



Team Earth

**- a cross-curricular project
pack for KS2-3**

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TEAM EARTH

Introduction

Grown-ups often ask children and young people, “What do you want to be, when you grow up?” In a way, it’s a silly question, because a lot of the jobs that today’s young people will be doing haven’t even been invented yet. We’re going to need all kinds of new inventions, new thinking, and new skills to bring our planet back into balance.

There’s no denying that our planet needs some help. We human beings have made some bad mistakes over the last 200 years or so. But if we all work together, and do some really creative thinking, we could put that right. And it may not take as long as we think – if we are very committed and take decisive action, we might be able to get everything well on the path to recovery within less than 100 years.

But to do that, we all need to be on Team Earth. In fact, we need to be Team Earth Heroes. We need to be working with the natural world, and not against it. Everybody can make a difference, and this project pack is all about getting us all thinking about how we can make a bigger difference.

So let’s start now!



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Disclaimer:

This project pack is offered simply as an educational resource. Although the author is a supporter of the Green Party, the views expressed here are not necessarily a reflection of Green Party policy and this is not an official Green Party publication.



SECTION 1: The Web of Life

The Web of Life

What's in this Section?

- Name that tree!
- Bird/butterfly/wild-flower diary
- Habitat maps
- Drawing from life
- Food chains – everyone's connected
- Making your garden wildlife friendly
- Bird mobiles
- group project – Seed bombs!
- Creating more change – write to local council, local paper, MP

Name that Tree!

How many trees can you already identify? You can identify trees by looking at their leaves, flowers, fruit/seeds, bark and even their buds. At different times of the year, you'll find some ways easier than others.

Go for a walk, somewhere where you'll find a lot of trees – this could be a local park, a common, a wood, or maybe a stately home or a castle. How many trees can you identify? You might like to use a Tree ID app to help you.



The Woodland Trust do a free Tree ID app which you can download onto your phone. There are versions for Android and Apple.

Android:

https://play.google.com/store/apps/details?id=com.woodlandtrust&hl=en_GB

Apple: <https://apps.apple.com/us/app/british-tree-identification/id1112564089>

The trees to look out for are the ones you **don't** yet know!

There are over 50 kinds of native trees in Britain, plus some ornamental trees that have been imported, mainly for gardens and parks, but which then sometimes "escape" to the countryside, so it's unlikely you know them all.

Set yourself a challenge – can you learn to identify 10 new trees in the next month?

There's a tree-spotter's record sheet on the next page, to help you record the new trees you can now identify.

The Tree-Champion Challenge

Can you learn the names of 10 new trees?

Each time you learn a new tree, write its name in one of the boxes. You might like to add a picture of one of its leaves, or a real pressed leaf, to help you remember. If you're doing this when the tree has no leaves, why not take a bark rubbing, or take a photo with your phone?

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Keep a Nature Diary

At least once a week, go outside for 15 minutes or so and record what you see in your Nature Diary. You may like to draw what you see or take photos or videos with a phone or a camera. What could you focus on?

- Trees – have they got leaves? What colour are they?
- Flowers- are they on trees, shrubs or plants? Can you identify them?
- Fruits – look out for rosehips, haws, sloes, acorns, conkers, blackberries etc.
- Birds- Can you identify the birds you see?
- Insects- Which bugs are about? Are they flying, crawling, jumping, or walking?
- Animals – look out for foxes, squirrels, rabbits, hedgehogs, mice.....
- Evidence of animals – molehills, scattered feathers, bones, rabbit warrens....
- Other plants such as moss or pondweed

If possible, visit more than one habitat and compare what you find. For example, you may find very different flowers and birds near a canal than you would in a wood or in the park.

If you keep a record of the same places over a year or so, you'll build up a fascinating picture of how the changing seasons affect the wildlife in your neighbourhood.

Making a Habitat Map

Can you draw a sketch map of the place where you go to do your nature diary? You can take a tape measure and measure it accurately, if you like, or you could measure it roughly, in strides. Decide on a sensible scale for your map. If your area is quite small – say 10m x 10m then drawing a map where 1 or 2cm : 1 metre might be sensible. If you've decided to study a big area, such as a 5km walk through a wood, or your local park, you'll need to choose a scale where maybe 1cm : 100m - 200m. Or choose just one clearing in the wood, or one small area of the park to map.

Mark on your map where the trees and big shrubs are. Then mark where you found flowers, fruits, insects and so on.

If you really enjoy identifying wild flowers, you could do a detailed study of 1 square metre of ground. Map all the flowers you find onto a scale plan. Good places for this are meadows, clearings in woodlands, the short grass you find on commons and on hilly areas that's full of little wildflowers, or even your own lawn! It's amazing how many different tiny plants you can sometimes find in just 1 square metre.

Drawing from Life

This is a lovely activity for calming you down and helping you to really pay attention to what you see. If it's fine, you can do this outside, sitting next to the plant you are drawing. If it's very wet or cold, you may want to pick a sprig of the plant, including flowers and leaves, to bring home and draw.

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Never pull up plants by the roots – and don't pick the whole plant – just a branching stem. Don't pick rare or protected species such as orchids and don't pick plants that are very poisonous!

Really look closely at your plant and draw what you see.

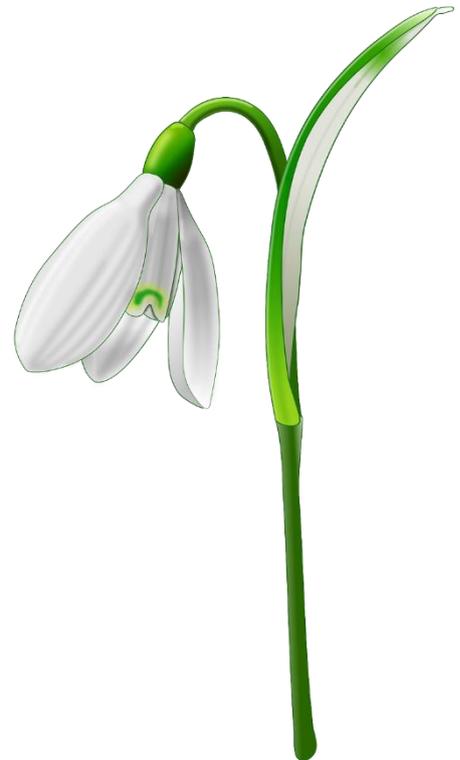
How many petals does it have? What shape are they? If you look carefully, you'll see that in many flowers the petals are not all the same shape or size. They may not be exactly the same colour as each other, either.

