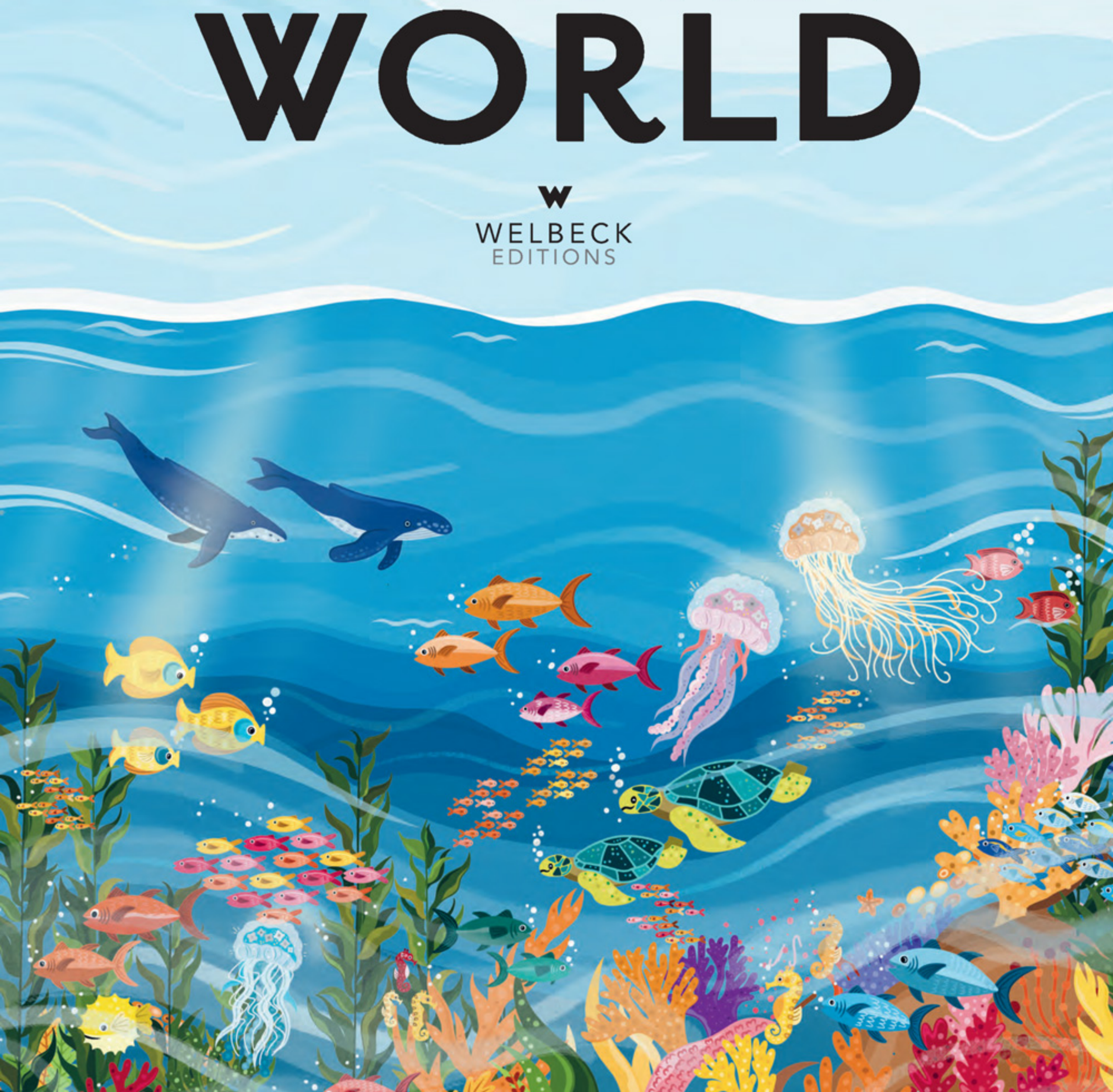
CINDY FORDE

ILLUSTRATED BY BETHANY LORD

BRIGHT NEW WORLD

WELBECK
EDITIONS



For
Alaïs, Chloé, Julian, Leo, Lilah, Lilly, Mia and Sophie
And for Saxon, Tasman and Everest.
C.F.

