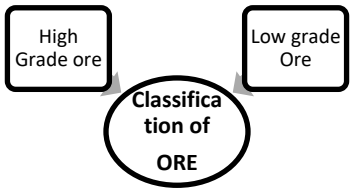
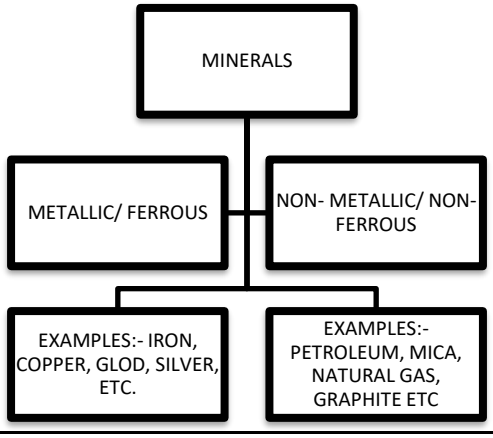
ODM Teachers' Note

Class	VIII	Subject	Geography	Plan For	Toppers

Prd	1	Chapter	4. Mineral and Power Resources

Sub-Concepts	1. What is Mineral Resources? 2. Types of Minerals
Teaching Aid To be used	Minerals like coal, iron, marble (Raw form)

Sl. No	Step Wise (What to be done)
1	**Minerals are naturally occurring substances that have a definite chemical composition.** • **Minerals are formed in different types of geological environments, under varying conditions.** • **Minerals can be identified on the basis of their physical properties such as colour, density, hardness and chemical property such as solubility.** • **Minerals are distributed in rocks and sea bed also.** • **Tropical regions are very rich in terms of mineral resources.** • **Minerals are in form of rocks.** **For Example:- aluminum , Iron, Calcium, Potassium, Sodium and Magnesium.**
2.	**Mineral distribution in different in whole of the world because of the Physical environmental conditions.**
3.	**All minerals have an economically viable for mining is called as <u>Ore.</u>**

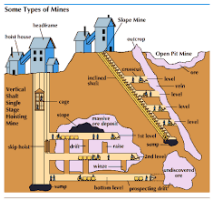
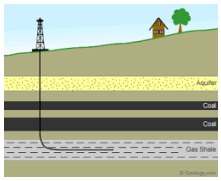
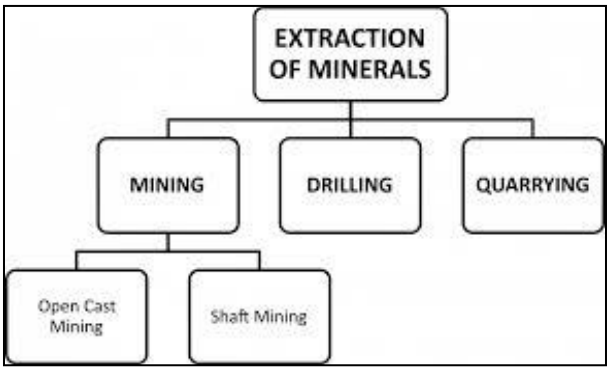
4.	**Classification of Ore:-** **High Grade Ore- In the high grade ores the mineral content is high and the impurities are low. e.g - gold ore** **In the low grade ores the mineral content is low and the impurities are high. e. g. copper ore** 
5.	**Types of Minerals:-** **1. On the basis of composition, minerals are classified into metallic and non-metallic types.** **2. Metallic, minerals contain metals in raw form.** **3. Metals are hard substances that conduct heat and electricity and have luster or shine. For example, iron ore and bauxite.** **4. Metallic minerals are of two types: (a) Ferrous and (b) Non-ferrous.** **5. Ferrous minerals contain iron ore, manganese, and chromites. Most of the Iron and steel industries and heavy industries depends on this mineral.** **6. Non-ferrous minerals do not contain iron but may contain some other metals like gold, silver, copper or lead.** **7. Non-metallic minerals do not contain metals. For example, limestone, mica, gypsum, coal, and petroleum.** 

ODM Teachers' Note

Class	VIII	Subject	Geography	Plan For	Toppers

Prd	2	Chapter	4. Mineral and Power Resources

Sub-Concepts	1. Extraction Of Minerals 2. Distribution Of Mineral (under rocks)
Teaching Aid To be used	SMART BOARD/ Images(Minerals Extraction).

