

## Introduction

- Minerals are scattered throughout the crust.
- They are not evenly distributed, some are not easily accessible i.e. Antarctica, arctic.
- Created in natural process without human interference, identified by colour, density, hardness, chemical property.



## Types of minerals

- There are over 3k different types of minerals (metallic and non metallic)
- **metallic**
- Conduct heat and electricity, lustre and shine have ferrous and non ferrous are its sub groups. ex manganese and bauxite, iron ore.

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Iron ore



bauxite



Manganese



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- **Non metallic-** do not contain metals and are mineral fuels like coal, petroleum are nonmetallic ex-limestone, mica, gypsum
- **Ferrous-**these minerals contain iron ex.manganese,iron ore, chromite.
- **Non ferrous-** do not contain iron but many contain metals like gold,silver,copper or lead.





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gypsum



mica



limestone



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## Extraction of minerals

- **Mining**-taking out minerals from rocks buried under the earth's surface.
- **Open cast mining**-taking out minerals from the surface layer.
- **Shaft mining**-done in great depth underground mining (deep bore-passage or tunnel is called shaft).





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Open cast mining



Shaft mining



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- **Drilling**-petroleum and natural gas are far below earth surface and wells are created to take them out.
- **Quarrying**-minerals that lie near the surface of the earth are simply dug out.

drilling



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## Quarrying



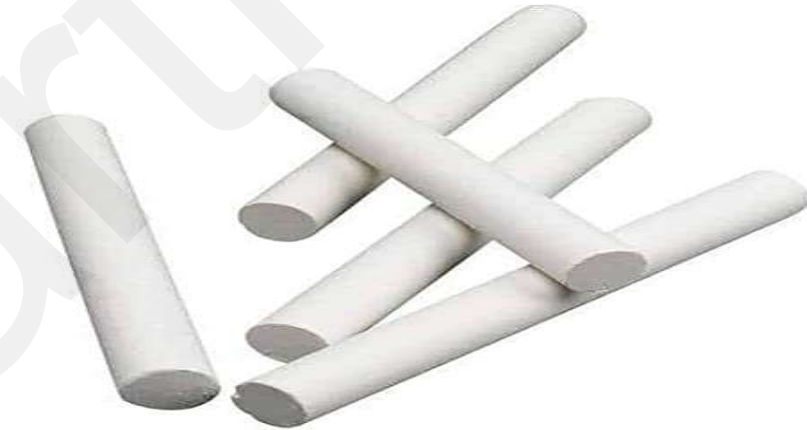
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## Distribution of minerals

- Minerals are found in igneous, sedimentary and in metamorphic rocks.
- Meta,ign-metallic
- Sedi-non metallic.
- Ex-limestone in France, manganese in gorgia,phosphorus in Algeria.



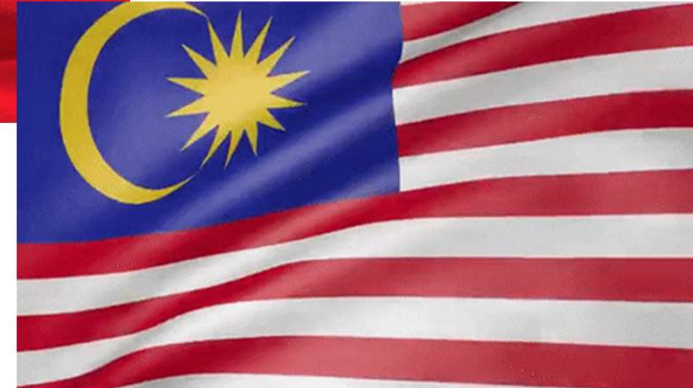
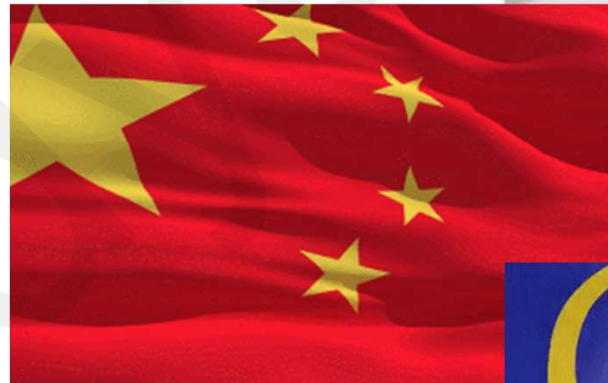


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## Asia

- China produces more than half of the world's tin along with Malaysia, Indonesia, Asia produces manganese, bauxite, nickel, zinc, copper



## Europe

- Europe is the leading producer of iron ore in the world.
- Countries-Russia, Ukraine, Sweden, France.
- Eastern Europe and Russia-zinc, lead, copper, nickel, manganese.





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## North America

- Minerals are basically in 3 zones.
- **Canadian region of north-**  
gold, nickel, iron ore,  
uranium, copper.
- **Appalachian region-**coal
- **Western cordillera-**  
gold, silver, lead, zinc etc.