Dedicated to all the children out there inspired to make change!
B.L.

ABOUT PLANETARI
Planetari is an education platform dedicated to equipping children to understand how Earth works and how they can be part of creating a brighter world.
www.planetari.world

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FOREWORD

I've been campaigning on environmental issues for more than 50 years. But my world changed on 20th August 2018 when a 16-year-old schoolgirl in Stockholm decided to go on strike – to remind Swedish politicians that they simply weren't doing enough to address the Climate Emergency. By the end of 2019, around seven million young people had joined Greta Thunberg, in one way or another, in urging politicians the world over to get their act together. Then we were all clobbered by Covid, but this is still one of the most inspirational movements I've ever seen. It made me more hopeful than anything else over the last few years. Young people standing up, so courageously, to remind their parents' and grandparents' generation that they've made a right mess of things so far – in terms of protecting this beautiful and fragile planet of ours.

I know just how passionately many young people feel about the environment – and I hate the fact that so much of what they hear about it is all the bad stuff: the disasters, the extinction of species, the pollution, climate change apparently just getting worse and worse. It really shouldn't be like that.

Which is why I really love *Bright New World*. It doesn't ignore any of the problems – that wouldn't help anyone. But it then invites us in to celebrate all the amazing things that are happening, all the brilliant campaigns (and young campaigners!), the stories of hope from around the world, and special places are protected, restored and loved.

And what's the most amazing thing of all? Every time we put Nature first (rather than prioritising yet more development and growth), we get so many other benefits: we get cleaner air and cleaner water, less waste, livelihoods and communities better protected, and more of those wretched greenhouse gases stored in soils, trees and vegetation, rather than ending up in the atmosphere.

We now know just how important this is. We know we have to put Nature back at the heart of our lives – in our towns and cities as much as in rural areas or wild places. And we know that all this puts joy in our hearts and a smile on our faces. And we need a lot more joy and many more smiles in such a troubled and destructive world.

Jonathan Porritt, author and campaigner

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INTRODUCTION

A WORLD THAT WORKS FOR EVERYONE

Beautiful, isn't it? Our tiny planet, in our enormous solar system, contains the only known life in the whole universe.

Each of part of Earth's life is important. Yours is perhaps the most important of all.

Humans face serious problems like climate change, species extinction, global pandemics, diminishing rainforests, polluted oceans, poverty, and inequality in many forms. Every form of life here is threatened, including ours, because Earth is finding it harder to do her job of looking after us all.

But because we now understand much more about how our planet works, we know how we can create a brighter world where all life can flourish.

In this book, we're going to visit that brighter world.

We'll explore the wonderful future we can have if we use our heads, and hearts, and dare to think differently. We know Earth is our life support system. So what if we turned the things that have caused the problems into the solutions? Energy, food, farms, factories, cities, buildings, trains, planes and cars. How we care for our rainforests, our oceans, each other, and other creatures. How we take holidays, what we learn in school, and what we choose to buy – it's all important.

Most of the solutions we need to do this already exist.

EARTH

Many solutions are already at work, and some are still on the drawing board. We'll look back from a world where our major problems are solved, then explore the steps that will get us there.

By working together with a shared purpose, just imagine what we can do! It's already happening. In 2015, almost every country agreed to the United Nations' Sustainable Development Goals, 17 goals that point us to a brighter world by 2030. This book is a roadmap to help us on our way.

It's a map you will be part of making.

You'll get to join in and help imagine how things can be done, and to invent solutions of your own. Remember we are together on this journey. And just imagine how Earth will be even more beautiful when our star shines out into the universe in the years to come.

THE FUTURE IS BRIGHT

THIS IS THE WORLD WE COULD MAKE!