Try to match the exact colour of the petals. Flowers exist in dozens of different shades of blue or pink, for example. Can you mix different paints or crayons together to make the right shade?

Look at the way the stem joins onto the flower. Is it more like a cap or are there separate green sepals, like individual green petals?

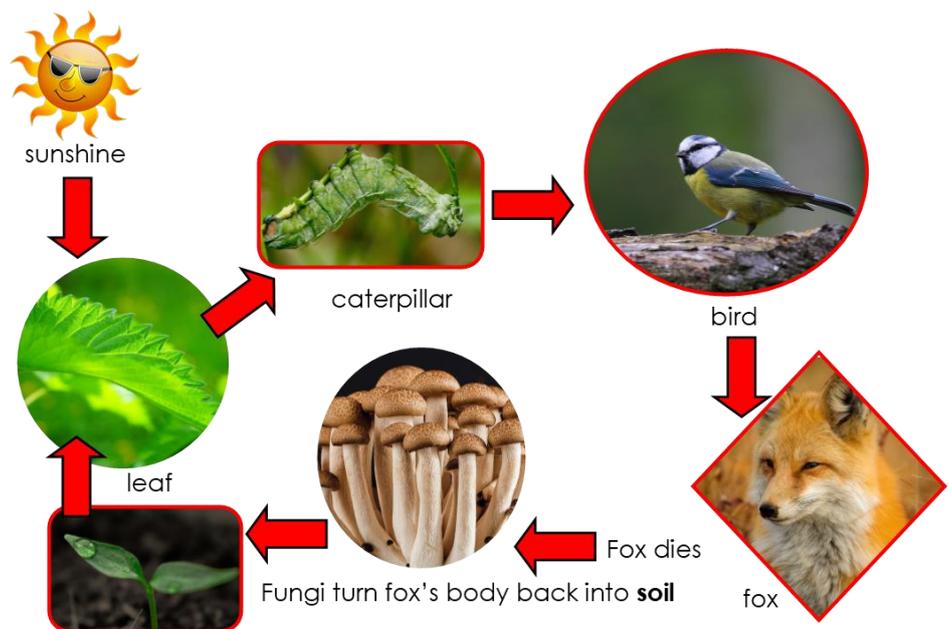
What shape are the leaves? Are they hairy or waxy, smooth, or very wrinkled?

Look carefully at the arrangement of the stamens (the little bits that stick up in the middle of the flower and which have pollen on, usually) How many stamens can you see? be sure to draw the right number.



Food Chains – how we're all connected

Ultimately, all the energy on Earth comes from the Sun. Green plants, including ones like mosses, algae, pondweeds, flowers, shrubs, trees, and grass can capture the energy of sunlight and combine it with water and minerals from the soil to produce foods that animals and humans can eat. Then the plants get eaten by other creatures, who may get eaten by bigger creatures in a food chain.



The diagram shows one example – can you think of other ones?

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All the food that we human beings eat is also part of a food chain.

Think about what you had for breakfast this morning. Maybe it was toast and honey, or breakfast cereal with milk, or an egg – could you draw the food chain for your breakfast? There might be several different chains that come together in your breakfast. For example, if you had cornflakes with milk, there will be a food chain for the corn, one for the milk and maybe one for sugar, too.

It's amazing, isn't it? Just something as simple as a bowl of cornflakes involves several food chains, involving different plants and animals. (And don't forget the work of the farmers, lorry-drivers, factory workers and supermarket staff, too. You didn't eat them (I hope!) but without them, you wouldn't have been able to get your breakfast.

The world is all joined-up. Sometimes people think and talk about Nature as if it was something quite separate from people. But actually, we are a part of Nature. We are part of its food chains and we couldn't live without them.



Making your home and garden more wildlife-friendly

How can you make your garden more wildlife friendly?

See how many ideas you can think of. Here are a few suggestions to start you off.

- Grow more flowers to feed bees, butterflies and other insects. The best ones are those with only a single layer of petals. Very “frilly” flowers such as roses with lots of layers of petals make it harder for insects to get at the nectar and pollen. What if you haven't got a garden? You could grow a big pot of flowers on your balcony or on your steps. You could even grow flowers in old tin cans, or plastic bottles, if you punch holes in the bottom for drainage.
- Make a bug hotel from hollow bamboo, twigs, straw, cardboard or even junk. There's a good set of instructions here, on the website of the Eden Project: <https://www.edenproject.com/learn/eden-at-home/how-to-build-an-insect-home>
- Make a tiny pond in your garden. There's a good set of instructions here, on the RSPB's website: <https://www.rspb.org.uk/get-involved/activities/nature-on-your-doorstep/garden-activities/createaminipond/>
- Feed the birds. As well as putting out bird-seed, you can grow bushes that have berries. Bluetits and Great Tits love shrubs like cotoneaster and pyracantha, which have lots of small red berries over the Autumn and Winter. Birds such as greenfinches love rosehips – especially the big fat ones you get on roses like Rosa Rugosa. Goldfinches love thistle seeds- if you have a bit of a wild area at the bottom of your garden where you don't mind letting some thistles grow. If you make compost from your vegetable peelings etc, you'll have a lot more worms and snails in your garden which will bring in blackbirds and thrushes. Areas where you let a few weeds grow provide food for

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caterpillars. As well as giving you more butterflies, you'll also get more birds such as blue-tits, who quite like the odd caterpillar for a tasty snack!

