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WHAT A WONDERFUL WORLD

With foreword by
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Be inspired to care for our planet with
35 real-life stories and green tips

HOW WE CHANGED THE WORLD

Stare into a churning sea, a raging storm or the boiling crater of a volcano, and you need no reminder that there are great forces at work on our planet. Yet in the 200,000 years that modern humans have walked the Earth, WE have become the greatest force of nature the world has ever known. Just a couple of hundred years ago we set a big change in motion.

In the late 1700s the Industrial Revolution began in Britain and quickly spread to other parts of the world. We invented factories and new machines powered by coal, oil and gas. These substances are known as fossil fuels and when burned they release carbon dioxide gas (CO_2) into the atmosphere. After factories came cars and, later, aeroplanes – inventions that revolutionised travel, but pumped even more CO_2 into the air from their engines. Today, we produce enough CO_2 to fill more than 1,000 two-storey homes every second.

GLOBAL WARMING

As well as CO_2, our activities have released another gas into the atmosphere. Landfill – the rubbish we bury in the ground – and livestock farming create methane. Methane and CO_2 are known as 'greenhouse gases'. They stop some of the Sun's heat escaping back into space and cause what is known as 'the greenhouse effect' – like when the Sun shines down on a greenhouse and the warmed air is trapped inside. The greenhouse effect is what makes Earth a good place for life, but the amount of greenhouse gases we have added to the atmosphere is causing the planet to warm faster than at any other time in human history.

ONE DEGREE

Earth is about one degree Celsius hotter since the Industrial Revolution began. One degree may not sound like much, but it is enough to melt polar sea ice and glaciers, cause sea levels to rise, make the weather more extreme and change climates around the world.

WE MADE OURSELVES AT HOME

To make matters worse, we have cut down three trillion trees, made enough concrete to thinly pave the planet's entire surface and filled the ocean with tiny plastic pieces. According to scientists, our actions have helped set in motion a mass extinction that is seeing wildlife disappear at a faster rate than ever before, with many species disappearing even before they are discovered.

It's scary to read, but this is not the end of our story. It's the beginning of a new chapter . . .