Hi, and welcome to the future! Read on, and find out what life could be like in the years to come...

"After that big scare when we only had about 10 years to stop our planet's temperature rising by more than 1.5 degrees Celsius, we all worked together, really fast. We agreed that we'd judge success on how healthy our planet is and how well cared for its citizens are – human and otherwise. We're doing pretty well, just look!"

"People realised that only counting how much money things made had caused most of the problems. It made some of us very rich, but many very poor. Though we could buy things cheaply, it almost cost the Earth."

"Now we design everything to cause no harm, or better still, help Earth regenerate. We power everything by the sun, wind or waves. Our farms are vertical and our cities grow health and happiness. 'Living' buildings power themselves, produce zero emissions and clean the air."

"Sea levels have stopped rising, but we've kept our floating cities and towns. They help make sure everyone has a home and bring us closer to our heroes – the oceans! Now rainforests and oceans are internationally protected treasures. We look after the web of life that looks after us."

"Thinking differently has made this bright future possible. To tell the truth, we'd known for a long time what needed to be done, and most solutions were already there. So we just got on and did it!"

A CONNECTED WORLD

All life on Earth is interconnected. It's a living planet. Like any living thing, what happens in one part of the system affects the other.

Over billions of years, life on Earth has transformed and the climate has changed naturally. But in recent years, human activity has affected Earth's ability to stay in balance and to remain a safe place for humans and all other forms of life.

EARTH'S PROBLEMS

So what's causing these problems?
The sun is the source of warmth for Earth. Ice and clouds reflect some of this heat away as light. The rest is captured by our oceans and land and warms these surfaces. Some heat escapes to space, but most is absorbed by greenhouse gases in our atmosphere.

They are called greenhouse gases because they trap heat and keep Earth warm. We need these gases, like carbon dioxide (CO_2), methane, and water vapour, to keep our planet at just the right temperature.

Over millions of years, the amount of CO_2 in the atmosphere has changed. But, since the industrial revolution in the late 18th century, when we started to use fossil fuels, such as oil, coal and natural gas, to power our factories, homes and transport, we've put about 2000 gigatons* of CO_2 into the atmosphere. So more and more heat is getting trapped in Earth's atmosphere.

