



THE GREEN ISSUE

Around 2,200 million years ago Earth was a giant snowball in space. Three hundred million years ago our climate was SO warm that it played host to seagull-sized dragonflies and millipedes the size of bears. Sixty-six million years ago, when the asteroid hit Earth and killed the non-avian dinosaurs, it got hot enough to roast a chicken. Okay, so that temperature change didn't last long, but the point is this: the Earth's climate has always been changing. Twenty-first-century humans are busy doing what every creature in Earth's history has done before us: figuring out how to face it. The only difference is, this time, we're the ones who've been changing it.

THIS IS THE LIFE

For thousands of years people have been creating things with the goal of making this planet feel more and more like home. In the last 200 years, this has really begun to take effect. We've figured out how to make water cleaner. We've found new ways to travel around the globe. We've learned how to survive cold winters and scary storms. We've created all kinds of ways to communicate with one another. But here's the thing: this project of making life easier and more comfortable for humans has required lots of energy and changes to the land. Much of the energy we've used has been created by burning **fossil fuels** – a practice that releases **greenhouse gases**. These changes have resulted in the Earth's climate heating up.

But hang on, how does that happen? And, how do we know it's down to us? Ed

Both excellent questions.

The Earth's climate can be affected by three major things:

- 1 How much energy is coming from the Sun
- 2 How the Earth orbits the Sun
- 3 How much of the Sun's energy is held in Earth's atmosphere

We know that the Sun's energy output has not increased enough to make an impact on our climate, and the Earth's orbit around the Sun has not dramatically changed. But the amount of energy held in the atmosphere depends on what the atmosphere is made of. Humans have been adding greenhouse gases like **carbon dioxide**, **methane** and **nitrous oxide** to the atmosphere in massive quantities. These gases are

excellent at trapping heat. Scientists are pretty certain this is the major cause of the climate change we're currently seeing.

Fair enough, but why should we do something about it? Ed

If we don't, then the project I was on about earlier – the one about making life more comfortable, that'll be a lot harder in future. People might struggle to grow food. Changes in weather and sea level will make some places much harder to live in. We could lose some important and beautiful habitats, such as coral reefs and rainforests. If we want to continue our project, we have to change our approach and tackle the problem.

THE GOOD NEWS

The good news is we are doing something about it. The largest change concerns how we get our energy. We are switching from fossil fuels to **renewable energy** sources like **solar power** and **wind power**. Getting this technology up to scratch has taken lots of experimentation and engineering, but around 20 per cent of the world's energy now comes from renewables, and this percentage continues to grow.

We're also changing the way our buildings are constructed. New buildings are much more energy efficient than their older counterparts. In fact, with fancy materials and clever designs they can have a 75 per cent lower carbon footprint. We are also changing the way we grow food, so

that we can protect important habitats like peatlands and forests that actually *pull* carbon dioxide from the atmosphere. (See our Earth issue from April 2020 to learn more about **carbon sinks**.)

What can we do? Ed

In terms of personal choices, one of the most effective changes we can make is to eat less food that comes from cows and sheep. Dairy and meat production creates a lot of greenhouse gas emissions. Another thing we can do is reduce the number of miles we travel by plane or car.

The very best thing AQUILAnauts can do, is stay curious and keep learning. When you grow up, you'll have the chance to bring your passion and knowledge to the problem of climate change. We'll need scientists to keep track of our progress and engineers and designers to invent new ways of making our lives better. We'll need artists, musicians and writers to bring their creativity and ideas. We'll need lawyers and politicians who can understand the science, so that the right decisions get made. Climate change isn't going away any time soon, but with continued hard work, we can make sure we live full lives that don't harm future generations.