

tinyurl.com/o2qeg8z

Energy Source	How does it work?	Pros	Cons
Solar Power	Photovoltaic cells in the solar panels convert light into electricity. Light hits the PV cells and is absorbed. The absorbed light causes electrons to flow, therefore creating electricity.	Minimal environmental impact. No generator needed to create electricity. Water is not needed.	Initially very expensive. Not always sunny.
Wind Power	Kinetic energy in the wind causes the turbines to spin. This turns the generators and creates electricity.	Wind power doesn't produce any pollutants.	If the wind isn't blowing, there is no energy being produced. It also has a negative effect on the bird population.
Hydro Power	The energy from falling water is captured by a turbine which turns this kinetic energy into mechanical energy. Then a generator takes the mechanical energy from the turbine and converts it to electrical energy.	Hydro power is very efficient (up to 90% efficiency) and very reliable as it is taken from the flow of water off of dams. It is also environmentally friendly and the water from the lake behind the dams can be used to irrigate farming. After construction, hydropower is also very low cost and low maintenance.	Extremely expensive to build initially, and if not built properly can cause lots of environmental damage. Also during droughts, they become much less efficient due to the lack of water flow.
Biomass/Biofuels	Biomasses such as grasses, crop residue and manure are burned at factories to heat water into steam. Then the energy from the steam is used to power turbines and other generators.	If handled properly, biomass energy can be a very efficient and low carbon emitting energy source. It is also a very cheap and abundant source of energy that can be quickly renewed.	If not managed properly the burning of biomass and removal of biomass from areas where its harvested can be extremely harmful to the environment.
Geothermal Energy	Geothermal energy is thermal energy generated and stored	Geothermal energy is one of the few kinds of renewable	The cost of initially building the power plant is very

	<p>in the Earth. Steam from underground wells that we tap into to access this natural steam and the hot water. The hot water and steam runs the turbines to create electricity.</p>	<p>energy and has no emissions. There is an enormous amount of the steam and hot water in our earth. Cheaper than most energy sources.</p>	<p>expensive. You have to drill very far into the earth to find the wells. It cannot be transported to other generation sites unlike nuclear energy and fossil fuels. The water gets extremely hot which is very dangerous to machinery and people.</p>
<p>Oil/Petroleum (fossil fuel)</p>	<p>We find deep underground reservoirs full of crude oil. We pump it out and transport it to a refinery. Then we use it for things such as gas. It's burned to heat water, steam moves a turbine, which creates electricity.</p>	<p>There is a wide variety of uses for oil and petroleum, including everyday items such as gasoline, ink, dish soap, eyeglasses, tires, asphalt, crayons, bubblegum, etc. It's used in mechanical engines. It's portable and relatively cheap.</p>	<p>Petroleum is not a renewable resource. It released emissions when burned, which disturbs the earth's natural carbon cycle and traps heat in the atmosphere. Affects areas we drill from, by destroying land and/or spilling to oil.</p>
<p>Natural Gas (fossil fuel)</p>	<p>Found deep underground in reservoirs, accessed by drilling. Used for many purposes, burned as fuel or used for everyday products. Used as a heating oil. It's burned to heat water, steam moves a turbine, which creates electricity. 30% of all electricity is produced by Natural gas. We also transfer natural gases into peoples houses for uses in fancy fireplaces and natural gas burning</p>	<p>Wide variety of uses, such as electricity production, paint, fertilizers, plastics, dyes, explosives, medicines, etc. It's used for fireplaces and stoves. It's portable and relatively cheap.</p>	<p>Not a renewable resource, when burned releases pollution and carbon emissions, which trap heat and harm the environment. Also has a high explosion risk. Drilling and collection processes disrupt environment.</p>

