

Quadrant II – Transcript and Related Materials

Programme: Third Year Bachelor of Arts

Subject: Geography

Course Code: GED 102

Course Title: Physical Geography of India

Unit: III-B Natural Resources

Module Name: Mineral and Power Resource Distribution and Utilisation: Coal

Module No: 31

Name of the Presenter: Asst. Prof. Ms. Tanvi V. Deshpande

Notes

- Coal is non-renewable, inflammable organic substance mainly composed of hydrocarbons.
- Coal is commonly found in seams of sedimentary rocks, often found sandwiched between layers of rock in the earth.
- Coal is one of the most important sources of energy and has formed the basis of industrial revolution.
- Due to its high utility as a source of energy and as a raw material for a large number of industries, it often called as *black gold*.
- Coal is the main power source in industrial use for the last two centuries.
- 2nd largest fuel source contributing 27% of global energy production
- Coal was, is and will continue to be the mainstay of power generation in many countries including India.

Formation of Coal

- Coal has originated from organic matter.
- Large tracts of forest lands were buried under sediments in the geological past i.e. in the Carboniferous age.

- As years passed, more and more plants died and many such layers were formed. The topmost layers compressed the layers beneath it.
- Heat and pressure caused some physical and chemical changes and eventually, some carbon-rich deposits were formed.
- Most of the coal deposits are of carboniferous age, i.e. about 300 million years old.
- More recent deposits of Tertiary age are usually composed of lignite and peat, which represents an early stage of coal formation and is still being formed today.

Types of Coal

Depending upon its grade from highest to lowest, coal is categorized into four types:

1. Anthracite

- It is the best quality coal and contains 80-95% carbon.
- It is very hard, compact, shiny, free of impurities, having less moisture content.
- It has the highest heating value and is the most prized among all other varieties of coal.
- This type of coal has comparatively small reserves.
- It burns well and leaves behind little ash on burning.

2. Bituminous

- This is the most widely used coal.
- It yields bitumen or tar hence called as bituminous.
- It contains 40-80% of carbon.
- Its calorific value is very high due to high proportion of carbon and low moisture content.
- When burnt, it gives smoke and leaves ash.

3. Lignite

- Also known as brown coal and contains 40-55% carbon and is a lower grade coal.
- It has high moisture content of around 35% and gives out much smoke but little heat on burning.

4. Peat

- This is the first stage of transformation of wood into coal and contains less than 40-55% carbon and a lot of moisture.
- It gives less heat, emits more smoke and leaves a lot of ash after burning.
- It is used as domestic fuel.

Distribution of Coal in India

- Coal is not evenly dispersed across India.
- Most of the coal deposits are found in the north-eastern part of the country.
- More than two-thirds of India's coal is produced by five states- Jharkhand, Odisha, Chhattisgarh, West Bengal and Madhya Pradesh.
- About 40% of India's total coal production comes from just two states, namely Jharkhand and Chhattisgarh.
- Other deposits are found in eastern and southern Madhya Pradesh, western part of West Bengal, eastern part of Andhra Pradesh and eastern part of Maharashtra.
- Indian coal reserves are mostly shallow, at a depth of up to 300 meters, and are typically exploitable using surface mining methods.

Coal production in India

- India holds the fifth-largest coal reserves in the world.
- A 2018 report estimated the India possesses over 319 billion tonnes of proven, indicated and inferred coal reserves.
- The top five states in India with the largest coal reserves are Jharkhand (83.15 billion tonnes), Odisha (79.30 billion tonnes), Chhattisgarh (57 billion tonnes), West Bengal (31.67 billion tonnes) and Madhya Pradesh (27.99 billion tonnes).

Advantages of Coal

- Coal is found most abundantly in the world and evenly distributed unlike petroleum.
- It is easy to mine, if deposits are near surface.
- It gives many by-products-tar, synthetic fibers, raw materials for plastics, detergents.
- Coal is used to obtain thermal power.

Disadvantages of Coal

- Coal is a non-renewable natural resource.
- It is heavy and bulky for transportation and transportation cost is more.
- Huge labour force is required for extraction of coal.
- It is slow in burning and much heat is wasted.
- When burned, coal gives off atmospheric pollutants, including greenhouse gases.

Uses of Coal

- Around the world, coal is primarily used as a fuel to produce heat.
- Coal is used in thermal power generation to produce electricity.
- Numerous synthetic compounds (e.g., dyes, oils, waxes, pharmaceuticals, and pesticides) can be derived from coal.
- Coal is also an essential ingredient in the production of specialist products such as activated carbons, carbon fibre and silicon metals.