

11

India–Mineral Resources

Lesson Plan

Contents

- ▶ Minerals and metals – their use
- ▶ Metals and non-metals
- ▶ Metallic minerals: Iron, copper, silver, etc.
- ▶ Non-metallic minerals: Mica, coal, diamond, salt, etc.
- ▶ Some minerals and their uses
- ▶ Conservation of mineral wealth

Objectives

- ▶ Learning about minerals and their use in our lives
- ▶ The difference between metallic and non-metallic minerals
- ▶ Where are the mineral deposits in India?
- ▶ Details about some of the minerals – what they are, how they are used and where they are found
- ▶ Conservation of mineral wealth

Teacher's Aids

- ▶ Maps of India – Political and Physical
- ▶ Maps showing distribution of mineral resources and related industries
- ▶ Atlases
- ▶ Blank maps of India for the students
- ▶ Blackboard, the internet, pictures, magazines, etc.

Tips for Teacher

- ▶ Make a list of items made of different minerals and metals.
- ▶ Ask students to bring one picture each of things made of different metals and minerals and make a collage in the classroom.

Gear Up, Background

- ▶ The three medals seen in Gear Up are made of (i) silver (ii) gold (iii) bronze.

- ▶ Ask students about the metals they see or use every day: vessels, decoration pieces, spoons, trunks, cars, aeroplanes, jewellery, wires, etc.
- ▶ What are metals derived from?
- ▶ Minerals available in rock – ore
- ▶ Taking minerals out of the Earth – mining

Metals and Non-metals

- ▶ **Two groups of minerals:** Metallic and non-metallic.
- ▶ **Metallic minerals:** Iron, copper, silver, etc.
- ▶ **Non-metallic minerals:** Mica, coal, diamonds, salt, etc.
- ▶ **Fuels:** Coal, petroleum.
- ▶ **Smelting:** The process of separating metals from mineral ores to remove impurities.
- ▶ Minerals can get exhausted. They are non-renewable.
- ▶ **India:** Rich in mineral resources – iron, manganese, aluminium, coal, petroleum, mica, copper, etc.
- ▶ **Distribution is uneven:** Northern Plains: poor in mineral resources.
- ▶ **Southern Plateaus:** Rich in mineral resources.
- ▶ **Iron:** From safety pins to ships – Jharkhand, Odisha, Karnataka, Chhattisgarh, Madhya Pradesh, Goa – largest producer of iron ore in Asia; seventh largest in the world – about half exported to Japan, China, South Korea, eastern Europe and Gulf countries – smelted and purified at iron and steel plants – Jamshedpur, Bhilai, Durgapur, Raurkela, Bokaro, Salem, Bhadravati, etc.
- ▶ **Manganese:** Used for making iron and steel, dry cell batteries, insecticides, plastics, glazed pottery, matches, glass and chemicals – Karnataka, Odisha, Madhya Pradesh, Maharashtra and Goa – most exported to Japan, USA, UK, Germany, France, Sweden and Ukraine.
- ▶ **Aluminium:** Ore called bauxite – used for making utensils, electricity cables, body of aeroplanes – Jharkhand, Odisha, Andhra Pradesh, Chhattisgarh, Telangana, Maharashtra, Gujarat, Karnataka and Tamil Nadu – increasing demand.
- ▶ **Coal:** Non-metallic mineral – source of energy – used for producing electricity, running factories, for means of transportation, as cooking fuel – Jharkhand, Chhattisgarh, Odisha, Madhya Pradesh, Bihar, Bengal & Tamil Nadu – fourth largest producer in the world – coal mining centres: Raniganj, Jharia, Dhanbad, Bokaro, Singrauli, Korba and Neyveli.
- ▶ **Petroleum:** Fossil fuel called mineral oil – needs to be refined – used for making petrol, diesel, kerosene, mobil oil, cooking gas, coal tar, and many other products like petroleum jelly – found only in sedimentary rocks at great depth – Assam, Gujarat, Rajasthan, Andhra Pradesh, Maharashtra and some off-shore oilfields like Mumbai High, which is about 160 km from Mumbai in the Arabian Sea – oil producing centres at Digboi, Ankleshwar, Cambay and Sibsagar – in many oilfields, natural gas or cooking gas is also found along with mineral oil – oil refineries at Jamnagar, Digboi, Kochi, Mumbai, Chennai, Mathura, Barauni, Mangaluru, Panipat, Haldia, Koyali, Bongaigaon, Vishakhapatnam, etc.

/// Conservation of Mineral Wealth

- ▶ Mineral resources are scarce in India. Tell the students about 'robber economy' – any item on Earth used carelessly or unnecessarily or over-used will get exhausted: water, soil, wildlife, trees and forests, medicinal plants, oil and minerals, etc. They take centuries to replace. We will damage and destroy the planet with our activities if we are not careful.