Sl. No	Step Wise (What to be done)
1	**Minerals can be extracted by different processes, which are as follows:** a. **Mining:** The process of taking out minerals buried under the rocks is called mining. There are two main methods of mining, viz. open-cast mining and shaft mining. b. **Open Cast Mining:** When minerals are taken out by removing the surface layer, the process is called open-cast mining. Minerals which lie at shallow depths are extracted by this process. c. **Shaft Mining:** When deep bores (called shafts) are made to reach the mineral deposits at great depth, the process is called shaft mining. d. **Drilling:** When deep wells are bored to take out the mineral, the process is called drilling. Petroleum and natural gas are extracted by this method. e. **Quarrying:** When minerals are simply dug out from near the surface, the process is called quarrying.     

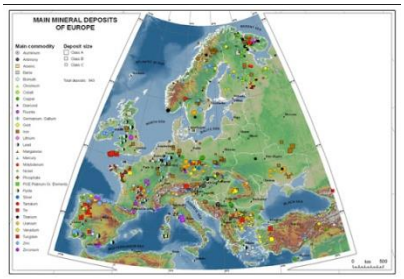
2.	**Distribution Of Mineral (under rocks)** Metallic minerals are usually found in igneous and metamorphic rock formations that form large plateaus. Non-metallic minerals are usually found in sedimentary rock formations of plains and young fold mountains.
3.	**Distribution Of Mineral (under rocks)** 1. Iron ore, nickel, copper minerals are found in igneous and metamorphic rocks. 2. Limestone is found in sedimentary rocks. 3. Plateau region of India such as Deccan and chota Nagpur plateau provides the rich level of mineral distribution.

ODM Teachers' Note

Class	VIII	Subject	Geography	Plan For	Toppers

Prd	3	Chapter	4. Mineral and Power Resources

Sub-Concepts	3. Distribution Of Minerals (Asia, Europe, North America South America)
Teaching Aid To be used	SMART BOARD/ MAPS(MINERALS WORLD DISTIBUTION)

Sl. No	Step Wise (What to be done)
1	**Distribution Of Minerals(Asia)** **Asia: Iron ore deposits are found in China and India. Asia produces more than half of the world's tin. China, Malaysia and Indonesia are among the leading producers of tin in the world. China is also a leading producer of lead, antimony and tungsten. Deposits of manganese, bauxite, nickel, zinc and copper are also found in Asia.** 
2	**Distribution Of Minerals (Europe):- Europe is the leading producer of iron-ore. Russia, Ukraine, Sweden and France have large deposits of iron ore. Deposits of copper, lead, zinc, manganese and nickel are found in Eastern Europe and European Russia.** 

3	**Distribution Of Minerals(North America)**  **North America: There are three regions in North America which have mineral deposits and they are as follows:** • **The Canadian region: Iron ore, nickel, gold, uranium and copper** • **The Appalachian region: Coal** • **Mountain ranges of the west: Copper, lead, zinc, gold and silver**
4	 **Distribution Of Minerals(South America)** **South America: Brazil is the largest producer of high grade iron ore. Chile and Peru are the leading producers of copper. Brazil and Bolivia are among the leading producers of tin. Deposits of gold, silver, zinc, chromium, manganese, bauxite, mica, platinum, asbestos and diamond are also found in South America. Mineral oil is found in Venezuela, Argentina, Chile, Peru and Columbia.**