## North Canada



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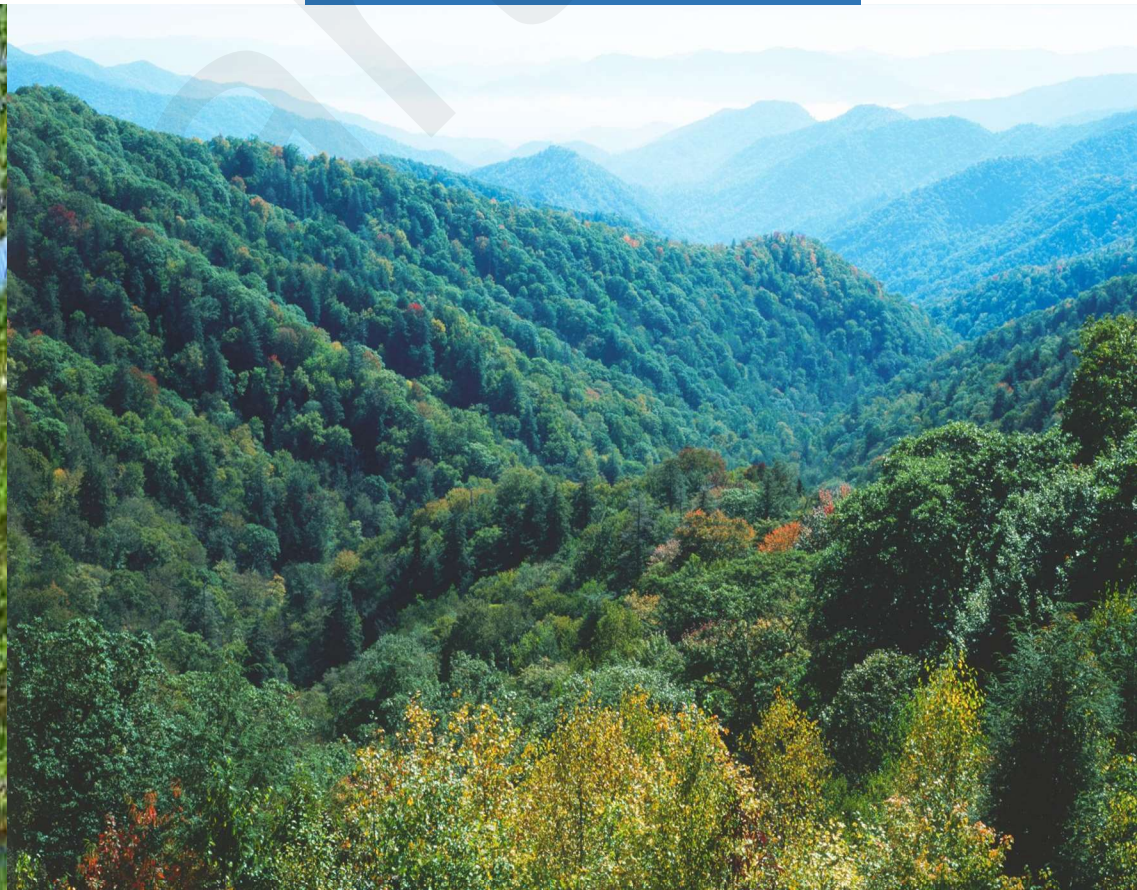
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**Western cordillera**



**Appalachian mount.**



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## South America

- Brazil is the largest producer of iron ore and tin along with Bolivia.
- **South America-** gold, silver, zinc, chromium, manga, platinum, diamonds.
- Minerals oil is found in argentinam, chile, peru, Colum bia.



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## Africa

- Largest producer of gold, minerals resources, diamonds, platinum.
- Other minerals-iron ore, chromium, cobalt
- Oils- Nigeria, Libya, Angola.





## Australia

- Largest producer of gold, bauxite, diamond, iron ore, nickel, copper, lead, zinc etc.



## Antartica

- Iron ore, gold, silver, oils are in commercial quantity.
- Coal and mineral resources and iron is also there. (east antarc, Transarctic mount.





## Distribution in India

### ☐ Minerals

- Jharkhand, Odisha, mp, goa, maharashtra, karnataka.

### ☐ Bauxite

- Jharkhand, mp, gujrat, Odisha, T.N.

### ☐ Mica

- Jharkhand, bihar, A.P, rajasthan (largest producer and exporter)

### ☐ Copper

- M.P, A.P, chattisgarh, karnataka.



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## ☐ Manganese

- M.P,A.P,chattisgarh,Odisha, karnatka.

## ☐ Limestone

- Jharkhand,Odisha,M.P,chatt isgarh,rajasthan.

## ☐ Gold

- Deepest mine in the world,(kolar in Karnataka)

## ☐ Salt

- Seas,lakes,rocks(leading producer and exporter)



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## Uses of minerals

- **Minerals** -used for gems that is hard in nature,industries,jewellery.
- **Copper**- pipes, coins
- **Silicon**-computer industries obtained from quartz.
- **Aluminum** is obtained from bauxite, used in automobile and airplane ,bottles,buildings,kitchen cookware.



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## Conservation of minerals

- People are consuming these minerals in much more higher number than it is formed.
- Recycle of metals and conservation should be done.
- They are non renewable (takes thousands of years to form)



