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FDI and Mining Sector: Effects on Environmental Pollution in India

KEYWORDS: FDI, Mining sector, Environmental pollution, SEZ

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ABSTRACT *The present study examines the participation of FDI on the inducement of Environmental pollution exposed through mining sector. The Introductory paragraph expresses the need for the discussion about environment pollution of FDI in Mining Sector. The second chapter enlists the review of literature and the third chapter discusses with the emerging trend of mining sector in India. The role of FDI in Mining sector, impact of FDI policy in Indian mining industry, and the list of foreign mining companies set up in Indian mining industry are analysed in the subsequent chapters. Finally, the impacts of mining sector on Environmental pollution are discussed.*

INTRODUCTION

During the past two decades many poor countries have experienced rapid economic development after adopting liberal economic policies. According to World Bank report 2011, India lags behind China in terms of attracting FDI Inflows in the country, in spite of having high-tech industries and adept workforce. Most of the important industries in India are using the minerals as the vital raw material extracted from the mining sector. The mining sector in India is plagued by several environmental problems. The mining operation damages the environment and ecology to an unacceptable degree, unless carefully, planned and controlled.

As on 29 September 2015, the Economic Times reports that with $ 31 billion of foreign capital inflows, India has surpassed China and the US to take the pole position in attracting largest FDI in the first half of 2015.

REVIEW OF LITERATURE

Pradeep S. Mehta, (2002) has highlighted the effects on the environment due to inflow of FDI in Indian Mining Sector. Aliyu et.al (2005) they disagree with the Pollution heaven Hypotheseis. Acharya J (2009), in his research article interlinked the FDI, growth and environment with the evidence from the carbon di oxide emission in the past two decade in India. Chandra Bhushan (2012) in his article, expressed how to make the Indian Mining Sector socially and environmentally viable. Debashis Chakraborthy (2012), exposed how india turning into a pollution heaven with the evidences from trade and investment patterns. Neha Arora, (2014), in her research article, she highlighted the adverse environmental impact due to the inflow of Foreign Direct investment in Mining sector in India.

NEED FOR THE STUDY

On the opportunity side, India has an estimate 85 million tones of minerals reserves remaining to be exploited. Besides coal, oil and gas reserves, the mineral inventory in India includes 13000 deposits/prospects of 61 non fuel minerals. On prospective side, the Foreign Direct Investment in the mining sector for all non-atomic and nonfuel minerals have now been fully opened up to 100% through the automatic route including diamonds and precious stones. On the challenging side, one of the major hurdles in investment in mining sector is the delay in approval due to bureaucratic delays and discretionary interpretation and the need of numerous approval and agencies at central and state level. On the demand side, the demand for minerals is expected to grow very fast, due to increasing level of consumption, infrastructure development and the growth of economy. The management of minerals sources has, therefore, to be closely integrated with overall strategy of development and exploitation of minerals, is to be guided by long term national goal and perspective.

THREE TIER (MINING- FDI- ENVIRONMENT POLLUTION)

In the liberalization era of the world, India is known to have attracted a quantum amount of Foreign Direct Investment, especially after our liberalization policy 1991. The automatic approvals for FDI were restricted to thirty-five industries according to the liberalization of FDI policy announced in July 1991. In January 20, 1997, the government had further liberalized the FDI policy. The list of automatic approvals had been expanded to sixty from thirty-five. Presently, the automatic approval of FDI is almost all the activities/sectors except a few mentioned cases which require approval of the government. Most of the important industries in India are using the minerals as the vital raw material extracted from the mining sector. However the minerals are natural resources which are non-renewable as well as limited in quantum. The extraction of minerals from nature often creates imbalances which adversely affect the environment. Some of key environmental impacts of mining are on the water balances, local climate & pattern of rainfall, depletion of forest, sedimentation and the disruption of ecology. The present study is an attempt to expose the problem in the three tier link of the Environment pollution- Foreign Direct Investment – Mining sector. (Socio-Eco-Indus- Problem)

EMERGING TREND OF MINING SECTOR IN INDIA

The mining industry in India is a very vital segment and contributes largely to the Indian economy. India is quite rich in mineral resources and the mining industry plays a significant role in the industrial development of the country. The rapid growth rate in India assures an alarming growth and development in the mining industry as well. Today, the reserve details are available for as many as 20000 minerals deposits, all over the country. The Indian Bureau of Mines (IBM) has prepared inventory of Mineral deposits for the country and updates it every five years. The country is self sufficient in case of 36 minerals and de-

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ficient in respect of a number of mineral. India produces 89 minerals which have been divided as 4 Fuel Minerals, 11 Metallic Minerals, 52 Non-metallic Minerals and 22 Minor minerals. [1] The National minerals policy was revised in 1994 and as a result, private investment (both domestic and foreign) has been permitted for the exploration of 13 minerals. In 1994 the Mines and Minerals (Development and Regulation) Act 1957 (MMDR), had accordingly amended. The act had been amended with a view to accelerate the inflow of private capital both domestic and foreign and also the state-of-art-technology. [2] In India 80 percent of mining is in coal and the balance 20 percent is in, various metals and other raw materials such as gold, copper, iron, lead, bauxite, zinc and uranium. The following table shows the position of Indian mining sector in the world level, in terms of production.