Obviously, what you can do depends on where you live. But I hope this has got you thinking. Which ideas would work in your home? How wildlife-friendly can you make it?

Make a Bird Mobile

Now you have been observing your local wildlife more closely, why not make a bird mobile for your home? Either you can colour the birds accurately, so they resemble the real ones you see in your neighbourhood, or you could create an aviary of gloriously imaginary birds!

You'll need:

- some card that will go through your printer
- Some coloured paper or tissue paper for the wings
- Some wire to hang your birds from – or you could use twigs
- Thin twine or thick thread to hang your birds. Something like fishing line is ideal but see what you can find at home.
- Crayons or felt-tips for colouring
- You may also need glue.



The template for the birds is on the next page. You could just make one or two, but for an interesting mobile, 6-8 is probably ideal. Print your birds and cut them out. Colour them, and then cut a slit where there's a thin black rectangle on the bird's back.

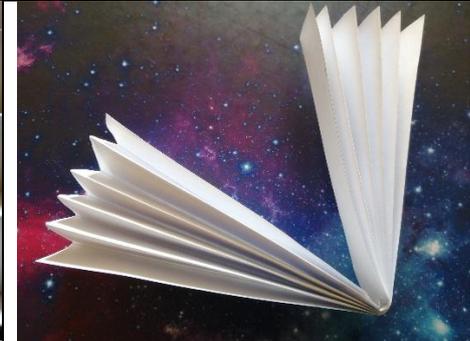
Cut a piece of coloured paper or tissue paper for the wings. You might like to experiment with the size but I cut mine 20x 20cm. The

longer the wings are, the trickier it is to get your bird to balance, so you may want to make the length of your paper less than 20cm. If you also reduce the width, be sure that you end up with a width that divides evenly into 2cm strips. (You'll see why in a second.)

Measure your paper and draw lines across it every 2cm.

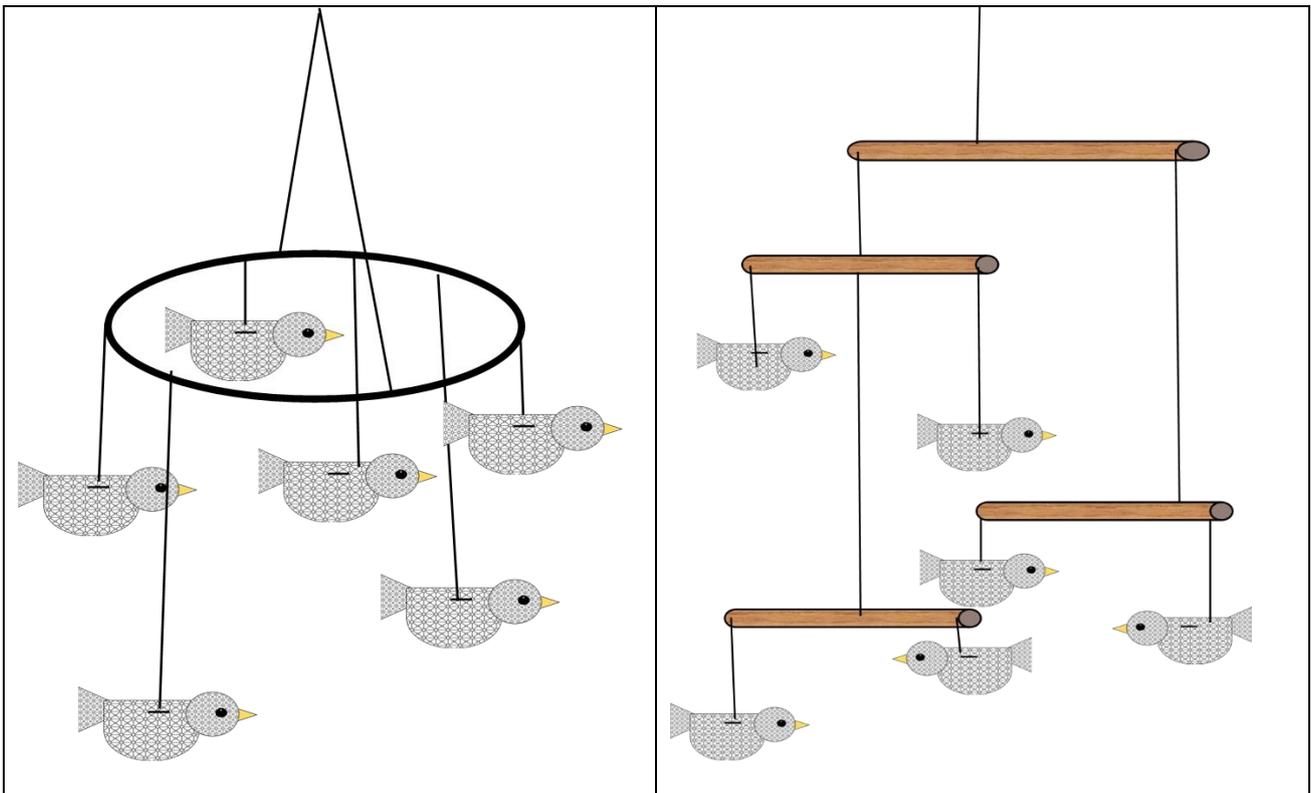
Then fold your paper along the lines, as shown in the pictures below.

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Rule your paper in 2cm sections.	Fold the paper backwards and forwards along the fold lines like this.	Fold in half to make your wings, and insert them through the slit on the back of the bird.

You may need just a dab of glue to hold your wings in position on your bird.

Make a small hole just above the slit where the wings are threaded through and attach a length of thread or string to hang your bird. The easiest way to hang the birds is to space them evenly around a circle of wire and then hang the wire with a loop of thread, like a chandelier. If you're patient and you'd like a bit more maths in this activity, see if you can get the birds to balance, hanging from twigs, like the second picture.

