lead to rapid expansion in the capacity of the sector and along with it, poses serious implication on the availability of other resources used in the mining processes.

[23] Geological survey of India (2010), *Detailed Information Dossier on Iron Ore*, GSI.

# CHAPTER 4: ENVIRONMENTAL ISSUES IN FOREIGN DIRECT INVESTMENT IN MINING IN INDIA: AN ANALYSIS OF THREE MINING PROJECTS.

This chapter looks at three major foreign direct investment projects in India, that have come to the lime light for causing considerable damage to the environment. These projects have violated the laws and the procedures laid down by law, for protecting the environment and for rehabilitating the environment, during the various stages of mining operations. The mineral deposits in most of the states in India are also found in heavily forested regions comprising wild life sanctuaries, fragile ecosystems and water courses. Thus the scope for environmental damage is higher in these regions.

If the innumerable examples of mining operations in the world are anything to go by, then it is clear that investors are not keen in sustainable mining or conserving the environment, their interest lies mainly with the exploitation of the mineral wealth. Especially when the investor is foreign, they do not have a personal stake in protecting the environment as the consequences and concerns do not concern them once the mining operations are over. So, for the investor environmental assessment and other procedures such as forest clearance, forest rehabilitation and reclamation programmes etc. only increase the time and costs, of bringing a mine into operation. Moreover, mining and other non – forest activities are prohibited in some of these areas, such as wild life sanctuaries and fragile ecosystems so, the investors employ illegal methods to secure mining leases or as seen in some cases, even engage in mining operations without even getting the permission of the government.

There are two aspects to such violation of laws and procedures. On the one hand, the foreign investors consciously violate laws, with hold information and employ illegal methods, on the other hand, due to the vast amount of investment involved and other associated benefits of FDI such as employment generation, infrastructure development and technology transfer, the authorities responsible for enforcing these laws are working hand in glove with the investors in these violations. So, any violation and illegality on the part of the investor is not only hidden from the decision making authorities but is also staunchly defended.

One of the main reasons for welcoming FDI in the mining sector is that it also brings with it additional benefits such as infrastructure development and mineral production. Most of the foreign companies engaged in mining in India, also have captive plants for processing the ore into minerals. So, while looking at such mining operations and the environmental concerns posed by them, it is also necessary to look into the environmental concerns raised by other aspects of the project such as, construction of infrastructure, mineral production etc.

### 4.1 The POSCO Project: An Analysis of the Environmental Costs and Concerns

The POSCO project in the state of Orissa is by far the largest foreign direct investment in the country.

Details of the memorandum of understanding between the state of Orissa and POSCO:

#### 4.1.1. The Various Components of the Project

A memorandum was signed between POSCO and the state government of Orissa, on June 22, 2005 for the setting up of an integrated steel plant in the Jagatsinghpur district of Orissa with a capacity of 12 million tones per annum. The plant would be located at the north west bank of Jatadharmohan river creek, 12 Km from the south of Paradeep port. The project will be completed in three phases, the first phase with an investment of 12 billion USD and with a production capacity of 4MTPA. The project requires 1621 ha of land, out of which 1253 ha is forest land. The various components of the project include Captive mining facilities for iron ore and coal in the areas allotted by the government of Orissa or the government of India, a proposal for prospecting the Kandhahar mines in Sundergarh district, extending to an area of 13000 acres, Construction of a steel plant and captive port at Jagatsinghpur , extending to an area of 4004 acres, Production of 600 million tonnes of iron ore per annum with a royalty rate of rs.24 per tonne and permission to swap low grade ore by exporting and replacing with imported ore. this entails that the company could export high grade ore and replace with imported low grade ore, Construction of roadways and railways from the mining area to the Paradeep port, Construction of an integrated township over 2000 acres and office facilities at Bhubaneshwar over 25 acres, Water supply to the project from the Jobra river barrage,

Mahanadi amounting to 12000 to 15000 crore liters and Granting SEZ status to the project for the purpose of subsidies and tax holidays.

The very signing of the MOU started with a controversy. In April 2005, the Orissa government agreed to identify and earmark iron ore mines for POSCO and the company wanted mining rights for one billion tonnes of ore for the duration of 50 years. According to the state policy a 12 million plant could not be entitled to more than 480 million tones and in addition the state government was not permitted to grant rights for more than 25 years. So, the proposal was turned down in the same month by the ministry of commerce and POSCO called off the signing of MOU scheduled for April 14, 2005.

### 4.1.2 A Brief Discussion of Events

The Ministry of Commerce (MoC), Government of India, turned down POSCO's proposal in the second week of April 2005, as it was against any project-linked exports of iron ore and in the event of POSCO desiring a long-term contract, it could enter into a deal with state-owned trading companies like the Minerals and Metals Trading Corporation (MMTC). At which, POSCO, called off the MoU signing programme scheduled for April 14, 2005.

After a meeting between the state government, chief POSCO executives and the finance minister regarding the slow progress of the deal, an agreement was reached. POSCO had cut down its ore requirements and also agreed to set up a plant without exporting iron ore. the long awaited deal was finally signed in June 2005. POSCO s offers were earlier down by investment savvy countries like China and Brazil as it did not take ore at market price.