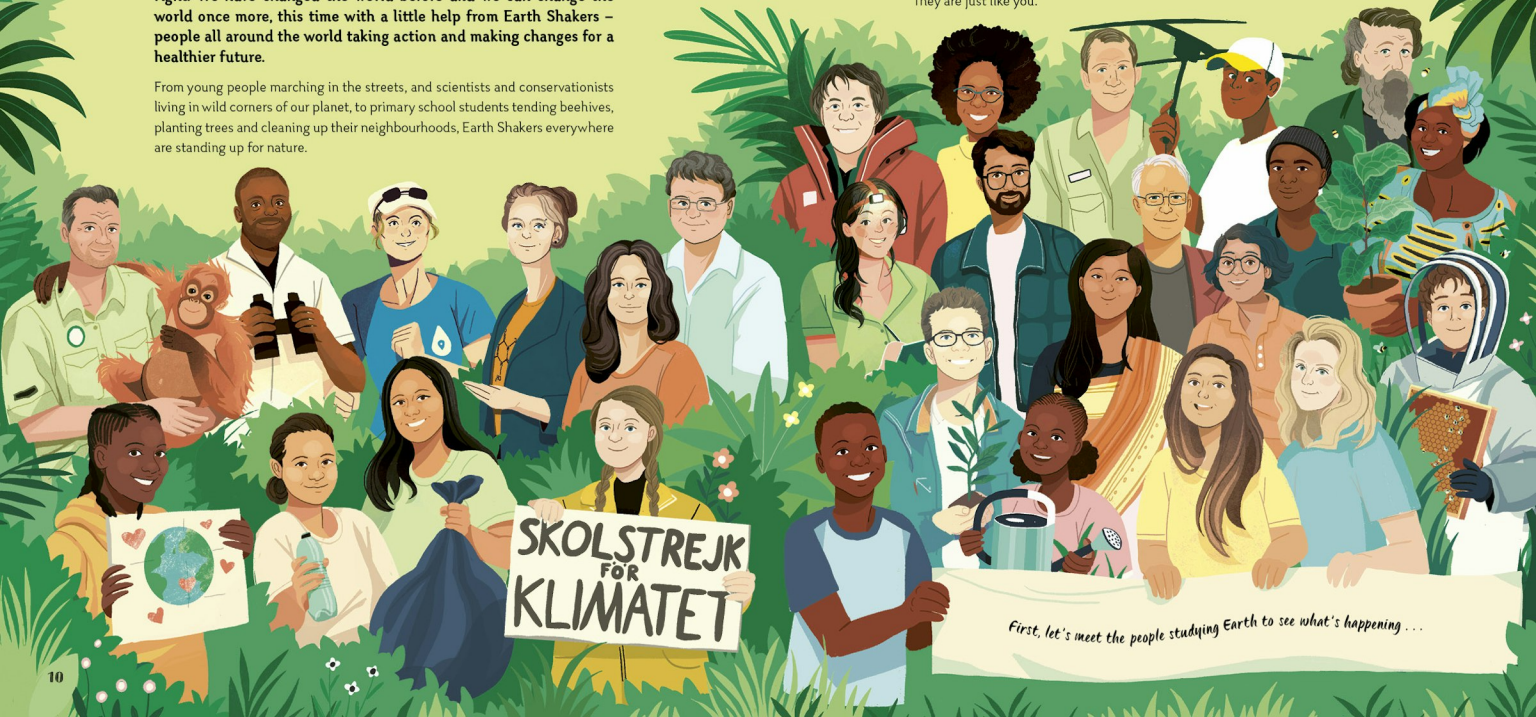
THE EARTH SHAKERS ARE RISING

Our planet is under pressure, but it's not too late to make things right. We have changed the world before and we can change the world once more, this time with a little help from Earth Shakers – people all around the world taking action and making changes for a healthier future.

From young people marching in the streets, and scientists and conservationists living in wild corners of our planet, to primary school students tending beehives, planting trees and cleaning up their neighbourhoods, Earth Shakers everywhere are standing up for nature.

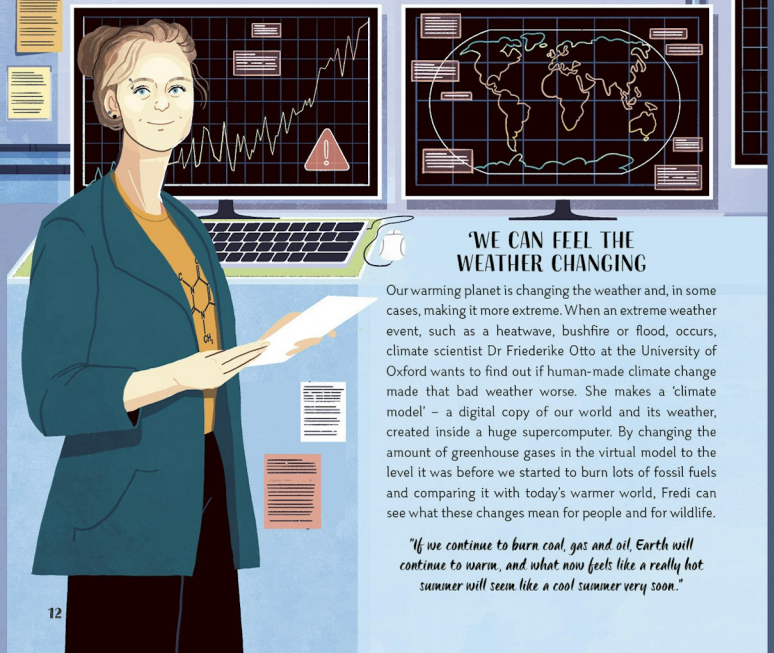
Already, positive changes can be seen all around us. We can drive electric cars and power our homes using energy created by water, the wind and the Sun, instead of burning fossil fuels. Conservation projects have helped to save extraordinary species from extinction, such as the giant panda and humpback whale, and protect huge areas of land and ocean from human development. Although there is still much more to do, more Earth Shakers than ever before are rising to the challenge. They are clever, caring and capable of incredible things.

They are just like you.



EARTH IS SENDING US A MESSAGE

Thanks to satellites, drones and scientific advancements, we have been able to study, observe and record our planet in more detail than ever before. Not only does data show us the changes that are happening, but we can also feel, see and hear the changes all around us. The Earth Shakers who study the planet help us understand what's happening now and what could happen in the future.



'WE CAN FEEL THE WEATHER CHANGING

Our warming planet is changing the weather and, in some cases, making it more extreme. When an extreme weather event, such as a heatwave, bushfire or flood, occurs, climate scientist Dr Friederike Otto at the University of Oxford wants to find out if human-made climate change made that bad weather worse. She makes a 'climate model' – a digital copy of our world and its weather, created inside a huge supercomputer. By changing the amount of greenhouse gases in the virtual model to the level it was before we started to burn lots of fossil fuels and comparing it with today's warmer world, Fredi can see what these changes mean for people and for wildlife.

"If we continue to burn coal, gas and oil, Earth will continue to warm, and what now feels like a really hot summer will seem like a cool summer very soon."