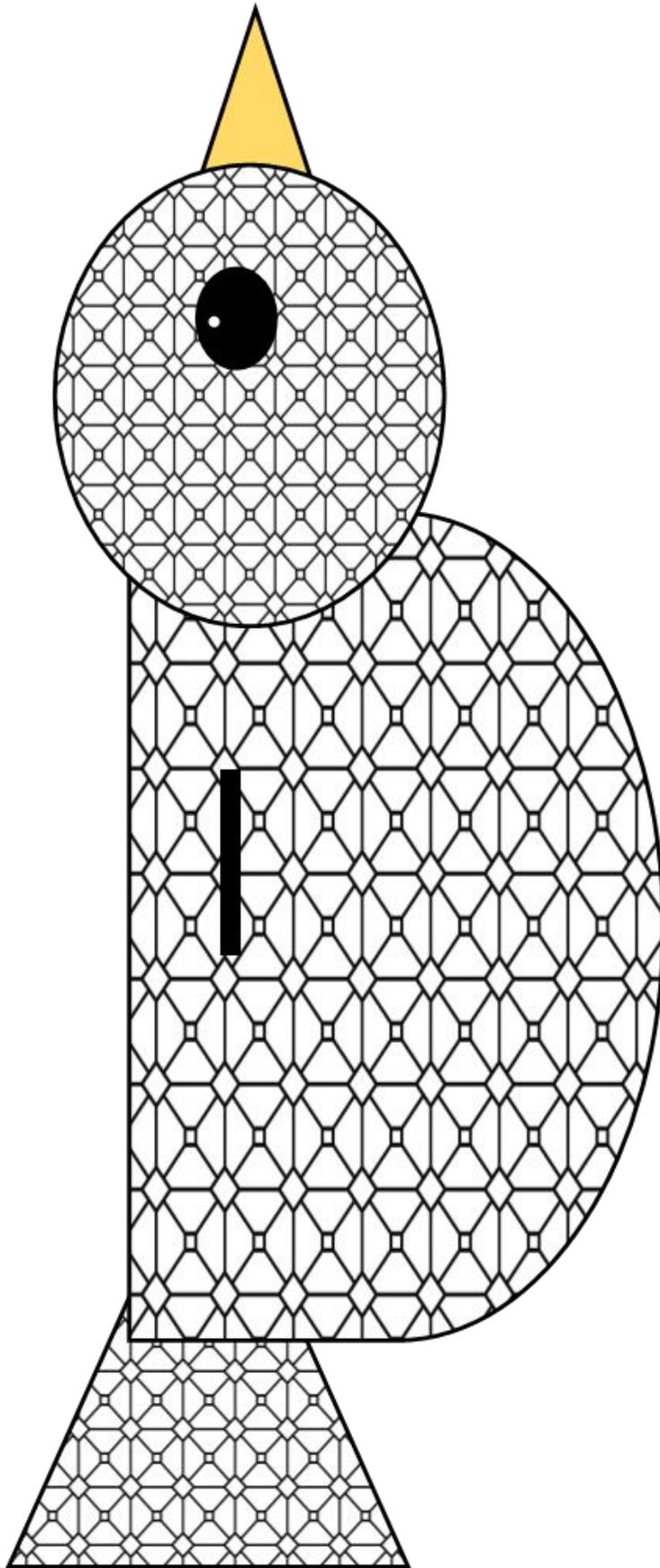


I've not drawn the wings on these birds, to make the diagrams clearer.

Enjoy your flock of home-birds who will gently fly about and flap their wings when doors or windows are opened!

Bird Mobile template – print 6-8 on thin card

Bird Mobile - cut out 6-8 in card.



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Group Project – making Seed Bombs

This is a great project to do as a group. If you meet up with your friends, your cousins, or a Home-Ed meetup group, this might be a fun activity to do together. You might also suggest it as an activity for forest school, or for Brownies /Guides /Cubs /Scouts.

It's **very messy!** So do it outside and either wear clothes that don't matter or put on overalls or aprons. Before you start, you'll all need to collect wildflower seeds. The best ones to pick are the ones that insects love most, as that's the whole point of seed-bombing – to provide more lovely flowers for insects. Good species to look out for are:

- Poppies
- Chamomile
- Common Bird's-foot-trefoil
- Common Knapweed
- Lady's bedstraw
- Red Clover
- Wild Thyme
- Borage
- Cornflowers
- Honesty
- Marigolds

Which species you choose depends on where you're planning to throw your seed bombs. If you're going to use them in the countryside – for example, throwing them onto a grass verge by the side of the road - be sure to only use seeds from native wildflowers, so you don't mess up local ecosystems.

For unloved areas in the town, such as patches of waste ground, central dividers and roundabouts on roads, and unloved-looking grass verges, you can use flowers that come from your garden, or wildflowers. Don't sow flowers that are really invasive such as Rosebay Willow Herb or Himalayan Balsam, because they spread and tend to reduce the biodiversity of an area, rather than enhancing it.

OK – so we'll assume you've now got your seeds.

Here's the recipe for making seed bombs:

5 parts clay – you can use your own clay soil if you have it or buy clay powder or air-drying clay from craft shops. Don't collect clay from river-banks because it often contains seeds of Himalayan Balsam. The easiest way to measure your 5 parts is to have 5 small cups full.

1-2 parts potting compost or home-made compost (1-2 small cups full)

1 part, or maybe slightly less, of seeds. (1 small cup, not quite full)

Don't be tempted to add too many seeds or too many different species mixed together as they will compete with each other if too many seeds come up together in a small space.

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You want to knead all of this together until it's the consistency of play-dough, using as little water as you can to get it to stick together. Don't get it really sticky and gooey or it will take forever to dry out. Roll your seed-bombs into balls about the size of golf balls and leave them in the sun to dry out for a few days. (In the UK, you might do better bringing them inside and leaving them in a warm porch or even the airing cupboard, if you have one.)



When you want to use them, pick a time when it's been raining a lot so the soil is wet, and there's more rain forecast, so your seed bombs will begin to get dissolved.

