

## Introduction

Though it may seem like an outdated industry, the mining, metals, and minerals industry forms the foundation of modern society. Mining consists of locating, excavating, and processing geological materials such as metals, minerals, or precious stones. Energy-related materials, as well as cultivable resources are excluded from this category. This industry is typically dominated by large, multinational firms.



## Industry Composition

The metals, minerals, and mining industry is defined as activities involved in locating, excavating, and processing metals, minerals, and other geological resources that are needed in the economy. The industry contains five main segments:

- Oil and gas extraction: produces petroleum and natural gas to heat homes, fuel cars, and power factories.
- Coal mining: produces coal, a fossil fuel used primarily for electric power generation and the production of steel.
- Metal ore mining: extraction of metal ores, primarily gold, silver, iron, copper, lead, and zinc used to produce jewelry, electronics, and steel.
- Nonmetallic mineral mining: covers a wide range of mineral extraction and produces crushed stone, sand, and gravel for construction of roads and buildings.
- Support Activities for Mining: work done by contract companies within the mining industry. For example, quarrying or wide-range mineral extraction.

These outputs serve as the foundation for nearly all other industries, whether it is for the formation of some further product in the industry or simply the necessary need for that natural resource in the industry.

## Industry Leaders and Fragmentation

\* All amounts are given in Billions USD

Company	Country	Sales	Profits	Market Value
Glencore International	225	219.8	3.3	60.5
ArcelorMittal	212	76	5.1	24
CITIC	175	68	6.4	43.6
Posco	321	59	1.5	19
Nippon Steel	179	54.5	2.5	16.2



## Profitability and Demand Drivers

### Primary Demand Drivers:

- Coal: Generators of electricity
- Metal ore: Industrial production
- Nonmetallic mineral: Construction spending and agricultural spending on fertilizers

### Profitability Drivers:

- Efficient operations since most products are commodities sold based on price
- Volume of operations
- Strategic acquisitions at bargain prices

## Trends

Technology has come to play a greater role in the industry, making way for better safety measures and reducing the amount of workforce needed for a job. The steel industry has especially benefited from this, with some companies reducing manpower by up to 90 percent.

Environmental effects have long been a concern for this industry. Many countries require mining companies to follow strict environmental guidelines to prevent erosion, sinkholes, groundwater contamination, and loss of biodiversity. There are provisions pertaining to the rehabilitation of the land to either its former or better condition. Gold mining companies often operate in fragile ecosystems, leading to charges of demand to the environment and the displacement or abuse of native populations. Environmental impact should be monitored in the near future since several national leaders have pledged to protect the environment, especially after the conference in Copenhagen where many of these issues were discussed. China, long maligned for their lack of regard for the environment, is now looking to decrease the carbon footprint by their steel mills according to their most recent five year plan.

Trade laws and international competition create a great deal of friction in the industry. Companies such as South Korea's POSCO and Japan's Sumitomo-Nippon Steel, two leading steel producers, export many of their products to countries such as the United States, where unions and steel companies complain of illegal dumping by offshore steel producers.

Recently there has been a large focus on rare earth metal mining due to ever advancing technology. The term rare, hints more at the difficulty of mining or extracting these metals than their actual abundance in nature. Their extraction ironically is being helped by newer technologies, exactly what they are needed to create and improve. China is the lead producer of rare earth metals, controlling 97 percent of production.