

For all the curious explorers – M.M.

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# Maddie Moate

Illustrated by Paul Boston



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## Hi, I'm Maddie.

Thank you so much for picking up my book! If you love adventure, caring for the planet and finding out how things are made, then you're in for a treat.

I have always been fascinated by the way things are made and have spent the last 5 years visiting factories, farms and workshops to explore their inner workings and learn how people make the stuff we use every day. I've been lucky to share my discoveries online and on television, but now I get to do it in this book!

During my adventures, I've come to realize that everything we use and all the stuff we own has a story. A beginning, a middle and an end.

*Where does it come from? How was it made? And what will happen to it?*

The stories our things tell us have meaning because they impact the world around us.

We don't always think about this story when we make, use and throw away our stuff. But when we do, when we *really* think about the way something is made and the effect it could have on our planet, the most ordinary thing can suddenly become . . . **extraordinary**.

What if paper could be made with elephant poo?



What if trains could levitate?



What if ink could be made with pollution . . .



. . . and fences made with beehives?



Across the planet, now and throughout history, people and communities have invented everyday objects in the most creative, caring and often mind-blowing ways!

I find these global tales really inspiring, which is why I wanted to share some of my favourite stories across these precious pages. You're about to go on a worldwide eco-tour of STUFF!

Some of the places you'll read about I've been to, others I'm yet to visit, but in this book we can travel the world together! See if you can spot me as you flip through the pages.

So, let's get started! Over the page you'll find a map to help guide you on your journey.

*Where do you want to go first?*

Stay curious,

Maddie



## Stuff to make and do

All these stories have made me think about what I can make and reuse at home. Check out some ideas on pages 46-49 and have a go - maybe you could invent something new, reused and fantastic yourself!



## Stuff you might need to know

Throughout this book there are a few **extra-special words and phrases**, which you may or may not have heard of before. They are extra-special as understanding them helps us better support our planet. You can find these **words** and their descriptions on pages 50-52.

**REDUCE  
REUSE  
RECYCLE**



## Stuff to spot!

When I'm on my travels, I love to explore, look around and see what I can spot! I enjoy spotting things in books, too, so see what you can discover in my 'Spotter's Guide to Stuff' on page 53.



# Elephant-Poo Paper

Have you ever wondered where paper comes from? Today, most paper is made from wood and recycled paper products, but paper can also be made from rice, coconuts, old cotton clothes and even ... elephant poo!

All these things start their lives as plants and are made up of something called **plant fibre**.

Plant fibres are hair-like threads that help give a plant its shape. If you tear apart a banana leaf or the husk of a coconut, you'll see these stringy fibres inside. If you mush the plant fibres with water and spread the mixture on to a sheet, the material dries and becomes a piece of paper!



## How do you make paper from poo?

Elephants eat lots and lots and LOTS of plants. An Indian elephant might spend up to 19 hours a day eating and can chow down around 150 kg of food (that's about the same weight as an adult gorilla!) – the bulk of which is made up of plant fibres.



However, fibre is tricky to digest and elephants have pretty bad digestive systems. In fact, they only digest a quarter to a half of all their food, so lots of it comes out looking the same as when it went in! All that food means a lot of poo and they can poop 15–20 times a day! That's an awful lot of fibre-packed dung that can be put to good use.

In Chiang Mai, northern Thailand, there is an elephant-poo paper factory tucked neatly away in the jungle. Here they work closely with an elephant sanctuary to make lots of poo paper!

You might imagine this would be really smelly, but elephants are **herbivores** and only eat plants so their dung doesn't smell bad at all.

Find out how to make your own recycled paper on page 46.

First the poo has to be rinsed and cleaned to get rid of any nasty bugs and germs ...



fresh water and poo fibres

... then it is boiled in a bubbling cauldron for 6 hours ...



... and left to dry out in the sun.



food dye (for colour)  
mixing machine

The dried poo then goes in a mixing machine, which works just like a smoothie maker! Everything is chopped and whisked together into a sloppy wet paste we call **pulp**.



The wet pulp is squeezed into balls the size of apples. Each ball of pulp will make one large sheet of paper!



The pulp is then spread on to a mesh frame and left to dry.

