

4 Geothermal Power

This refers to using heat from the ground – the deeper the source the hotter it will be because of the heat loss from the earth's core and the radioactive decay of minerals underground.

Ground source heat pumps can be used to extract heat from the soil or from groundwater which remains at a relatively constant temperature all year round below a depth of about 30 feet. The pump takes the available heat and increases the temperature for space and central heating.

The same heat pump principle of moving heat from one place to another can be used in air source heat pumps which extract heat from the air surrounding a property for indoor heating of the premises.

Use of heat pumps is expected to increase substantially in Northern Ireland as home heating moves away from the use of oil and natural gas. At present heat pumps are not commonly used.

A community group in Edenderry village, on the outskirts of Belfast, has just been constituted (at time of writing Nov 2021) with an ambition to install a district heating system for the 400 inhabitants. One potential option is to extract heat from an underground aquifer about 150 metres below the surface. The water temperature in the aquifer is about 13-15°C with very little seasonal variation so is ideal for use in this way. Another option may also be explored. The project is at a very early stage and a feasibility study will determine if it progresses, but it exemplifies the result of innovative thinking that has been driven by the need to do things differently in the face of climate change concerns.

Work is currently going on in the Centre for Sustainability, Equality and Climate Action at Queen's University, Belfast to explore the potential for a geothermal heating scheme in South Belfast.

Some benefits

This energy supply is renewable, reliable and free.

The infrastructure is long lasting.

It has a small land footprint compared to some other renewable technologies.

It can be used at both small and large scale.

Geothermal energy is well suited to district heating schemes.

Heat pumps are very energy efficient.

Heat pumps can also be used to cool buildings during hot weather,

Some disadvantages

The technology is only useful in certain locations.

It is expensive to install.

There are some concerns about surface instability and some are said to be concerned about possible earthquake risks.

Opportunities

Geothermal power plants could generate electricity at scale.