

Hydroelectric power

Hydroelectric power is the most used and the older renewable power in Europe and worldwide. It is not produced for import or export but consumed at the regional scale.

History

1831: Michael Faraday invented the electric generator

1878: Invention of the first hydroelectric generator William Georges Armstrong England

1882: 1st hydroelectric power plant Wisconsin

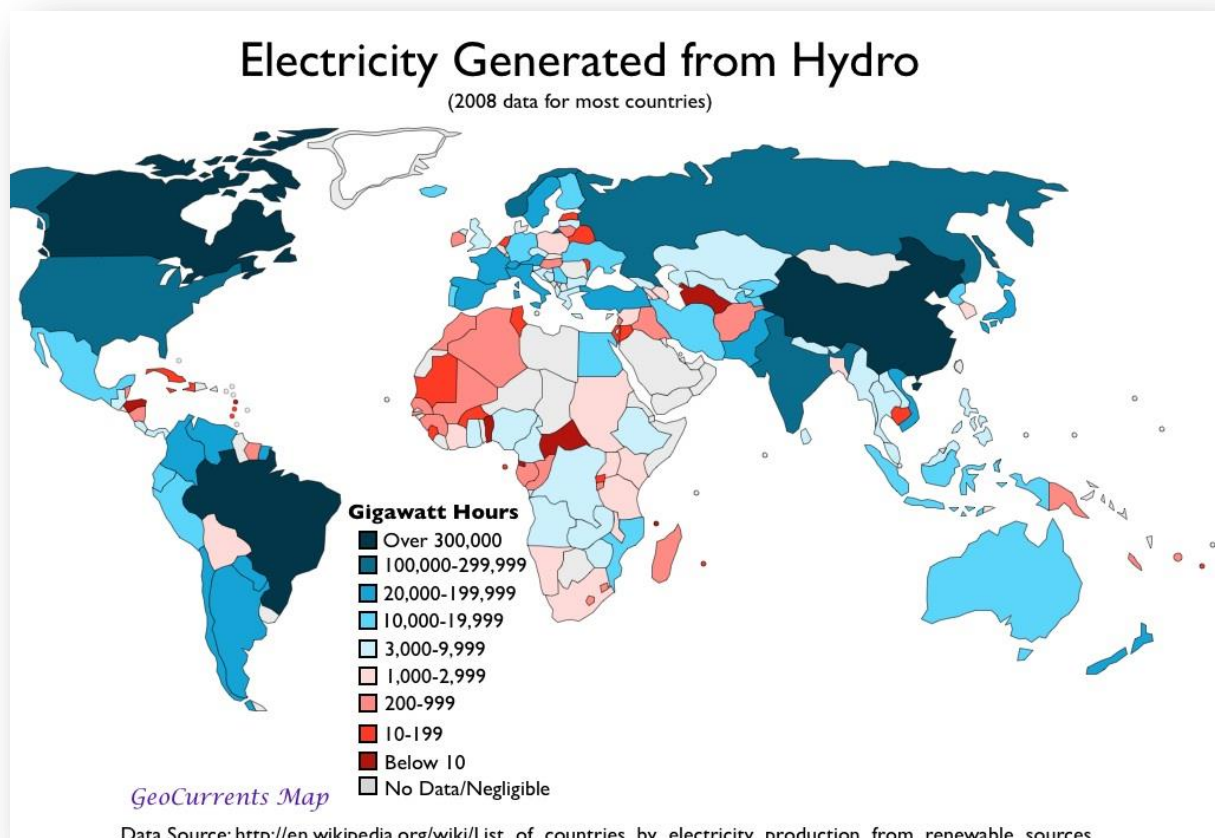
1889 more than 200 hydroelectric power plants in the USA