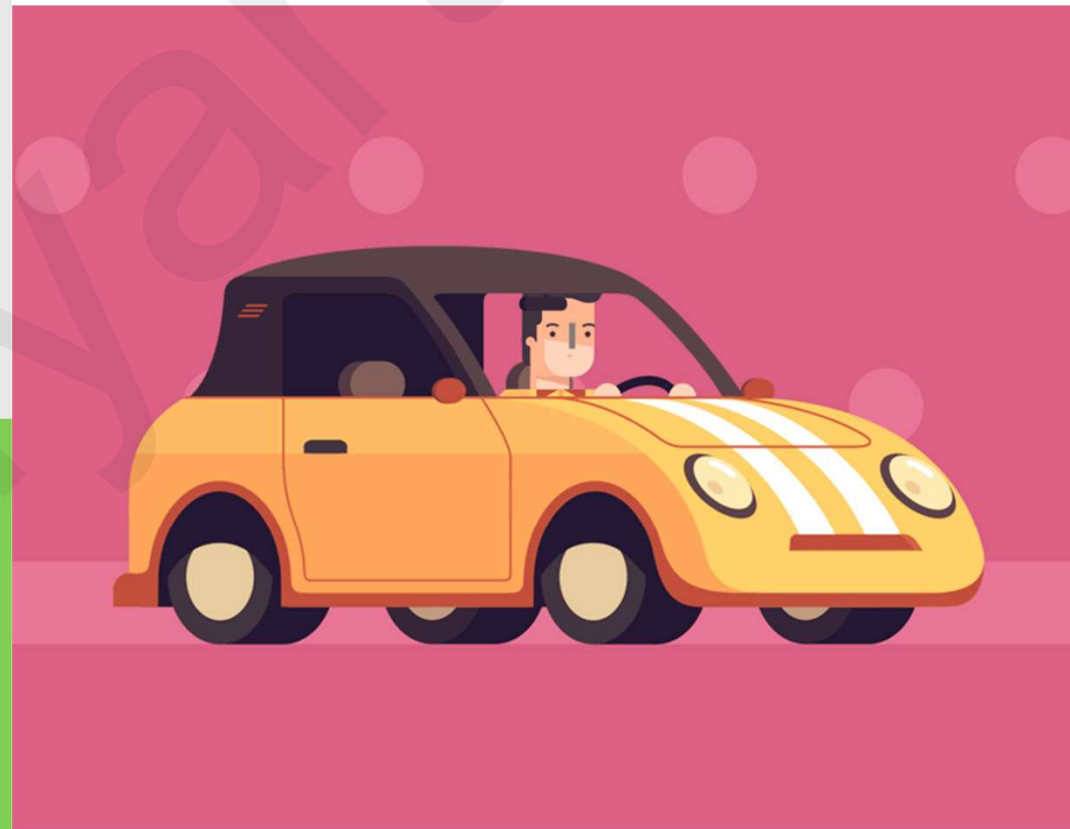
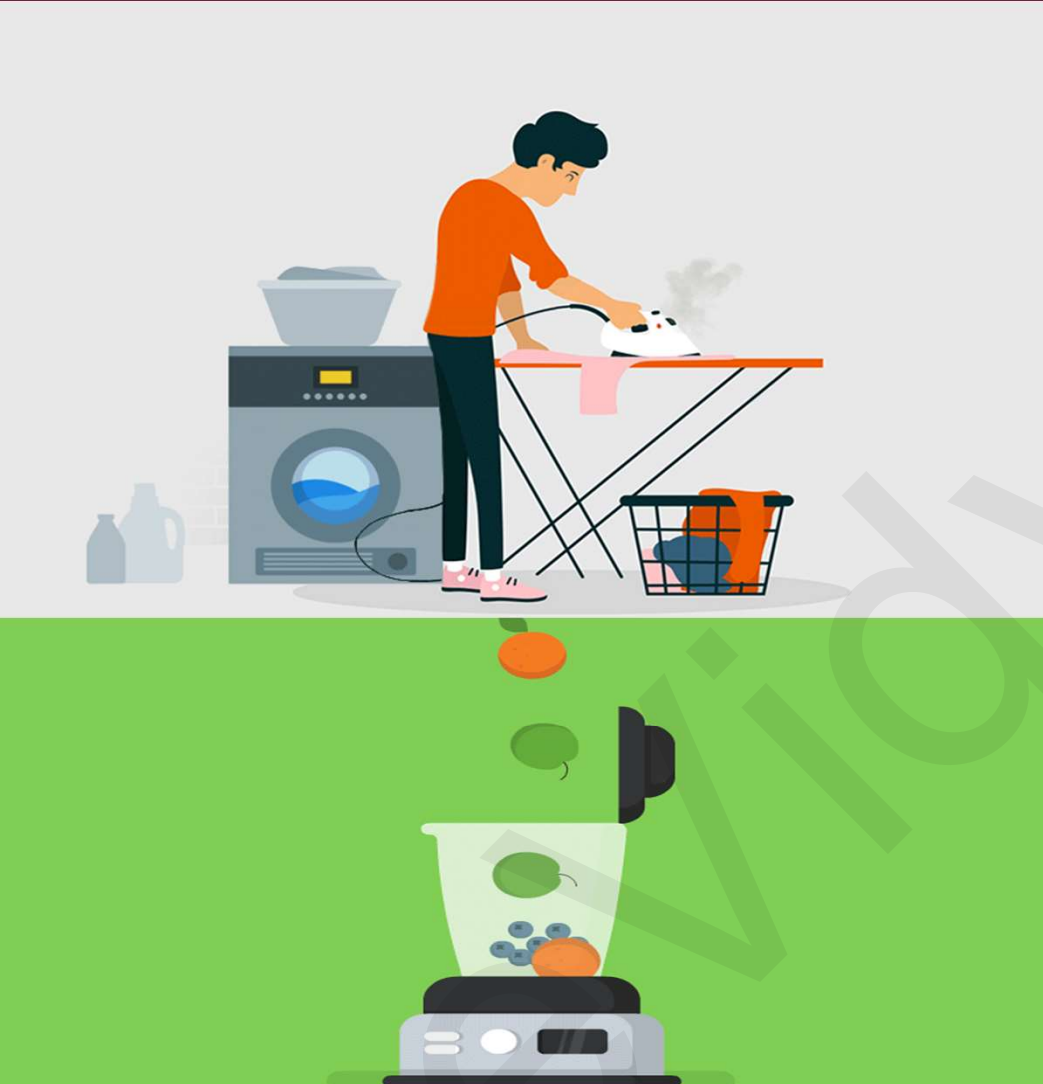
## Power resources

- **Power resources** are used in agriculture, industries, transport, communication, defense.
- Story of sunny
- Geyser
- Iron press
- Blender
- Broadly categorize in two-
- Conventional and non conventional.