### 4.1.3 Progress after Signing the MOU

The rapid environment impact assessment for the steel plant and captive power plant and separately for the captive minor port, along with demarcation for the CRZ areas was completed by November 2005. The environment management plan was prepared and the Ministry of Environment and Forests gave the clearance to the port in may15 2007 and the steel plant in July 19 2007. The government of Orissa applied for the diversion of 1253.225 ha of forest land and the ministry also granted in principle (stage I) clearance

on 28 September 2008 to the diversion of forest land along with a set of conditions to be complied before the final clearance. On 8 Jan 2010, the MOEF clarified that clearance is conditional on the settlement of Forest Rights Act, 2006. In March 2010, the forest and environment department of Orissa wrote to the MoEF that there were no tribal or traditional forest dwellers dependant on the proposed forest land.

There were wide spread agitation against the POSCO project and the MoEF and the Ministry of Tribal Affairs jointly constituted a committee to investigate the implementation of Forest Rights Act, especially from the point of sustainable forest management. The subcommittee submitted a report stating that there was non – compliance of the processes under the Forest Rights Act. So, the MoEF issued an order on Aug. 5 that land transaction should be stopped till all processes required under the FRA should be completed.

In July 2010, a four member committee was set up on the recommendation of the FAC to examine all issues relating to the diversion of the forest land. The committee submitted its report on 18 Oct. 2010 and this was considered by the FAC, EAC for captive power cum steel plant and EAC for infrastructure for the captive minor port.

### 4.1.4 The Environmental and Social Cost of the Project

The project entails severe environmental costs and social costs to the people in the district of Sundergarh and Jagatsinghpur. There is a proposal that the Kandhahar hill range would be leased to POSCO for lifting iron ore. There are thirty six streams flowing in the hill range which is the main source of irrigation to the seven gram Panchayats located in Lahunipara block under Bonaigarh sub division of the Sundergarh district. It is feared that excavation of the hill side for mining iron ore will dry up the waterfalls and thus seriously jeopardize the supply of water for irrigation in the agricultural fields.

The proposed port site for the captive port in Paradeep is very close to the nesting site of the endangered Olive ridley turtles. The construction of the Paradeep port has lead to serious erosion on the beaches of Gahirmatha, the major nesting site. Environmentalists fear that the construction of a new port close by would result in further erosion and sand dredging for the construction of the new port will also affect the nesting site of the turtles

near the mouth of the river Devi. Dredging the sea bed will also have an effect on the ecosystem as it means destruction of the fauna, on which turtles and other organisms feed. The strong artificial lights of the port will also affect the nesting process of the turtles as the turtle hatchlings use the moon light and star light on the waves as their guide to return to the sea. Marine conservation was one of the important conditions for the environmental clearance.

POSCO has denied the presence of turtle nesting sites in the EIA and other reports submitted to the EAC.

The proposed port site is also a belt of mangrove forests and sand dunes. During the super cyclone of 1999, the villages of Dhinkia, Nuagaon and Gobindpur were directly in the path of the cyclone but due to the protective shield provided by the mangrove forests and the sand dunes death toll was comparatively low in these villages. Most importantly clearing of the mangrove forests is also bound to affect the ecosystem of the region, in addition to making it vulnerable to cyclones.

### 4.1.5 The Findings of the Committee: A Cause for Concern

The committee set up to review the environment clearance granted felt that the recommendations and procedures prescribed by the law were not being implemented and also that many serious lapses and illegalities in the EIA process.

It is important to note that EIA has statutory status under the Environment Protection Act. And so violation of EPA amounts to statutory violation.

The EIA for such a huge project was very rapid and that only one season data was taken into account for the appraisal. Other components of the project such as the transportation project, rail road and transportation project etc. were not taken into account and the appraisal was limited to the phase I of the project. With regard to a clarification sought by committee member, Dr. Suresh the director of POSCO replied that comprehensive EIA for both the steel plant and captive port was completed by July 2007 but the copies of the EIA were delivered by hand in the regional office of MoEF and the Orissa government only in oct.2010. Submitting such a critical report after three years shows that the

company was an act of mere formality. Discrepancies were also found in the public hearing process that excluded many communities from voicing their opinion to the EAC. It was found that copies of the EIA were not given to the Panchayats, as required by the rules.

The committee felt that only the steel plant was built with a capacity of 4MTPA, whereas the rest of the project aspects and infrastructure was for the final capacity, i.e.12MTPA. So, granting environmental clearance based on the EIA of the steel plant alone is unsatisfactory. Paradeep has a CEPI index of 69.26 making it a severely polluted area and the technical committee of Orissa state pollution control board had raised some issues regarding air pollution. Even before the queries could be satisfactorily answered, the company has been recommended for clearances and this is a serious abdication of responsibility on the part of the Orissa state pollution control board. In reply to a question during the parliament session of 2005, the ministry of shipping, road transport and highways replied that the construction of the minor port could lead to erosion and had asked the government of Orissa to undertake a detailed study. Unfortunately the EAC and MoEF did not ask for the report before giving clearance in 2007. the water resource department had allocated additional water hansua nalla and this information was not disclosed in EIA. The committee also showed that the original conditions imposed by the clearances of 2007 and 2009 were not being fulfilled. So, it recommended that the clearance should be revoked.