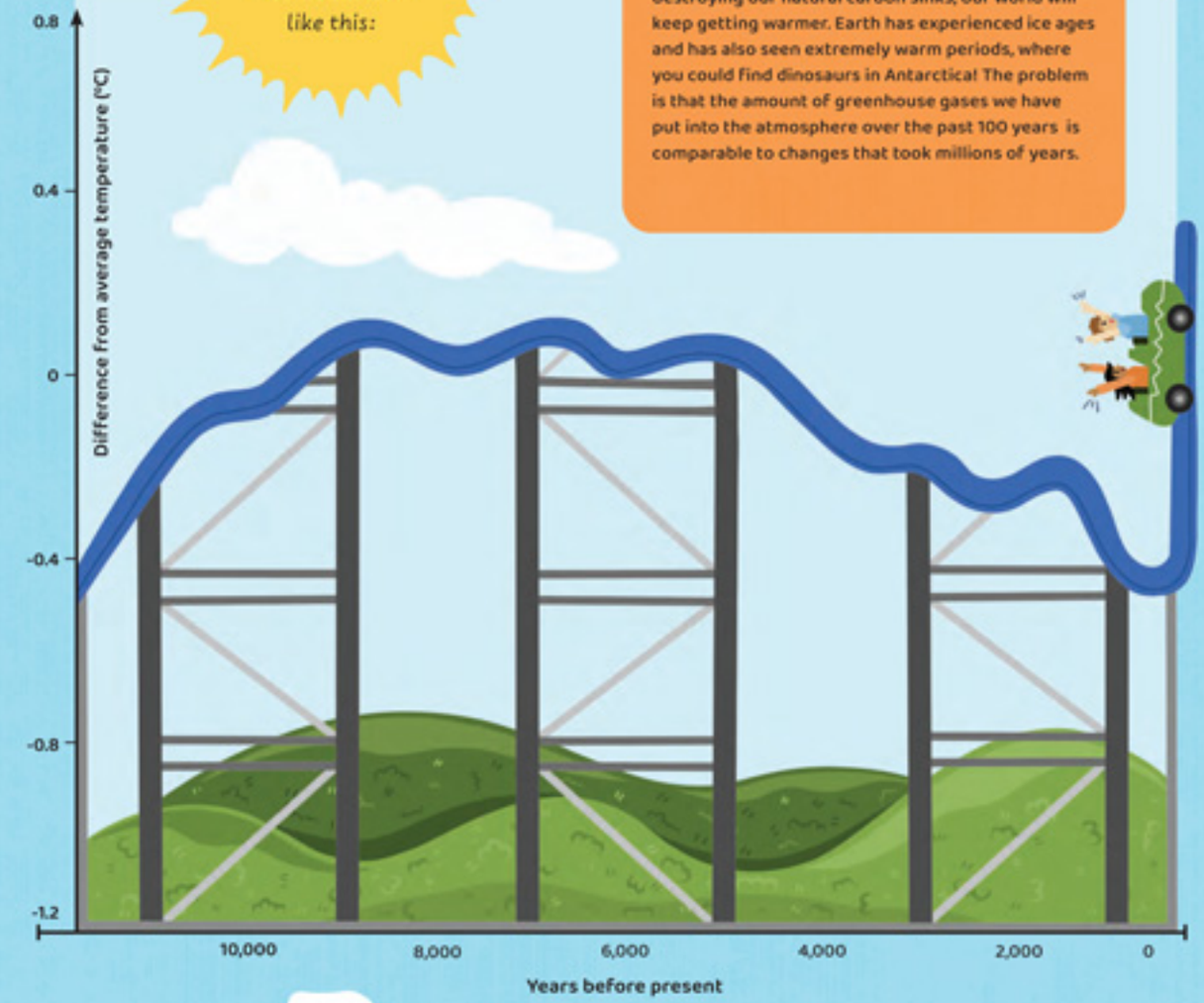
* 1 gigaton = the weight of 12.2 billion people (twice the world's population!)

There are now almost 8 billion people on Earth, up from just over 1 billion 100 years ago. We are clearing more land to build more cities. To have space to raise all the animals we eat, we are chopping down forests. Forests are carbon sinks which means they absorb CO_2. Without them, even more heat gets trapped. And dead trees release the carbon they once stored. More heat!

About half of the habitable land on Earth has been cleared for agriculture, much of this for raising cows. When cows burp, they let out methane which is a greenhouse gas. More heat!

The oceans absorb huge amounts of heat. They are the planet's best carbon sinks. Because the planet is warming, they are absorbing more heat than ever before. This makes them too acidic which damages the coral reefs which help store carbon and keep the oceans healthy. And because of overfishing, many sea creatures that help absorb and store carbon are gone, so even more carbon escapes to heat Earth.

If it was a rollercoaster, the temperature rise would look like this:



ROLLERCOASTER DANGER

As the planet heats, ice caps and polar regions melt. This means they can't reflect heat away from Earth as light and also causes sea levels to rise.

If we keep emitting greenhouse gases and destroying our natural carbon sinks, our world will keep getting warmer. Earth has experienced ice ages and has also seen extremely warm periods, where you could find dinosaurs in Antarctica! The problem is that the amount of greenhouse gases we have put into the atmosphere over the past 100 years is comparable to changes that took millions of years.

LIFE CYCLES

Knowing how our planet works helps us learn to live in balance with it. Whatever we may want to be – farmers, physicists, filmmakers – we need to do it in a way that causes no more harm. Or better still, in a way that helps Earth regenerate!

