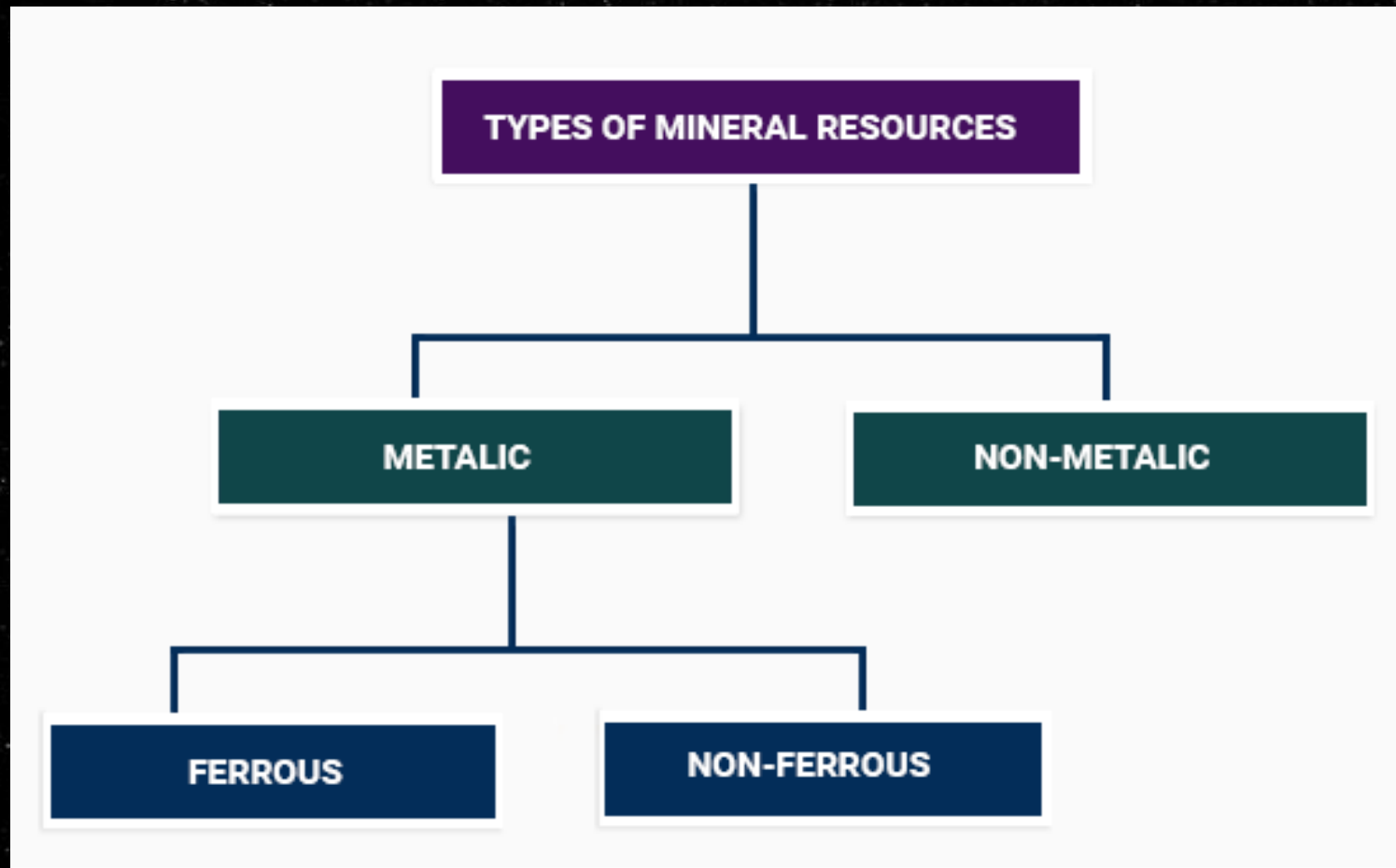


MINERALS AND POWER RESOURCES

What are Minerals?

- A naturally occurring substance that has a definite chemical composition is a **mineral**.
- Minerals are not evenly distributed over space. They are concentrated in a particular area or rock formations

TYPES OF MINERALS



Metallic minerals contain metal in raw form. Metals are hard substances that conduct heat and electricity and have a characteristic lustre or shine. Iron ore, bauxite, manganese ore are some examples. Metallic minerals may be ferrous or non-ferrous.