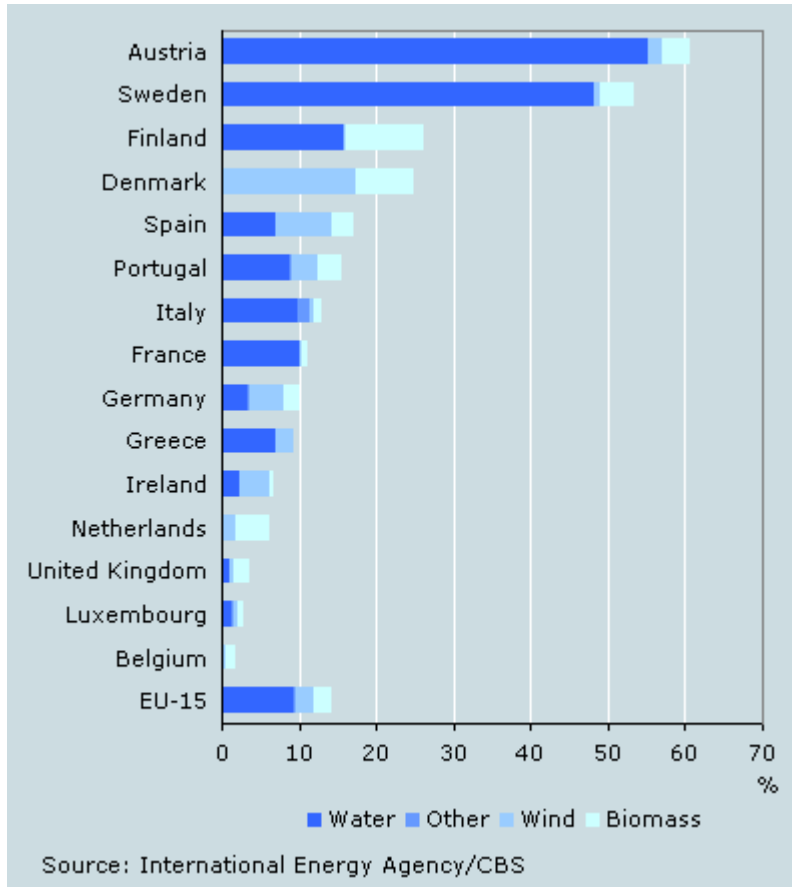
1920: 40% of electricity produced in the USA was from hydroelectricity

Keep increasing 20th century

2008: The Three Gorges Dam, currently the biggest dam in the world was built in China

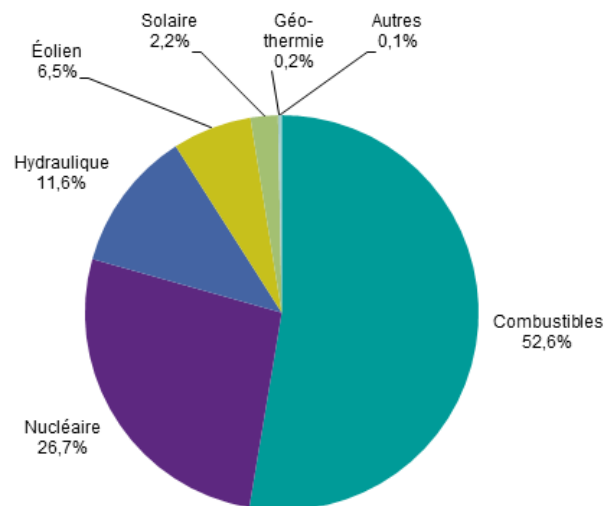
Current place of hydroelectric power





In 2006, Austria was the European country that had the biggest part of its energy production made with hydroelectric power. It represented 55% whereas the UK only produced 2%.