Let's look at two vital cycles so we understand how to work with them:

THE CARBON CYCLE

Carbon is an element formed from exploding stars. It's in every living thing, including you. Earth constantly takes in, stores and releases carbon. Like breathing. It's the most important building block for all life on this planet. For a healthy Earth, we need the right amount of carbon in the atmosphere.

The Problem

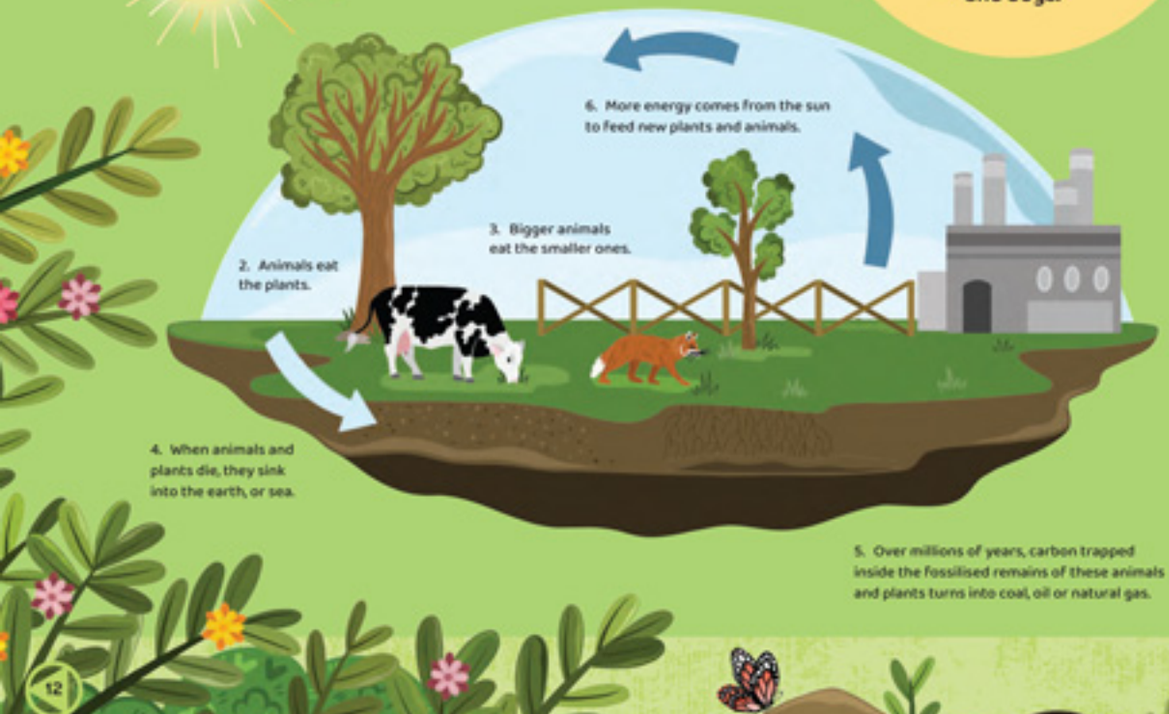
Since fossil fuels have increasingly powered our world, carbon that Earth took millions of years to store has been released in a few hundred. This makes Earth too hot. The carbon cycle is out of balance.

