

# Mineral Resources

Naturally occurring substances with different physical and chemical properties.

## Ores:

These are mineral or combination of minerals from which metal can be extracted.

Concentration of minerals at one particular spot is called mineral deposit.

## Classification of mineral resources:

U.S geological survey divides non renewable mineral resources into 3 categories.

### 1. Identified resources:

Location, existence, quality and quantity known by direct geological evidence and measurement.

### 2. Undiscovered resources:

Assumed to exist on the basis of geological knowledge, but their specific location, quality and quantity are unknown.

### 3. Reserves:

Minerals are identified. Usable materials can be extracted profitably.

## Uses and exploitation of minerals:

1. Development of industrial plants and machinery. - Fe, Al & Cu
2. Construction work – Fe, Al & Ni
3. Generation of energy - coal, lignite, uranium
4. Designing defence equipments like weapons and ornaments
5. Agricultural purposes – fertilisers and fungicides – Zn & Mn
6. Jewellery – Au, Ag & Pt
7. Making alloys for various purposes – phosphoresces
8. Communication purposes – telephone, wires, cables and electronic devices
9. Medicinal purposes, particularly in ayurvedic system – sulphur pyrites

## Classification of minerals:

### Metallic minerals:

From which metals can be extracted. e.g Fe, Al & Cu

### Non metallic minerals

Non metallic compounds can be extracted.e.g Quartz and feldspar

### Mineral wealth of India

S.No	Mineral	Available state
1	Iron	Tamil nadu
2	Coal	Orissa, west bangal
3	Manganese	M.P
4	Copper	Bihar
5	Gold	Karnataka
6	Aluminium	Tamilnadu
7	Lime stone	M.P
8	Mica	Bhar
9	Monozite	Kerela
10	Lead and zinc	Gujarat & rajasthan
11	Precious stones	Rajasthan
12	Magnesite	Tamil nadu
13	Petroleum	Assam
14	Magnesite	Tamilnadu, sikkim
15	Gypsum	Rajasthan

## **Mining:**

The process of extraction of minerals from the earth.

Types of mining:

1. Surface mining
2. Under ground mining

Types of under ground mining

### **a. Open pit mining:**

Machines dig holes and remove the ores.

### **b. Dredging:**

Chained buckets are used to extract minerals.

### **c. Strip mining:**

Bulldozers are used to extract minerals.



## **Environmental damages caused by mining activities:**

### **1. Devegetation :**

- topsoil and vegetation are removed
- deforestation leads to several ecological losses
- land scape badly affected

## **2. Ground water contamination:**

Mining pollutes ground water , sulphur is converted into sulphuric acid which enters into the soil.

## **3. Surface water pollution:**

Radioactive wastes and other acidic impurities affect the surface water, which kills many aquatic animals.

## **4. Air pollution:**

Smelting and roasting are done to purify the metal which emits air pollutants and damage the nearby vegetation. It causes many health problems.

## **5. Subsidence of land:**

Mainly underground mining results in cracks in houses, tilting of buildings and bending of rail tracks.

### **Effects of over exploitation of minerals:**

1. Rapid depletion of mineral deposits
2. Wastage
3. Environmental pollution
4. Needs heavy energy requirements.

### **Management of mineral resources:**

1. The efficient use and protection of mineral resources.
2. Modernisation of mining industries
3. Search for new deposit
4. Reuse and recycling of the metals.
5. Environmental impacts can be minimised by adopting eco friendly mining technology.

### **Case studies;**

#### **Mining and quarrying in udaipur:**

200 open cast mining and quarrying in udaipur. But 100 minings are illegal. 150 tonnes of explosives are used per month. It pollutes air, soil and water. It affects irrigation and wild life.