### 4.1.6 Who is the Law Maker? Who is the Law Breaker?

In the case of POSCO project, the administrative institutions are also found wanting when it comes to enforcing the procedures described by law. There are two minutes for the sixty seventh meeting of the EAC which discussed granting clearance to POSCO. The review committee found that the minutes were manipulated in order to favour POSCO. The original minutes said: “Committee noted that numerous issues had been raised at the public hearing which would have a bearing on human settlements, habitations, agricultural occupation in the village nearby and the farmlands. Members desired to go into each significant issue or objections raised in detail to satisfy themselves that the project poses no threat or insurmountable problem whatsoever from an environmental

point of view to the neighboring areas. The members will study the issues, objections and concerns raised and offer their specific views on these at the next meeting.[24]"

The revised minutes states: "Committee was convinced that a sunrise industry of great importance is proposed presenting a leap forward in steel production and needs expeditious, prompt clearance by the government. Certain issues have been raised at the public hearing that may have a bearing on human settlements, habitations, agricultural occupation in the villages and farmlands nearby. These must be looked into and resolved… It was decided to look into these matters at the next meeting of the committee.[25]"

Another significant alteration is in terms of the reclamation process. POSCO proposed to utilize the same 1000 acres of land for mandatory greenery and tree planting that it had earmarked for solid waste dumping. The original minutes of the meeting said: "It was admitted by the company that no plantation can be raised on this area within 15 years. How any plantation can at all be raised in this area where sludge is to be disposed of is not clear.[26]"

Whereas in the revised minutes, it read: "Within the area reserved for Solid Waste Management, it would take 15 years to develop a full plantation and this would have to be done in stages. Plantation would have to be raised in one section while sludge is dumped in another. Thus the dump will graduate in stages to a forest in 15 years. Thereafter one needs to know where and how the sludge will be dumped.[27]"This made it seem just like a matter of technical enquiry and not a serious issue. A very serious concern regarding the disposal of waste and rehabilitation of the forest land has been seriously mis represented in order to secure clearance sooner.

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[24] Mittal, Tusha (2011), *Loopholes in the Ministry's Verdict?*, [Online: Web] Accessed 16.4.2011, http//:www.tehelka.com

[25] Mittal, Tusha (2011), *Loopholes in the Ministry's Verdict?*, [Online: Web] Accessed 16.4.2011, http//:www.tehelka.com

[26] Mittal, Tusha (2011), *Loopholes in the Ministry's Verdict?*, [Online: Web] Accessed 16.4.2011, http//:www.tehelka.com

[27] Mittal, Tusha (2011), *Loopholes in the Ministry's Verdict?*, [Online: Web] Accessed 16.4.2011, http//:www.tehelka.com

The project was given environmental clearance in the very next meeting of the EAC and it would not be unfair to deduce or assume that the alterations were made in order to enable the project get a green light easily.

### 4.1.7 The Loop Holes in the Verdict of the Ministry

The ministry of environment and forests gave its verdict based on the recommendations of its own committee and other sub – committees. It just prescribed additional conditions without revoking the clearances. The conditions seem to direct towards a balanced approach towards environment but a closer study reveals that the conditions by themselves do not set right the violations pointed out by the MOEF s own enquiry committee. A look at some of the conditions will give a clear picture of the loop holes in it. The earlier environment clearances are not revoked and rather new conditionalities are imposed, which could be violated by POSCO again. The steel plant of such a magnitude was given environment clearance based only on a rapid EIA and not a comprehensive EIA and the cumulative effect of the project on the environment is in the dark as there is no comprehensive EIA for the township, railway line etc. and the MOEF does not prescribe that POSCO should submit one. As per environmental law rapid EIA done during the monsoon is illegal and in spite of that the verdict does not ask POSCO for a fresh EIA for the port. . This makes environment assessment a farce and a ceremonial activity, instead of making it an effective tool for the protection of the environment.

Construction in coastal regulatory zone is prohibited but the proposed port and steel plant and port fall within CRZ1 and CRZ3 areas. POSCO had given false data to the government regarding the location of its plant. The conditions just ask POSCO not to carry out any industrial activity in the port and for this to happen, the entire design for the construction of the port and the plant will have to be changed. The verdict does not prescribe any directions regarding this nor any mechanism to ensure its compliance. It such a situation it just amounts to violation of the CRZ act. The water supply for the project is from the Jobra barrage, which is also the main source of drinking water to the areas surrounding Cuttack. The verdict also asks POSCO to voluntarily sacrifice water. There is no mechanism to ensure compliance and it is doubtful if POSCO will choose to comply, when it has defied compliance in more crucial matters. It is hard to understand

why the ministry would trust POSCO to abide by the rules and try to protect the environment, when it had so blatantly disregarded them.

There has been no assessment made on the impact of the project on the marine ecology and now the government asks POSCO to submit a detailed marine environment conservation plan without any appropriate mechanism for assessment and compliance. In case of the threat posed to the olive ridley turtles, how could it be ensured that the conservation plan will mitigate the impact of the port on the turtles when POSCO has even blatantly denied the existence of the nesting sites in the past. The violations of the Forest Rights Act have not been adequately addressed. It just asks for a "categorical assurance" from the Orissa government that the Act is not violated and that there are no traditional forest dwellers in the area. This is rarely appropriate when the state government had grossly misrepresented the facts earlier.

Some contradictions can also be observed in the conditions imposed for the steel plant and port. The condition for the steel plant states that the water used in the power plant will be circulated five times before it is treated and re used, whereas, in the case of the port POSCCO s water balance report say s that the power plant will draw around 100,000 cubic meter water each hour from the sea and it will be discharged back into the sea after circulating it only once. POSCO will have to get a separate CRZ clearance stating the location of discharge and its possible impact on the marine life.