- Ferrous minerals like iron ore, manganese and chromites contain iron.
- A non-ferrous mineral does not contain iron but may contain some other metal such as gold, silver, copper or lead.

Non-metallic minerals do not contain metals. Limestone, mica and gypsum are examples of such minerals. The mineral fuels like coal and petroleum are also non-metallic minerals.

EXTRACTION OF MINERALS

- 1) The process of taking out minerals from rocks buried under the earth's surface is called **mining**.
 - a) Minerals that lie at shallow depths are taken out by removing the surface layer; this is known as open-cast mining.
 - b) Deep bores, called shafts, have to be made to reach mineral deposits that lie at great depths. This is called shaft mining.
- 2) Petroleum and natural gas occur far below the earth's surface. Deep wells are bored to take them out, this is called drilling
- 3) Minerals that lie near the surface are simply dug out, by the process known as quarrying

DISTRIBUTION OF MINERALS

ASIA

- The continent produces more than half of the world's tin.
- Asia also has deposits of manganese, bauxite, nickel, zinc and copper

EUROPE

- Europe is the leading producer of iron-ore in the world.
- Minerals deposits of copper, lead, zinc, manganese and nickel are found in eastern Europe and European Russia

NORTH AMERICA

- The mineral deposits in North America are located in three zones: the Canadian region north of the Great Lakes, the Appalachian region and the mountain ranges of the west.
- Iron ore, nickel, gold, uranium and copper are mined in the Canadian Shield Region, coal in the Appalachians region. Western Cordilleras have vast deposits of copper, lead, zinc, gold and silver

SOUTH AMERICA

- South America also has large deposits of gold, silver, zinc, chromium, manganese, bauxite, mica, platinum, asbestos and diamond.
- Mineral oil is found in Venezuela, Argentina, Chile, Peru and Columbia.

AFRICA

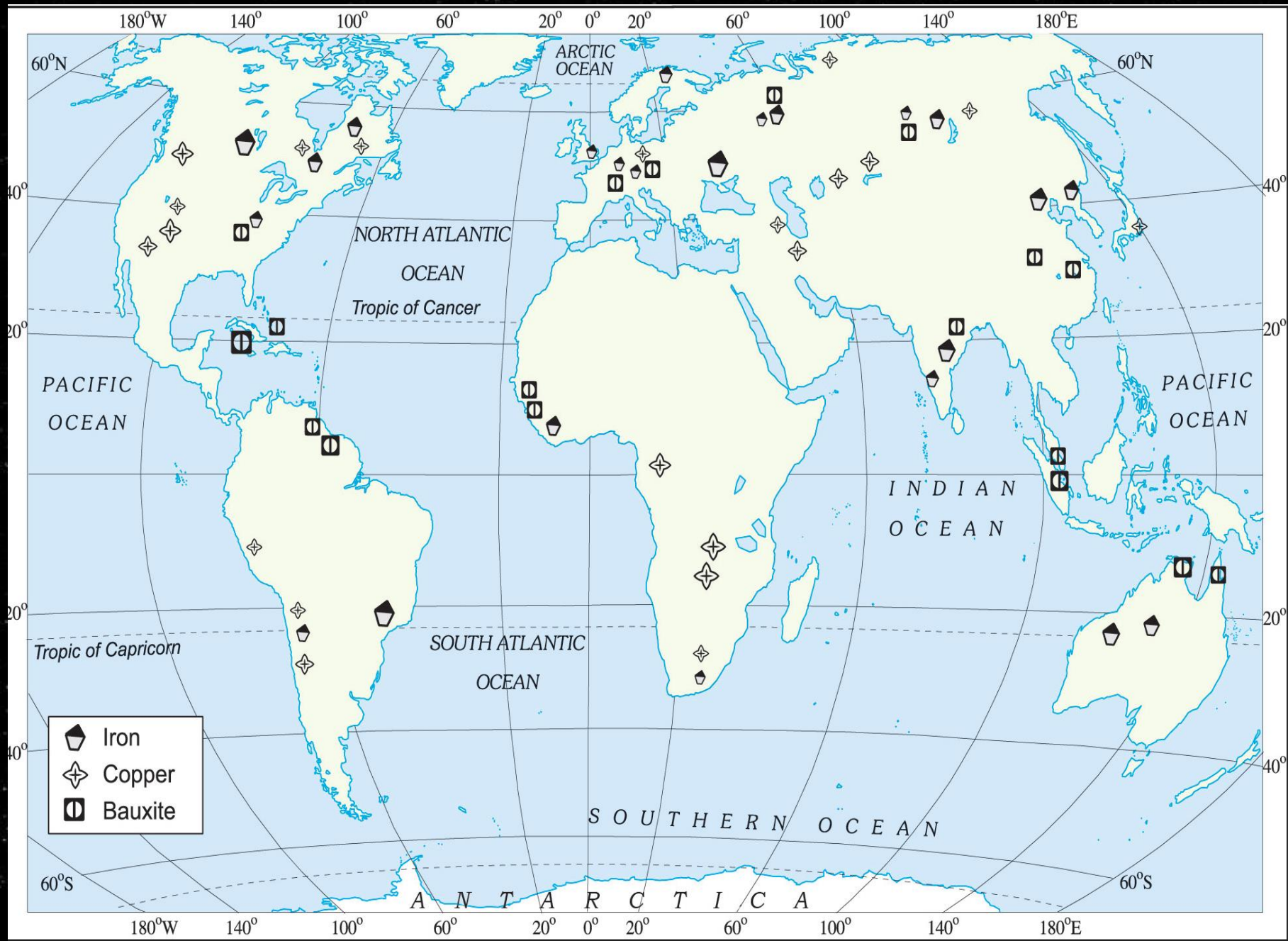
- Africa is rich in mineral resources. It is the world's largest producer of diamonds, gold and platinum.
- The other minerals found in Africa are copper, iron ore, chromium, uranium, cobalt and bauxite. Oil is found in Nigeria, Libya and Angola