ODM Teachers' Note

Class	VIII	Subject	Geography	Plan For	Toppers

Prd	4	Chapter	4. Mineral and Power Resources

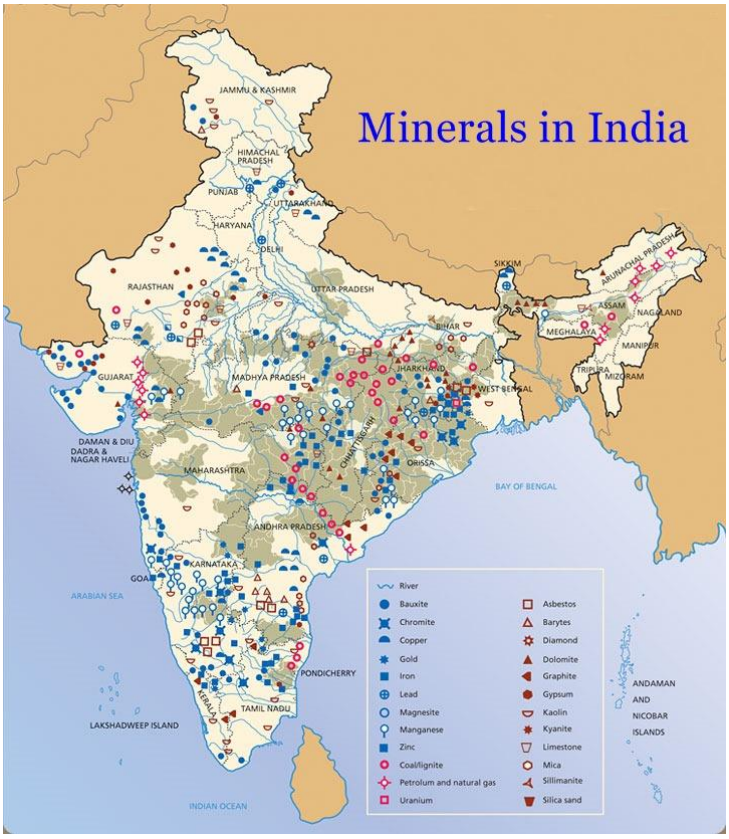
Sub-Concepts	1. Distribution Of Minerals (Africa, Australia, Antarctica) 2. Distribution of Minerals (India)
Teaching Aid To be used	SMART BOARD/ MAPS(MINERALS WORLD DISTIBUTION)

Sl. No	Step Wise (What to be done)
1	**Distribution Of Minerals(Africa)** **Africa: Africa is the largest producer of diamond, gold and platinum. A large portion of the world's gold is produced in South Africa, Zimbabwe and Zaire. Copper, iron ore, chromium, uranium, cobalt and bauxite are also found in Africa. Oil is found in Nigeria, Libya and Angola.** 
2	**Distribution Of Minerals (Australia):-** **Australia is the largest producer of bauxite. Australia is among the leading producers of gold, diamond, iron ore, tin and nickel. Copper, lead, zinc and manganese are also found in Australia. Large deposits of gold are present in Kalgoorlie and Coolgardie areas of Western Australia.** 
3	**Distribution Of Minerals (Antarctica:):- Geologists have estimated deposits of a variety of minerals in Antarctica. Forecasts have been made about significant coal deposits in the Transantarctic Mountains. Iron is estimated to be present near the Prince Charles Mountains of East Antarctica.**

4

Distribution of Minerals (India)

Iron: There are deposits of high grade iron ore in India. Jharkhand, Chhattisgarh, Orissa, Madhya Pradesh, Goa, Maharashtra and Karnataka are the states with iron ore deposits.



Bauxite: Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, Gujarat, Maharashtra and Tamil Nadu are the states with bauxite deposits.

Mica: Mica is mainly found in Jharkhand, Bihar, Andhra Pradesh and Rajasthan. India is the largest producer and exporter of mica.

Copper: Copper is mainly found in Rajasthan, Madhya Pradesh, Jharkhand, Karnataka and Andhra Pradesh.

Manganese: Manganese is mainly found in Maharashtra, Madhya Pradesh, Chhattisgarh, Orissa, Karnataka and Andhra Pradesh.

Limestone: Bihar, Jharkhand, Orissa, Madhya Pradesh, Chhattisgarh, Rajasthan, Gujarat and Tamil Nadu are the major states which produce limestone.

Gold: Gold is found in Kolar in Karnataka. The Kolar mines are among the deepest mines in the world.

Salt: Salt is obtained from sea, lakes and rocks. India is among the leading producers and exporters of salt.