Production in India	Rank in the world
Mica blocks and splitting	FIRST
Coal and lignite; Barytes, chromites	THIRD
Iron ore	FOURTH
Bauxite; Manganese ore	SIXTH
Aluminium	TENTH
Crude Steel	ELEVENTH

Source: Government of India, Department of Commerce and Industry.

Source : Government Of India (GOI) , Department of Industrial Policy and Promotion.

FDI AND MINING SECTOR

The demand for minerals is expected to grow very fast, due to increasing level of consumption, infrastructure development and the growth of economy. The management of minerals sources has, therefore, to be closely integrated with overall strategy of development and exploitation of minerals, is to be guided by long term national goal and perspective. Further the opening up of the Indian mining sector for the foreign investment has generated considerable global interest. India did not open much of economic activities to the foreign players as compared to other developing nations except liberalizing trade and foreign investments. According to the World Bank report 2011, India lags behind China in terms of attracting FDI Inflows in the country, in spite of having high-tech industries and adept workforce. The main cause behind this drawback is that India is not skilled enough to adopt the technological advancements at a fast pace.[3] The evolution of FDI in mining sector starts from the new industrial policy **1991**. FDI Inflows has been permitted up to 100 percent under automatic route in the mining industry in India except for the atomic minerals and fuel minerals. The Indian mining sector was opened up to Foreign Direct Investment in **1993** after the announcement of the New Mineral Policy. In **1994**, the national mineral policy was revised to permit private domestic and foreign investors, to explore and exploit the following minerals: Iron ore, copper, Manganese, lead chrome ore, zinc, Sulphur, molybdenum, gold, tungsten ore, diamond and platinum group of metals. The main objectives of the policy revision are to encourage large scale private investment in mining sector and to achieve increased export of minerals in value added form. Initially, all proposals were considered on a case to case basis by the Foreign Investment Promotion Board (FIPB). FDI policy in the mining sector was further liberalised in January **1997** which opened up an "automatic approval" route for investments involving foreign equity participation up to 50 percent in mining projects, and up to 74 percent in services incidental to mining. Till September 2001, India had approved 70 proposals of FDI worth of $834 million in the mining sector. However the actual FDI inflows in this sector are quite low compared to total FDI inflows in the other sectors.

1. Comparative Analysis of India's and China's FDI Flow (2011) www.mapsofindia.com

In February **2000**, the Department of Mines reviewed **guidelines** in the mining sector and made few changes, to bring about further liberlisation in the mining sector.

- 74 percent FDI allowed in exploration and mining of diamond through automatic route. For proposals seeking high than 74 percent FDI, the cases will come to the FIPB for clearance.
- 100 percent FDI allowed in exploration and mining of gold and silver and minerals other than Diamond and precious stones metallurgy and processing.
- 100 percent FDI allowed on the automatic route for processing minerals and metallurgy.
- For the Petroleum sector, the percentage of FDI permitted varies from 51 percent to 100 percent depending on the type of activity. For petroleum products, maximum 51 percent FDI is permitted. The automatic route is not available.
- For coal and lignite up to 74 percent FDI permitted for the setting up of mines for captive consumption. For these cases, FDI is allowed up to 50 percent under automatic route subject to condition that such investment should not exceed 49 percent of the equity of Public Sector Units (PSU)
- For atomic minerals up to 74 percent FDI permitted in certain activity. e.g., Mining and minerals separation value addition per se to such products and integrated activities comprising these two activities.

The Foreign Direct Investment (FDI) policy in the mining sector has been gradually liberalized over the last few years. FDI capital for exploration in mining of diamonds and precious stones had been increased to 100% under the automatic route with effect from 10th February, **2006**. With this, the Foreign Direct Investment in the mining sector for all non-atomic and nonfuel minerals have now been fully opened up to 100% through the automatic route including diamonds and precious stones. The data on FDI in the mining sector from 2006 to 2009 indicates that liberlised FDI policy enhancing the inflow of foreign capital in India.

