



What is Energy?

At its most basic, energy is the ability to do work. We consume energy constantly in our daily lives in everything from heating and cooling our buildings, fueling our cars, and even going for run. While

food provides our body with energy, we look to outside sources, such as oil, natural gas, and sometimes renewable energies in order to power buildings, cars, and other electronics.

Types of Energy

Biomass



The burning of plants, typically wood.

Benefits: Technically renewable because it uses trees

Drawbacks: Causes deforestation, dirty to burn, unfeasible due to high production expenses

Coal



A carbon-rich rock that is mined and burned to release energy

Benefits: Very cheap, semi-abundant

Drawbacks: Dangerous, destroys mountains, causes black lung disease, dirty to burn

Nuclear



Energy is created when heat is produced during fission, or the splitting of atoms

Benefits: Burns clean

Drawbacks: Water intensive, creates lots of dangerous waste, can wipe out entire cities in the event of a serious facility malfunction

Natural Gas



A fossil fuel formed from decomposed organic matter that, when combusted, creates energy from the hot exhaust gas released

Benefits: Cheap, abundant, less dangerous for drillers

Drawbacks: Hydraulic fracturing during extraction correlated with earthquakes, degrades land and water quality, water intensive, semi-dirty to burn

Solar



Harness electricity created when sunlight strikes certain materials and agitates electrons.

Benefits: Renewable energy source, no greenhouse gas emissions, panels made from silicon (very abundant, easily reused), carbon neutral

Drawbacks: Not always available (little sun), solar panels can be expensive

Wind



Power generated by wind is capture when wind moves blades on a wind turbine.

Benefits: No greenhouse gases produced, relatively cheap, renewable energy source, carbon neutral

Drawbacks: Currently unable to store power, can be dangerous to birds, limited on-shore space for wind farms, not always a reliable source

Hydroelectric



Through the use of dams, hydroelectricity uses gravity to harness the power of moving water.

Benefits: Renewable, releases only a negligible amount of greenhouse gas emissions

Drawbacks: Uses a lot of land and can degrade water quality, damages wildlife habitats

Global energy consumption has grown over 350% since 1950 and that growth isn't expected to stop anytime soon. This consumption has started to have enormous negative impacts on both the environment and economy. For most of us, our energy seems to come from a wall outlet or a gas pump, but in reality its generation and use is much more complicated. Increased energy awareness is necessary for progress towards energy conservation.

Effects of Energy Use

When certain types of energy are used, particularly the burning of fossil fuels, carbon dioxide is released into the atmosphere. Increased levels of carbon dioxide (CO₂) trap more of the sun's heat in the atmosphere, causing earth's temperature to rise.

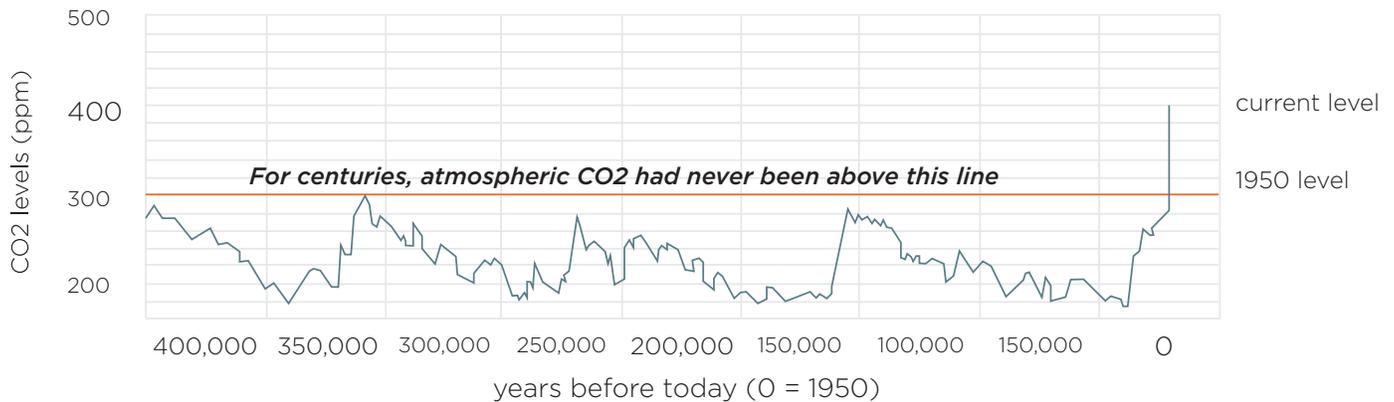
For 650,000 years atmospheric carbon dioxide levels have never been above 300 parts per million. However, as of 1950 they have been steadily increasing above this level. Most scientists agree that an atmospheric CO₂ concentration of more than 400 ppm is dangerous for the planet's stability. This year, for the first time in human existence, CO₂ levels surpassed that concentration, further contributing to a number of economic, environmental, and safety problems.

Increased pollution from burning fossil fuels results in increased health problems, such as lung disease and asthma attacks. Coal mining and reliance on biomass can lead to land degradation and deforestation. Warmer temperatures cause sea level rise, stronger hurricanes, more droughts, and more floods, all of which put increased financial burdens on governments as they respond to these effects.

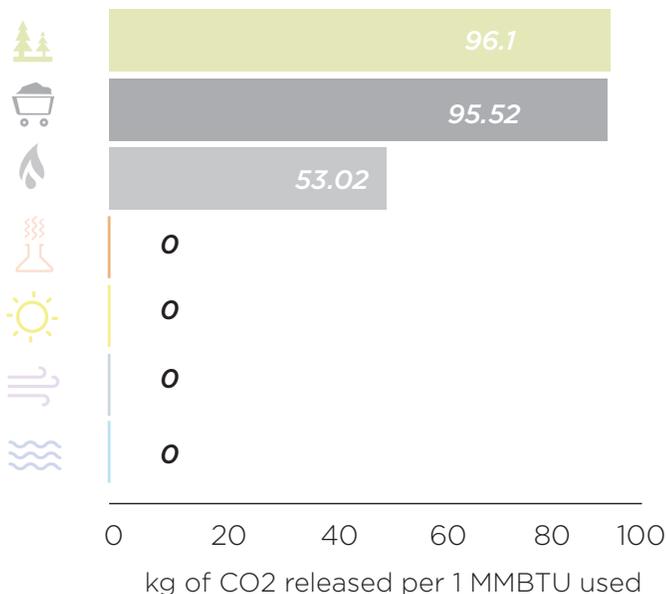
Climate change is even moving the world toward mass extinction as species lose their habitats or are unable to adjust to rising temperatures. Last but certainly not least, dependence on certain energy sources can cause national security issues when conflicts arise in attempts to protect foreign sources of oil.

Atmospheric Carbon Dioxide Levels

From NASA



Carbon Dioxide Released by Different Kinds of Energy



MMBTU, or MBTU, stands for one million British Thermal Units (BTU).

A BTU is a measure of the energy content in fuel, and is used in the power, steam generation, heating, and air conditioning industries. One BTU is equivalent to 1.06 Joules.

Natural gas is usually measured in BTUs.