<http://globalwarmingisreal.com/2013/07/09/the-eu-climate-change-threats-at-the-water-energy-nexus/> in 2006

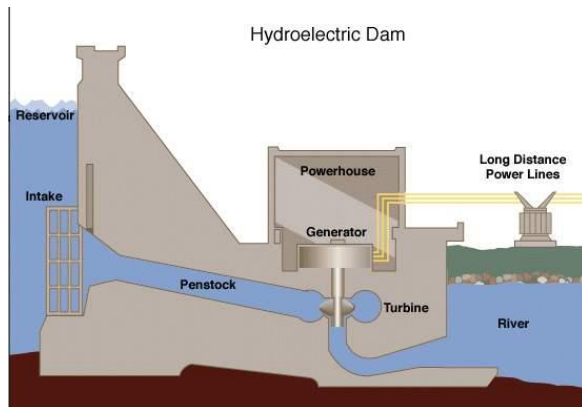


(*) La somme des chiffres n'est pas égale à 100 % car les valeurs ont été arrondies.
Source: Eurostat (code des données en ligne: nrg_105a)

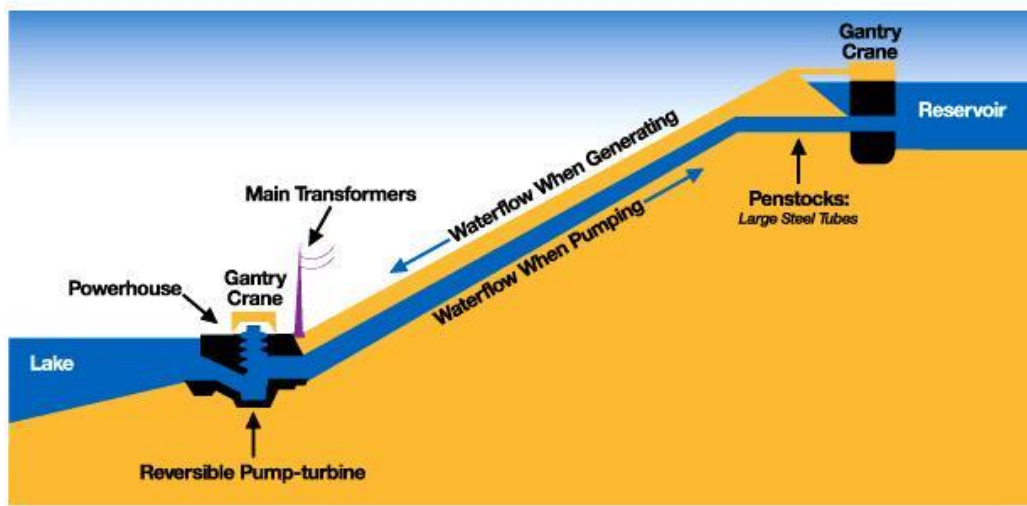
[http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/File:Net_electricity_generation,_EU-28,_2012_\(%C2%B9\)_\(%25_of_total,_based_on_GWh\)_YB14-fr.png](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/File:Net_electricity_generation,_EU-28,_2012_(%C2%B9)_(%25_of_total,_based_on_GWh)_YB14-fr.png)

