

# Introduction

## READ:

Figure 1 shows the Reykjanes Peninsula. The Reykjanes Peninsula extends for some 50kms south westwards from Reykjavík. The land of this peninsula is part of the Western Volcanic Zone, the western extension of the Mid Atlantic Ridge.

Within this region of Iceland there are many “fissure swarms”, lines of weakness that run down through the crustal rocks towards the molten mantle of the Earth. These fissure swarms trend (run) in a NE to SW direction.

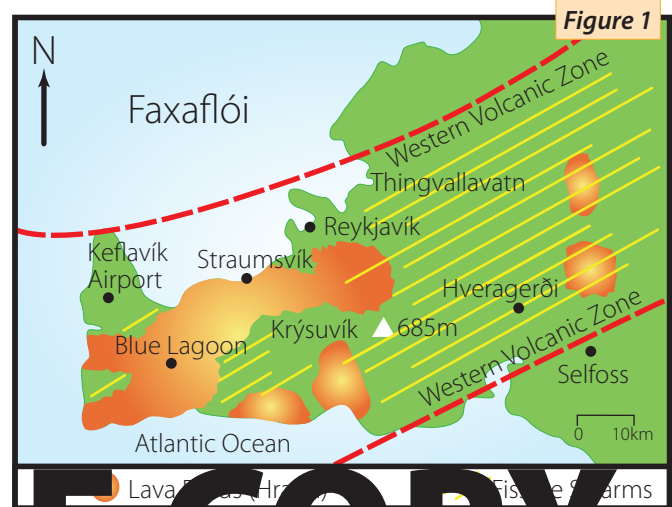
Over time, lava outpourings have built up the land of the Reykjanes Peninsula. The highest point today in the area of the Reykjanes Peninsula shown in Figure 1 above is \_\_\_\_\_ metres.

During Iceland’s glacial periods the sub glacial eruptions of magma produced palagonite lava. During the times when there was no ice present then basalt lava was produced. In this way the Reykjanes Peninsula has been built up in series of lava layers, one on top of the other. This particular feature of the region’s geological structure (layer upon layer of lava flows) will be later seen to be very important for the existence of geothermal potential in this area.

The most recent and greatest volcanic event in the Reykjanes Peninsula was in 1963. The town of the Illahraun was formed by cooling lava from a fissure (lahraun in Icelandic means “evil lava” – enough said!).

This Study Unit will look at the presence, extraction and use of the geothermal hot water of the Reykjanes Peninsula.

The Reykjanes Peninsula - South West Iceland



## Svartsengi Geothermal Power Plant



## The Blue Lagoon



## (1) Geothermal Energy

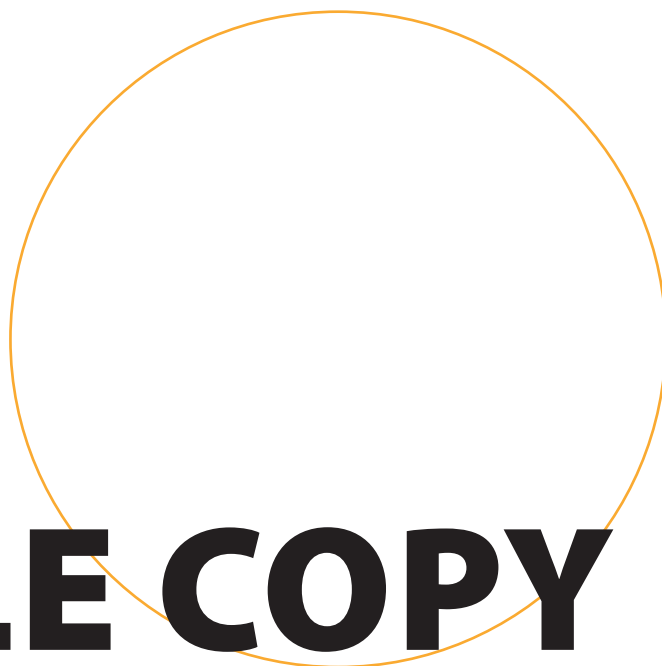
### (a) As a Valuable Renewable Energy Source:-

Iceland is the only country in the world that produces all of its electricity (well, 99.9% of it) from **sustainable resources**.

This is quite remarkable and it is only possible due to the country's location astride the **Mid Atlantic Ridge**.

The pie chart opposite shows how Iceland generates its electricity.

Energy Source	Percentage (%)
Hydro	83.0%
Geothermal	26.91%
Oil	0.01%
Wind	0.0%



How Iceland Generates Its Electricity

(b) Fill bold in the table below to the left above

The benefits of generating electricity from hydro and geothermal energy sources can be most fully appreciated in the following table:-

(c) Select the correct word - from the choice of NONE, LOW, SOME, HIGH for columns 1,2 and 4 and from the choice of YES, NO, for the third column - and write the words into the spaces in the table below (NOTE: the same word can be used more than once).

	Level of CO <sub>2</sub> Emissions	Amount of Waste Product	Renewable energy source?	Environmental Impact
Fossil Fuels (oil, gas, coal)				
Nuclear				
Hydro				
Geothermal				
Wind				