

# Hydrological

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# What Is it ?

Hydrological is an energy source that comes from the help of water. It's also known as hydroelectricity or hydro-power. A way to get the energy resources can come from dams, water mills, pumped storage plants, and tides. The energy does not come directly from the water itself, it comes from the motion of the water. It does not matter what type of body of water it used, we can get the energy from rivers, lakes, oceans, reservoir.



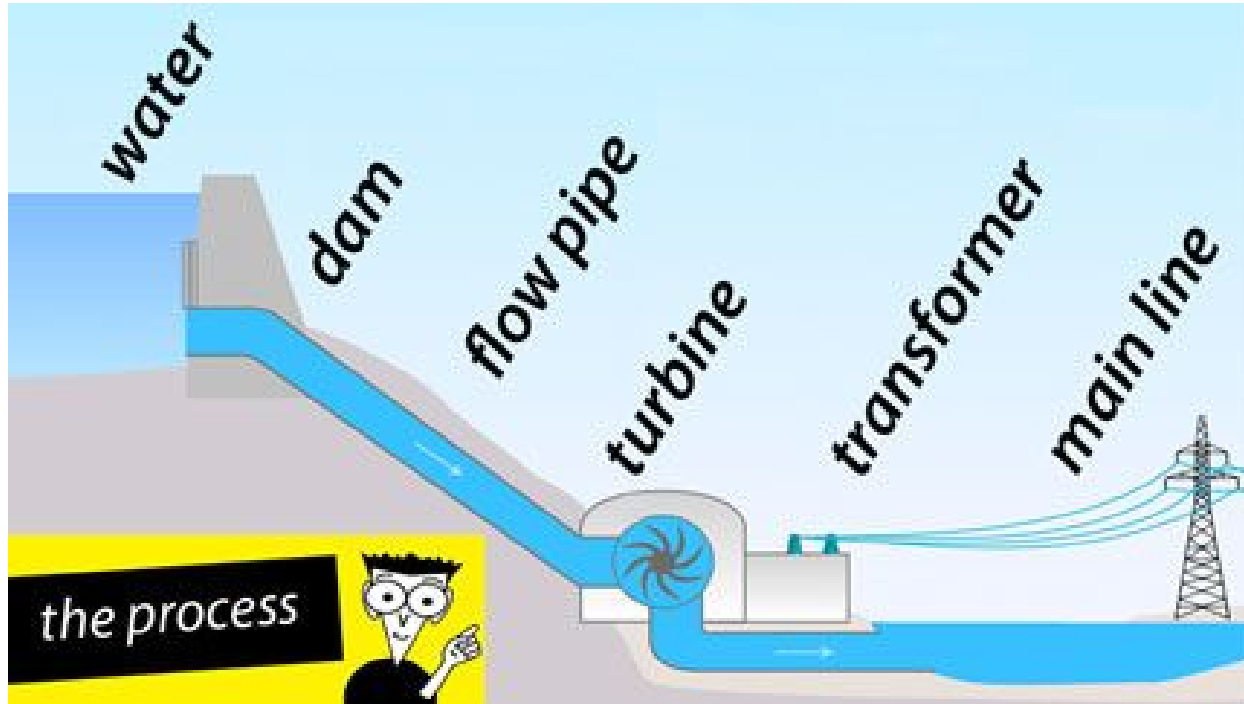
# The Machines

The way that electricity is gain is through kinetic energy that is formed from moving water. There is a piece that is placed in the Dam called a turbine. High speeds of water makes the turbine, which then powers a generator which form electricity. One gallon per second can generate one kilowatt of electricity, so the key element to making this chain reaction work is the speed or volume of water to be high to trigger the turbine. In order to build that speed up, there is a opening in dams, gravity is now a helping factor. The water moves down a pipe called a penstock, it hits the turbine and you the rest from there.

Another hydropower technology is a pump storage plant. In this machine, water is pumped from a lower reservoir to a higher reservoir. This is potential energy, taking from the name it is stored for later on.



# Visual Learners , Here you go



# The Machines

Another helpful machine is the water mills. There is a water wheel, or as we learned before, a water turbine that forms a mechanical movement like milling, rolling, or hammering. It's basically the same thing as a Dam but in a much smaller form. Another family member to helping us get energy is ocean tides. Once again the famous magic piece, the turbine. A large turbine is placed in the ocean where a lot of motion is happening. Like all the other machine, this one is collecting all the kinetic energy. We gain the most energy source from tides because the kinetic energy in the ocean is very high, which is very helpful.



# The Hoover Dam



This dam is a concrete arch-gravity dam in the Black Canyon of the Colorado river, on the border between Nevada and Arizona

# The Positivity

Because this energy is coming from the help of water, it is a clean energy resource and also renewable. It's an international resource as well, states and countries do not have to rely on other people to gain this energy. Also hydropower also is good for the environment because it give flood control, irrigation and water supply. It doesn't harm that much habitat life and does not have a long term effect on the earth. It's a source of energy that will be supplied to us as long as water remains here.



# The Negativity

Hydrologic energy may not add to the damage of air pollution or global warming gases, but it still has an effect. The building of these machines harm plant life, believe it or not. For example the Tucuruí dam in Brazil created a reservoir in the rainforest, when building the dam, the trees were not cleared. Because of this it allowed the trees to rot. This leads to the oxygen level to down, which also drops in water and kills the plants and aquatic life. These Hydropower project can also alter river flow which leads to killing of aquatic life as well. Another obvious negative impact is the life that lives in the water, fish. Dams can

block the migration of fish. For example, a couple of dams were built in the Pacific Northwest and California. This blocked the migration of the coho, chinook, and sockeye salmon. The fish could not properly move from the ocean to the upstream grounds.

The building of dams, and all those other hydrologic energy projects take a long time and money to build. We as human are changing the pattern of planet earth, which of course we have a bigger impact on animal and human life later on down the road.



# A Social & Economic Viewpoint

This project is seen to be more popular in nations with growing populations and developing economies. In 2012, more than 30 GW of new hydropower capacity was commissioned. The most investment came from South America, Asia and Africa. Majority of people are fans of the hydropower project so there is more support and more money given to expand the project.

On a money scale, it cost a lot of money to fund into this projects. There pushing up in the billion dollar range. Most of the biggest dams are built



in the poorest area. Taking from that statement, do you think that it is worth putting money into this projects knowing that it'll put a nation in a hard economic status? Yes or no, and explain.



# Currently & The Future

Improvements are being made to make turbines more fish friendly. This hydropower projects are providing cheap and clean electricity to urban and rural areas, which is also a plus to mother earth. This is right step into a new direction to clean energy. We won't depend on fossil fuels no more. Harvesting our energy from water will not have an impact on human health and climate. It's an non-renewable resource, but it's something that will always remain as a giver of electricity as long as water is planted and moving on earth.

# Sources

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