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## Conventional sources

- Which have been commonly used for a long time ex-fossil fuels, firewood are main ones.
- **Fire wood**
- Widely used for cooking, heating 50% comes from the village.
- **Fossil fuels** -remain of plants and animals which were buried under the earth for millions of years got converted by heat and pressure turned into fossil fuels such as coal,petroleum,natural gas



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## Coal and petroleum

- Used in industries, i.e. irons and steel, steam engines also generate electricity from coal is called thermal energy.
- It is formed in millions of years ago.
- It is also called as buried sunshine



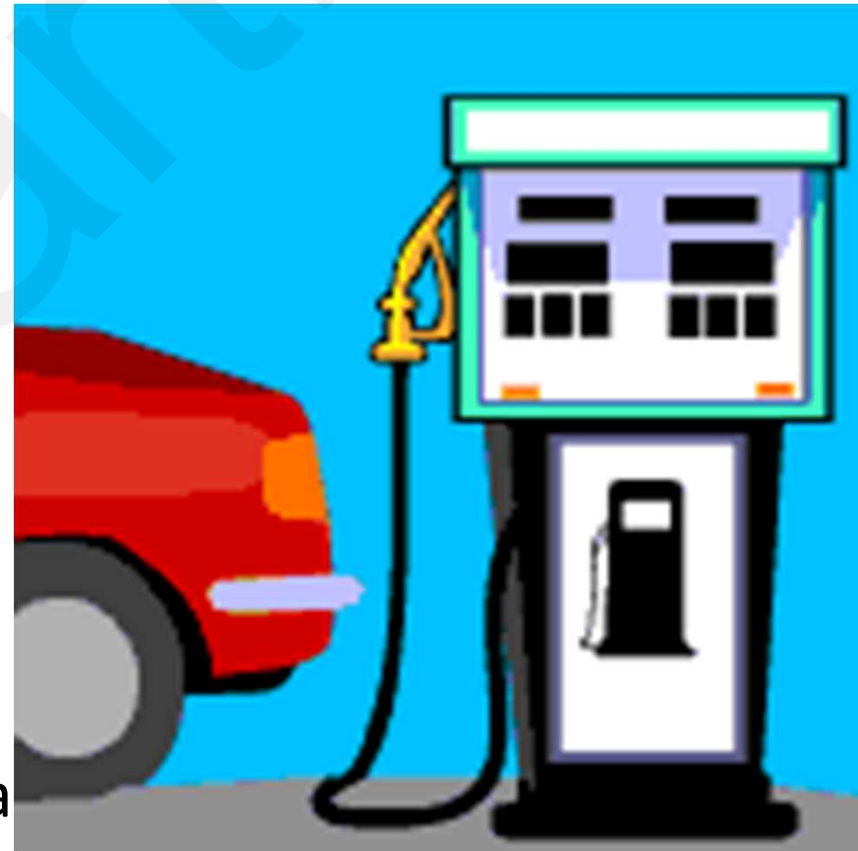


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### petroleum

- It is found between the layers of rocks and is drilled from oil fields.
- It is then sent to refinery and produces variety patrol,kerosene,wax,lubricant,diesel.
- Also known as black gold as it is very valuable.
- Found In Saudi, qatar,iran,Iraq.
- In India it is found in Mumbai,assam,Godavari and Krishna delta.



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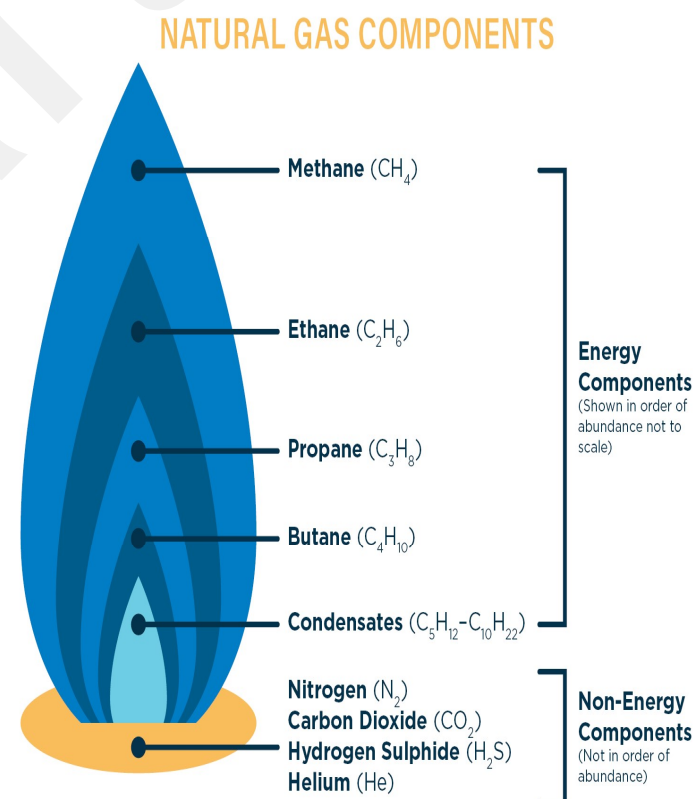
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## Natural gas and hydal power.

