

## How Mining Companies Influence the Environment

### Introduction

Mining is an important sector attracting significant amounts of foreign investment in a large number of countries. It is an important activity in a number of developed countries such as the United States, Sweden, Australia, Canada and Finland. In many developing countries such as Chile and Botswana too, this sector is important for economic development. An expansion of mining activities with the expansion of economies around the world has an effect on the environment.

Mining activities are intimately related with the environment, due to their inherent characteristics. It can harm the environment adversely, mainly by affecting wildlife and fishery habitats, water balance and local climates, especially the pattern of rainfall. Mining also causes sedimentation, the depletion of forests and the disruption of the ecology. Due to its environmental implications, the expansion of mining activities is a cause of concern for ecologists.

Foreign direct investment (FDI) flows have increased rapidly in the last twenty years and the participation of transnational companies (TNCs) in cross-border investment activities has also increased significantly over this period. One of the sectors receiving high FDI is mining.

This Paper intends to study the importance of mining TNCs in the global mining sector, effects of operations of these companies on the environment and the general relationship between environmental regulatory structure and FDI flows to a country. It also discusses the uncertainties faced by companies, steps taken by companies to overcome these uncertainties and steps taken by governments to protect the environment.

### Transnational Companies in the Global Mining Sector

Global FDI flows in mining, like total global FDI flows, take place mainly between Organisation of Economic Cooperation and Development (OECD) countries. Though mining industries of developing countries receive not more than 4-5 percent of FDI flows in mining to developed countries, in some developing countries FDI flows, as a percentage of the total, can be significant (See Table I and Box I). The strategies of TNCs for entering a country are, sometimes, guided by opportunities in the mining sector. For example, one of the motives of TNCs for entering Chile, Argentina and Peru has been the raw material availability in the minerals sector<sup>1</sup>.

Mining activities are characterised by high capital intensity and economies of scale, thus requiring huge volumes of investment. Since TNCs have easier access to capital markets and advanced technologies, they are in an advantageous position to invest in the sector. Though TNCs operating in this sector have attracted a lot of attention in the recent times in terms of their environmental performance, companies operating in this sector are smaller in terms of asset base or sales, compared to the largest TNCs in the world. Table II.II shows sales figures of the five-largest TNCs in the world, ranked in terms of foreign assets, which can be compared with the sales figures of the five-largest mining TNCs in the world given in Table II.I.

In terms of transnationality, however, mining and mineral companies figure among the top-ten TNCs. Rio Tinto is ranked number one and Anglo American number eight, in terms of transnationality index (TNI) in 2000. TNI index is calculated as the average of the three ratios<sup>2</sup>: foreign assets to total assets, foreign sales to total sales and foreign employment to total employment.

The structure of mining companies is diverse and complex. There are both large TNCs, and medium and small companies producing the same mineral products. There are about 30-40 large TNCs in exploration, mining, smelting, refining and selling activities. The large TNCs and the medium-sized companies usually undertake most of the FDI<sup>3</sup>. There has been, however, increasing concentration in this sector, by mergers and acquisitions. The industry, as a whole, is plagued by low commodity prices and low returns.

**Table I: Contribution of the Mining Sector in Developing Countries**

Region/Country	Contribution of the Mining Sector
Southern African Development Community (SADC)	23 percent of total FDI flows into mining
Ghana	55 percent of total FDI flows into gold mining; export share of mining 45 percent
Indonesia	Around US\$800mn of state revenue from mining

Source: *Rapporteurs Report from the OECD Global Forum on International Investment Conference: FDI and Environment – Lessons from the Mining Sector*, <http://www.oecd.org/env/investment>; UNCTAD *Investment Policy Review: Uganda*

### Box I: The Example of the African Mining Sector

- Studies by the World Bank, the EU and some African governments have concluded that one of the highest potentials for economic growth in the African continent is in the mining sector.
- The 1990s have marked a major departure from the recent past in the African mining sector. There was a considerable dismantling of state ownership and control. Towards the end of 1995, at least 35 African countries had radically revised their mining codes.
- The various social and environmental impacts of the industry are :
  - ◆ Pollution of groundwater, soil and air with little remedial measures or compensation;
  - ◆ Poor planning and financing of community resettlement schemes;
  - ◆ Causing a loss of livelihood of people engaged in farming and wildlife harvesting by taking away their land; and
  - ◆ Prevalence of chemicals such as mercury and cyanide, which are banned from use in developed countries.
- Unfortunately, national mining and investment laws to safeguard the environment and local communities in African countries are non-existent or are inadequate.
- Social and environmental standards can be enforced in these countries by voluntary compliance (with codes of conduct). Environmental campaigners, however, have exposed the limits of voluntary compliance as largely corporate makeovers.