Methods to produce electricity from the kinetic energy of water

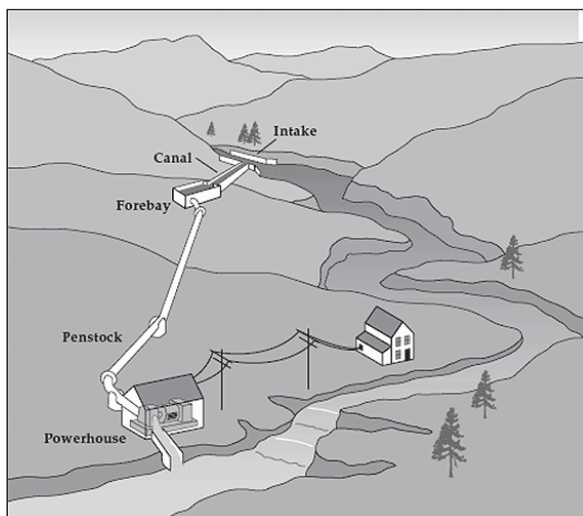
- Dam



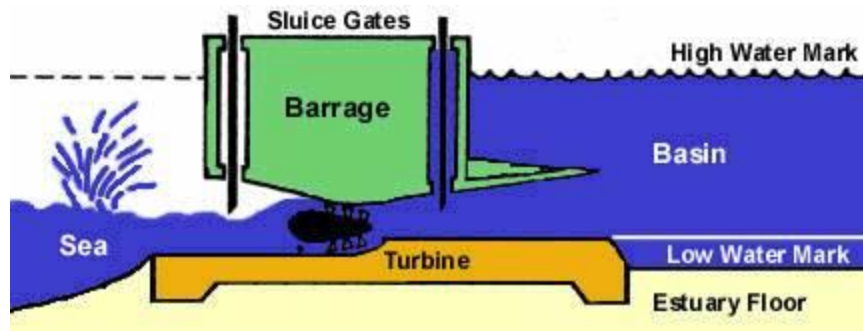
- Pumped storage



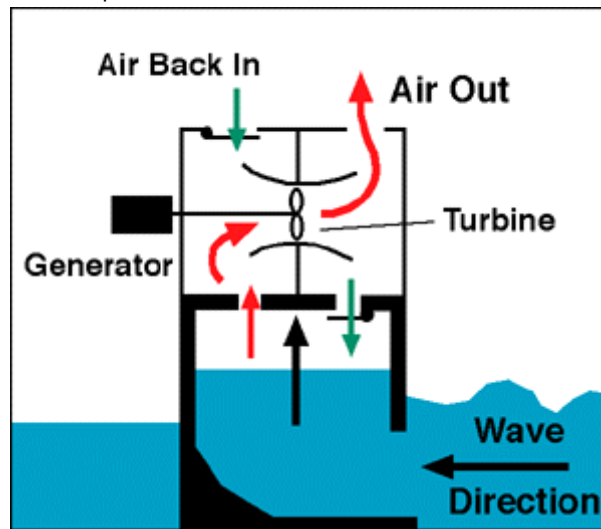
- Run of the river



- Maritime
 - Tidal power



- Wave power



- Marine current power

<http://www.energy.siemens.com/hq/en/renewable-energy/hydro-power/ocean-power.htm>

Different associations and companies

- Ocean Energy Europe
- EDF and other national energy companies
- Siemens
- European Marine Energy Center (Orkney – Scotland)

The future of hydroelectric power

Tide

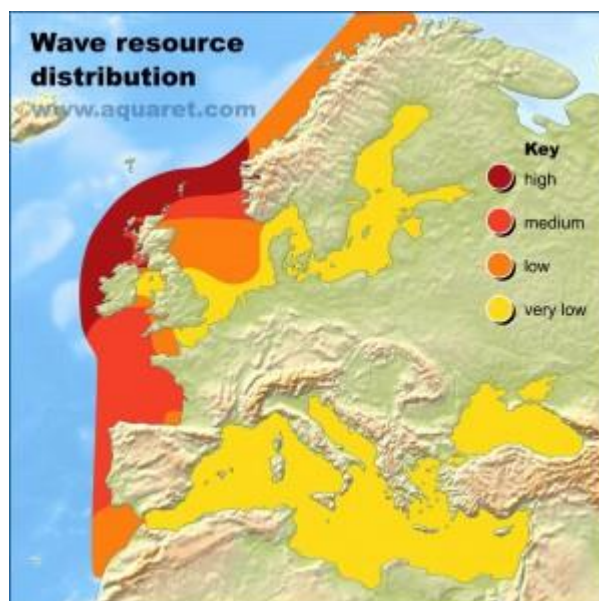
- In GB, there are eight sites that could be developed, which have the potential to generate 20% of the electricity used in 2012
- For example a plant has been finished in Swansea and will start during Spring 2015 and generate 400GWh (enough for 110 000 houses in Wales)



Marine current Power

- In France, a movement called "Blue energy" is growing strong. EDF has already put a park of demonstration in Brittany to study the potential of this energy.
- In EU there is more than a hundred sites where marine current plants can be placed which could provide a total of 50TWh (the nuclear power in France provides more 350TWh, the total electricity produced in EU is equal to 3130 TWh)

Wave



Conclusion

- * Dams are no longer supported by the public especially those in non-mountain areas
- * Maritime alternatives are not going to replace our actual production but may help being more independent from fossil and nuclear energies