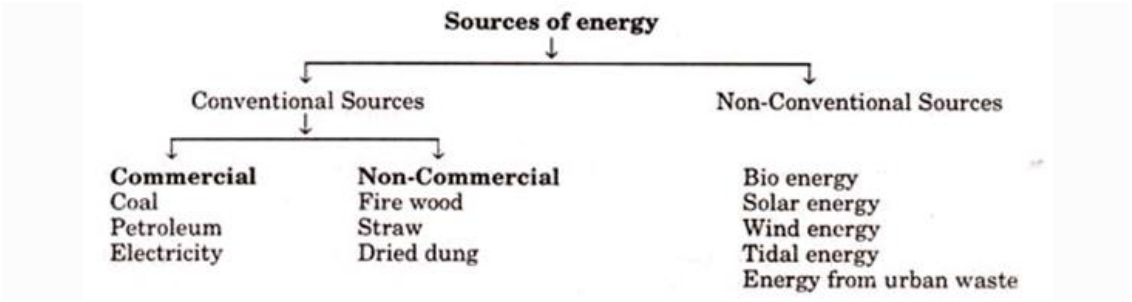
ODM Teachers' Note

Class	VIII	Subject	Geography	Plan For	Toppers

Prd	5	Chapter	4. Mineral and Power Resources

Sub-Concepts	**1. Uses and Conservation of Minerals.** **2. Power Resources.**
Teaching Aid To be used	**SMART BOARD/ CHART PAPAR**

Sl. No	Step Wise (What to be done)
1	**1. Uses and Conservation of Minerals.** **Uses of Minerals:** 1. Some minerals which are usually hard are used as gems for making jewellery. 2. Copper is used in almost everything from coins to pipes. 3. Silicon is used in almost everything from coins to pipes. 4. Silicon is used in the computer industry which is obtained from quartz. 5. Aluminum is used in automobile, airplanes, bottling industry, building and in kitchen cookware. 6. Mica is used to make electrical appliances and glassmaking industries. 7. Iron and steel is used in every industry. **Conservation of Minerals:** It takes thousands of years for the formation of minerals. But we are using the minerals at a much faster rate. Hence, it is necessary to conserve minerals. This can be done by reducing the wastage during mining. We should reduce our consumption of items so that demand for minerals can be reduced. We should reuse old items to reduce the demand for minerals. Metals can be recycled many times which can help in reducing the demand for fresh minerals.

2	**Power Resources.** **Power resources are of two types:** **(a) Conventional Resources, (b) Non-conventional Resources** **(a) Conventional Resources:-** The energy resources which have been in common use for a long time are known as conventional sources. 1. Firewood and fossil fuels are two main conventional energy sources. 2. Fossil fuels comprises of Coal (known as buried sunshine), Petroleum (known as black gold), Natural Gas and Hydroelectricity. **(b) Non-conventional Resources:-** Non-conventional sources of energy are renewable in nature. 1. Solar energy, wind energy, tidal energy, etc. are the examples of non-conventional sources of energy. 2. They are more expensive as it needs technological up gradation. 3. India has a great potential for Solar energy.
3	

ODM Teachers' Note

Class	VIII	Subject	Geography	Plan For	Toppers

Prd	6	Chapter	4. Mineral and Power Resources

Sub-Concepts	1.Convectional Sources of Energy
Teaching Aid To be used	SMART BOARD/ CHART PAPAR

Sl. No	Step Wise (What to be done)
1	1.Convectional Sources of Energy When we cannot reuse a source of energy after using it once we call them "conventional sources of energy" or "non-renewable energy resources". They are the most important conventional sources of energy. These include coal, petroleum, natural gas and nuclear energy. Oil is the most widely used source of energy. Coal, petroleum and natural gas account for about 90% of world's production of commercial energy and hydroelectric and nuclear power account for about 10%.
2	**Types of Conventional Sources of Energy:** **Coal**  Coal is the most abundant conventional source of energy which could last for at least 200 years. It is a black-brown sedimentary rock. Formation of coal occurs when the remains of plants convert into lignite and then into anthracite. This involves a long process that takes place over a long period of time. Coal helps for various proposes such as heating of the house, as fuel for boilers and steam engines and for generation of electricity by thermal plants. It constitutes about 70% of total commercial energy consumption in the country. **Oil** Out of all the conventional sources of energy, oil is used abundantly all over. Considering, oil is one of the most important conventional sources of energy in India, the resources for same are even smaller. The extraction of oil from deposits is known as oil resources.