- It is found with petroleum.
- Used in domestic and industries as a fuel.
- U.K, Netherlands, Norway are major producers.
- **In India** – Tripura, jaisalmer, Mumbai
- Burning of these fuels are also alarming
- Non convention sources are a good altern.





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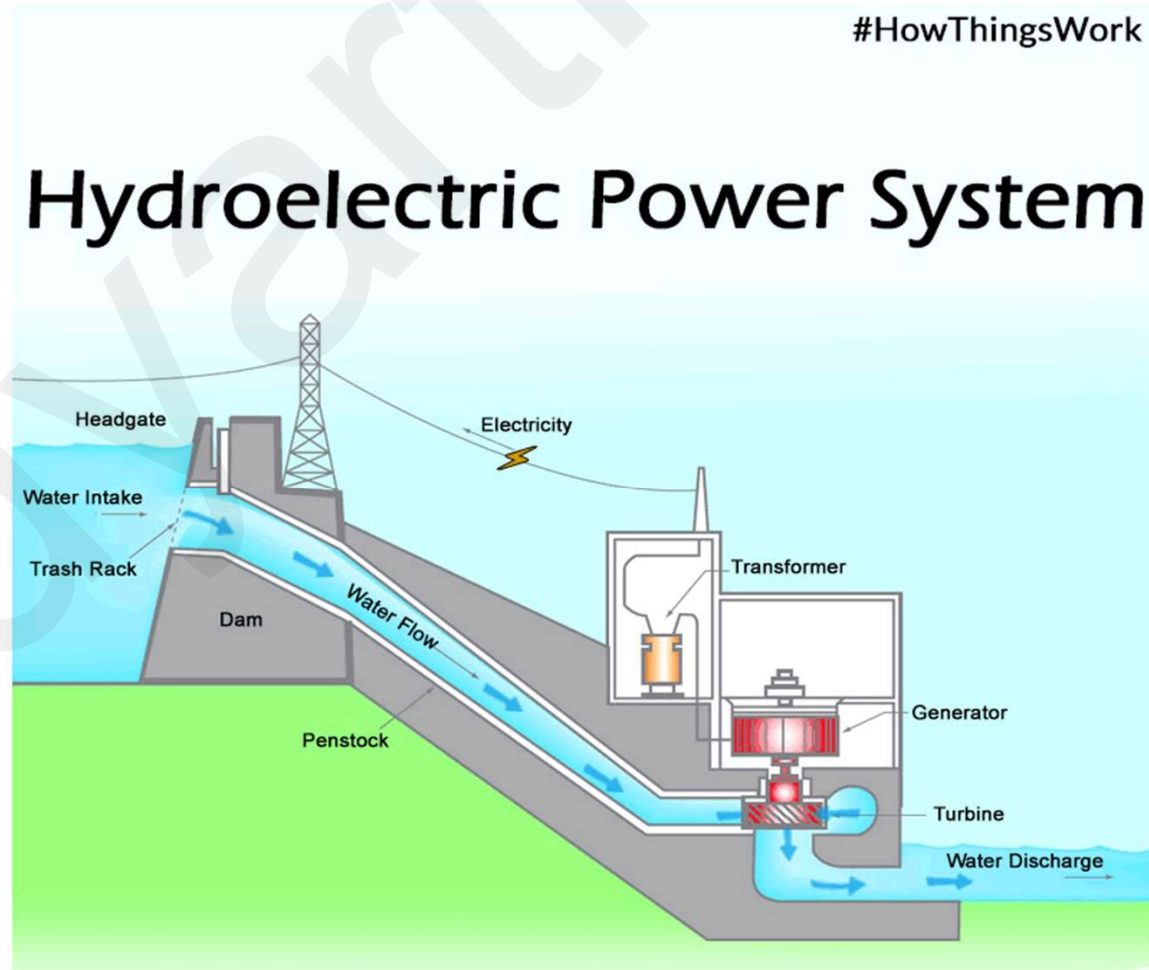
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## Hydel

- rain or river water is stored in dams and is made to fall from heights.
- Water flow through pipes
- The moving turbine blades are there.
- Then the generator works and produces electricity.
- The water is discharge for irrigation.



