

## Trends of U.S. Fossil Fuel Consumption

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### Abstract

Coal, oil, and natural gas are compared by looking at the advantages and disadvantages of each. Coal is one of the worst polluting fossil fuels, and has the biggest impact on the environment through burning and mining. Oil is a better alternative to coal, and has many more uses. But oil also causes devastating damage to the environment through oil spills and other disasters. Natural gas is the best alternative to both coal and oil, because it emits the lowest amount of CO<sub>2</sub>. However, there is no perfect fossil fuel. Natural gas also has many disadvantages, including the contamination of drinking water.

*Keywords:* coal, oil, natural gas, energy, environment, fossil fuels, fracking

### Trends of U.S. Fossil Fuel Consumption

Ever since fossil fuels were discovered, the rate of technological advancements made by humans skyrocketed. Coal was used to fuel the Industrial Revolution across the world in the 19th century. In the 1830s, people in the United States began heavily using coal, which could be used to produce electricity and power machines. During the Industrial Revolution humans achieved a new means of evolving as a higher species. Oil was discovered several years later, which began a new trend for fossil fuel consumption. The burning of oil has less of an environmental impact than coal, which promotes the use of oil today. Natural gas was a relatively unexplored fuel until now. About 20 years ago, an outburst of operations to extract natural gas occurred in the United States. Corporations realized that natural gas was an even more lucrative fossil fuel, and there is also an abundance of it. However, with all of the benefits to human society, there has also been a lot of devastation caused by using fossil fuels. The consumption of United States energy has progressed from coal, to oil, and now natural gas. Environmental impacts have lessened as we shifted towards better fossil fuels.

### Coal

#### Advantages

Coal is an abundant energy source in the United States, and it is typically found in the Appalachian Mountains. It is still widely used today to generate electricity, and can be used in manufacturing to make an array of compounds and products useful for everyday life. But there are not many advantages to coal, because it is the worst fossil fuel.

### Disadvantages

The use of coal has many consequences. There are two different methods to extract coal from the ground, each are very dangerous and environmentally destructive practices. One way coal is harvested is by mountain top removal, when miners literally remove the tops of mountains with explosives. Mountaintop removal destroys the surrounding streams and forests, and pollutes nearby communities. Another method to harvest coal is with underground coal mines, which are exceptionally dangerous. Each year hundreds of miners lose their lives in mines due to roof collapses, explosions, and fires.

Furthermore, coal generates a lot of waste when it is burned, and some of the waste contains carcinogens, which impact the health of people. Boller (2002) refers to the fact that “the Harvard School of Public Health determined that soot and noxious chemicals emitted by coal-fired plants cause about 15,000 premature deaths annually in the United States.” Coal is the worst polluting fossil fuel that is used today, and causes significant damage to the environment and people’s health.

## Oil

### Advantages

In 1859 a new type of fossil fuel was discovered: crude oil. In the 1940s, oil consumption increased dramatically as World War Two raged on. After the war, oil consumption climbed even higher as the oil industry began making even more products from oil. Today, oil is used in a huge number of products that people use every day. To name a few things, oil is used to produce pharmaceuticals, food, fuel for machines, fuel for heat, and also to manufacture plastics.

Technology has continued to improve how companies locate and extract oil, by reducing

environmental impact. Oil is better than coal because it is used in a refined state, and does not release as much CO<sub>2</sub> when burned compared to coal.

#### Disadvantages

Oil still has many negative effects on the environment. Oil spills such as the Exxon Valdez in 2003, and Deepwater Horizon in 2010 are well known national catastrophes that released millions of gallons of crude oil into the environment, killing wildlife and aquatic vegetation. As the National Oceanic and Atmospheric Administration (2016) states, “spilled oil can harm living things because its chemical constituents are poisonous”. Smaller oil spills actually occur frequently, but the public is only generally aware about the devastating spills that get broadcasted through the media.

The process of extracting oil is a hazardous job for workers on oil rigs. The Deepwater Horizon accident is an example of how dangerous oil drilling can be. Not only did 11 men lose their lives on April 20, 2010, but the environment was severely impacted from a massive oil spill. In 2015, Shultz, Walsh, Garfin, Wilson, and Neria state that “4.9 million barrels of petroleum flowed into the Gulf of Mexico over 87 days and the spill expanded to cover 68,000 square miles of sea surface.” Disasters of this magnitude clearly illustrate how devastating fossil fuel such as oil can be.

### Natural Gas

#### Advantages

Natural gas that is extracted from shale is a fuel source that has recently seen a sharp rise in demand. There are certain benefits to natural gas, including that it is an even “cleaner” burning fuel, by emitting less CO<sub>2</sub> than coal or oil. Brantley and Meyendorff (2013) state, “shale gas

emits half the carbon dioxide per unit of energy as does coal.” Natural gas is also one of the fastest fossil fuels that can regenerate, making it a more renewable resource.

#### Disadvantages

Removing natural gas from underground is still a dangerous process that can cause a lot of pollution. Natural gas is often extracted by using a method called hydraulic fracturing, or “fracking”. This process is involved in a lot of controversy because it involves injecting toxic chemicals underground. These chemicals have the potential to seep into underground aquifers, and contaminate drinking water. Furthermore, the methane that is released from fracking can seep into aquifers, and make water flammable. As Brantley and Meyendorff (2013) find, “sometimes methane leaks out of gas wells because, in 1 to 2 percent of the wells, casings are not structurally sound”. There are many dangers associated with methane, including the risk of explosions. Furthermore, fracking has been linked to causing minor earthquakes in western regions of the United States.

#### Conclusion

Coal is the worst polluting fossil fuel that is used today, and it is a very dangerous fuel to mine for. The carbon footprint of coal is much larger than oil or natural gas. Oil is a better alternative to coal, but it still causes pollution, especially from huge oil spills such as the Exxon Valdez. Natural gas is the best alternative to coal and oil because of its lower carbon emissions, and the extraction practices used to harvest it have less of an impact on the environment. However, fossil fuels in general will always be a source of pollution. The best sources of energy are renewable energy sources such as a wind and solar power. These renewable energies are what the United States should be investing in to preserve the environment for future generations.

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