Hydro Energy

What is Hydro Energy?
How can we use Hydro Energy?

Hydro energy or **hydroelectricity** – is using the energy in flowing water to produce electricity.

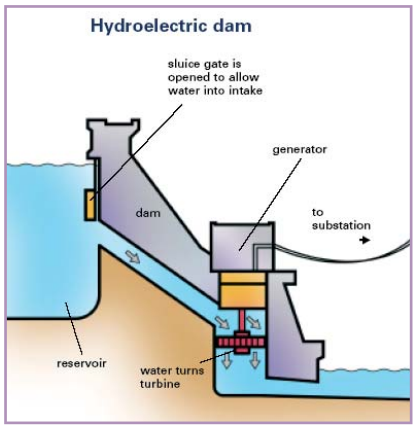
Hydro energy makes more energy in the world than any other kind of renewable energy source.

Many countries rely on hydro energy, for example, countries like Canada and Nepal. Nepal relies on hydro energy so much that when there is a 'dry' rainy season, there are electricity shortages.

How does hydroelectricity work?

One way is by building **Hydroelectric Dams**, which traps flowing water and then releases it under greater pressure.

Dams depend on kinetic energy, which is the energy something possesses when it is moving. The higher the water falls, the greater the flow through the turbines and the more electricity is generated.



Source: dti

- A river is blocked by building a dam.
- The valley is flooded behind the dam and forms a **reservoir** (like a lake).
- The water in the reservoir flows out through pipes under high pressure
- This water turns a turbine, which turns a generator, which makes electricity.
- Elan Valley, Wales – four dams hold 199 million tonnes of water. This water is the main water supply for Birmingham and the turbines produce enough electricity for 11,000 homes.

Hydro Energy in Northern Ireland

Hydroelectric power was first used in Northern Ireland from 1896 to 1965 on the River Roe, near Limavady. This scheme supplied electricity to Limavady and the local area. Now, there are 30 small-scale hydroelectric power sites working in Northern Ireland, producing a total of 3.4MW = about 0.2% of Northern Ireland's peak (greatest) electricity demand.

Hydro Energy - Key Stage 3

Advantages

- Once the Hydroelectric system is built, running costs are very low
- No waste or pollution produced
- While there is always a supply of water, electricity can be generated all the time.
- Creates a supply of energy for remote mountain areas

Disadvantages

- Dams are expensive to build
- Good sites for large-scale projects are hard to find
- Good sites are often remote, which means cost to transport power can be high.
- Building a dam and flooding the valley behind, has environmental and social impacts for the area

Case Study: Northern Ireland

Where?
Creggan Country Park, Derry
What?
Small-scale hydroelectric power plant
Advantages?

- No CO_2 emissions
- Makes the Park more sustainable
- Promotes renewable energy

Photos courtesy of creggan country park

Water flows down manmade channel to turbine & generator