In the POSCO project, even the highest government institutions such as the MoEF does not show considerable interest in enforcing the laws. In matters of the EIA, it is very evident that the purpose of the whole process is lost, due to faulty and in adequate assessment. Even then, the ministry has not reversed the earlier clearances based on the faulty assessments and it has not stipulated stricter conditions with proper enforcing mechanisms to ensure compliance. The various illegalities in the project had come to the lime light only due to complaints regarding the Forest Rights Act. Investigations and evaluations regarding compliance take place only in mines that are operational. This project high lights the need of having an authority to ensure the compliance of clearance procedures and conditions. The proposals for clearances are forwarded by the state government and proposals violating the norms are forwarded and defended by the state

government, as they focus mainly on the vast amount of investments associated with the project. In such a case, some effective mechanism should be put in place to ensure compliance not only by the project authority but the government institutions at all levels.

### 4.2. The Rio Tinto Project: The Diamond Rush

It deserves mention that second operating diamond mine in the country was discovered by Rio Tinto, an Australian mining giant. The same project has also been alleged of various illegalities and violation of prescribed norms.

In may 2004 Rio Tinto, de beers, BHP minerals and NMDC proposed to prospect the districts of Panna, Chatarpur, Tikkamgarh, Sagar, Angor and Majghawan areas of the state. Rio Tinto had been issued 4 reconnaissance permits for 10,000 square kilometer in the Panna and Chattarpur districts. In the same year significant diamond deposits were found in the Chattarpur district by riot into. In the year 2006 the company was given the prospecting license. The company proposed a mine in the Buxwaha tehsil of the Chhatarpur district and the foundations for the plant were given in 2007 and pollution clearance was granted in 2008. The DMS (Dense Material Separation) basically is used for bulk material reduction i.e. reducing the amount of material that need to be processed to extract the diamond.

In July 2007 the Australian mining giant applied for a prospecting license for locating diamonds in the districts of Panna and Chhatarpur. The then diamond officer of Madhya Pradesh declared that riot into has discovered a Kimberlite pipeline in Bauxwaha in Chattarpur and Amjhiria and Rampur in the Panna districts. He further stated that after receiving a NOC from the forest department the application would be forwarded to the state government and work would begin as soon as the procedures are completed.

In June 2008 the Australian company announced that it had filed for a mining lease to proceed with the project. Later in the year it also stated that diamond deposits were discovered in the Chattarpur district and sought mining leases from the government for running commercial business. There is roughly 30 million carat worth of diamond deposits expected to be in the new site and it is the second diamond deposit discovered in the country. The government is expected to earn rupees 100 crore as royalty rate from

this project. The company had been prospecting diamonds since 2004 and discovered it only in 2008. It had invested around USD 25 million in exploring for diamonds in the region. In 2009, the possibilities of the region were recognised and permission was sought by the NDMC to prospect and explore regions surrounding the Panna mines. NDMC was already prospecting the Chattarpur district for diamonds.

Rio Tinto has also been undertaking aerial survey in the north eastern part of the state, in and around the Chattarpur district for which it had gotten permission from the central government. In 2010 it sought permission for land survey to confirm the presence of the diamond deposits. In the month of august in the same year the state mining and mineral secretary announced that Rio Tinto had started the production of diamonds in the Bunder project and also commenced bulk sampling at the Mumbai auctions. The investment in the project amounted to rupees 250 crore and the mining lease is for an area of 475 hectares. This investment is gradually expected to cover 5000 hectares and touch an investment of rupees 25000 crore. The additional chief secretary of the state for industry, commerce and employment also announced that the company will invest rupees 370 crore in the next three years. The state government has also ear marked an area of 280 acres near Indore for the setting up of value addition industries like diamond cutting and polishing.

### 4.2.1 Environmental Concerns

The Bunder project in Chattarpur is just a few kilometers from the western border of the Panna tiger reserve. According to tiger expert Valmiki Thapar, "It's an example of a completely dysfunctional system of government from top to bottom.[28]" He also said that in order to revive the tiger population that the reserve had lost it is necessary that the surrounding forest area and the connecting corridors are given complete protection for at least the next ten years. This is an ecologically sensitive area and mining is prohibited in ecologically sensitive areas and wild life reserves. The diamond mining also occurs in an area which is also the watershed for the Panna reserve and the Shyamri river. The

[28] Sabrang (2011), *Fact Sheet on Rio Tinto's Illegal Diamond Mining*, http://www.sabrang.com/news/2011/Fact%20sheet%20on%20Rio%20Tinto's%20Illegal%20Diamond%20Mining%20in%20MP.pdf

Shyamri river is considered one of the cleanest rivers in the country and mining activities in the water shed area will certainly impact the quantity and quality of the water flow. This will have an adverse impact on the water regime, which will have long term implications for the ecosystem.

Around 99% of the diamondiferous block of the Bunder project falls into forest region, which is the best corridor of teak forest south of the gangetic plain. Serious objections were raised by environmentalists and conservationists on the lack of sensitivity displayed by the state government with regard to environmental concerns. Protests were staged in 2010. Mining including prospecting, in case pitting is involved is a non forest activity and granting forest clearance for this eco sensitive region is in effect nullifying the laws prescribed for the protection and conservation of environment.

### 4.2.2 The Lack of Concern Displayed by the MoEF

In the meeting on March 2011, the forest advisory committee, of MOEF stated that there was shortage of time to discuss the prospecting of diamonds at 143 additional locations in a forest area of 2329.75 ha. of forest land in the Bauxwaha range in Chattarpur district, in spite of serious protests against the violations of environmental law. In the same year, in the month of April, the MP from Khajuraho, Jeetendra Singh Bundela laid a statement in the Lok Sabha stressing that the diamond project in Chattarpur district of Madhya Pradesh has to be reviewed as it posed a serious threat to the environment in the region[29].