After it is dry, the brand-new piece of poo paper can be peeled off the frame.



The money made from selling the paper goes towards planting more food, like banana leaves, for the elephants – so the system works in a big loop, and there's barely any waste.



## Save our trees!

Making paper from wood means cutting down lots of trees. **Deforestation** disturbs animals and can contribute towards **climate change**. **Sustainable** wood pulp can be great for making smooth, white paper, but most of the time we use paper for notes, scribbles or arts and crafts. So, if we don't need PERFECT paper all the time, then why don't we make more paper from a waste product like poo instead?!

# T-shirt Trends

**What if you could make T-shirts from T-shirts?** One billion items of clothing are made each year, but almost 40% never even get worn! This means a dumper truck of perfectly good material gets burned or buried in a huge hole in the ground, called a **landfill**, every second.

Clothes can sit in landfills for over 200 years. As they slowly break down, methane is produced. This **greenhouse gas** traps heat in the Earth's atmosphere, causing **global warming**. We can help prevent this by reducing the amount of clothes we buy, reusing clothes from second-hand shops and recycling the ones we already own!  
*Check out a fun idea on page 47.*

## Long Live your T-shirt!

Wouldn't it be great if we only made clothes that were really needed, and could find a way to turn old clothes into new ones? One clothing company is trying to solve this very problem and their story starts in India...