3	**Petroleum and Natural Gas** Petroleum is the mixture of hydrocarbons like alkanes and cycloalkanes. In crude form black liquid is known as petroleum and the formation of a natural gas occurs when the gas comes in contact with petroleum layer. Natural gas is a mixture of 50-90% of Methane, Ethane, Propane, Butane, and Hydrogen sulphide. After refining and purifying crude petroleum, it is available as petrol, diesel, lubricating oil, plastic etc. Natural gas is also making a significant contribution to the household sector. It causes less air pollution as compared to other fossil fuel. **Fire Woods** Rural people use the fire wood for their day to day cooking which comes from natural forests and plantations. The availability of fuel wood has become difficult due to rapid deforestation. We can avoid this problem by planting more trees on degraded forest land, culturable wasteland, barren land grazing land.

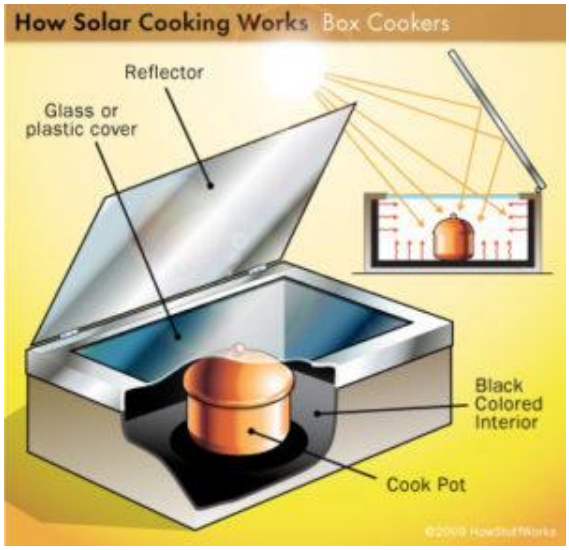
ODM Teachers' Note

Class	VIII	Subject	Geography	Plan For	Toppers

Prd	6	Chapter	4. Mineral and Power Resources

Sub-Concepts	1. Non- Convectional Sources of Energy
Teaching Aid To be used	SMART BOARD/ CHART PAPAR

Sl. No	Step Wise (What to be done)
1	1.**Non-Convectional Sources of Energy** Natural resources like wind, tides, solar, biomass, etc generate energy which is known as **"Non-conventional resources**". These are pollution free and hence we can use these to produce a clean form of energy without any wastage.
2	**Types of Non-convention sources** • Hydroelectric Power • Solar Energy • Wind Energy • Tidal Energy • Geothermal Energy • Biomass
3	• **Solar Energy** • Solar energy is harnessed by converting solar energy directly into electrical energy in solar plants. Photosynthesis process carries out this process of conversion of solar energy. In photosynthesis, green plants absorb solar energy and convert it into chemical energy. Solar energy is an essential energy of all non-conventional sources but its usage amount is very less. It is the most important non-conventional source of energy and it gives non-polluting environment-friendly output and is available in abundant. • **Uses of Solar energy**

	• A solar cooker directs the solar heat into secondary reflector inside the kitchen, which focuses the heat to the bottom of the cooking vessel. It has a covering of a glass plate. They are applicable widely in areas of the developing world where deforestation is an issue, and financial resources to purchase fuel are not much. • Solar heaters also use solar energy to heat water instead of using gas or electricity. • Solar cells also use solar power to generate electricity from the sun. 
4	**Wind energy** • Wind energy describes the process by which wind is used to generate electricity. As the wind increases, power output increases up to the maximum output of the particular turbine. Wind farms prefer areas, where winds are stronger and constant. These are generally located at high altitudes. Wind turbines use wind to make electricity. There is no pollution because no fossil fuels are burnt to generate electricity. One of India's largest windmill farm is in Kanyakumari which generates 380mW of electricity. 