Source: C. Frick, *Direct Foreign Investment and the Environment: African Mining Sector, February 2002*

### General Impact of Mining on the Environment

Mining activities can harm both the physical and social environment. Mining can adversely affect the physical environment in two ways:

- By excavation of rocks; and
- By affecting bio-diversity and sensitive areas (See Box II)

The impact of mining on the social environment may be more severe than that on the physical environment. For example, if a mine does not have linkages with the local economy, because it relies mainly on imported raw materials, then it would not bring any benefits to the local economy. Besides, a mining area may have better living conditions in comparison to the surrounding areas. This leads to an "island" development of the mining area whereas the rest of the economy may be underdeveloped.

The phenomena of island development can be prevented only by a huge project because of the presence of large deposits, e.g., the Zambian Copper belt. In such a case, it justifies setting up of railway connections and a local industrial sector, which links the mining area with the rest of the economy.

Several mining companies, such as Freeport in Indonesia<sup>4</sup>, have been implicated in damaging the environment with their activities. It is alleged that copper wastes thrown by the company's operation have resulted in total destruction of the nearby forests and the river ecology. There also have been allegations of human rights abuses by the company.

### Environmental Regulations and FDI Flows

Lax environmental regulations can attract environmental-unfriendly FDI in some regions. These regions are termed as "pollution havens". Companies may seek pollution havens because pollution control costs they incur can be high, compared to the financial returns they receive.

There are a few instances of countries, which have lowered their environmental standards to attract higher FDI. For example, countries in the Asia Pacific region, such as Papua New Guinea, the Philippines and Indonesia, have, allegedly, lowered their environmental standards to attract FDI in the recent past<sup>4</sup>. All the three countries, it is alleged, made exemptions to domestic laws to accommodate certain mining disasters. This is also known as "the race to the bottom" phenomenon.

There are also instances of companies, which hesitate to invest for reasons of environmental standards, putting pressure on the host developing countries to lower environmental regulations, or prevent their enforcement. Examples include Shell's oil drilling in Nigeria and Freeport's mining operation in Indonesia.

There is a fierce competition among countries for attracting FDI. It may be possible for companies to bargain with countries to reduce their environmental standards but sometimes they bargain to increase the standards.

The experiences of the countries suggest that, under appropriate regulatory framework, foreign investments in mining perform better on the environmental front, as compared to the domestic companies. When the frameworks are not in place, both foreign and domestic companies can cause serious environmental and social damage.

Foreign companies, particularly the TNCs, are in a position to perform well on the environmental front in host developing countries, because they often develop and adopt advanced and environment-friendly technologies. If they apply advanced environmental-friendly technologies, they may induce local firms to adopt these. Outdated environmentally-harmful technologies are, however, cheaper and, if a host country has a lax environmental regulation, it may be tempting for companies to use such technologies.

Broadly speaking, countries, which have transparent, clear-cut and efficient environmental programmes, do not face many problems in attracting environment-friendly FDI. TNCs are often found to be interested in consistent enforcement of environmental rules, rather than

**Table II.I: The World's Largest Mining and Metal Companies Ranked by Foreign Assets**

Name	Ranking on the Basis of Foreign Assets in 2000	Home Country	Industry Classification	Sales in 2000 (US\$bn)
Anglo American	26	United Kingdom	Mining & quarrying	18.470
Rio Tinto	39	United Kingdom/Australia	Mining & quarrying	9.972
Compagnie De Saint-Gobain	57	France	Non-metallic mineral products	26.798
Cemex	76	Mexico	Non-metallic mineral products	5.621
Alcan	88	Canada	Metal and metal products	9.244
Usinor	94	France	Metal and metal products	14.771

Source: UNCTAD *World Investment Report (WIR), 2002*

**Table II.II: Sales Figures of Five Largest TNCs in the World Ranked by Foreign Assets**

Company	Home Country	Industry Classification	Total Sales in 2000 (US\$bn)
Vodafone	United Kingdom	Telecommunications	11.747
General Electric	United States	Electrical and electronic equipment	129.853
ExxonMobil Corporation	United States	Petroleum exploration/refining/distribution	206.083
Vivendi Universal	France	Diversified	39.357
General Motors	United States	Motor vehicles	184.632
Royal Dutch/Shell Group	The Netherlands/United Kingdom	Petroleum exploration/Refining/distribution	149.146
BP	United Kingdom	Petroleum exploration/Refining/distribution	148.062

*Source: UNCTAD WIR, 2002*

maintaining lower environmental standards per se. They would adopt higher standards if their competitors were also required to do so.