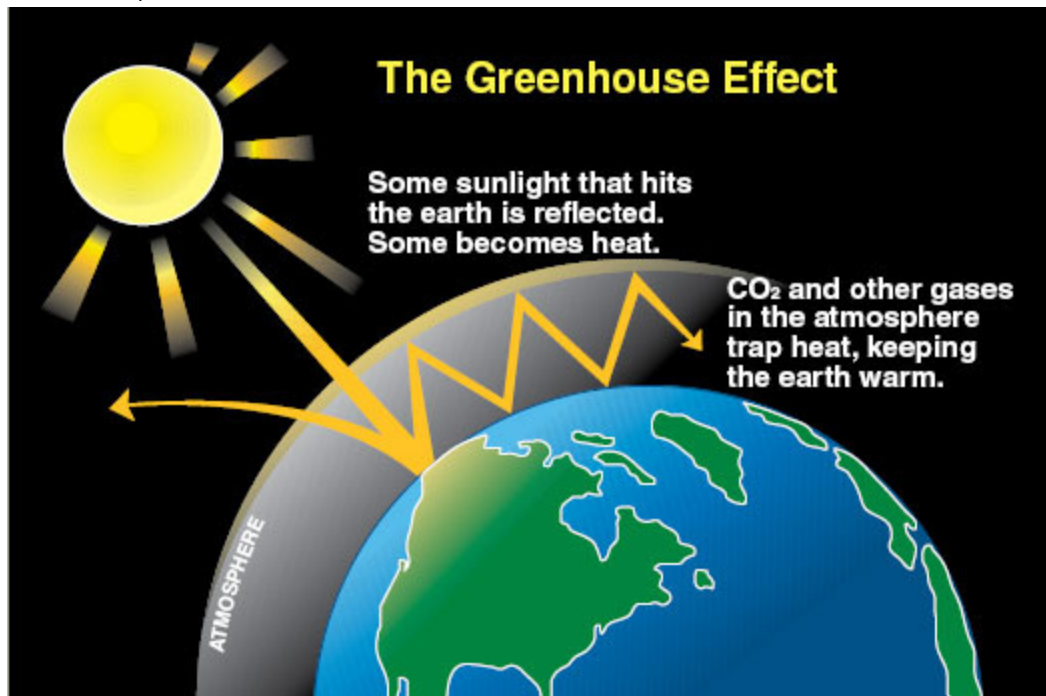
	stoves.		
Coal (fossil fuel)	Coal is extracted from the Earth through the process of mining. Once extracted, the coal is shipped to power plants to be burned for energy. The coal burns under a pot of water, bringing to a boil creating steam. The steam rises and turns a turbine creating electricity and power. 37% of all electricity is produced by coal.	<ul style="list-style-type: none"> -produces electricity -cheap as heck -stable infrastructure 	<ul style="list-style-type: none"> -destroys landscape -makes a lot of air pollutants -causes acid rain -finite amount
Nuclear/Uranium	They produce electricity through a process called fission. Fission is the act of splitting an atom or it's heavy nuclei.	<ul style="list-style-type: none"> -generates a lot of power -Produce very little pollutants -Low risk -very low cost to produce power 	<ul style="list-style-type: none"> -processing uranium makes waste and that waste is extremely dangerous to anything alive, it is buried deep underground, it's also radioactive -high start up cost -takes thousands of years for waste to not be deadly -when things go wrong, things go REALLY WRONG

Why build a house without electricity?

Cost/Economics: Electricity costs money, the average US household spent just over 100 dollars on electricity each month. We use about 955 kilowatt hours per month. We use about 11,460 kilowatt hours per year. Every year we spend around 1,200 dollars a year.

