



Iceland is in the forefront of countries which uses geothermal energy. In the last century there have been huge changes in geothermal researches. Nowadays most Icelanders enjoy the privilege of geothermal energy. 85% of houses in Iceland are heated up with hot water. Hot water is also used for swimming pools, industry and for electricity production. 66% of the energy use in Iceland came in the year 2009 from geothermal energy. So we can say that geothermal energy is one of the most important resources that the Icelandic people have. The main geothermal activations in Iceland are connected to the plate boundaries and most of them are located in southeast of Iceland.

Geothermal heat in Iceland is initially from rain which is exposed to the hot bedrock. Geothermal areas are divided in high temperature area and low temperature area. General definition of low temperature area is that the heat is lower than 150°C at 1000 meter depth. High temperature areas are above the active volcanic zones, where molten lava is widely found at only a couple kilometer depths. There are about 20-30 active volcano systems in Iceland. There the temperature of water is more than 200°C at a 1000 meter depth.



The energy from geothermal heat are in two ways; hot water and steam which is used to heat up cold water or make electricity. Firstly the steam is mainly used to heat up cold water, because the hot water which comes from the ground is not clean enough, and if it were pumped for example into a household furnace it would clog the whole system pretty quickly. Secondly the steam which comes from the ground is cleaned so that no moisture is in it, and the dry

steam is then used to propel cylinders to produce electricity. The water which is left after the steam is cleaned it is either put on earth's surface that is e.g. how the famous Blue Lagoon was formed. It is also possible to pump the water back into the ground.

Now there are researches in Iceland which is called the Carbfix project. It is about reducing the release of carbon dioxide which is one of the gases which cause the greenhouse effect. Now carbon dioxide is being trapped away from various springs and it is pumped down to the earth again into more suitable rock types. It is not yet known how this project is going to succeed. The areas where the experiments are carried out are near settlement. So far has the pumping of the carbon dioxide into the ground caused earthquakes which are at about 4 on the Richter scale and this will not be tolerated.

The positive effects of geothermal energy:

There are not a lot of drastic changes in the landscape. It is possible to use the power from these power plants to heat up houses and produce electricity.

If a well will lose its power the equipment can be moved to another well and used there.

It is less investment cost of geothermal plant than other power plants.

There are also some negative effects:

A lot of gases go in to the air and they can cause greenhouse effect.

The run-off water can leak into the pure ground water.

The landscape can also wear out and get destroyed by big drill holes, buildings and plumbing systems from buildings.

There is also much noise pollution from these types of power plants. A steam hole which has not been covered produces about 125 decibels, but a silenced one reduces the noise strength down to 85 decibels.

[Presentation about geothermal energy held in Lithuania](#)

Written by Aleksandra, Lukka and Sólveig