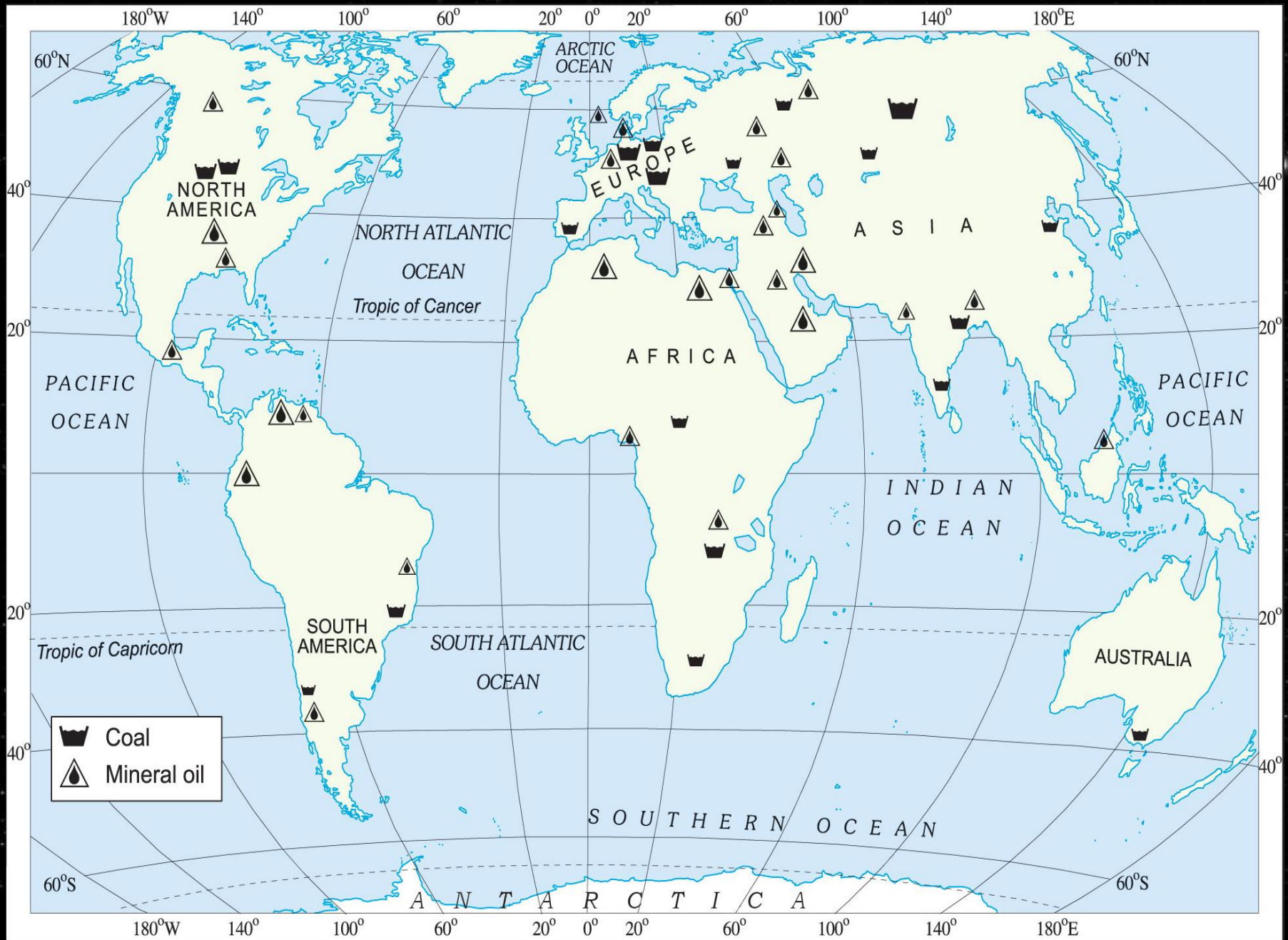
AUSTRALIA

- Australia is the largest producer of bauxite in the world. It is a leading producer of gold, diamond, iron ore, tin and nickel.
- It is also rich in copper, lead, zinc and manganese.

ANTARCTICA

- The geology of Antarctica is sufficiently well known to predict the existence of a variety of mineral deposits, some probably large.
- Significant size of deposits of coal in the Transantarctic Mountains and iron near the Prince Charles Mountains of East Antarctica is forecasted.
- Iron ore, gold, silver and oil are also present in commercial quantities





DISTRIBUTION IN INDIA

- Iron: India has deposits of high grade iron ore. The mineral is found mainly in Jharkhand, Odisha, Chhattisgarh, Madhya Pradesh, Goa, Maharashtra and Karnataka.
- Bauxite: Major bauxite producing areas are Jharkhand, Odisha, Chhattisgarh, Madhya Pradesh, Gujarat, Maharashtra and Tamil Nadu. Do you know? The oldest rocks in the world are in Western Australia. They date from 4,300 million years ago, only 300 million years after the earth was formed.

- Mica: Mica deposits mainly occur in Jharkhand, Bihar, Andhra Pradesh and Rajasthan. India is the largest producer and exporter of mica in the world.
- Copper: It is mainly produced in Rajasthan, Madhya Pradesh, Jharkhand, Karnataka and Andhra Pradesh.
- Manganese: India's manganese deposits lie in Maharashtra, Madhya Pradesh, Chhattisgarh, Odisha, Karnataka and Andhra Pradesh.

- Limestone: Major limestone producing states in India are Bihar, Jharkhand, Odisha, Madhya Pradesh, Chhattisgarh, Rajasthan, Gujarat and Tamil Nadu.
- Gold: Kolar in Karnataka has deposits of gold in India. These mines are among the deepest in the world which makes mining of this ore a very expensive process.
- Salt: It is obtained from seas, lakes and rocks (Fig 3.8). India is one of the world's leading producers and exporters

