

SOCIETY**● Living on the Mid-Atlantic Ridge**

Imagine living hundreds of kilometers from other people on an icy outcrop of volcanic rock surrounded by the cold North Atlantic Ocean. How would you stay warm? For the people of Iceland, this is an important question that affects their daily lives. Iceland is a volcanic island situated on the Mid-Atlantic Ridge, just south of the Arctic Circle. Sea-floor spreading produces active volcanoes, earthquakes, hot springs, and geysers that make life on this island seem a little unstable. However, the same volcanic force that threatens civilization provides the heat necessary for daily life. Icelanders use the geothermal energy supplied by their surroundings in ways that might surprise you.

Let's Go Geothermal!

Geothermal literally means “earth heat,” *geo-* meaning “earth” and *therme* meaning “heat.” Around the ninth century A.D., Iceland’s earliest settlers took advantage of the Earth’s heat by planting crops in naturally heated ground. This encouraged rapid plant growth and an early harvest of food. In 1928, Iceland built its first public geothermal utility project—a hole drilled into the Earth in order to pump water from a hot spring. After the oil crisis of the 1970s, geothermal-energy projects were built on a grand scale in Iceland. Today 85 percent of all houses in Iceland are heated by geothermal energy. Hot water from underground pools is pumped directly to houses, where it is routed through radiators to provide heat.

Geothermal water is also pumped to homes to provide hot tap water. This natural source meets all the hot-water needs for the city of Reykjavik, with a population of about 150,000 people!

There are still other uses for this hot water. For example, it is used to heat 120 public swimming pools. Picture yourself swimming outside in naturally hot water during the dead of winter! Greenhouses, where fruits and vegetables are grown, are also warmed by this water. Even fish farming on Iceland’s exposed coastline wouldn’t be possible without geothermal heat to adjust the water temperature. In other industries, geothermal energy is used to dry timber, wool, and seaweed.

Power Production

Although hydropower (producing energy from water power) is the principal source of electricity in Iceland, geothermal energy is also used. Water ranging in temperature from 300–700°C is pumped into a reservoir, where the water turns into steam that forces turbines to turn. The spinning motion of these turbines generates electricity. Power generation from geothermal sources is only about 5–15 percent efficient and results in a very large amount of water runoff. At the Svartsengi power plant, this water runoff has created a beautiful pool that swimmers call the Blue Lagoon.

Going Further

Can you think of other clean-energy resources? How could we harness such sources?