Environmental Impact:

Climate Change - Why it happens (explain the greenhouse effect and how it gets influenced by emissions)

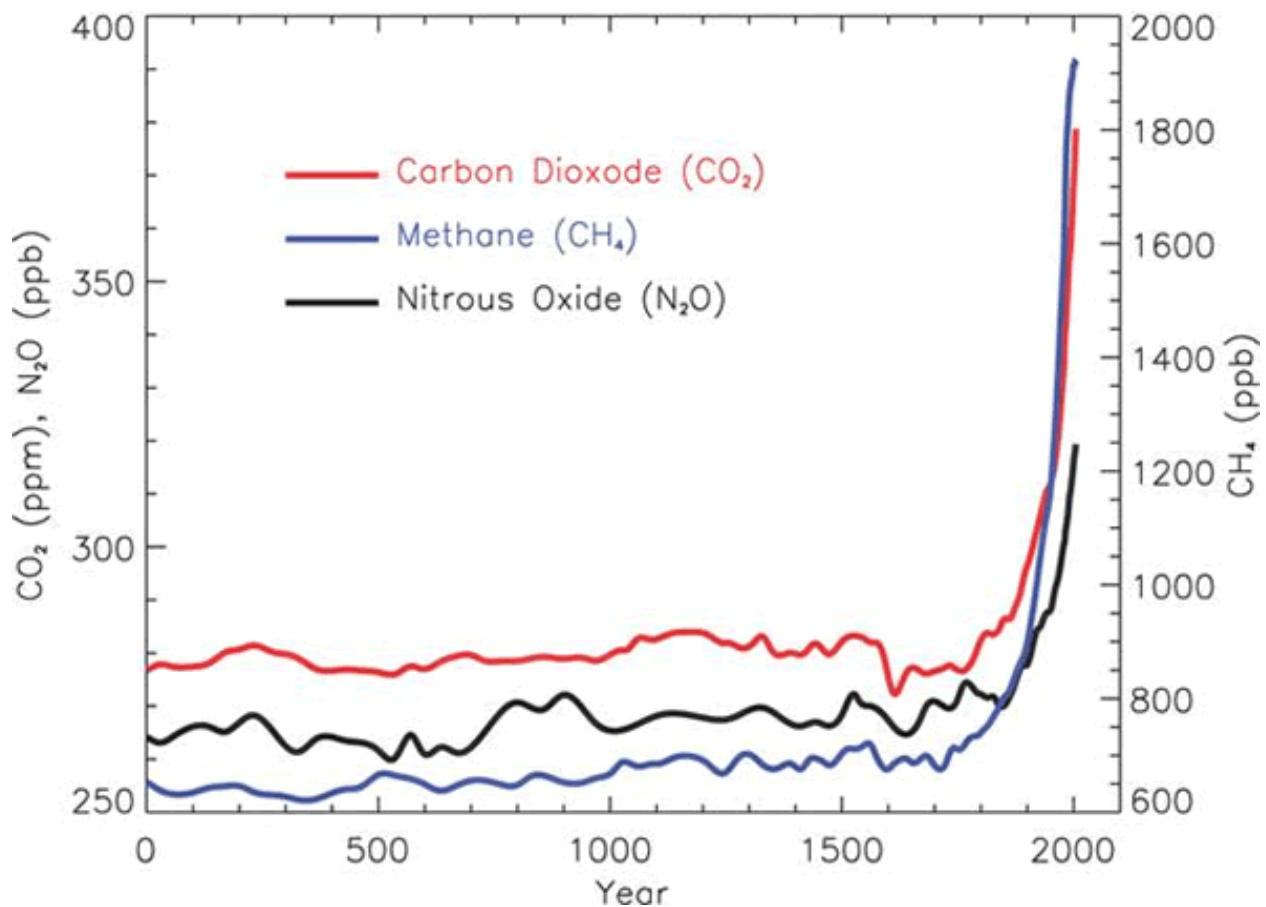


The solar radiation from the sun is absorbed into the earth's atmosphere and combined with emissions (greenhouse gases) from the earth. The radiation and the emissions combined after being absorbed into the earth try to leave the atmosphere but will almost completely remain there. Some greenhouse gases include: CO², Nitrous Oxide, Carbon, Water vapor, and Carbon Monoxide.

Climate Change - Consequences - what could happen as a result of the changing climate?