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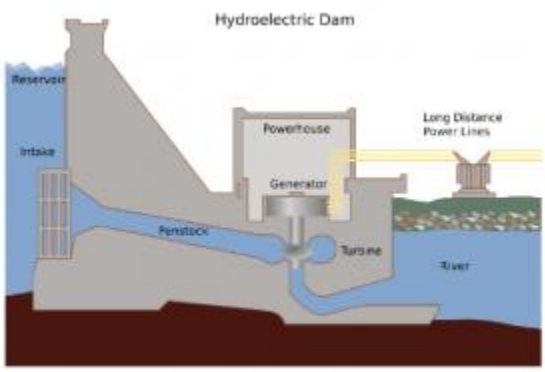
Class	VIII	Subject	Geography	Plan For	Toppers

Prd	6	Chapter	4. Mineral and Power Resources

Sub-Concepts	1.Convectional Sources of Energy
Teaching Aid To be used	SMART BOARD/ CHART PAPAR

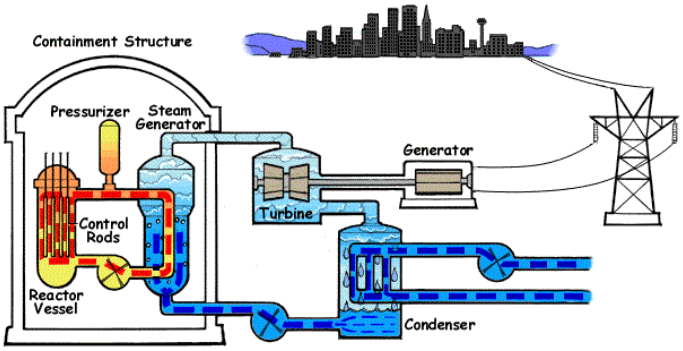
Sl. No	Step Wise (What to be done)
1	

Hydroelectricity



Basic components of a Hydro Power plant

Hydroelectricity refers to the generation of electrical power by the use of hydropower. Hydropower here mainly is the gravitational force of falling water. This does not use any water in energy production. In the previous article on the Thermal power plants, you learnt that steam was causing the movement in the turbines. Here the flow of the water from a height causes the rotation in the turbines, but more on that later. Coming back to hydroelectricity, it is the most widely used form of renewable energy accounting for 3% of the world's total energy consumption. The cost of hydroelectricity is relatively low, giving it a competitive edge as a source of energy. The average cost of electricity for a large hydropower plant is very less. Energy production is dependent on the amount of water that is let out since this can be controlled, hydropower plants have the advantage of being flexible. The output can be controlled as required by the need.

2	**What is Nuclear Energy?** Nuclear Energy is the energy in the core of an atom. Where an atom is a tiny particle that constitutes every matter in the universe. Normally, the mass of an atom is concentrated at the center of the nucleus. Neutrons and Protons are the two subatomic particles that comprehend the nucleus. There ex a st massive amount of energy in bonds that bind atoms together.  Nuclear Energy is discharged by nuclear reactions either by fission or fusion. In nuclear fusion, atoms combine together to form a larger atom. In nuclear fission, the division of atoms takes place to form smaller atoms by releasing energy. Nuclear power plants produce energy using nuclear fission. Sun produces energy using mechanism of nuclear fusion. **Nuclear Reactions** Nuclear reactions cause changes in the nucleus of atoms which in turn leads to changes in atom itself. Nuclear reactions convert 1 element into a completely different element. Suppose if a nucleus interacts with any other particles then separates without altering the characteristics of other nuclei than the process is called as nuclear scattering rather than specifying it as a nuclear reaction. This does not imply to radioactive decay. One of the most evident nuclear reaction is nuclear fusion reaction that occurs in fissionable materials producing induced nuclear fission.
3	**Geothermal energy** Geothermal energy is the heat energy that we get from hot rocks present in the earth's crust. So Geothermal wells release greenhouse gases trapped within the earth and but these emissions are much lower per energy unit than the fossil fuels. This energy generally involves low running costs since it saves 80% on fossil fuels. Due to this, there is an increase in the use of geothermal energy. It helps in reducing global warming and does not create pollution.
4	**Tidal energy** Tidal power is a form of hydropower that converts the energy of tides into electricity. In areas where the sea experiences waves and tides, we can generate electricity using tidal power. India may take up "ocean thermal level conversion" by which it will be able to generate 50,000mW of electricity to meet the power requirements.

5	**Biomass energy-** Biomass is the organic matter that originates from plants, animals, wood, sewage. These substances burn to produce heat energy which then generates electricity. The chemical composition of biomass varies in different species but generally, biomass consists of 25% of lignin, 75% of carbohydrates or sugar. Biomass energy is also applicable for cooking, lighting, and generation of electricity. The residue left after the removal of biogas is a good source of manure. Biomass is an important energy source contributing to more than 14% of the global energy supply.