In the April month of the same year the global mining giant also applied for mining license for what would be the largest diamond mine in the country. It is believed that the mine could have 2.7 million carat reserves making it the largest find in the past ten years. The grade of the Bunder reserve is expected to be 0.7 carats per tonne and it is estimated that it contains seven times more reserve than the Panna mines, the only operating diamond mine in the country.

[29] Sabrang (2011), *Fact Sheet on Rio Tinto's Illegal Diamond Mining*, http://www.sabrang.com/news/2011/Fact%20sheet%20on%20Rio%20Tinto's%20Illegal%20Diamond%20Mining%20in%20MP.pdf

### 4.2.3 Public Interest Litigation against Rio Tinto

A case was filed against the firm in the Madhya Pradesh high court. This may considerably delay the grant of mining license. The high court had also issued notices to the central and state government on the issue of illegal diamond mining in Madhya Pradesh. 9th April, 2011: Madhya Pradesh High Court issued notices to the Centre and the state Pollution Control Board. The issue of illegal mining was brought to the limelight in the PIL filed by a social activist. It stated that the provisions of the forest conservation and other procedures prescribed by the law are not being followed by the Australian mining company Rio Tinto. The company did not get the required permission from the central government and also the NOC from the pollution board in order to carry on diamond mining and trade. The PIL also further stated that a letter was written by the collector of Chattarpur district to the revenue department but no action has been taken so far. This clearly proves that the administrative mechanism responsible for enforcing the rules and regulations are also not doing their duty. The Toxic swatch Alliance submitted "A letter on Illegal Diamond mining project in district Chhattarpur, MP" to the Parliamentary Petitions Committee in July 2011[30].

In spite of all these developments and concerns raised by conservationists and activists, the MoEF has not even appointed a committee to look into the allegations and enforcement of laws. Madhya Pradesh has considerable tribal population and in spite of this no committee has been formed to look into the settlement of Forest Rights Act; this deserves special mention, as the committees constituted for this purpose have also brought to light the environmental violations in the past. The population of the tiger, the national animal is fast dwindling in the country. The government is engaged conservation measures, to protect the tiger population but permitting large scale mining operations in sanctuaries and wild life parks, make the measures pointless and in effective.

[30] Sabrang (2011), *Fact Sheet on Rio Tinto's Illegal Diamond Mining*, http://www.sabrang.com/news/2011/Fact%20sheet%20on%20Rio%20Tinto's%20Illegal%20Diamond%20Mining%20in%20MP.pdf

### 4.3 The Joint Venture between OMC and Sterlite Ltd.: An Analysis

The next project in question is the agreement signed between OMC and Sterlite Industries (India) Limited for mining of Bauxite in Lanjigarh bauxite deposit in Kalahandi & Raygada districts & supply to the refinery of M/s Vedanta Aluminium Ltd. at Lanjigarh. This agreement was signed in 2009 and the equity holding between OMC and SIIL is 26:74. SIIL is a subsidiary of London based company VEDANTA. It is clear from the division of equity holding that Sterlite ltd. has management rights and decision making authority in the venture.

In Feb. 2005, a proposal was forwarded by the state government for the diversion of forest land for the OMC for mining bauxite in Orissa in Kalahandi and Rayagada. The FAC granted in principle approval in 2007 with certain conditionalities such as concurrent reclamation, minimum tree felling in phased manner and modified wild life management plan. The supreme court judgment dated 23 rd. nov.2007 laid down that certain conditions have to be met before granting clearance and also that the execution of the project should be undertaken by SIIC or OMC and that Vedanta in all forms should not be involved. After VEDANTA filed an affidavit accepting the rehabilitation package, the Supreme Court granted clearance for forest diversion. It further stated that the next step would be for the MoEF to grant approval in accordance with law.

It is necessary to note that both SIIL and Vedanta Alumina ltd. are subsidiaries of the London based company VEDANTA group.

In December 2008, "in principle" approval was granted by the MoEF, it is noteworthy that the CEC had earlier mentioned that the forest diversion should not be permitted and that the environmental clearance granted to the aluminum refinery granted on Sept. 22$^{nd}$ 2004 should be revoked and further work sopped.

#### 4.3.1 The Allegations of Non Compliance with FRA

In august 2009, the state government filed for final clearance and the matter was considered by the FAC on Nov. 4$^{th}$ 2009, and recommended that final clearance should

be granted only after ascertaining the community rights of the scheduled tribals and other forest dwellers on the forest land. Accordingly a three member team was constituted to consider the proposal submitted by the Orissa state govt. and to make recommendations to the MoEF. Three individual reports were submitted by the committee on 25th January 2010 and suggested that many issues of relevance should be looked into in a comprehensive and detailed manner before granting the clearance.

The FAC met in 16th April met to decide on these three reports and decided that a committee has to be set up under the ministry of tribal affairs to look into matters of violation of tribal rights and also settlement of forest rights under the forest rights act 2006. The Saxena committee that was constituted in June 2010, decided to look into two important aspects namely the settlement of forest rights act under the recognition of forest rights act and the impact of the project on the wild life and bio diversity in the surrounding areas.

The findings of the committee on the settlement of forest rights are of great significance by they are not relevant to the subject under discussion in a direct manner so they shall be mentioned and briefly discussed. Whereas, the findings of the committee with regard to the impact of the project on the environment and also violations of the environment laws will be looked into in detail. The findings of the committee are as follows.