### Uncertainties Faced by Companies

In the 1990s, environmental issues such as environmental performance of TNCs in developing countries came under greater scrutiny. Wider networking among the civil society and greater access to information has helped create public pressure on TNCs to perform well on the environmental front.

Environmental groups have also been demanding for some time that the World Bank should disengage itself from the mining sector. There is similar pressure on other international financial institutions (IFIs) to stop financing mining activities. Lending to this sector has declined due to such pressure. But, lending has declined also because of lower return in the industry.

Consequently, mining companies, at present, are facing greater uncertainties. They face a higher stake in terms of losing social and political licence to operate. If any company is charged with environmental misconduct or if any activity becomes socially undesirable, then there could be a pressure of public opinion on the companies to either improve environmental performance or stop production<sup>4</sup>.

Local communities, national governments and the media, who have become more aware of the environmental issues, expect higher social and environmental standards and performance from the companies. It is reflected in changes of policies and regulations. It is also reflected in the continuous innovation and invention by companies, research institutions and governments for improving environmental performance and rates of return in the industry.

Thus, technology and standards of operation used by companies today can become obsolete or undesirable tomorrow, due to policy changes and technological invention or innovation. Companies react to such policy and technological uncertainties by adopting environmental standards higher than host countries. They tend to invest in countries, which provide a stable environment by establishing strict environmental rules and effective implementation structures.

### How do Companies Address the Uncertainties?

During the first-half of the twentieth century, the mining companies' principle was to focus exclusively on making

money for their shareholders and leaving environmental protection to governments. They believed that the taxes they paid to governments would provide funds for taking steps to protect the environment.

In the second-part of the twentieth century, the public became increasingly conscious of environmental issues, which led to the enactment of environmental laws in many countries. Under the environmental laws and regulations, mining companies had to take steps to protect the environment and make closure plans of the mines in advance.

During the last two decades of the twentieth century, some mining companies have taken measures to protect and upgrade the environment by improving their performance standards. The companies have also adopted best practices of other industries, which have led to improvements in productivity, workers' and local communities' safety and environmental protection.

At present, many TNCs apply a single high environmental standard in their worldwide operations, without paying any regard to standards in individual countries. There are three reasons for this:

- To avoid tarnishing of their reputation on charges of environmental exploitation by consumer organisations, shareholders and the media;
- It may be less expensive to apply a single environmental standard in its units throughout the world, rather than having tailor-made production lines based on varying levels of environmental standards; and
- There may be home country requirements, guiding environmental performance of companies in host countries.

TNCs usually take the following measures to improve environmental performance and address environmental concerns:

- Adopt corporate codes of conduct;
- Frame and implement environmental management systems; and
- Regular environmental reporting.

A KPMG survey in 2001 on global reporting trends of the mining industry shows that broadening of social responsibilities with respect to the environment and communities is one of the issues considered by the industry as important. The survey found that 98 percent of the 40 surveyed mining companies reported environmental issues in their annual reports. The companies, which were

#### Box II: How Mining Affects the Environment and Local Communities

- *Air*: Surface mines may produce dust from blasting operations and haul roads. Many coal mines release methane, a greenhouse gas.
- *Water*: Mining throws 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 the surface and underground mines.
- *Land*: The movement of rocks due to mining activities and overburden (material overlying a mineral deposit that must be removed before mining) in the case of surface mines impacts land severely.
- *Health & Safety*: Underground mining is generally more hazardous than surface mining because of poorer ventilation and visibility and the danger of rockfalls. The greatest health risks arise from dust, which may lead to respiratory problems and from exposure to radiation.

*Source: Sustainable Development Networking Programme (SDNP), India, <http://sdnp.delhi.nic.in>*

surveyed, were the world's leading mining companies from Australia, Canada, South Africa, the United States and the United Kingdom<sup>5</sup>.

TNCs attract higher scrutiny from governments and civil society than smaller domestic companies, but many of them have developed codes of conduct and practices and reporting procedures to take care of environmental and societal concerns. When a big company opens a mine, they usually make proper assessment of environmental effects and steps taken to minimise and mitigate these and closure plans. They are also subjected to financial market disciplines, which smaller companies usually do not face<sup>6</sup>.

### Steps that Governments and IGOs Take to Protect the Environment

Governments of developing countries face two challenges:

- They have to design appropriate environmental laws and regulations; and
- They have to implement rules effectively, by building suitable regulatory frameworks.

The most important step in meeting the challenge is by making environmental administration of the mineral sector a part of wider environmental management in a country. The next step is to formulate an environmental management system (EMS) for the mining sector. An EMS provides a structured method for company management and regulating authorities for awareness and control over environmental performance of a project. It is to be applied to all stages of the life cycle of a mine.

