Wind Energy:

Wind energy is energy form the wind that we use. How does it work? We use wind to turn a turbine which turns a magnet. If wire is coiled around the magnet, when it spins, the magnetic field of the magnet has electrons aligned, causing the electrons in the wires to flow in the same direction. Wind energy is an alternative to burning fossil fuels. When we burn fossil fuels, we release Carbon Dioxide into the atmosphere. Carbon Dioxide isn’t a bad thing. It’s a good, important gas that our plants need to go through photosynthesis. However, when we increase how much Carbon Dioxide is in our atmosphere, it traps more heat which raises temperatures. When Wind energy is renewable and inexhaustible. We can’t run out of it and it’s a free resource. We don’t have to pay for wind, unlike coal or other fossil fuels. Once the turbine is made, wind turbines don’t cause pollution. They can be unique features of the land. Wind turbines are good for remote areas. They are available in a wide range of sizes. The government gives incentives for using wind turbines, like tax deductions. Prices for wind turbines have decreased over the years. The operational costs are rather low once built. It has great potential and is growing substantially in the world as a leading alternative to burning fossil fuels. A single wind turbine can power 500 homes. It is the #1 alternative energy in the United States.

There are some disadvantages to using wind energy also. Wind turbines can sometimes kill birds or wildlife. Also the strength of the wind isn’t constant and some places don’t have much wind at all. These locations would not be a good site for wind turbines. Wind turbines are noisy and you wouldn’t want to install them too close to someone’s home. Pollution does occur when wind turbines are being produced because we have to use fossil fuels to make turbines. You need a lot of space for wind turbines. They can take up a lot of space. Turbines are made from expensive materials like titanium. They are also expensive to set up. Wind turbines can be unsafe in storms and high winds. A lot of wind farms are far away where there is a lot of free space to set them up. This means we have to pay a lot to transport the electrical energy generated in those remote locations.

Hydroelectric Energy:

Hydroelectric energy is energy we use from falling water. Hydroelectric energy is found in reservoirs or dams. It is a renewable resource. How does it work? A dam holds water. There is a slide, of sorts, called a penstock with a door, or intake. The water flows through the intake and falls down the penstock. This falling water causes the turbine to spin. Since the turbine is connected to a magnet, the magnet spins. The magnet has wire coiled around it. When the magnet spins, because it’s electrons are aligned, the electrons in the wire flow in the same direction, thus generated electricity. Hydroelectric energy doesn’t “use” water in that all of the water is returned to the source. The water just moves through the hydroelectric power plant to turn the turbine and then it returns to the source. It can generate electricity 24/7, unlike wind energy, which requires constant wind, or solar energy which requires sunlight. Hydroelectric energy is not only renewable but also inexhaustible. Hydroelectric energy accounts for 96% of the worlds renewable energy. It provides better water quality due to the systems in place to filter and transfer the water. The dam used to hold the water that will then fall down the penstock can also provide recreational uses such as camping grounds, fishing and water sports. Hydroelectric energy has huge potential. There are already a lot of dams all around the world that were originally made to prevent flooding. These dams could easily be converted into a hydro power plant, with much of the infrastructure already in place.

Some disadvantages of using hydroelectric energy is that it can harm or kill wildlife such as fish and can destroy habitats. Also, it requires water, so in dry locations, this is not ideal. A solar panel would be better for deserts. The creation of dams can cause flooding. Hydro power affects other rivers and streams, draining them. If there is a drought, the hydro dam is worthless in terms of electric energy generation. Hydroelectric energy power plants and dams take up a lot of land and space and many cities can’t afford to lose that much realty space with such high population demands.

Geothermal Energy:

Geothermal energy is thermal energy from below the earth’s surface. We find geothermal energy in the ground. It is a renewable form of energy. Geothermal energy uses a turbine to generate electricity, similar to a wind turbine or a hydroelectric power plant. Steam and heat from below the earth’s surface is uses to turn a turbine and generate electricity. The overall cost is cheaper than using fossil fuels. It doesn’t take up much space since it’s underground. In fact, it has the smallest land foot print of any resource, so if there isn’t much space or land, digging and placing a geothermal unit under buildings or homes would be a great solution. This could prove very helpful with the rise in populations of dense cities. Using geothermal energy causes no air pollution. It also doesn’t fluctuate in productivity like solar or wind. It is not depended on weather since it is under ground.

Some disadvantages of using geothermal energy to generate electricity are that the prime sites for a geothermal location are very specific. You can’t just set this system up anywhere. Sometimes the rock is too hard to drill through. Other times, a preexisting building wouldn’t withstand the digging from below. At first, the cost to install a geothermal unit is expensive, $10,000-$20,000. However, once it is set up, it is much cheaper. Overall, it will be a good investment once paid off. It will save you money in the long run, but it will be painful to pay for in the initial purchase and installment. An effective geothermal unit needs to be above hot rocks and has to be a reasonable drilling distance. Sometimes, it requires digging/drilling too far down and it is too expensive and challenging to do so. Sometimes drilling can cause leaks of harmful gases, like sulfuric acid or silica. Drilling into heated rock can also be difficult. Geothermal plants and units use water and electricity to run. It can damage underground and be expensive to fix.

Biofuels:

Biofuels are fuels we make from the energy in plant and animal waste. Biofuel is found in organic matter in plants and animals. Biofuels is a renewable resource, but it is not inexhaustible like solar, wind and geothermal. We could theoretically run out of plants and animals, although hopefully we don’t. Some advantages of biofuels are that it is carbon neutral. That means that the amount of Carbon Dioxide released in burning biofuels is equal to the amount absorbed by plants. This is especially true when the biofuel plant is placed near fossil fuel factories. Then the plants could help absorb the Carbon Dioxide emissions. Biofuels are better for cars and can mix with fossil fuels, so it is a flexible, high quality fuel for cars. Some people use Ethanol as an additive for their cars, to increase the performance of their engines. Sometimes, biofuels are even the cheapest form of fuel. Biofuels are much better for the environment than burning fossil fuels.

Some negative aspects of biofuels are that with increase use of biofuels there will be an urge to grow more of the crops meant for biofuel production instead of food crops. A reduced food production can increase the prince which may lead to inflation. However, recent studies suggest we may be able to use human feces as biofuel, which would not require the growth of crops. If crops are being raised to make this biofuel, then there can be a loss of habitat. More land would be required to cultivate biofuel production. This can cause a loss in habitat for various species of plants and animals. There are limits in its use in vehicles. Some kinds of biofuels require modifications to vehicle engines and tye are still being used as additives rather than a fossil fuel replacement. Biofuel engineers are working to make biofuel a replacement so we don’t need to still rely on fossil fuels. Lastly, biofuels are not widely available and not many people know about it.





