

Coal

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11-B



The Main Goal of Coal

1. Coal is a combustible sedimentary rock made out of both carbons and hydrocarbons
 - a. It is made from layers of dead plant life trapped at the bottom of swamps
2. Coal is a nonrenewable energy source.
 - a. It is the second most used source for energy in the world
 - b. Over 30 percent of the world uses it
 - c. It is the most produced abundant fossil fuel in the US
3. There are many different types of coal that used for various things



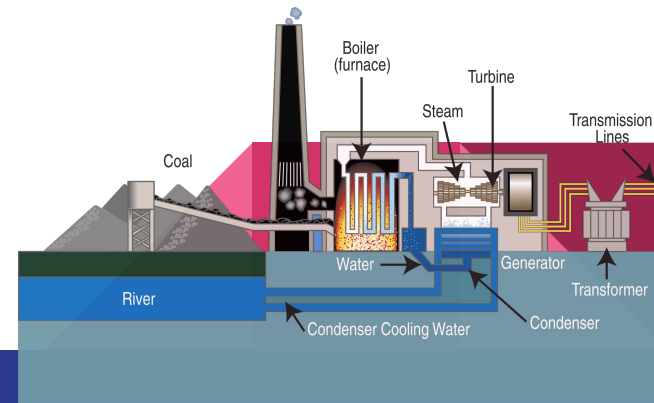
The Main Goal of Coal(cont.)

1. It primarily used for generating power(Steam/Thermal Coal)
 - a. Over 40 percent of power worldwide
 - b. 50 percent of US power comes from oil
2. It is also used in steel production(Coking/Metallurgical Coal)
3. The 4 types of coal used ranked by energy efficiency are
 - a. Lignite, Subbituminous, Bituminous(the most common), Anthracite



How it Functions

1. As mentioned before coal is primarily used to generate electricity
2. The coal is mined from the surface or more dangerously from beneath the ground
3. The coal is then sent to a coal-fired power plant where it is combusted to produce fires
4. This heats water that eventually turns into steam that is incorporated into steam turbines and generators to create power



Technological Obstacles/Disruptions

Alternative energy refers to energy sources that have no undesired consequences such for example fossil fuels or nuclear energy. Alternative energy sources are renewable and are thought to be "free" energy sources. They all have lower carbon emissions, compared to conventional energy sources. These include Biomass Energy, Wind Energy, Solar Energy, Geothermal Energy, Hydroelectric Energy sources. Combined with the use of recycling, the use of clean alternative energies such as the home use of solar power systems will help ensure a sustainable lifestyle.



Technological Obstacles/Disruptions (cont.)

Solar Power

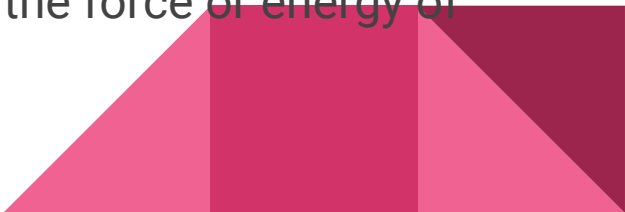
Solar power is a renewable source of energy which uses the sun rays to generate power

Wind Power

Wind power is a renewable source of energy which uses the currents of the wind to generate power

Hydroelectric Power

Hydropower is a renewable source of energy which uses the force or energy of moving water to generate power



Consequences

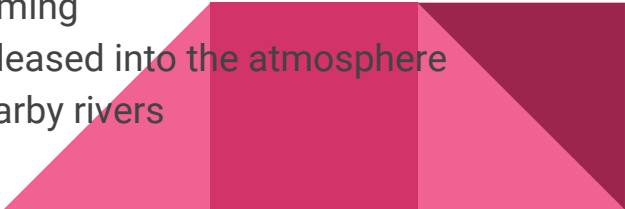
1. Social

- a. The burning of coal has adverse effects on the health of those near these mines
- b. These range from minor respiratory problems to higher cancer rates to increased mortality to birth defects

2. Economic

- a. The aforementioned health problems cost billions to treat, manage and fix
- b. There are millions of dollars paid in subsidies for coal companies
- c. Taxpayers having to pay for environmental disasters

3. Environmental

- a. The burning of coal is one of the leading causes of global warming
 - b. When burned many of impurities dormant within the coal is released into the atmosphere
 - c. Fish are often poisoned by illegal coal dumps that occur in nearby rivers
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Political and economical obstacles

Federal laws passed in the 1960s and 70s, namely the Clean Air Act and the Clean Water Act, required industries to reduce pollutants released into the air and the water. Laws also were passed that required coal companies to reclaim the land destroyed by strip mining Which is called...The Surface Mining Control and Reclamation Act of 1977

SMCRA created two programs: one for regulating active coal mines and a second for reclaiming abandoned mine lands. SMCRA also created the Office of Surface Mining, an agency within the Department of the Interior, to promulgate regulations, to fund state regulatory and reclamation efforts, and to ensure consistency among state regulatory programs.



Political and economical obstacles

Regulatory Program

The regulation of active mines under SMCRA has five major components:

- **Standards of Performance.** SMCRA and its implementing regulations set environmental standards that mines must follow while operating, and achieve when reclaiming mined land.
 - **Permitting.** SMCRA requires that companies obtain permits before conducting surface mining.
 - **Bonding.** SMCRA requires that mining companies post a bond sufficient to cover the cost of reclaiming the site.
 - **Inspection and Enforcement.** SMCRA gives government regulators the authority to inspect mining operations, and to punish companies that violate SMCRA.
 - **Land Restrictions.** SMCRA prohibits surface mining altogether on certain lands, such as in National Parks and wilderness areas.
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Positive Environmental Impacts

1. Cheapest source of energy, It extremely cheaper than nuclear, natural gas, oil.
2. Coal also provides a stable source of energy and there is a very plentiful supply both in the U.S. and in other foreign countries.
3. Coal provides many jobs in removing coal from the earth, transporting it to the utility, burning it, and properly disposing of coal ash.
4. Coal is American made, We do not have to import this product into this country.
5. Coal can be mined and burned with little environmental impact compared to other forms of energy
6. Coal provides 56% of the electricity used in the nation each day.



Negative Environmental Impacts



All fossil fuels, such as coal, petroleum, and natural gas, contain sulfur. When these fuels are burned, the organic sulfur is released into the air where it combines with oxygen to form sulfur dioxide. Sulfur dioxide is an invisible gas that has been shown to have adverse- effects on the quality of air we breathe. It also contributes to **acid rain**, an environmental problem that many scientists think adversely affects wildlife (especially fish) and forests.

The coal industry is also concerned about the carbon dioxide that is produced when coal is burned. Carbon from burning coal reacts with air to form carbon dioxide. When carbon dioxide and other gases, such as those emitted from automobiles, accumulate in the earth's atmosphere, they form a shield that allows the sun's light and heat in, but doesn't let it out. This condition is called the **greenhouse effect**.



Can The Negatives Be Remediated?

Since the carbon is released from burning coal is put into the atmosphere it won't just take a day or two to remove the amounts released which means negative environmental impacts are long term impacts that will take months or years to fix.

Coal production companies have been dealing with acid rain, and the greenhouse effect for years because of the fact that the problem is long term.



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