

Coal

By Ashmal Irfan and Tony Chang
Block 2 - POE

Coal: A Nonrenewable Resource

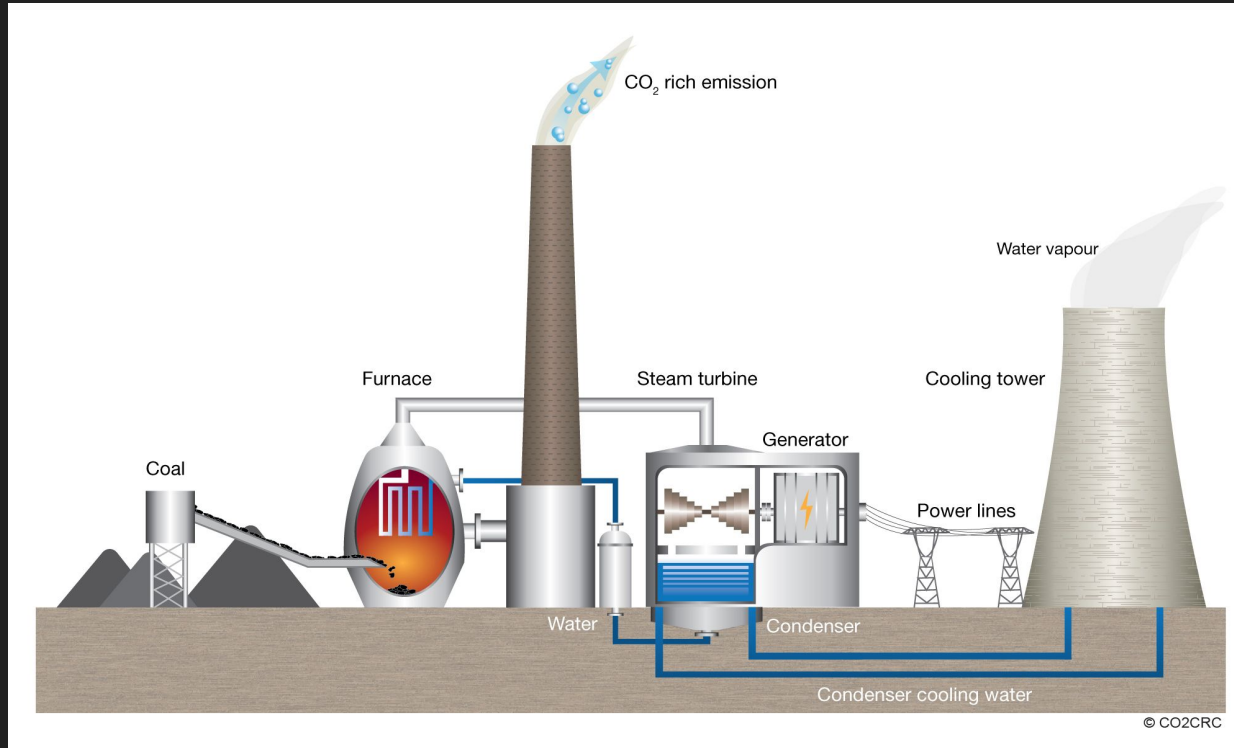
- Coal: A type of sedimentary rock composed of carbons and hydrocarbons.
- Forms over millions of years.
- Derived from stored energy of decayed plants.
- Compressed through carbonization with heat and pressure.



Coal: How It Is Made Into Energy

1. Transported from a mine to power plant.
2. A machine called a pulverizer crushes coal in a fine powder.
3. Coal powder mixes with hot air.
4. The burning coal heats water in a boiler, creating steam.
5. The steam powers a spinning turbine.
6. The turbine powers an electric generator.

Coal: How It Is Made Into Energy



Coal: Costs of Construction and Operation

- A estimated cost of a coal plant had reached \$3,500 per kilowatt (kW).
- That would mean 600 megawatts (mW) coal plant in 2008 would cost around \$2 billion.
- These numbers are increasing every year.



Coal: Transmission and Transportation Needs

- Heavily depends on train transport.
- 70% of US coal is moved by train.



Coal: Widespread Use

- Most abundant fossil fuel in United States.
- 90% of US coal used in power plants.
- Makes up a large portion of US energy.
- 39% of total US generated power (2014) derived from coal.



Coal: Emerging Technologies

- Carbon Capture and Storage
 - Captures carbon dioxide and stores it underground where CO₂ dissolves from pressure.
- Low nitrogen oxide burners
 - Reduces the creation of NO_x by changing the combustion process.

Coal: Environmental issues

- Surface mining causes water pollution and landscape change.
- Underground mining vents methane.
- Coal gives off emissions like CO₂, SO₂, heavy metals into the atmosphere.

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