Then go and create bee-and-butterfly heaven somewhere unloved, near you!

Creating More Change

There's a famous quote by Margaret Mead:



“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.”

Margaret Mead

This doesn't exclude children or teenagers, as Greta Thunberg has so powerfully shown!

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What issues do your children really care about? Saving bees? Reducing the amount of plastic in the ocean? Creating enough energy from renewable sources to totally eliminate all our need for fossil fuels? Stopping wild animals or native wildflowers and butterflies from becoming extinct?

Why not encourage them to write to your local MP? You can find out who he or she is on the official website, here: <https://members.parliament.uk/FindYourMP>



When you click the link to your local MP, the page also gives you their addresses both in Westminster and in your local constituency and tells you what the polite/correct name is to call them by. Your children can ask what the Government are doing about specific situations such as building more renewable energy generating capacity in your area, or lodge a protest about a specific issue about which they feel the Government could do more. But it's best to be specific, and to ask a clear question or make a clear point to which your MP can respond.

Children and young people can also write letters to the local paper, or to your parish magazine, if you live somewhere where one is widely distributed. You stand more chance of getting their letter published if it's focused on the local area. So rather than "I'm worried all the bees are dying," it might be useful to write that there seem to be fewer bees in your local park these days. Or how much you appreciate the local council planting a local roundabout with wildflowers, which you noticed just yesterday was positively humming with bees.

Rather than saying that they are concerned about the amount of plastic in the ocean, your children might write about what a pity it is that local supermarkets package fruit in plastic punnets, rather than ones made from cardboard or paper. Better still, would be to write a letter about how fantastic it is to see that your local farm shop/greengrocers **does** use paper punnets rather than plastic ones, and how great it would be if the local supermarkets copied them. (It never hurts to give free publicity to people who are doing something right!)

It's also useful to write to local councillors about local issues and your children's good ideas for how to make things better locally for bees or wildlife, or how the council could improve the situation around rubbish or pollution, for example. You can find out who your local councillors are and how to contact them on the Gov.UK website, here: <https://www.gov.uk/find-your-local-councillors>

It's good for children to understand that democracy isn't just about voting. It's about adding your voice to the many other voices that are seeking to influence those with the power to make this a better world.



SECTION 2: The Lungs of the Planet

Oceans and rainforests – the lungs of the planet

What's in this Section?

- What do lungs do?
- Working for Team Earth – restoring the balance
 - Plant trees
 - Plant flowers, grass, vegetables
 - Think forest friendly
 - Think about fires
 - Support British Farmers
 - Support wild-life charities – hold a fund-raiser.

What do lungs do?

Our bodies need a special kind of gas, called oxygen, to help us turn food into energy. There are millions of tiny chemical reactions going on in our bodies, all the time. As we convert the food we eat into energy, and into hair, toenails, hands, feet, eyeballs and all the rest, our bodies produce another gas called carbon dioxide, which we need to get rid of.

So lungs are like our swap-shop. They breathe in oxygen from the air and breathe out carbon dioxide. You can feel this happening if you put your hands on your ribs as you breathe. When you breathe in, you can feel your chest filling up with air. As you breathe out, you can feel how your chest is getting emptier as you breathe out the spare air and the carbon dioxide you've made. All animals and people need to breathe.



Rather amazingly, plants do the exact opposite of people and animals. They “breathe in” carbon dioxide, which they combine with water and minerals to make plant energy, leaves, flowers, fruits and all the other plant-y bits. And they “breathe out” oxygen.*You can see the amazing balance here. can't you? Ideally, humans and animals breathe out carbon dioxide which grows more plants which breathe out more oxygen, which grows more people and animals. Nature is very clever!

** Plants don't actually breathe – they haven't got lungs like animals or gills like fish. But they do exchange gases with their environment. Older children might want to find out more about how they do this.*

Big areas of plants act like lungs for the planet. So forests, grasslands, gardens, and the oceans (which are naturally full of plants, from giant seaweed to tiny little plants called phyto-plankton, which are food for fishes) all generate lots of oxygen every day to keep all the people and animals of Earth alive and healthy.

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At least, that's Plan A. That's what's supposed to happen.

What happens if people cut down trees, mow the grass, build towns on the countryside, and pollute the ocean?

Well, obviously, that's not a good thing to do, but Nature has quite a lot of spare capacity. Trees can regrow in about 15-20 years. Grass can regrow in a few months. So long as people plant trees in their towns and make lots of gardens, Nature can cope with a few cities. And pollution in the oceans does eventually break down into less and less harmful stuff – even plastics. It's just that plastics and some chemicals may take a very long time, like 100 years or more, before they are gone.

So, Nature can cope with a bit of misuse – but not lots and lots, over a long period of time. It's becoming obvious that people have been cutting down too many trees, taking too many crops out of the soil, building too many towns and cities with way too few plants in them, and polluting our oceans with too much rubbish, too quickly for Nature to get rid of.

So now, our planet's "lungs" are in trouble. The forests are getting smaller and the deserts are getting bigger. The oceans are getting too polluted, and less full of living things. We people are messing up the balance between oxygen and carbon dioxide. There's getting to be more carbon dioxide in the air than the plants can keep up with. We need to start putting the balance back right again. We need to do some work for Team Earth.

Working for Team Earth – restoring the balance

There's a lot of people on the TV and in the newspapers, giving us a lot of bad news about how people are cutting down too many trees and generally making a big mess of this planet we call home. So it's important to see that there's lots of good news, too. Here are some wonderfully inspiring videos about people working very hard to make some very damaged bits of Earth lovely and green again:

The Daffodil Principle :

<https://youtu.be/b6VDtkef8FI>

How to green the world's deserts and reverse climate change | Allan Savory :

<https://youtu.be/vpTHi7O66pI>

This Couple Nursed a Rainforest Back to Life: <https://youtu.be/Lk9fpESv3lw>

Regreening the desert with John D. Liu:

<https://youtu.be/IDgDWbQtIKI>

So now, what can ordinary people do – people like you and me?