USES OF MINERALS

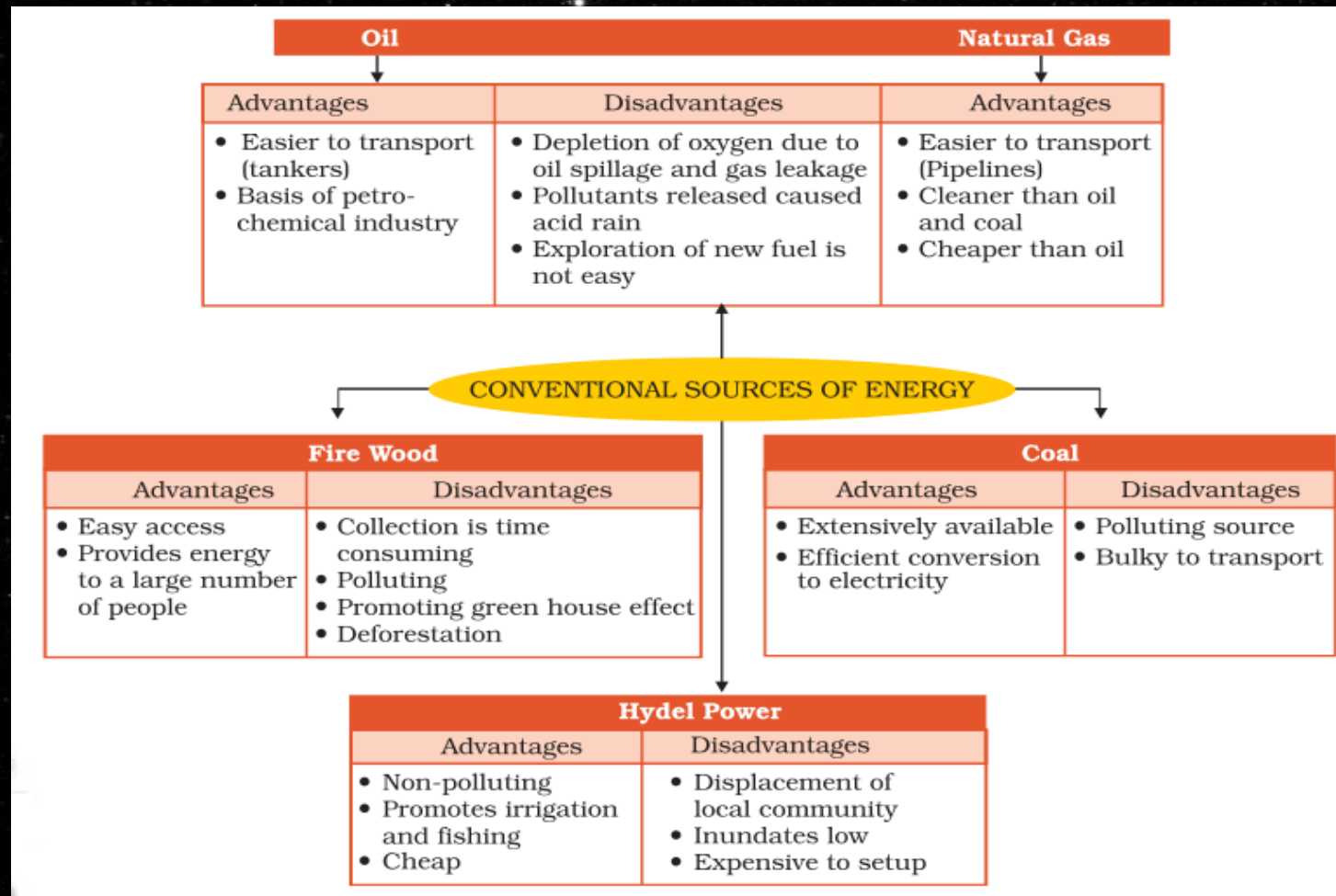
- Minerals are used in many industries. Minerals which are used for gems are usually hard. These are then set in various styles for jewellery. Copper is another metal used in everything from coins to pipes. Silicon, used in the computer industry is obtained from quartz. Aluminum obtained from its ore bauxite is used in automobiles and airplanes, bottling industry, buildings and even in kitchen cookware.

CONSERVATION OF MINERALS

- Minerals are a non-renewable resource. It takes thousands of years for the formation and concentration of minerals.
- The rate of formation is much smaller than the rate at which the humans consume these minerals. It is necessary to reduce wastage in the process of mining.
- Recycling of metals is another way in which the mineral resources can be conserved