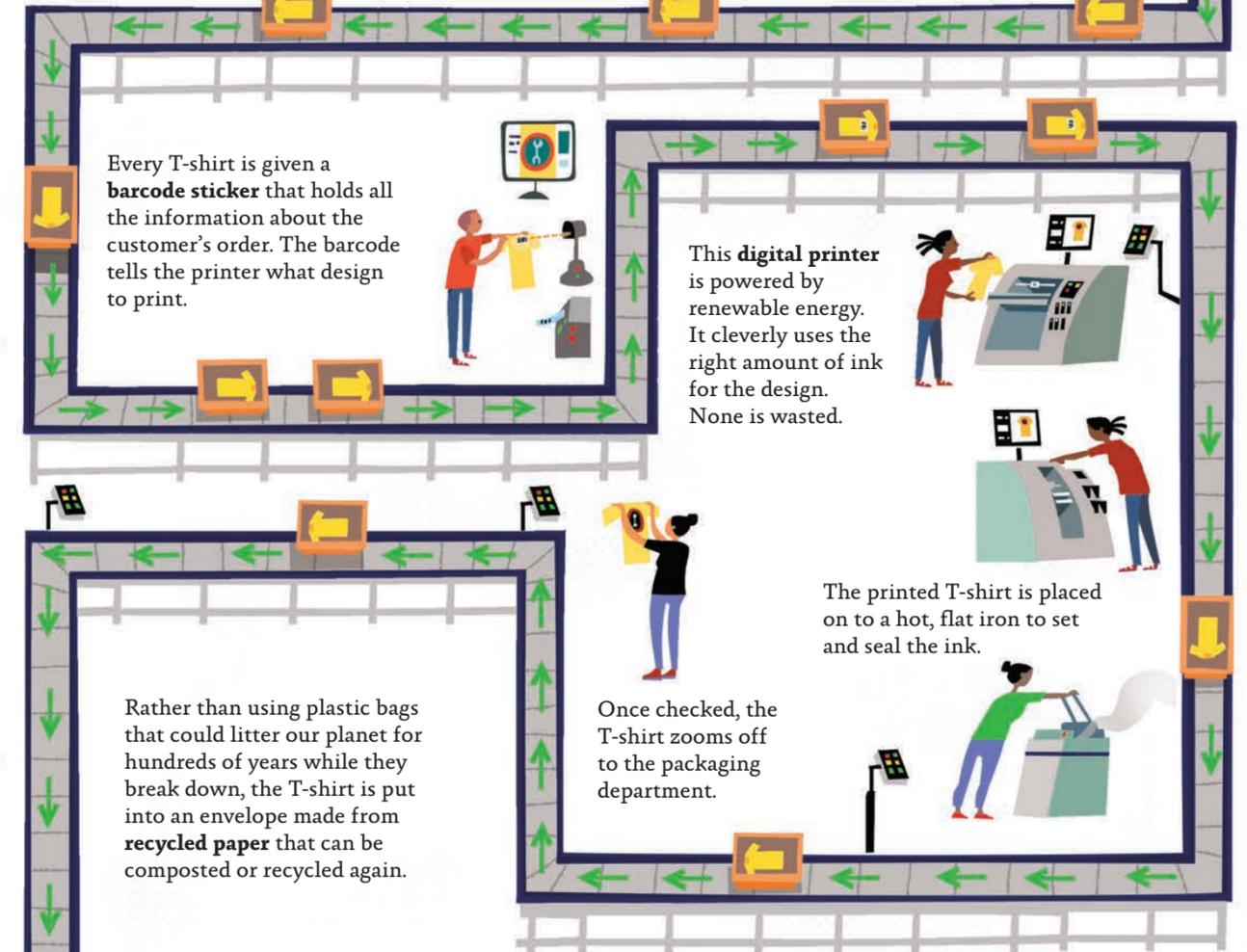


Landfill

## Ordering

Using **smart technology**, the UK factory only prints a T-shirt when an order has been placed by a customer online.

A factory worker finds the right size and colour T-shirt from the stock room.



Finally, the T-shirt is sent to its new owner, who can wear it time after time until it's been worn out or outgrown.

## But... then what happens to it?

Every single T-shirt the factory prints is designed so that it can be sent back in the post to be shredded, recycled and remade into new products again and again.

It works in one big **sustainable loop!**

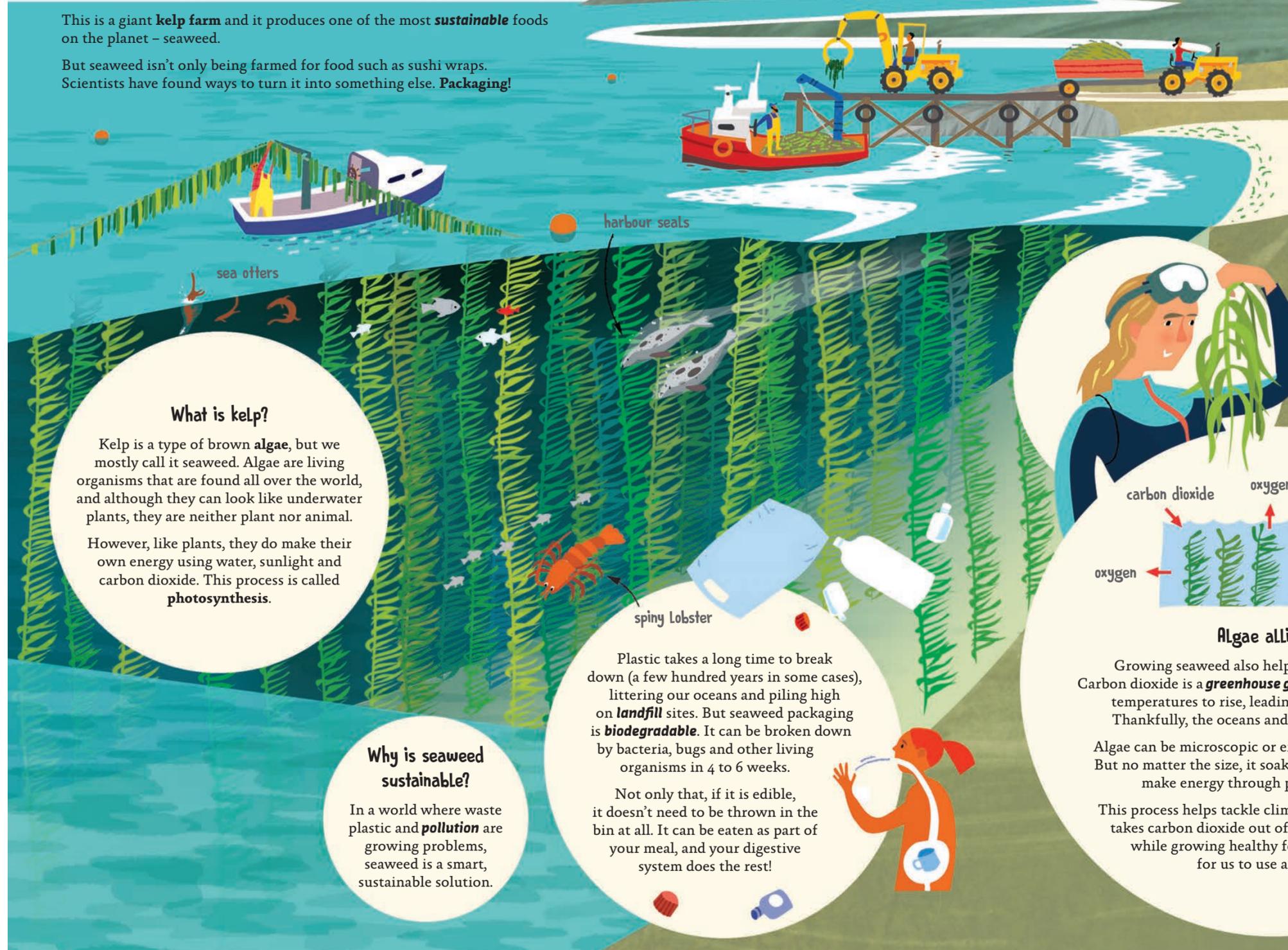
This is what's known as a **circular economy**.