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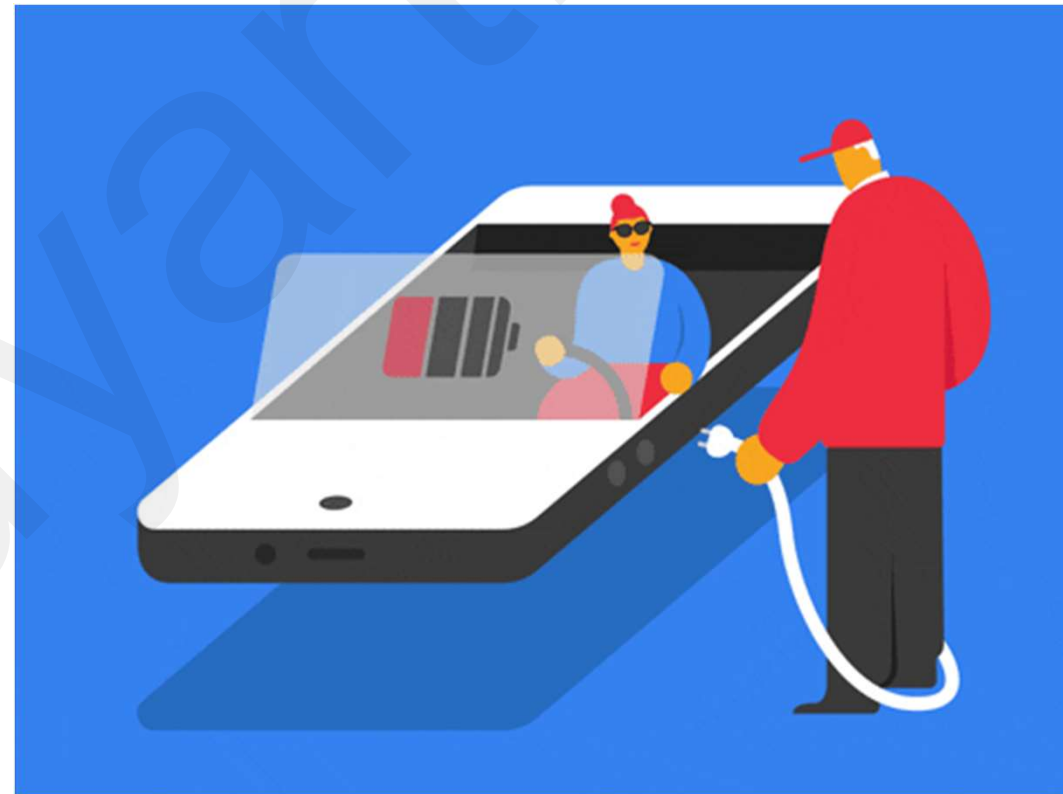
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- $\frac{1}{4}$  of world's electricity is produced by hydel power.
- Leading producers are Norway, Brazil, China.
- In India  
Bhakra-Nangal, Gandhi Sagar, Nagarjun Sagar, Damodar Valley.

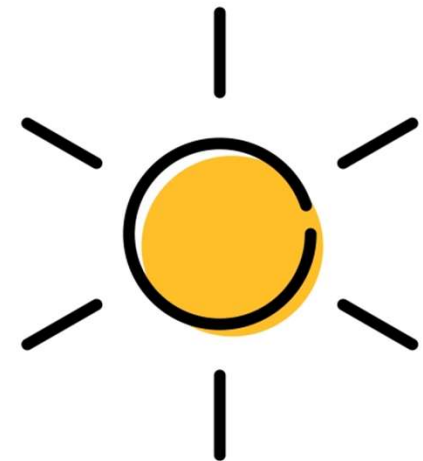


## Non conventional sources of energy

- Usage of conventional source causes environmental pollution and can be exhausted soon.
- There is need to use renewable energies.

### Solar energy

- Trapped sun rays in the solar cells can produce electricity and also joined to panels to generate heating and lighting purpose.



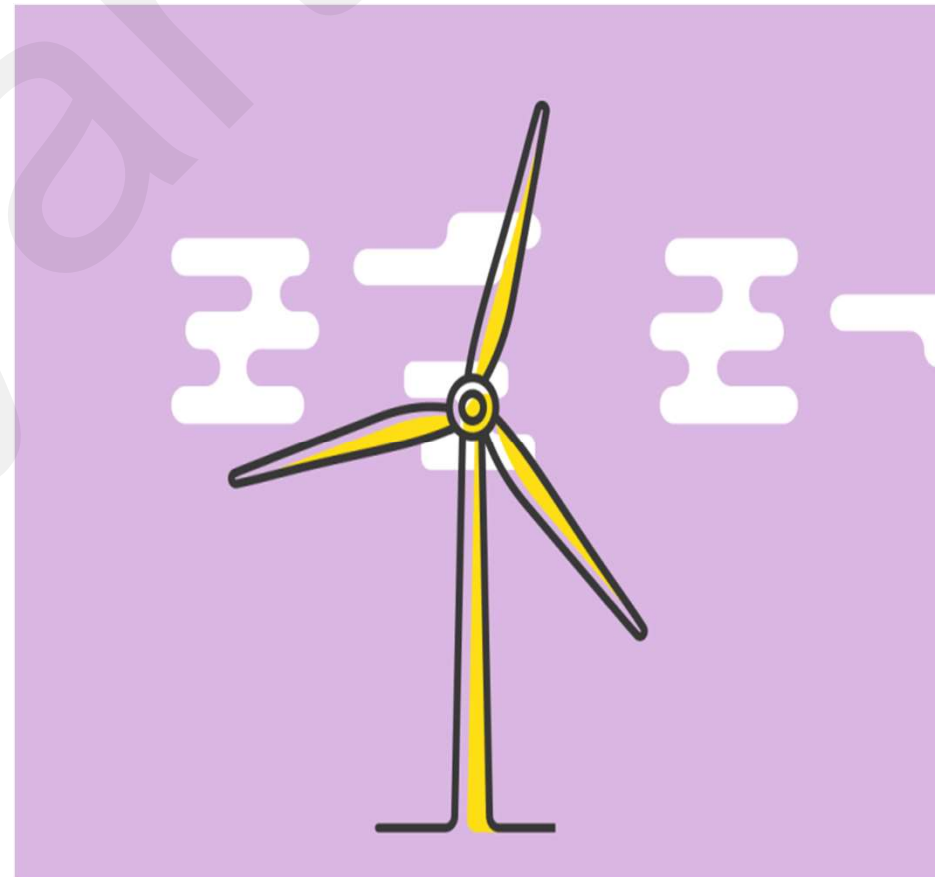
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- Ex solar cooker, solar dryer, solar heater.
- It can benefits a lots of countries with abundance of sunshine.

### wind

- Wind mills are connected to the generator and produces electricity.
- Use to grind grain, lifting water.