### 4.3.2 The Findings of the Committee

#### 4.3.2.1 The Ecological Costs of Mining

The mining operation is spread over an area of 7 sq. km. and it is bound to have an adverse impact on this wild life habitat, which is also proposed to be a part of Niyamgiri Wild life sanctuary.

The clearing of the forest area requires the felling of 1.21 lakh of trees and along with it many lakhs of shrubs and herbal flora. The clearing of the forest, will destroy the edge effect" of the grass land forest landscape. This grassland forest area is the breeding ground and fawning ground for the four horned antelope (tetracerus quadricornis),

barking deer (muntiacus muntjac), spotted deer(axis axis) and a rare type of lizard named the golden gecko ( callo dactyodes aureus) is also found under the lease area in question. The Niyamgiri hills is also an important elephant habitat and the hills are included in the South Orissa Elephant Reserve and mining operations in this area will adversely affect the plan of elephant conservation in Orissa. The mining operations entail stripping off the top of more than 7 sq.km of the niyamgiri hills. This will greatly alter the region's water supply and thus severely disturb the availability of water resource and the ecosystem. The region also is used by the kondh tribes for cultivation and around 28 kondh villages live in the forest area proposed to be leased out.

Apart from these concerns it is found that the M/s Vedanta Aluminium Ltd. at Lanjigarh to which the ore shall be supplied is also violating environmental and other laws. The company has violated the forest conservation act, the environment protection act and also violated the conditions of environment clearance.

#### 4.3.2.2 Violation of Forest Conservation Act:

The company is in illegal occupation of 26.123 ha of village forest lands, i.e. Gram Jagya Jangal. The construction of rods parallel to the conveyor corridor of the company is in illegal occupation of plot no. 157(p) of 1.0 acre and plot no. 133 of 0.11 acres of forest land.

#### 4.3.2.3 Violation of Environment Protection Act:

The refinery has also started the capacity expansion from I MTPA to 6 MTPA and evidence has been found that more than 60% of the construction is complete without getting environmental clearance without getting the environmental clearance as per the Environment Impact Assessment notification of 2006. The expansion is of a vast magnitude, that is expanding six times the original capacity of the plant. This is in complete violation of the Environment Protection Act.

#### 4.3.2.4 Violations of the Conditions of Clearance Granted Under the EPA to the Refinery

The refinery was granted clearance under the EPA that no forest land would be used for the establishment of the refinery. As the company is in illegal occupation of 26.123 ha of village forest land the clearance granted under EPA is not legally valid.

This is proof that authorities have co operating at all levels are strictly enforcing the environmental laws and the procedures prescribed the law. A capacity of such expansion and illegal occupation of forest land is not possible without authorities turning a blind eye to it. The regular inspections and enquiries that ought to have brought the violations to the lime light have not done so. The committee also found that the operations of the proposed mining project and the aluminium refinery have violated the community rights of the scheduled tribes and other traditional forest dwellers.

Based on these findings the saxena committee, recommended that the clearance should not be granted as it has serious implications on the tribal community, environment and wild life. It also stated that as the companies have repeatedly flouted the laws of the land, it is not advisable to allow mining keeping the implications in mind.

In august 2010, the state government of Orissa stated its grievances with the findings of the Saxena committee and wanted to be heard before any decision could be taken on the committee's report. The chief minister of the state of Orissa and other authorities urged that since the supreme court had granted "in principle" clearance to the project and so the MoEF should go ahead and give the green signal for the project. The Saxena committee was also challenged on its findings. Since, the Supreme Court had already granted clearance to the project, there were doubts regarding the extent of the role of the MoEF and the discharge of its functions. The attorney general of India clarified on the role and procedure to be followed by the MoEF stating that the clearance from the Supreme Court does not obviate the necessity to obtain the clearance from the Supreme Court.

### 4.3.3. The Recommendations of the Forest Advisory Committee

The forest advisory committee in its meeting on Aug. 2010 observed that there has been violation of section 3(1)(e) of the Forest Rights Act, Forest Conservation Act, Environment(Protection) Act, conditions of clearance under the Environment(Protection) Act. Regarding the last violation the FAC noted that M/S Vedanta Alumina ltd. had applied for environmental clearance for the refinery in March. 19 2003, and in this the company claimed that no forest land was required for the proposal and that there was forest area within a 10 km radius. Whereas, on 16 Aug 2004 the company had submitted a proposal, for forest 58.943 ha of forest land for the establishment of the refinery and a conveyer belt. This included 26.123 ha of forest land for the refinery and the rest for the conveyer belt and road to the mining site.

When the CEC informed the MoEF of this an order was passed by the ministry that further construction should proceed only after getting the forest clearance. The company instead of obeying the order responded that it did not need any forest land for the construction of the refinery and continues to claim that they do not use any forest land. The company is in illegal occupation of 26.123 ha of forest land and has misrepresented the facts to the MoEF for gaining clearance, both of which is a serious offence. So, the FAC had recommended that the serious offences should be punished according to law.

The FAC has also reiterated that mining in the Niyamgiri hills will have a negative impact on the livelihood of the kondh tribes and on the bio diversity as the region is home to the animals mentioned in the I schedule of the wild life protection act, such as four horned anteloped. Most importantly, the FAC has noted that expansion plans of the plan rely on the supply of bauxite ore from fourteen mines and eleven out of this fourteen mines do not have environmental clearance.

Accordingly the FAC has recommended that the stage I clearance be withdrawn for the diversion of 660.749 ha of forest land in favour of OMC for mining bauxite in the Niyamgiri hills in Kalahandi, Rayagada districts. It has also advised suitable action under law should be taken for the violations of conditions of environmental clearance.