# Seaweed Wraps

**What can you make with seaweed?** Off the coast of California, USA, beneath the waves, is an underwater garden bathed in aqua-blue light. Skyscrapers of slippery seaweed sway in the flowing current, shellfish cling to the green towers, fish dart between their shadows, and curious otters hunt for sea urchin snacks!

This is a giant **kelp farm** and it produces one of the most **sustainable** foods on the planet – seaweed.

But seaweed isn't only being farmed for food such as sushi wraps. Scientists have found ways to turn it into something else. **Packaging!**



## What is kelp?

Kelp is a type of brown **algae**, but we mostly call it seaweed. Algae are living organisms that are found all over the world, and although they can look like underwater plants, they are neither plant nor animal.

However, like plants, they do make their own energy using water, sunlight and carbon dioxide. This process is called **photosynthesis**.

## Why is seaweed sustainable?

In a world where waste plastic and **pollution** are growing problems, seaweed is a smart, sustainable solution.

Plastic takes a long time to break down (a few hundred years in some cases), littering our oceans and piling high on **landfill** sites. But seaweed packaging is **biodegradable**. It can be broken down by bacteria, bugs and other living organisms in 4 to 6 weeks.

Not only that, if it is edible, it doesn't need to be thrown in the bin at all. It can be eaten as part of your meal, and your digestive system does the rest!

## How is seaweed packaging made?

The kelp is harvested and brought to shore on boats.



It is then washed, dried and ground down into a fine powder.

Next, the powder is blended with water and a few other special ingredients to make a seaweed sludge.

The sludge mixture is heated and boiled, then turned into a thick gloopy gel.

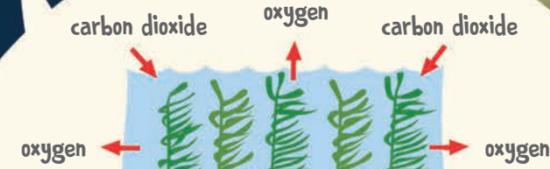
Once the gel has cooled, it can be moulded into something that looks and feels like plastic.

The seaweed 'plastic' can be used to make drink pouches, sauce sachets, carrier bags, food wrap, cups, straws and many other things.

Some scientists are even adding different flavours to the material because some seaweed packaging can be eaten!

## Seaweed farmers

Finding more uses for seaweed is great news for farmers. Seaweed grows along shorelines worldwide; it doesn't need to be fed or watered and it grows really fast. Giant kelp can grow about 60cm a day. This means lots can be grown very quickly!



## Algae allies!

Growing seaweed also helps the environment. Carbon dioxide is a **greenhouse gas** that's causing average temperatures to rise, leading to **climate change**. Thankfully, the oceans and algae are our allies!

Algae can be microscopic or enormous like seaweed. But no matter the size, it soaks up carbon dioxide to make energy through photosynthesis.

This process helps tackle climate change because it takes carbon dioxide out of our atmosphere, all while growing healthy food and material for us to use and eat.