(Amount in USD million)*

Period	2006-07	2007-08	2008-09	2009-10 (Apr. to Sep., 2009)
Mining	6.62	444.26	34.22	86.63

*(Source: DIPP)

The Indian Mining sector has random growth rate in the past decade. During the period 2006-07 to 2010-11 the average growth rate of 4.8 percent. But, after that the sector witnessed negative growth rate of 0.6 percent for the next two years. (2011-12 and 2012-13). According to the Minister of State for Mines and Steel Mr. Vishnu Deo Sai, during 2011-12 the FDI inflow in mining sector was $142.65 million and it was considerably reduced to $57.89 million in the next year i.e., 2012-13. It was unfortunate that during 2013-14 the FDI has reduced drastically $12.73 million. But fortunately, the FDI in the mining sector has jumped to a whopping inflow of $657.46 million in the 2014-15 fiscal year and that too, for the period of April to

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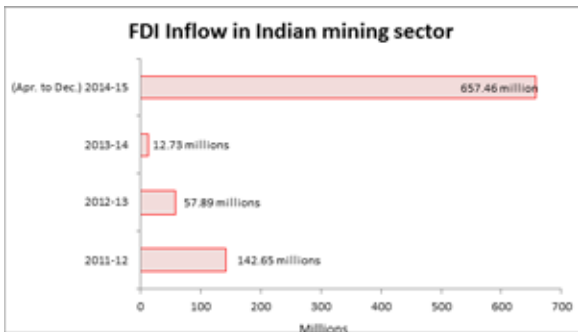
December of fiscal year.



IMPACT OF FDI POLIY IN INDIAN MINING INDUSTRY

- MOU with Uzbekistan - A Memorandum of Understanding (MOU) for cooperation in geology and mineral resources was signed between the Ministry of Mines and the State Committee of the Republic of Uzbekistan for Geology and Mineral Resources.
- MOU with China - A Memorandum of Understanding (MOU) was signed between Ministry of Mines and the Ministry of Land & Resources of the People's Republic of China
- India-Australia joint working group on energy and minerals - A Joint Venture between India and Australia on Energy and Minerals. The India-Australia Joint Working Group (JWG) on Energy and Minerals was established in the year 2000 for enhancing bilateral co-operation in the energy and mineral sectors.
- MOU with Western Australia - There is also another MOU between Ministry of Mines and Western Australia on mine rehabilitation. September, 2009.
- MOU With Ontario - A Memorandum of Understanding (MOU) between Ministry of Mines, Government of India and the Ministry of Northern Development, Mines and Forestry of the Province of Ontario, Canada on cooperation in the fields of Geology and Mineral Resources is proposed to be signed shortly in view of the geological potential of Ontario Province and the avenues of co-operation and investment. The MOU will provide an umbrella framework for development of mutual cooperation in the field of geology and mineral resources between India and Ontario Province, Canada.
- MOU with Chile - A Memorandum of Understanding (MOU) was signed between India and the Republic of Chile on 17th March, 2009, for cooperation in the field of Geology and Mineral Resources during the visit of President of Chile to India.
- MOU with Namibia - Ministry of Mines has signed a Memorandum of Understanding (MoU) with the Republic of Namibia on cooperation in the field of geology and mineral resources, in New Delhi on 31st August, 2009.
- MOU with Argentina - Geological Survey of India (GSI), an attached office under the Ministry of Mines has signed a Memorandum of Understanding (MoU) with the Serviceo Geologico Minero Argentino (SEGEMAR), of the Argentine Republic on scientific and technical cooperation in the earth sciences in New Delhi on 14th October, 2009 during the visit of the Argentine President to India.

FOREIGN MINING COMPANIES SET UP IN INDIAN MINING INDUSTRY

- De-Beers Consolidated mines ltd., South Africa
- Pebble creek Resources Ltd., Canada
- Anglo American Exploration (India) BV, Netherlands
- Metdist Group, UK
- Phelps Dodge Exploration Corpn, USA
- Transworld Garnet Co., Canada
- Rio-Tinto Minerals Development Ltd., UK
- Meridian Peak Resources Corpn, Canada
- BHP Billiton, Australia

