🌎 Geothermal Factsheet

Introduction - Our lives are dependent on energy and electricity. Consider the role of energy in reading this: energy was required to create the computer that this article was written on. Energy is needed to keep the lights on and to keep the air warm (if you have the heater on) or cool (if you have the air-conditioner on). It took energy to build the building you're in. If you're thinking of eating a snack while you're reading then chances are energy was needed to create, store or transport your snack. The clothes you're wearing needed energy to be made and will need energy later to be cleaned.

Evidence of our dependency on energy is all around us. And because we need it for so much in our lives, it makes sense that we should be using a form of energy that is best for us and best for our planet, both now and in the future. This is what we call 'sustainable energy'.

- **Energy** - Scientists describe energy as the ability of a body or system to do work. Energy is all around us and is constantly changing. When you feel the warmth of the sun on your back you're enjoying the heat energy from the sun. When you cook over a campfire you're using heat energy converted from the stored energy in the wood you're burning. There is energy in the food that we eat. This energy comes from plants who used the energy from the sun. And there is the energy we use for making electricity.
- **Electricity** - Electricity is a form of energy. We use this energy in almost every aspect of our lives: heating and cooling, cooking, lighting, charging phones and computers, watching TV and listening to music, and even for charging (some of) our cars.

About geothermal energy - The Earth has a very, very hot molten core (melted rock). We see this melted rock close to the surface of the Earth when it erupts out of volcanoes. In addition, at only about 3-6km below the surface of the Earth there are layers of very hot - but not molten - granite. These can be as hot as 250 degrees centigrade, and we can use this heat to generate electricity. This is called geothermal energy. There are a couple of ways that we can get this heat out of the ground and turn it into energy.

- *Wet geothermal power* - Wet geothermal power works by tapping into the hot water and steam trapped in the hot granite under the Earth's surface. Water trapped close to this heat is then pushed to the surface where the pressure created from the steam of the hot water is used to power generators to create electricity.
- *Dry geothermal power* – In the US, we don't have any molten lava just beneath the surface, but we do have lots of hot granite. We can access this heat by drilling holes into the hot rocks and then forcing water into the holes. This creates great pressure which fractures the rock and allows the water to move through the rock. In moving through these pathways, the water is heated by the hot rocks and then drawn out of the holes at a lower pressure. This hot water is then used to power a turbine on the surface that spins out electricity.

The good thing about geothermal energy is that it is entirely renewable and clean. Like the sun and the wind it will never run out. But unlike energy from the wind and the sun, geothermal energy can provide steady power that can be accessed 24 hours a day.