The stages in EMS cycle consist of:

- Formulation of environmental policy;
- Formulation of environmental management plan;
- Establishment of standards for emissions and performance monitoring;
- Socio-economic impact assessment of a project;
- Operational control and emergency procedures;
- Environmental and compliance audits; and
- Review of the system regularly.

Some initiatives have been taken by intergovernmental organisations (IGOs), governments and industry associations to develop guidelines for environmental practices for the mining sector. The World Bank, for example, developed guidelines for governments in Latin America and Africa on the "global best practices" to apply in the mining sector. The "global best practices" lay down institutional reforms that should be undertaken in government departments for mining to develop legal and policy frameworks to deal with the administrative, fiscal, environmental and investment risks. They indicate that sound systems of environmental impact assessment (EIA) (See Box III), advanced monitoring procedures and advanced technology should be developed for minimising environmental damage. In many cases, they also provide financial provisions for rehabilitation of closed mines.

### Box III: What is an Environmental Impact Assessment (EIA)

- EIA is perhaps most widely used tool of environmental management in the mining sectors as people in the mining sector and the World Bank have encouraged its use.
- EIA is promoted along with Social Impact Assessment (SIA) and cost-benefit analysis to take into account the social and economic factors.
- EIAs are now mandatory for most large-scale development projects. However, often they are not properly implemented.
- There is a lack of rigorous technical standards. This hampers the implementation of EIAs.

### Conclusion

Mining is an important sector in several countries and a number of TNCs are operating in the sector. However, mining TNCs are not as large as the world's largest corporations in terms of foreign assets or sales. They do not appear in the list of the world's largest transnational corporations if companies are ranked on the basis of their foreign assets. If they are ranked on the basis of transnationality, however, mining TNCs figure in the list of top ten. Mining TNCs have come under public scrutiny in the past few years, due to the fact that mining operations have the potential to damage the environment.

Both foreign and domestic companies can perform poorly with regard to the environment. Though TNCs usually have the assets to develop environmental technologies as compared to domestic companies in developing countries, they might not adopt the technologies, if the environmental regulation in these countries is lax. Companies, especially TNCs, face a lot of uncertainties in the investment environment they operate in, due to unpredictable policy and technological changes and poor public perception of their activities. Companies, in response to this, take measures to maintain rigorous environmental standards and improve public perception of their operations. Governments and IGOs also take steps to enforce environmental standards in the mining sector.

The primary job to enforce environmental standards is that of governments. The important task for IGOs is to monitor environmental performance of companies in countries with poor regulatory structures. Often, companies wish to enforce high standards, but face problems in implementing these standards. Sometimes, domestic companies are worse than foreign TNCs on the environmental front. It is important, therefore, to have a uniform regulatory and performance standards in a country.

Civil society has an important role to play in pointing out environmental misdeeds and lax application of environmental standards and regulation by countries. They can do this by helping companies draft environment-friendly mining practices and implement them and by working closely with governments and IGOs in developing codes of conduct and performance standards for mining companies.

Lastly, mining companies have to enforce a uniformly high performance standard in all the countries of the world. TNCs should play the role of leaders in developing technologies and adopting them effectively and develop best practices for other companies to follow.

### Endnotes

- 1 'Foreign Investment in Latin America and the Caribbean, 2001', United Nations, Economic Commission for Latin America and the Caribbean.
- 2 'World Investment Report 2002', United Nations Conference on Trade & Development.
- 3 'Mining, Minerals and Sustainable Development Draft Report', International Institute for Environment and Development & World Business Council for Sustainable Development, <http://www.iied.org/mmsd>
- 4 <http://www.unesco.org/courier/1998-12/uk/planete/txt1.htm>
- 5 'A Survey of Global Reporting Trends: The Mining Industry 2000 – 2001', KPMG, <http://www.kpmg.com/industries>
6. Same as 3.

© CUTS 2003. This Briefing Paper is produced by CUTS under a grant from the Department for International Development, UK, to inform, educate and provoke debate on issues of trade, investment, development and equity. Readers are encouraged to quote or reproduce material from this paper, but as the copyright holder, CUTS requests due acknowledgement and a copy of the publication.

This Briefing Paper has been researched and written by Sanchita Chatterjee of and for CUTS Centre for International Trade, Economics & Environment, D-217, Bhaskar Marg, Bani Park, Jaipur 302 016, India, Ph: 91.141.220 7482, Fx: 91.141.220 7486, E-mail: [cuts@cuts.org](mailto:cuts@cuts.org), Web Site: [www.cuts.org](http://www.cuts.org), and printed by KBS Printers, Tonk Road, Jaipur 302 001, India.