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Plant Trees



Trees are a good way to pull carbon dioxide out of the air - they turn it into leaves and wood and roots, while making more oxygen for us to breathe. If you have enough space, planting a tree – even a small tree – in your garden is a great idea.

If you plant a fruit tree, you'll have flowers in the Springtime which encourage more bees and butterflies. And you'll have fruit in the Autumn – either fruit you can eat such

as apples, pears, cherries or plums, or food for wild birds, such as hawthorn, rowan, pyracantha, or crab apples. But any kind of tree is good.

If you don't have space to plant a tree, maybe you could make a donation to charity that plants trees – for example, The Woodland Trust.

<https://www.woodlandtrust.org.uk/>

You could also write to your local council with ideas about where they could maybe plant more trees.

The Woodland Trust will give free trees to schools and communities that have plans for tree-planting projects. You can find out more here:

<https://www.woodlandtrust.org.uk/plant-trees/schools-and-communities/>

Plant ANYTHING

Trees take in Carbon dioxide from the air and turn it into leaves and roots and trunks and branches and flowers and acorns.....

But every other plant does similar work, even grass. In fact, simple tiny plants – plankton (in the sea) and algae (in ponds and damp places) - lock up more of the world's carbon than trees do, simply because there's an awful lot of them.

So, if you can't plant trees, could you plant some flowers? Even if you have no garden, maybe you could put a big plant-pot full of flowers outside your front door. Could you plant grass? Or make a pond that has pond-weed in it? Even house plants make a difference because every single plant gets to turn carbon dioxide into bits of plant.

(Some parasitic plants, and a few plants that have no green colouring may get most of their food from a tree or from fungi, but they're usually contributing something positive as well.)

There are a lot of people out there telling us to plant trees, but it's also good to plant grass on sand-dunes, or plant deserts with the kinds of tough shrubs that can withstand long periods of dryness, and to clean up the oceans so pollutants don't kill off the plants. Anything and everything you can do to turn some of the grey places, or the brown sandy places, into green spaces helps.

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Think forest friendly

Of course, while there are lots of people planting trees all over the planet, there are also lots of people cutting trees down. Some of these trees are cut for timber to make houses and furniture. But some are used for much less important things. For example, I have read that **7 million trees** are cut down each year just to make toilet paper. Now that is just plain silly! Yes, we all want toilet paper – but it's possible to make good toilet paper from hemp (which grows new each year) or even from recycled paper such as bills, newspapers, advertisements, and packaging.

There are also big companies who cut down all the trees in big areas of forests to drill for oil, or mine for gold. Other companies cut down lots of trees to make plantations where they can grow things like oil palms to make palm oil and soya beans (Some to feed humans and some to feed animals who are being farmed in sheds instead of being able to live in fields and eat grass.)

The best way to stop this is for governments to make laws saying it's illegal to cut down forests for things like that. It's quite hard for ordinary people to change laws or to pressurise governments into changing them. But every one of us can also make a difference, every time we buy food. If you buy food that's been grown in Britain, you can be sure that no rainforests have been cut down to grow it, because we haven't got any to cut down!

But of course, not all the things we eat can be grown here. If you buy food like peanut butter that sometimes has palm oil added, look on the labels for brands that say there's no palm oil in their peanut butter. Check the labels on sweets, margarine, and other manufactured foods and buy a different brand if it contains palm oil. Make sure any soya products you buy are either grown organically or come from countries that don't cut down forests to grow them.

We've talked about toilet paper – but we make lots of things out of paper, so we can throw them away and not have to wash and reuse them. Think about things like paper cups, paper plates, paper napkins and paper towels. How much do you use things like that, in your family? Can you think of what else you could do instead? Could you take cups with you to cafes, for example?

And last of all, think about all the cardboard boxes and paper envelopes and paper bags we use. How could we use less? Where could we cut down? And when there is packaging we can't do without, or can't change, can we recycle more of it?



Think about Fires

Every time someone burns coal, or wood, or paper, or gas or oil, a lot of the carbon it contains gets turned into carbon dioxide and is released into the air. So, it would seem that the best way to heat our homes would be electricity, wouldn't it? But actually, that depends on how your electricity is made. If it's made by burning coal, or gas, or oil, then even though it looks nice and clean when you're using it in your home, it's still causing pollution somewhere else.



So, can you think of ways you can make electricity without burning anything? You might want to look online and find out more about this. Basically, the cleanest ways to make electricity are to use sun, wind or waterpower.

You'll have seen wind generators around the place - especially if you live somewhere hilly like Wales, or on the coast. (Because obviously, wind generators work best in places where there's a lot of wind!) And you've probably seen solar panels on people's roofs. Waterpower is less visible, because it's usually next to a big river, or the sea. To generate electricity, you need fast moving water, with a strong flow. So you can use water from waterfalls, dams, waves, and tides. Some cities that have lots of rainfall have even experimented with putting little water wheels inside the storm drains that run under the city.

Some electricity companies promise that all their electricity comes from renewable sources like these. So, from the point of view of climate change, those are the best companies to get your electricity from. Does your electricity come from a company like this? If not, is it possible for you to change supplier?

We already know that it's good to avoid burning things on open fires. So, when do people light fires? To burn garden rubbish, perhaps? What's a better alternative? And what about fires for special occasions such as bonfire night? These days, more and more people choose to go to big public displays put on by a charity or by the local council, rather than having a bonfire in their own garden.

But apart from that, most fires happen by accident. Especially at times when the weather is very hot and dry, the countryside dries out and then it's very easy to start a forest fire, a moorland fire, or to cause a fire in a field. Countryside fires, especially big forest fires, aren't just a problem because of the carbon dioxide they release, of course. Lots of wildlife can get killed, crops and trees get destroyed, some people lose their homes, and a few people get killed by the fire. What can people do to avoid this? Could you think of some sensible rules to try to keep the countryside safe?