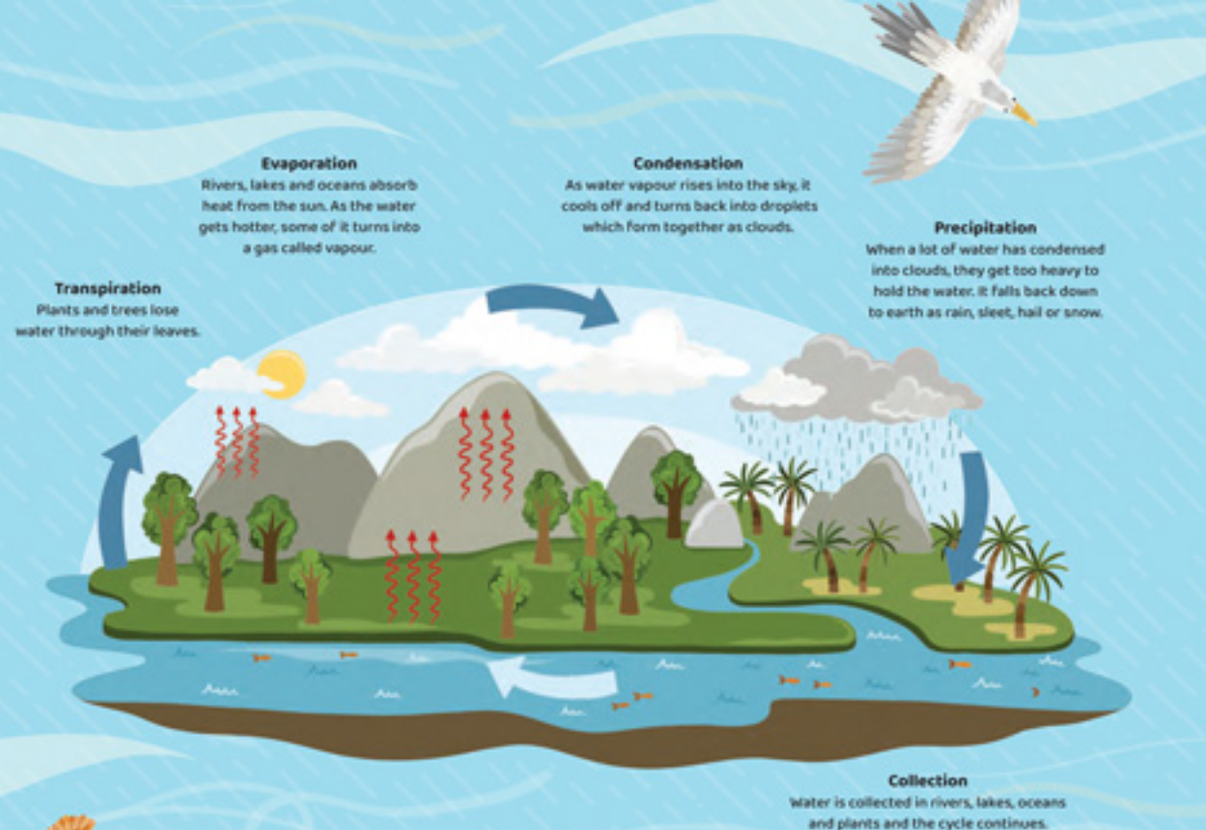
The Solutions

Stop putting more CO_2 into the atmosphere, by changing how we produce energy.

Get CO_2 out of the atmosphere, by looking after our carbon sinks. Carbon sinks absorb carbon from the atmosphere and reduce the amount of CO_2 in the air. The main natural carbon sinks are oceans, forests, plants and soil, and bogs.

1. Plants use sunlight to turn CO_2 in the atmosphere into glucose, a form of sugar. This is called photosynthesis. Glucose is used as energy to power the whole food chain.





THE WATER CYCLE

What have you got in common with a sabre-tooth tiger, Queen Cleopatra and Chief Sitting Bull? You drink the same water. Earth has recycled water for over 4 billion years.

The Problem

As more CO_2 gets into the atmosphere, Earth gets warmer so:

- More water evaporates into the air. Warmer air can hold more water vapour, which can lead to severe rainstorms, causing major problems like flooding.
- In some places, air gets drier, which means trees and plants and even the soil dries out. So when it does rain, much of the water runs off the hard ground into rivers and streams, and the soil remains dry, increasing risks of drought and fires.
- Ice at the North and South Poles is melting. This puts more water vapour into the atmosphere, so things get even hotter. It also puts more water into the sea which causes sea levels to rise, increasing the risk of severe flooding.

The Solutions

Use and waste less water.

Cut greenhouse gas emissions.

CLIMATE CHANGE

What happens when the climate changes – even by a little bit?

This is the saddest part of this book. But it can make us determined to do things differently, which is what this book is about.