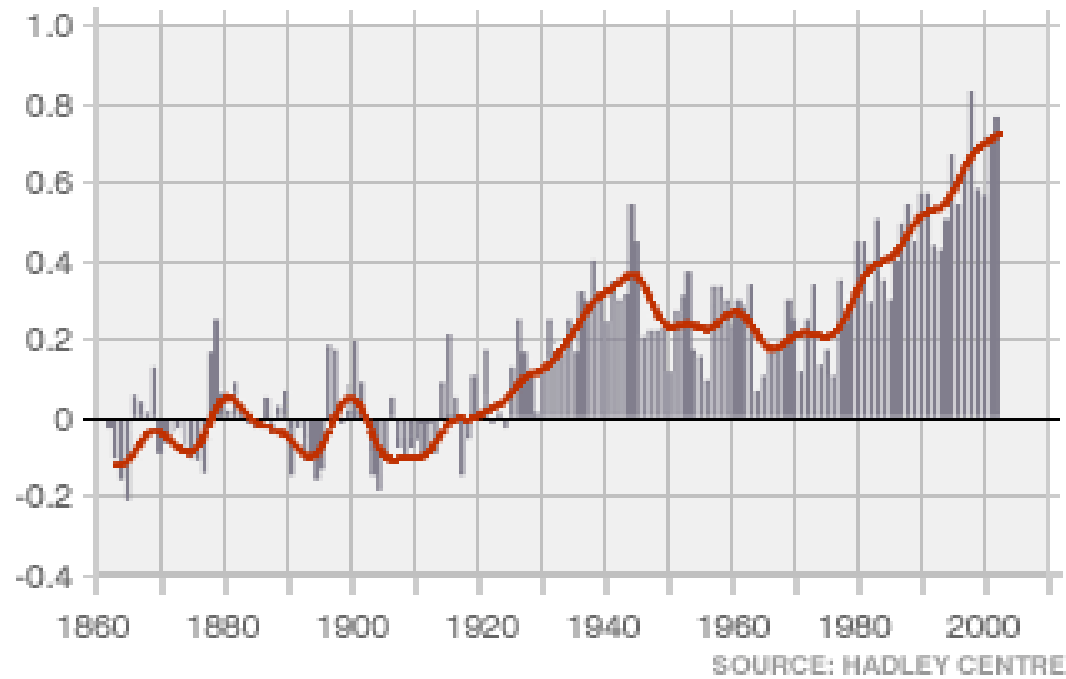
Climate change is basically the alarming rise of temperatures on earth. It happens because of all the fossil fuels (such as carbon dioxide, methane, nitrus oxide, etc.) that factories, cars, etc. release into the atmosphere on a daily basis. The green house gases form a blanket around the earth and trap the sun's rays/heat, in a process called the "greenhouse effect." We need this process, but because of the overabundance of fossil fuels, now there is too much heat trapped on earth, therefore causing the problem of climate change. There are many consequences that happen due to climate change:

1. Glaciers are rapidly melting, and if this glacial retreat continues at its current rate, 100% of the glaciers at the National Glacier Park will be gone by 2070.
2. The increase in temperature will cause droughts. California is only one example.
3. Because glaciers are melting, polar bears are dying due to their loss of habitat. If the glaciers continue to melt, the polar bear will become extinct in Alaska by 2050.
4. Climate change severely affects marine ecosystems. Coral bleaching happens due to the rising ocean temperatures, causing whole coral reefs to die.
5. Due to glacial melting, ocean levels are rising. If this continues, countless places by the coast and below sea level will be flooded over.
(ex. New Orleans)
6. More intense storms occur due to climate change. Hurricanes, for example, gather energy from the heat of the water. With rising ocean temps, hurricanes will be more powerful and can do more damage. (Ex. Hurricane Sandy, Hurricane Haiyan that hit the Philippines)



Variations in global near-surface land temperature

Temperature variation in degrees C



(a) Global-Mean Surface Temperature Anomaly ($^{\circ}\text{C}$)