Maybe you could make your rules into a poster or put them into a PowerPoint or a video? Litter in the countryside (and in towns) also helps cause fires. Organising a

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group to pick up litter from a park or a wood might be an idea for something you could do. You'd need to work out ways to keep yourselves safe and clean while you did it – wear boots, to avoid being pricked, nettled, or stung, for example, and gloves to protect your hands. You need to be clear about what you're going to do with the rubbish you collect, too.

Support British Farmers

British farmers have a high level of commitment to look after the countryside because most of them want to be able to pass on their farms to their children. They look after hedges, and woods, and some of them plant wildflowers to encourage bees. Some of them also work with conservation organisations.

British standards of animal welfare are higher than many other countries, too, So it makes sense to buy food grown in Britain when we can, as that also means it hasn't travelled so far in aeroplanes, ships or lorries as food from abroad.

It's easy to check labels when we go to the supermarket and choose food grown in Britain over food grown elsewhere, whenever there's a choice.

If you want to know more about British farmers, how they farm, and the standards they work to, they have several pages on Facebook. This is one of the best:

<https://www.facebook.com/groups/backbritishfarmingcampaigners>

Raise money for a wildlife charity



Finally, another thing we can all do is to raise money for charities that work to plant trees, conserve wildflowers, birds, and butterflies, and protect Nature.

Most charities have suggestions on their websites for ways you can support them – for example, by holding a coffee morning, or a cake sale, or by joining a sponsored walk. Some charities also invite volunteers – for example, to help with a big tree-planting project.

If you belong to a local Home Education group, or an organisation such as Scouts or Guides, maybe this is a project

you could do as a group? You could brainstorm ideas for fundraising, decide on a project and then create a step-by-step plan to make it work.



SECTION 3: Climate Change

Climate change

What's in this Section?

- What is climate change?
- Getting clear on climate change
- What can we do?
 - Cars and other transport – how many miles do you travel per week?
 - Burning coal/gas/oil- how is your home heated?
 - Making stuff in factories – buying stuff
- Tell the world – Get the message out
- Data mapping – comparing different ways of showing climate change data

What is Climate Change?

Of course, the climate on Earth is constantly changing. If you've read about dinosaurs, you know that when they were around, a lot of the Earth was quite hot, with tropical vegetation such as giant ferns. You've probably also heard that there have been several ice ages in the past when glaciers covered much of the land and much of the sea was frozen. So, there have been times in the past when the climate was quite different from the climate now.

But generally, most climate change happens too slowly to notice over the length of a human lifetime. The climate might slowly be getting warmer or slowly be getting cooler, but even the oldest grandmas and grandpas would remember the weather when they were children being pretty much the same. Over the last 250 years or so, that pattern has changed,

The planet as a whole has got warmer. Since 1880, which is when most of the fairly accurate records began, the world as a whole has become just over 1°C warmer,

Now, that doesn't sound like a lot – but the energy needed to warm up a whole planet by 1° is enormous. That's all the land, all the seas, all the mountains and deserts – all of Earth. And because earth is all joined up, that changes things like the patterns of ocean currents, the pattern of the winds, and how clouds form and

move over the whole planet.

What that does is to start changing the weather – sometimes quite drastically. There have always been places on Earth that had occasional forest fires or that flooded from time to time. But recently, it seems that there are many more fires, floods, and storms than usual, affecting even places where this hasn't always been a problem.



So what has made our planet hotter? Well, it's looking more and more as if it's mostly us – the human beings. We're making the planet hotter. And scientists are understanding more and more clearly how we're doing that.

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Every day, we burn fuel to make things work – coal, oil, gas, wood – and every time we burn anything, we release a gas called carbon dioxide into the atmosphere. This has the effect of trapping heat from the Sun in the Earth's atmosphere, so it doesn't radiate back out into space. Some other gases have this effect, too, such as methane, which is the natural gas we cook with, and which is produced by bacteria in swamps, landfills, and in the guts of many animals, and water vapour, which is produced when water evaporates.

But carbon dioxide is the greenhouse gas that gets the most attention because in the last 250 years or so, we've invented all kinds of machines, including cars. So – in 250 years – we went from burning wood and a bit of coal to warm our homes to making railways, steamships, factories, cars, and electricity generating stations that all ran on coal, gas or oil. We also changed the way we farm, so that many of our farms are locking up much less carbon in the soil. So we've suddenly made **lots** of carbon dioxide – millions and millions of **tonnes** of it. And all that carbon dioxide, piling up in our atmosphere is holding in more heat than is good for the planet.

We don't want to get rid of **all** of it – because, without greenhouse gases – our planet would be about as cold as a Siberian Winter (-25 to -30°C) all year round. But it would be good if we could get it back to the level it was at before we invented industrial technology. So what should we do? Stop driving round in cars and go back to horses and carriages? Stop making things in factories and go back to making everything very slowly, by hand? Stop heating our houses and just start wearing more clothes?

Well, no. We don't have to do that. Because these days we have the technology to be able to run factories and cars and home heating systems and all the things that make our lives easier and more comfortable, without burning coal, oil, or gas. These days, we can get energy from the Sun, from wind, waves and water that is clean energy and doesn't create lots of carbon dioxide.



But we need to swap our systems soon, because every year that we do things the old way, we are putting more carbon dioxide into the air and warming up our planet even more. Also, we need to realise that just changing to clean energy doesn't reduce the amount of carbon dioxide that's **already** in the atmosphere – it just stops there being more. So we also need to find as many ways as possible to pull that extra carbon dioxide out of the air and lock it up.

To do this, we have a very powerful ally – Nature! Nature turns carbon dioxide into trees and grass and flowers and plants. It locks up carbon in soil bacteria and in fungi. It fills the surfaces of the ocean with phyto-plankton -tiny plants that feed fish and also capture carbon dioxide. But at the moment, we're working against Nature by chopping down lots of trees, turning grasslands and farmlands into deserts, and polluting our oceans. We need to start working with Nature a whole lot more, so that, together, we can bring the planet back into balance.