The world's average temperature is now about 1 degree higher than it was in pre-industrial revolution times. It sounds small, but it makes a big difference. It's already changed our planet.

All the different effects and changes are connected to each other. To solve climate change, we need to work with our living Earth to restore a balance across the whole system. It's not just about reducing carbon emissions – we need to restore and care for our people, forests, rivers and oceans, and the creatures who live there. All these have a vital role to play in a healthy planet.

EFFECTS OF CLIMATE CHANGE

STORMS, HURRICANES AND CYCLONES

RISING SEA LEVELS

DROUGHT

FIRES

HEATWAVES

HEAVY RAINFALL

CONSEQUENCES

Disappearing places
As sea levels rise, low-lying areas (such as Pacific islands like the Maldives, and Fiji) are at risk of disappearing entirely. Cities like Jakarta in Indonesia, New York in the USA, Shanghai in China, and The Hague in the Netherlands could sink beneath sea water.

Species extinction
Many of the world's threatened species live in areas severely affected by climate change. Climate change is happening too quickly for many species, both animal and plant, to adapt. Over 1 million species now face extinction.

Freshwater pressure
Climate change unbalances the world's water systems causing flooding and droughts. In 2019, heavy rains left more than 45 million people in 14 countries in Africa struggling to find food. And floods in Bangladesh left over 200,000 people homeless.

Devasted forests and communities
Drought, high temperatures and high winds are a lethal combination for forests. In 2019-2020, Australian bushFires destroyed 12.5 million hectares of forest – that's the size of South Korea. Nearly three billion animals died or lost their home.

Trouble at the poles
The North and South polar regions are crucial for regulating our planet. Antarctic ice is melting 6 times faster than 20 years ago. Sea ice could be gone from the Arctic within 15 years.

Acidic oceans
The oceans are absorbing so much CO_2 that some waters are becoming too acidic. This can harm coral reefs and sea creatures. Over half the world's coral reefs have been lost or severely damaged.

Loss of land, home and country
After a disaster has destroyed their homes and livelihood, many people have to find another place, or even another country to live in. This is called displacement. An average of 22.5 million people have been displaced by climate or weather-related events every year since 2008.

Health hazards
Air pollution due to burning of fossil fuels caused 8.7 million people's death globally in 2018, almost 4 times more than Covid-19.

EFFECTS OF CLIMATE CHANGE

Scientists agree that if we stop global temperatures from rising by no more than another half a degree by the end of the century, we can prevent some of these effects at their worst.

If we don't, by the end of this century, the planet will have warmed by more than twice that amount with tragic consequences. Yet scientists also agree that we are due to pass the 1.5 degree mark within the next 10 years! So we have to act fast.

The good news is that we already have almost all of the solutions... as we'll find out in the rest of this book.

SUPER POWER

THE FUTURE OF ENERGY

"In your time, producing energy often means damaging the planet. But if you work together, you could have a future like this..."

"We had a huge celebration all around the world last year and got a new international holiday, Sun Day. It's to commemorate that almost all power on Earth now comes directly from the sun."

"We've had solar tower power stations for ages, but the breakthrough came when we finally got artificial photosynthesis right. This means we can make liquid fuel directly from sunlight! "

"All our vehicles can now be transitioned to run completely on 'Sun' – that's what we call the new fuel. We don't need to mine rare minerals for electric vehicle batteries anymore. We're turning the mines into nature reserves."

"This 'Sun' is powerful enough to drive heavy vehicles like trucks, cargo ships, planes and rockets, so we can phase out biofuels and hydrogen. Since we've had so much energy to go round, we have a much more peaceful world."

"We cleaned up the oceans, replanted the forests, and education and healthcare are free almost everywhere. Far less people get ill, and climate change has stabilised so there's more fresh water to go round."

"The new photosynthesis technology is portable and cheap, so everybody agreed that 'Sun' should be free. It's funny, when you don't have to fight over something you get much better at sharing!"