### 4.3.4. Observations of the Monitoring Report of the Eastern Regional Office.

In its monitoring report dated 25. May 2010, the following observations were made by the eastern regional office, which has pointed out the various violations. Apart from flouting the Environment Protection Act and the conditions of environmental clearance, M/S Vedanta Alumina Ltd has also not established peizometers for monitoring the quality of water around the red mud and ash disposal ponds. It has further stated that out of the fourteen mines from which bauxite is sourced only one has environmental clearance, eleven of them do not have a mining license and two have only TOR s.

### 4.3.5 Action Taken by the MoEF

Based on the findings of the Saxena committee and also other incriminating evidences that has come to the surface, the MoEF rejected the forest clearance for the OMC and Sterlite bauxite mining in the Niyamgiri hills and as the forest clearance is rejected, the environment clearance for the mine is in operable. The ministry also separately started examining the issue of sourcing bauxite from mines that have not received clearances. The ministry has also issued show cause notice to the project proponent as to why the environmental clearance for the 1MTPA refinery should not be cancelled. The TOR for the EIA plan for the expansion and the appraisal process for the expansion has been suspended and a show cause notice has been issued as to why the TOR for the expansion from 1MTPA to 6MTPA should not be withdrawn. The issue of penal actions for the various violations is also being separately examined.

It is interesting to note that both the POSCO project and the VEDANTA project came to the lime light through the non compliance with the FRA. The environmental issues and non compliance were also found out by the committees set up for enquiring into the operationalisation of FRA. There has been negligence and abdication of duty on the part of the officials, at the local level and higher level. Illegal activities cannot continue without the compliance of the administrators, when the mechanisms for environmental protection stress on frequent investigations and approvals at every stage of the mining operation. As seen in the Vedanta project, an expansion scheme of great magnitude, involving increase by six times has been happening without even intimating the MoEF,

and though there the expansion has been stalled, there is no mechanism to ensure that illegal mining operations do not happen.

The state governments are also found supporting the investors, even when the projects come under severe criticism. An application for any clearance cannot be forwarded without the consent of the state government. In these cases, it is found that not only has the state government mis represented facts and conveniently negligent in their duties but they have also defended the investors before the MoEF. If this is the scenario, the most stringent and meticulous system of law would be ineffective. Even the MoEF is not serious in incorporating the recommendations of its own committees in an effective manner. The case studies show a serious need for enforcing mechanisms and investigation agencies, not only during the active operation of a mine but in all stages of mining.

The procedures for clearances need to be stream lined, the time delays have to be taken into consideration in order to evolve procedures less time consuming but effective at the same time. In both the POSCO project and the Vedanta Project, illegalities have happened in the clearance stage of the operations, this high lights the need for government agencies themselves to undertake assessment operations. Since the State governments and its various institutions are found collaborating with the illegal practices followed by the investors, a centralized agency under the direct control of the MoEF has to be created for the purpose.

Illegal mining and violation of laws have become the order of the day. The existing penal consequences of violation have not proved effective, so, the system of punishment for offences has to be strengthened to ensure compliance. Only then, the system of laws and procedures for the protection of the environment can be effective.

# CHAPTER 5: CONCLUSION

This study is limited by the lack of availability of data regarding the mining operations of the foreign investors in the country. The data that is available is also not available uniformly for the stated time period. In spite of all these short comings, significant analyses can be made on the environmental implications of the Foreign Direct Investment in the mining sector.

The first chapter has looked into the shift in the economic policy of India and found that after the economic liberalization in 1991, most of the industrial sectors in the country have been opened up for private investment and especially foreign investment. The Import Substitution Strategy and protectionism of the domestic market, through high tariffs in the initial years after independence, had not yielded the desired results in terms of growth and development of the economy. In order to develop the various sectors, government intervention and regulation of the economy was done away with. Private capital, specifically foreign capital was sought to be used in developing the various sectors. But this processing of opening up of the sectors has been a gradual process, in terms of increasing the number of sectors open for foreign investment and caps on investment etc. though the opening has been gradual, it has been steady and does not show any signs of being reversed. More than two decades after the liberalization process, the number sectors and investment caps have only increased.

Though mining is not one of the sectors that attract the maximum share of the total FDI, it's share in the growth of the industry is very high. The policies are being designed in mind with liberalizing the sector further. The FDI caps have been increased through various legislations and the list of reserved minerals is also fast dwindling. The reasons are that the Public Sector Undertakings engaged in mining; do not have the technological skills and investment capacities to undertake large scale mining. India is actively engaged in increasing the mineral production capacity and for this, larger mines with better production facilities are needed. India is also found lacking in terms of adequate infrastructure to boost and support industrial growth and expansion. FDI in mining is supposed to fill these gaps and create additional benefits such as employment generation and value addition benefits. How these are true or applicable in the Indian context can be analysed only with a cost benefit analyses of the economic aspects of such projects. But

considering the rapid growth of the industry in the recent years and the increasingly FDI oriented policies, it becomes important to assess the social and environmental costs of a mining project. This is what the study had explored in the rest of the chapters.

Mining as an activity, is a long term process and occurs in various stages. In all these stages and in the allied activities, associated with the different stages of mining considerable damage is caused to the environment. Mining operations all over the world have been criticized for harmful and dangerous practices, endangering human health and safety. The environmental damages caused by mining activities have long term impacts. In such a scenario, it becomes important to understand the environmental costs of mining while formulating policies for the growth of the industry.