IMPACT OF MINING SECTOR IN ENVIRONMENTAL POLLUTION

- ❖ Air: Surface mines may produce dust from blasting operation and haul roads. Many coal mines release methane, a greenhouse gas. Smelter operations with insufficient safeguards in place have the potential to pollute the air with heavy metals, sulphurdioxide and pollutants.
- ❖ Water: The mining sector uses larger quantities of water though some mines do reuse much of their water intake. Mining though sulphide – containing minerals into the air, where they oxidise and react with water to form sulphuric acid. This together with various trace elements impacts groundwater, both from surface and underground mines.
- ❖ Land: The movement of rocks due to mining activities and overburden(materials overlying a mineral deposits that must be removed before mining) in case of surface mines impacts land severely, These impacts may be temporary where the mining company returns the rocks and overburden the pit from which they were extracted. Many copper mines extract ore that contains less than 1 percent copper only.
- ❖ Health and safety: Mining operation range from extremely hazardous to being as safe or as dangerous as any other large scale industrial activity. Underground mining is generally more hazardous than surface mining because of poorer the ventilation and visibility and the danger of rock falls. The greatest health risk arises from dust which may lead to reparatory problems and from exposure to radiation (where applicable).

Source: Sustainable Development Networking Programme (SDNB, India)

The mining sector in India is plagued by several environmental problems. Especially, it has more health and safety related problems. Several accidents have taken place in underground and surface mines like coal and stone mines in the last few years. During 1973 to 2001, seven mining disaster have taken place. After the disaster of February 2001, 30 miners lost their lives in the accident in the Bagdigi mines in the eastern Indian state of Bihar. Every year many mine workers lose their lives in mining accident in India. In recent past, on the status of safety in mines, if looked at from the point of view of accidents in mines, it can be said that the past decade, the accident figures have come down.

However, the matter of concern is the plateau reached in fatal accidents in the last two decades of the previous century. The year 2000, however, saw substantial reduction on accident figures which were down to 0.27 and 0.25 fatalities per 1000 persons employed for coal and non coal sectors respectively. Serious injuries in mines show a steady decline. While examining accidents in details, it could be seen that similar causes of accidents repeat themselves in a disturbing manner. In view of this, it was found necessary to apply scientific and technological research findings more in containment of accidents. Training and re-training of workforces also need to be emphasized. Time is now

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ripe to introduce new initiatives and stress upon areas of high risk in order to minimize them.

One of major environmental challenges facing by the mining Industry is due to the mine sites which are no longer in use. The Jharia and Ranigarij coal fields in Bihar, there are more than 500 abandoned mines veering about 1800 hectares. The sites include subsided areas, excavated pits, overburdens, spoil dumps and areas affected by fire.

One of the right cases to mention the environmental damage by the mining company in India, for Land, water and Air pollution, is the Karnataka Iron Ore Company Limited (KIOCL) in the Western Ghats mountain ranges in Karnataka state in South India. The operations of KIOCL have caused large scale destruction of hills (land pollution), pollution of ground water in the neighborhood (Water pollution) and have affected the Kudremukh National Park (Air Pollution).

Thus, there are several visible and not so visible impacts of mining on the environment and these issues must be addressed for a balanced and beneficial development of mining sector. Most of the increase in production of minerals will come from open cast mines in the future which would lead to loss of large tracts of forests and agricultural lands.

CONCLUSION

During the past two decades many poor countries have experienced rapid economic development after adopting liberal economic policies. More recently, attention has been turned to the possible impact of differences in environmental regulations. Regulation of industrial pollution increases with economic development for two main reasons. First, the demand for environmental quality rises with income, both for aesthetic reasons and because the valuation of pollution damage increases. Second, more developed economies have more highly developed public institutions and are more capable of enforcing desirable environmental norms. If the income elasticity of regulation is greater than one, the developing countries will not retain a comparative advantage in dirty production.

One of the major hurdles in investment in mining sector is the delay in approval due to bureaucratic delays and discretionary interpretation and the need of numerous approval and agencies at central and state level. At times, the process takes 3 to 7 years for approval and clearance which is much higher than other countries. Another hurdle for investment in mining is infrastructural impediment like high railway freights, inadequate capacity of rail wagons and inadequate power evacuations.

On the opportunity side, India has an estimate 85 million tones of minerals reserves remaining to be exploited. Besides coal, oil and gas reserves, the mineral inventory in India includes 13000 deposits/prospects of 61 non fuel minerals. The expenditure outlay for mining sector is meager compared to other competing emerging mining markets and the investment gap is most likely to augment by the private sectors. India welcomes joint ventures between foreign and domestic partners to mobilize the finances and technology and secure access to Global market.

The mining operation damages the environment and ecology to an unacceptable degree, unless carefully, planned and controlled. There is a need for balance between mining and environmental requirement. Therefore, it is necessary to assess the impact on air quality due to mining and to suggest proper abatement measures for control of air pollution. Therefore, it is expected that this assessment will provide a better understanding of the sources of pollutants in the coal mining areas and will permit long term analysis of data accumulate over years.

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