

Volcanic activity can have both positive and negative effects.

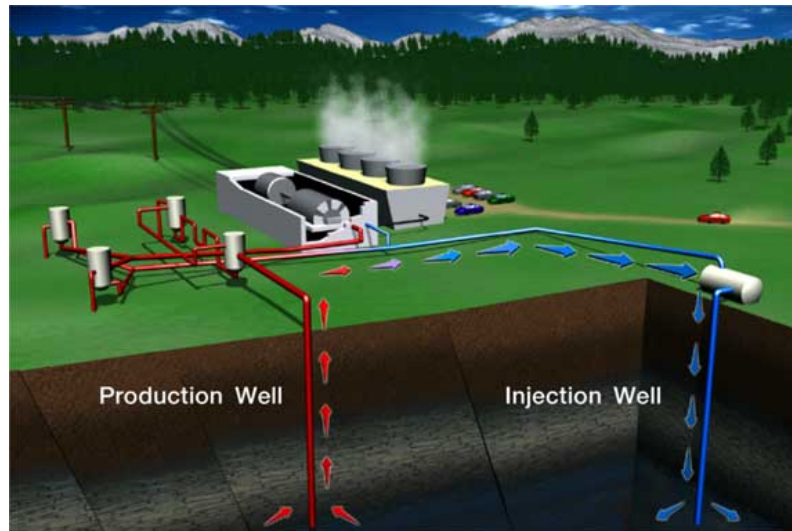
Positive Effects

Volcanic materials produce fertile soils. Ash and cinder are natural fertilizers as they are rich in minerals. As lava cools and is eroded by the elements it also adds to soil fertility. For this reason agriculture often thrives in volcanic regions, e.g. near Mt Vesuvius, which is an important vegetable production area in southern Italy. The Brazilian plateau is another region where ancient volcanic activity has enriched the soils and allowed coffee production to thrive. In New Zealand volcanic soils are used in the dairy industry and fruit production.

Volcanoes are also important tourist attractions. Mount Vesuvius in Naples and Mount Etna in Sicily are major tourist attractions in southern Italy. In Iceland, the **geysers and hot springs** caused by volcanic activity bring many tourists to the island. This tourism generates jobs and money in areas that may not have many other sources of employment. Jobs are generated in areas such as accommodation, transportation, sight-seeing and retail (shops).

Geothermal energy production in Iceland is another positive of volcanic activity. Iceland is on the mid-atlantic ridge (plates separating) and for this reason has a lot of volcanic activity. Magma rises close to the surface of the crust and this heats the groundwater. This water is heated to well beyond boiling point (up to 200 degrees celsius) and becomes “super-heated”. Wells are drilled into the rock and the hot water is pumped out. As this hot water reaches the surface it does so as steam due to the intense heat. **This steam is then used to drive turbines and create electricity.** The steam then cools slightly and becomes hot water, which is then piped to homes and offices in Icelandic towns to heat them. **Today, over 90% of homes in Iceland are heated through geothermal energy.** Once the water is used to heat buildings, it is then used in green-houses as the still warm water is piped under the soil to allow the production of flowers and vegetables. If there is a lack of groundwater, cold water is pumped into the rock through specially drilled wells, which is then heated by the hot

rock and pumped back up.



Geothermal Energy Production

Negative Effects

Large volcanic eruptions can cause death and the destruction of property. **The lava flow and mud-flows caused by volcanic eruptions can kill people and destroy property as it moves rapidly down the side of the volcano.** Mud-flows killed thousand in Colombia following a volcanic eruption there. The lava flow can also destroy agricultural land and as the lava hardens it can make it difficult for farmers to return to the area. 3

When the Icelandic volcano (Eyjafjallajökull) erupted in 2010 air traffic was disrupted all over Europe. The cancelled flights in Europe had knock on effects to flights to Asia and America. Hundreds of thousands were left stranded in airports for two weeks as clouds of volcanic ash meant planes could not fly. The ash cloud was carried up to 11km into the sky and moved across Europe. **This ash cloud could have damaged jet engines resulting in plane crashes.**

This volcanic eruption also released **poisonous gases such as sulphur dioxide and carbon dioxide.** A number of tourists hiking in the vicinity of the volcano were killed as a result of inhaling theses gases.

The glacier that sat on top of this volcano melted as a result of the eruption

and this caused huge floods that came down the side of the volcano. These floods swept away roads and bridges cutting off some areas. As the melt-water moved down the mountain, it mixed with volcanic ash and boulders to create a very powerful mud-flow (also known as a lahar).

Agricultural land can also be destroyed by ash following a volcanic eruption. After the Icelandic volcano erupted in 2010, up to 5 cm of ash covered some areas. If this ash hardens into a crust, it will mean the land can no longer be used for farming. The fall of ash in this way can also destroy crops, which has a negative impact on the farmers income.



Floods damage roads in Iceland