The second chapter has enumerated the various laws for environmental protection in mining in India, through this it made an effort to see if the laws covered all aspects of the mining operation. It is noticed that initially the legislation was concerned only with the active operation stage of a mine and the concerns such as pollution and disposal of waste were focused. Later legislations started taking a comprehensive approach towards the various possible environmental damage, which could result from mining operations. Investigations and evaluation for compliance of norms are addressed in the system of laws. Yet there is a need for strengthening such mechanisms for the various stages of mining. For example, mechanisms should ensure compliance of procedures even at the clearance stage of a project. The system of strict measures to penalise the offenders, has to be strengthened to discourage investors from flouting the laws.

The third chapter analyses the concerns posed by the rapid growth of the industry to the availability of the resources. The industry has been rapidly expanding after opening it up for foreign investment and this marked by an increase in the number of projects and capacity expansion of the industry as a whole. The production capacity of the sector is sought to be increased by focusing on large scale projects, in terms of, investment and capacity expansion. Iron ore and bauxite ore production has grown four fold and three fold increase in less than two decades. Mining operations also involve the use of other resources such as electricity, forest land and water etc. The increase in mining activities

requires the use of these resources is also increasing. The most important resource that is being exploited rapidly, along with the other minerals is the forest land. This is due to the fact that minerals are found in abundance in thickly forested regions. Along with the rate of production of bauxite and iron ore, the increase in the forest land diverted for mining was also looked into.

Three important findings that ensue are: First, the rate of the clearances, both environmental and forest clearance granted to these mining projects is very high. This shows that the number of mining projects is increasing by the day. The rate of exploitation of the resource is also very high. With the increase in the rate of production, a corresponding increase is also seen in the rate of exports of these resources. This proves that the development of the minerals and the mining industry, in the case of the discussed minerals, is not happening in a sustained manner. The growth of the industry is not gradual but rapid. In this scenario, the resources risk the chance of being depleted early. As there is an increase in the export of the mined minerals, the chance of recycling these minerals for future use is also narrowed down. Minerals such as iron ore and bauxite are very necessary for the development of any economy, as they are mainly used in infrastructure, manufacturing and other important industries. If these minerals are not developed and used in a sustainable manner, then the present and the future generation will face a resource crunch. This is even truer for a country like India, where the population is high and hence, the demands on the resources will also be high.

The fourth chapter looks at three case studies, the POSCO iron ore project, the Vedanta bauxite mining project and the Rio Tinto diamond project. In all these three case studies flouting of the environmental laws and regulations are rampant. The flouting is serious as capacity expansion of refineries happening without even intimating the government. Withholding of information, faulty assessments, and abdication of duty on the part of the authorities is noticed in all these cases. Another shocking finding is that, the local population who shall be affected by the project are not given a chance to voice their opinions. According to the EIA procedures, the local population has to be informed about the various impacts of the project and they should be given a chance to voice their

opinions in the public hearings. This procedure has been blatantly violated and sadly, the local administrative authorities are also to blame.

Due to the immense social costs and ecological costs of these mining projects, a lot of protests and agitations are happening in the country. This shows that an unwelcome project of development is thrust on the people. The projects are unwelcome mainly because they do not try to address the draw backs in terms of social and ecological costs. Any policy for development, cannot succeed without the active support of the people for whom, it is intended. If some of these serious questions are not addressed then, the protests and agitations shall only delay the projects, this is bound to reduce India‘s attractiveness as a host. Addressing the issues raised is the need of the day, but instead short cuts and illegalities have become the norm of the day.

This study concludes, based on the three case studies that the environmental rules and regulations are not complied in the Foreign Direct Investment projects. The fault is not just of the investor but also the administrative institutions at all levels for not stringently enforcing the norms and rules. They are also found collaborating with the investors, in terms of allowing them to carry on the illegal activities, even after complaints of serious violation. The agencies for investigation and audit have been negligent in their duties, even to the extent of withholding information to higher authorities. This clearly shows a lack of co ordination between the various institutions and agencies engaged in the protection of environment.

There could be two causes for both the investors and the government institutions engaging in illegalities. First, the procedures and conditonalities could be found time consuming, this could either discourage the investor from investing itself or to employ illegal methods for faster approval. Since, the government is also in dire need for investments, it becomes an active and passive collaborator in these activities. Corruption, rampant in India, could be another reason for the felicity with which these illegalities are engaged in. The next reason could be that mining operations are planned in ecological sensitive areas and other regions, where it is prohibited by law. In such instances, a fair and proper approach towards the various procedures and norms, will mean that the

mining operation could not be realized at all. In the first case, the remedy is through stream lining the procedures and norms. But in the second case, stringency has to be shown in enforcing the laws.

The case studies have given ample proof to show that environmental rules and regulations are not followed in the foreign investments in mining. In such a scenario, the loop holes in the existing system of laws have to be remedied and further steps have to be taken to ensure that flouting is not the easy way out. The mechanisms for audit and evaluation has to be strengthened to ensure vigilance in the compliance of laws.

Thus the study concludes that FDI in mining operations, in the manner in which they happen today and under the existing system of laws entail great risks and costs not only to the environment but also to the quality of human life and safety. The impacts of these operations on the ecology and environment will be long term and the measures that are in place to mitigate the effects are in adequate and in effective. Moreover, it poses a threat to the availability of the resources, hence having an impact on the long term development goals of the country. These costs and risks have to be taken into consideration before welcoming FDI in this sector.

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