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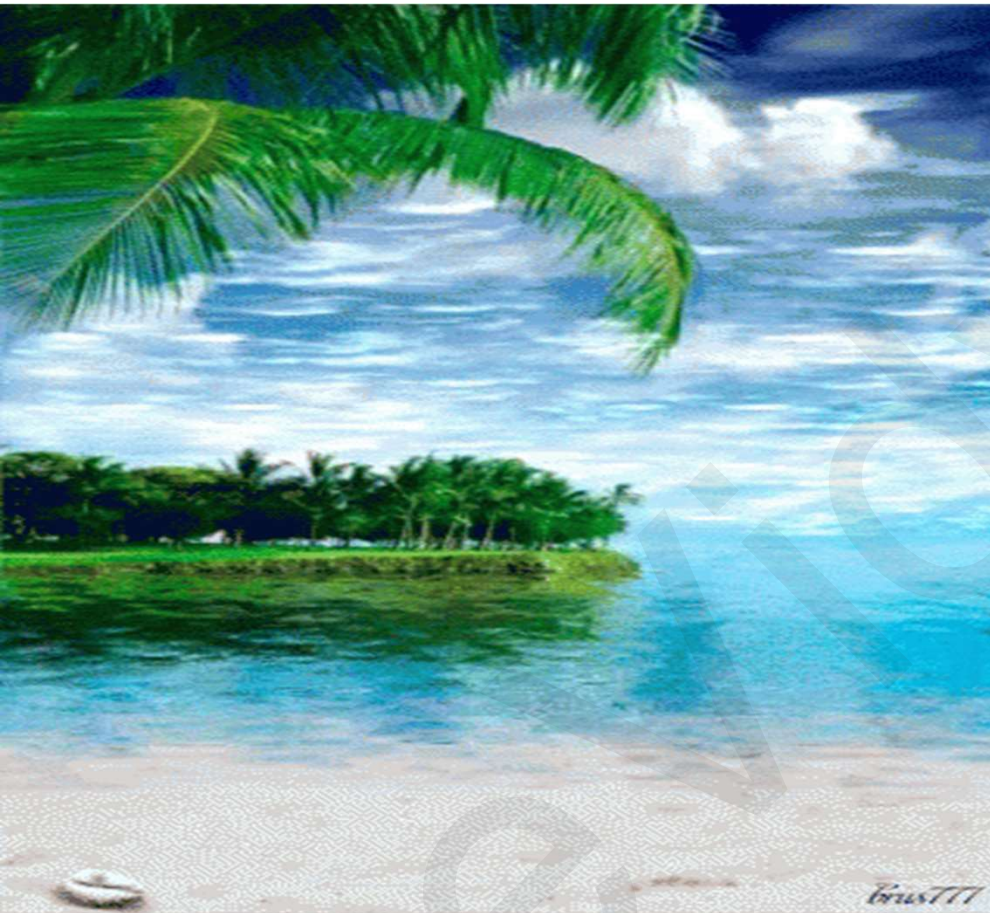
- Strong and steady wind passes in mount. And in costal region.
- Countries-  
Germany,Denmark,spain,  
USA.



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## Nuclear and geothermal energy

- It is obtained from the radio active like elements uranium, thorium.
- Splitting of uranium atoms generates heat that produces steam which is used to generate electricity.
- Greatest producers, USA, Europe, in india, rajasthan, Jharkhand





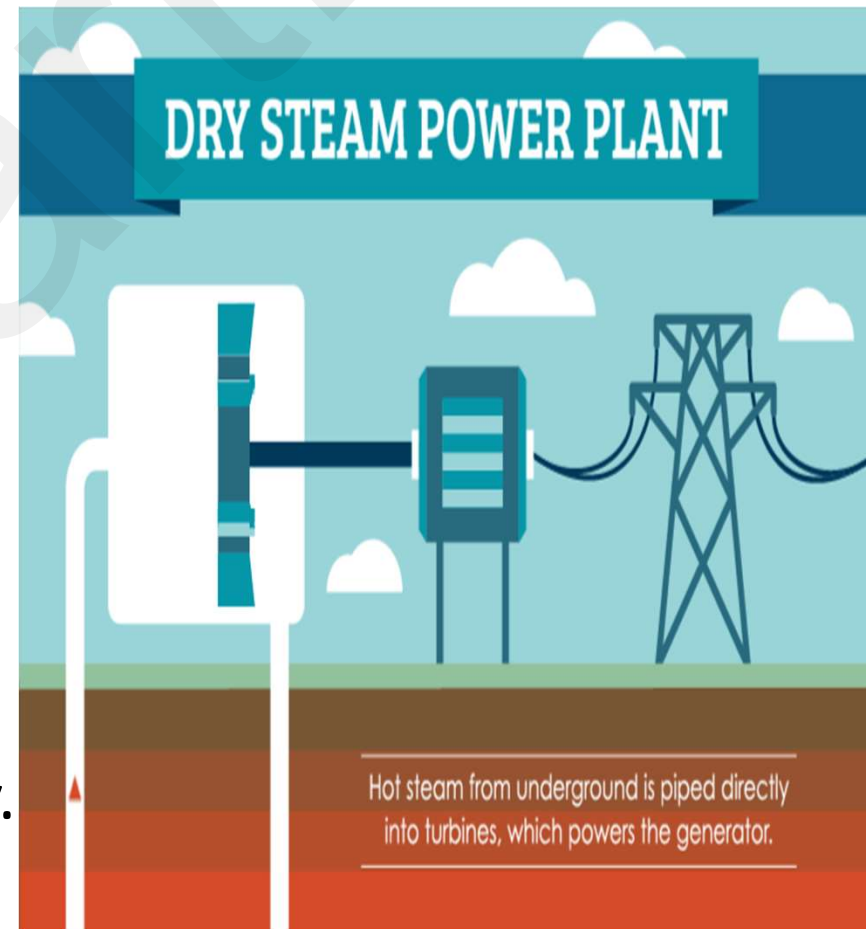
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- Thorium is found in kalpakkam in kerela tamilnadu,tarapur in Maharashtra,kota in rajasthan,narora in U.P and kaiga in Karnataka.