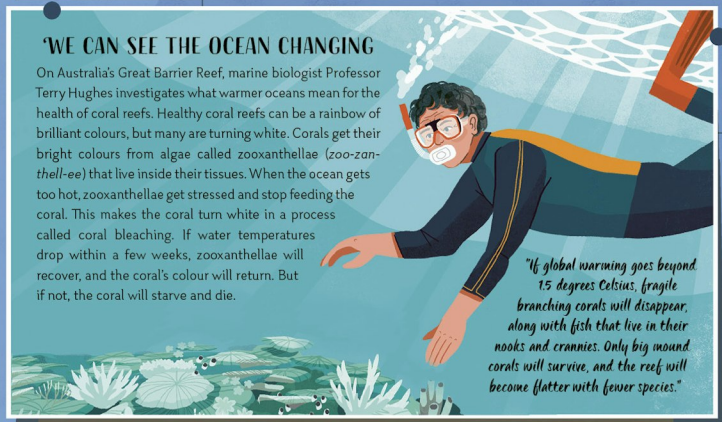
"Nature isn't something that only happens in the middle of the countryside – it's right in front of us. We are part of it – and urgently need to look up, listen, and get on nature's wavelength so we can save it."

'WE CAN HEAR IT IN THE SILENT SPACES

The world's wild spaces are falling silent, as a growing number of bird species are threatened with extinction, including puffins, snowy owls and turtle doves. Naturalist David Lindo fears children today will never know the turtle dove's distinctive purring song, which was once a sound of the British summer. Turtle dove numbers have fallen by around 80 per cent since 1980. Each year, they migrate more than 5,000 kilometres from wintering grounds in Africa back to their breeding grounds in Europe, but millions of birds are shot down by hunters. The birds that successfully complete the journey find the woodlands where they breed increasing cleared for farming.

'WE CAN SEE THE OCEAN CHANGING

On Australia's Great Barrier Reef, marine biologist Professor Terry Hughes investigates what warmer oceans mean for the health of coral reefs. Healthy coral reefs can be a rainbow of brilliant colours, but many are turning white. Corals get their bright colours from algae called zooxanthellae (*zoo-zan-thell-ee*) that live inside their tissues. When the ocean gets too hot, zooxanthellae get stressed and stop feeding the coral. This makes the coral turn white in a process called coral bleaching. If water temperatures drop within a few weeks, zooxanthellae will recover, and the coral's colour will return. But if not, the coral will starve and die.



"If global warming goes beyond 1.5 degrees Celsius, fragile branching corals will disappear, along with fish that live in their nooks and crannies. Only big mound corals will survive, and the reef will become flatter with fewer species."

Take a journey around the world, from the highest mountain peaks, down into the blue ocean, and meet some of the Earth Shakers who have helped change our planet for the better . . .

'ON THE ROOF OF THE WORLD

MOUNTAINS

Mountains are mighty barriers of rock covering around 25 per cent of Earth's land surface. Born when continental plates collide, carved by giant glaciers and sculpted by wind and rain, mountains are breathtaking monuments to powerful forces at work on our planet.

At high altitude, the weather can change in minutes, from clear skies to blizzards and sunshine to sub-zero temperatures. Fast-moving masses of snow with the weight of three Empire State Buildings can roar down the slopes as avalanches. Although mountains are one of the most dangerous and unforgiving environments on our planet, around one in 10 people and a variety of species live in these regions.

CLEAN MOUNTAIN AIR

The easier it becomes to access the world's mountains, the more people come to visit, leaving a trail of rubbish behind. But in mountain valleys, a different kind of pollution has taken hold – air pollution. In areas that are largely surrounded by mountains, the wind is blocked and air pollution cannot blow away – this is called the 'basin effect'. In more than 400 of America's national parks – many of which are in mountainous regions – air pollution has reached unhealthy levels.

Huge, shaggy-furred yaks are at home in the thin air and bitter winds experienced at elevations beyond 5,000 metres.

THE DEATH ZONE

The higher you go, the harder life becomes. Areas with an altitude higher than 8,000 metres have so little oxygen no plants or animals can survive. Only 14 mountains on Earth have peaks higher than 8,000 metres – that's about 10 times higher than the world's tallest building, the Burj Khalifa in Dubai. Ten are in the Himalayas, and the highest – Mount Everest – towers 8,850 metres above sea level.

LIFE ON THE EDGE

At around 3,500 metres on the Himalayan slopes, trees give way to smaller plants and shrubs, which are grazed on by one of the world's toughest animal mountaineers – the spiral-horned markhor. Beyond 4,000 metres tough, low-growing plants, such as grasses and mosses, peek from between rocks, and are nibbled on by little Himalayan marmots. High up on rocky outcrops, spotted snow leopards scan for prey where large, woolly, goatlike tahrs scramble over ridges. Beyond 6,000 metres, Himalayan jumping spiders pounce on insects blown up on the wind.

But at the foot of the Himalayas, the winds of change are blowing . . .