POWER RESOURCES

CONVENTIONAL RESOURCES



COAL

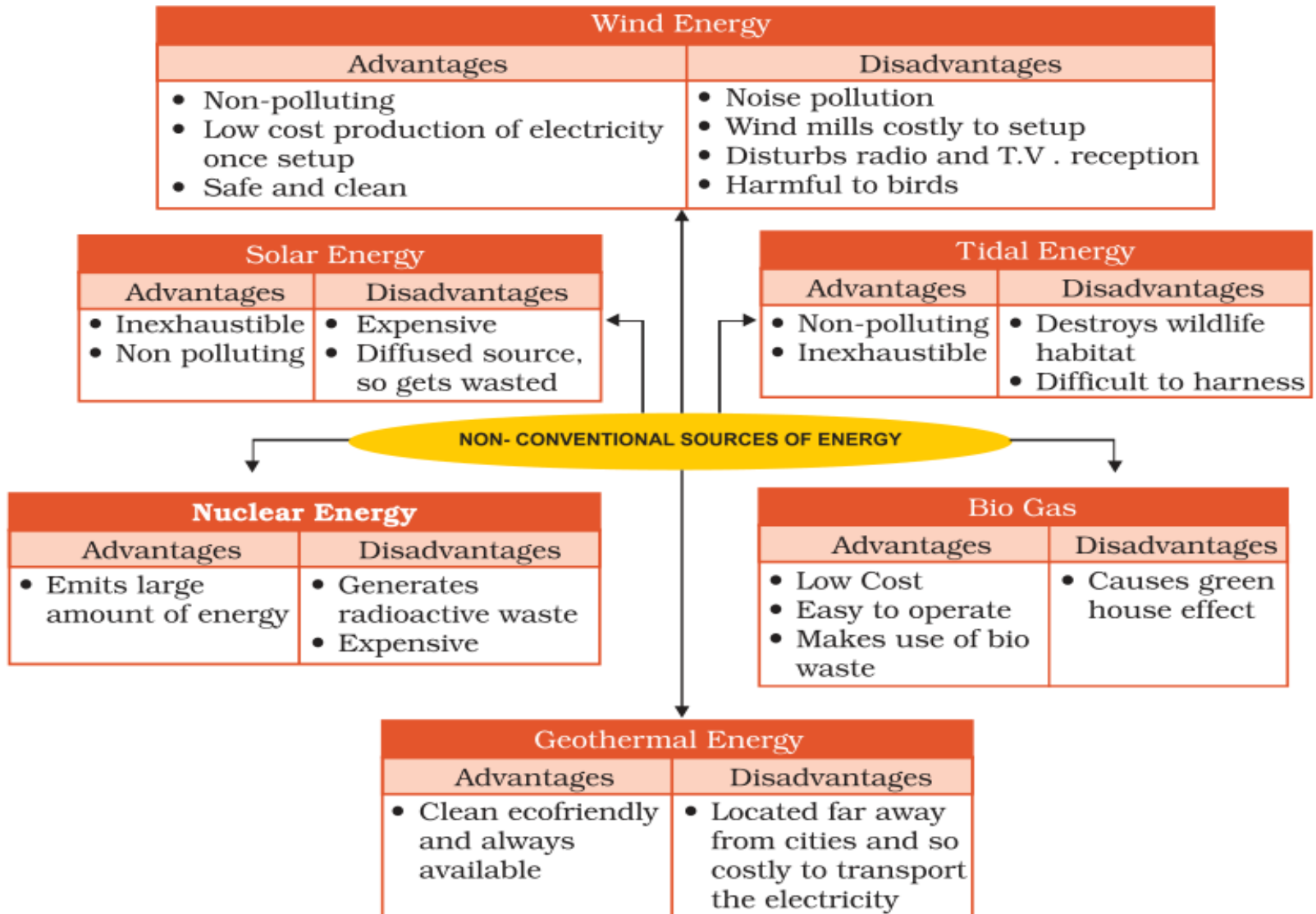
- This is the most abundantly found fossil fuel. It is used as a domestic fuel, in industries such as iron and steel, steam engines and to generate electricity.
- Coal is therefore referred to as **Buried Sunshine**

PETROLEUM

- The petrol that keeps your car running as well as the oil that keeps your cycle from squeaking, both began as a thick black liquid called Petroleum.
- It is found between the layers of rocks and is drilled from oil fields located in off-shore and coastal areas.
- Petroleum and its derivatives are called **Black Gold as they are very valuable**

Some of the important conventional resources include Natural Gas, Hydel Power and Firewood

NON CONVENTIONAL RESOURCES



SOLAR ENERGY

- Solar energy trapped from the solar cells to produce electricity. Many of these cells are joined into solar panels to generate power for heating and lighting purpose.

WIND ENERGY

- Wind is an inexhaustible source of energy. Wind mills have been used for grinding grain and lifting water since times immemorial

TIDAL ENERGY

- Energy generated from tides is called tidal energy. Tidal energy can be harnessed by building dams at narrow openings of the sea.
- During high tide the energy of the tides is used to turn the turbine installed in the dam to produce electricity.

Some of the other important non conventional resources are Bio Gas, Nuclear Energy and Geothermal Energy