### geothermal

- Heat energy is obtained from the earth.
- This heat surfaces in hot springs and can may be use to produce electricity.



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- Used for cooking, bathing.
- USA, newzeland, plillipines ,iceland are the major countries.
- In India plants are located In manikaran in H.P, puga valley in ladakh.



## Tidal energy and biogas

- Produces from tides used to turn the turbine installed in the dams to produces electricity.
- India have huge tidal plants-gulf of katchh,Russia,france.





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### biogas

- Organic waste like cow dung, dead plants, kitchen waste is used to make biogas which is later decomposed by bacteria's.
- Excellent fuel for vehicles, heating and electricity.
- Energy is everywhere but to harness them it is difficult as well as costly.



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## Exercises

### Question no.1

**Answer the following Question**

**(i) Name any three common minerals used by you every day.**

**Ans.** Three common minerals used by us in day-to-day life are copper, iron and salt.

**(ii) What is an ore? Where are the ores of metallic minerals generally located?**

**Ans.** An ore is a rock from which minerals are mined. Ores of metallic minerals are found usually in igneous and metamorphic rock formations.

**(iii) Name two regions rich in natural gas resources.**

**Ans.** Two regions in India rich in natural gas resources are: Jaisalmer and Krishna-Godavari delta.

**(iv) Which sources of energy would you suggest for :**

**(a) rural areas (b) coastal areas (c) arid regions**

**Answer.**

**(a)** For rural areas, solar energy and wind energy are feasible options.

**(b)** For coastal areas, wind energy and tidal energy are good choices.

**(c)** For arid regions, wind energy and solar energy are feasible, for reasons similar to rural areas.



**(v) Give five ways in which you can save energy at home.**

**Answer.**

1. Promoting the use of solar energy as much as possible.
2. Using biogas as cooking fuel.
3. Drying clothes in sunlight instead of electric dryers to prevent emissions and unnecessary use of electricity.
4. Avoiding misuse of electricity; switching off fans and lights when not required.
5. Using pressure cookers for cooking.

**Quest 2. Tick the correct Answer:**

**(i) Which one of the following is not a characteristic of minerals?**

- (a) They are created by natural processes.
- (b) They have a definite chemical composition.
- (c) They are inexhaustible.
- (d) Their distribution is uneven.

**(ii) Which one of the following is not a producer of mica?**

- (a) Jharkhand (b) Karnataka (c) Rajasthan
- (d) Andhra Pradesh

**(iii) Which one of the following is a leading producer of copper in the world?**

- (a) Bolivia
- (b) Ghana
- (c) Chile
- (d) Zimbabwe



**(iv) Which one of the following practices will not conserve LPG in your kitchen?**

- (a) Soaking the dal for some time before cooking it.
- (b) Cooking food in a pressure cooker.
- (c) Keeping the vegetables chopped before lighting the gas for cooking.
- (d) Cooking food in an open pan kept on low flame.

**Quest 3. Give reasons.**

**(i) Environmental aspects must be carefully looked into before building huge dams.**

**Ans:** Building huge dams causes destabilization of the natural habitats of plants and wild animals living in the area. These environmental aspects should be looked into before building dams.

**(ii) Most industries are concentrated around coal mines.**

**Ans:** Presence of coal mines around industries reduces the costs of transportation and also ensures easy availability of fuel.

**(iii) Petroleum is referred to as “black gold”.**

**Ans:** Petroleum is a very valuable fossil fuel. It is used for running all machineries, transport vehicles, from a bicycle to an aero plane.

**(iv) Quarrying can become a major environmental concern.**

**Ans.** After quarrying, pits are not covered so they may cause environmental hazards.

**Quest 4. Distinguish between the followings.**

**(i)** Conventional and non-conventional sources of energy.



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Conventional sources of energy	Non-conventional sources of energy
1. Conventional power source are those that have been in use for a long time.	1. Non-conventional power source are those power source that have come into use recently due to the depleting conventional resources and growing awareness.
2. Examples: Fossil fuels and firewood .	2. Examples: Solar energy, tidal energy.

## (ii) Biogas and natural gas.

Biogas	Natural gas
1. Biogas is obtained from the decomposition of organic waste.	1. Natural gas is obtained as a by product from the extraction of petroleum.
2. It is a renewable source.	2. It is a non-renewable source.
3. It is a non-conventional source.	3. It is a conventional source.

## (iii) Ferrous and non-ferrous minerals

Ferrous minerals	Non-ferrous minerals
1. Ferrous minerals are those containing iron.	1. Non-ferrous minerals are those not containing iron.
2. They are magnetic.	2. They are non- magnetic.
3. Examples: Iron ore	3. Example: Limestone.

## (iv) Metallic and non-metallic minerals.

Metallic minerals	Non-metallic minerals
1. Metallic minerals contain metals in raw form.	1. Non-metallic minerals do not contain metals.
2. Examples : Iron ore, Bauxite	2. Examples: Limestone, gypsum.