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Getting Clear about Climate Change

Have a look at some of the different websites explaining climate change. Which ones are best at helping you to understand?

Are some too simple and babyish? Are some much too complicated?

Young People's Trust for the Environment

Video: Climate Change

<https://ypte.org.uk/videos/climate-change>

The YPTE do some really good, informative fact sheets on climate change, too.

Nasa - Climate Change: How do we know?

Video: Global Warming from 1880 to 2020

https://climate.nasa.gov/climate_resources/139/video-global-warming-from-1880-to-2020/

Video: How Global Warming Stacks Up

https://climate.nasa.gov/climate_resources/144/video-how-global-warming-stacks-up/

National Centers for Environmental Information

Global Time Series – Interactive graph and table of data giving year-by-year information on how much the average annual temperature for each year differs from the average annual temperature for the period 1880 – 2020

https://www.ncdc.noaa.gov/cag/global/time-series/globe/land_ocean/ytd/7/1900-2020

Smile and Learn - Climate Change - The environment for Kids (Updated Version)

<https://youtu.be/IJoAcD0oUww>

Global Warming - The End Game | The Dr. Binocs Show

<https://youtu.be/Y3gqoDUtmt4>

What Can We Do?

So now that you understand a bit about how climate change is happening, let's think about what ordinary people like us can do to help.

Transport

How do you get around? Catch a bus or a train? Cycle? Walk? Drive in a car? Could you walk or cycle more? Could you use public transport more often? Could you drive a smaller car? Could you drive a car that produced fewer exhaust gases? Could you drive an electric car? Could you get your groceries delivered instead of driving to the supermarket? (I know the van driver is using petrol or diesel but he or she is driving round anyway, and delivering to your house is likely to add fewer miles to their trip than your family driving both ways to the supermarket)

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Even turning off your engine every time you stop at traffic lights or in a traffic jam, makes a difference. (It saves you money, too)

It may not be possible for your family to change much right now. If you have 4 kids, you're not all going to fit into a Smart car! If you live in the country, there may not be any public transport. If you have babies or toddlers in your family, walking can be difficult, because you have to carry them or push them in a buggy, which isn't always convenient. But is there some small change that you could make?

Your Home Energy

How is your home heated? Electricity? Gas? Coal? Heating Oil? Could you change your energy supplier to one that uses only renewable sources such as wind and solar energy? Could you add more insulation to your home, so you use less energy for heating? Could you draught-proof your home? Could you turn off all the lights when you're not using them? Could you remember to close the doors when you enter or leave a room? Could you use more energy-efficient lightbulbs? Could you turn down your thermostat by 1°C? You probably can't change how your home is heated – but could you do some of these little things to make your home heating more efficient?

Things/Stuff



Most of the things we buy are made in a factory. They're also often transported half-way across the world to reach us. And they can't all be recycled. In the future, we're all going to have to put some serious thinking into all the stuff we have.

We're going to have to ask questions such as:

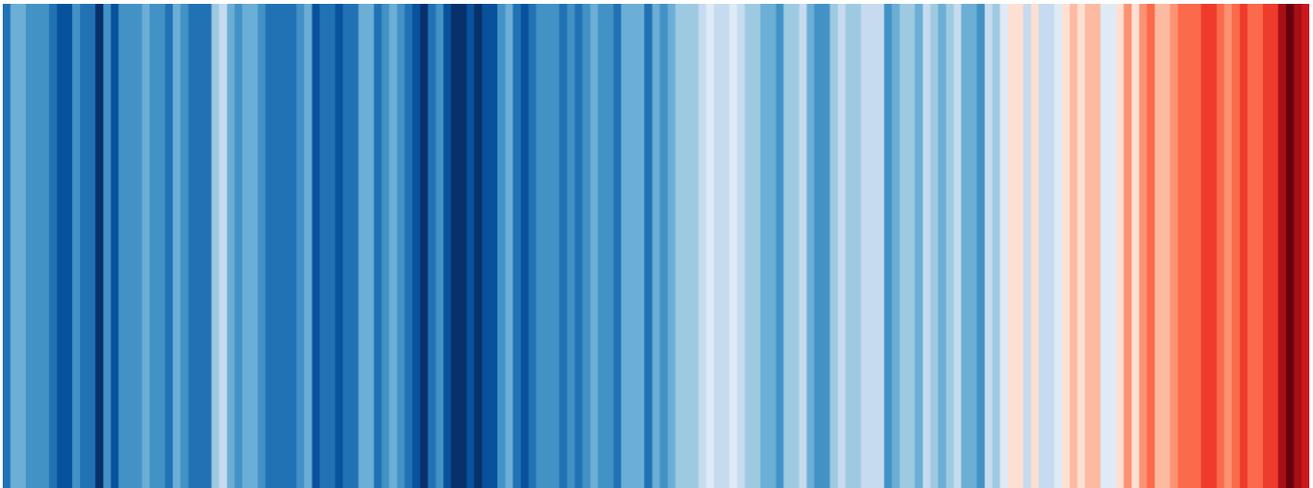
- Do we need this?
- Could we make it ourselves?
- How long will it last?
- Could we get it second-hand?
- Can it be recycled when we've finished with it?
- How has it been made? Were the workers paid a fair wage?
- Has it had to travel thousands of miles to get here?
- Is there a better alternative?

What kinds of things can your family make for yourselves? Does anyone sew? Do woodwork? Can anyone mend cars? Can anyone mend electrical things? Can you cook? Can you weave or spin? Do you know how to make dye from plants? Do you ever gather wild foods? (Blackberries count!)

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Data Mapping

You can show climate change in different ways. For example, you could draw graphs, or create a table of data. Ed Hawkins, a climate scientist from the University of Reading, came up with a diagram using coloured stripes to show how the climate has warmed from 1850 (left hand side) to 2018 (right hand side)

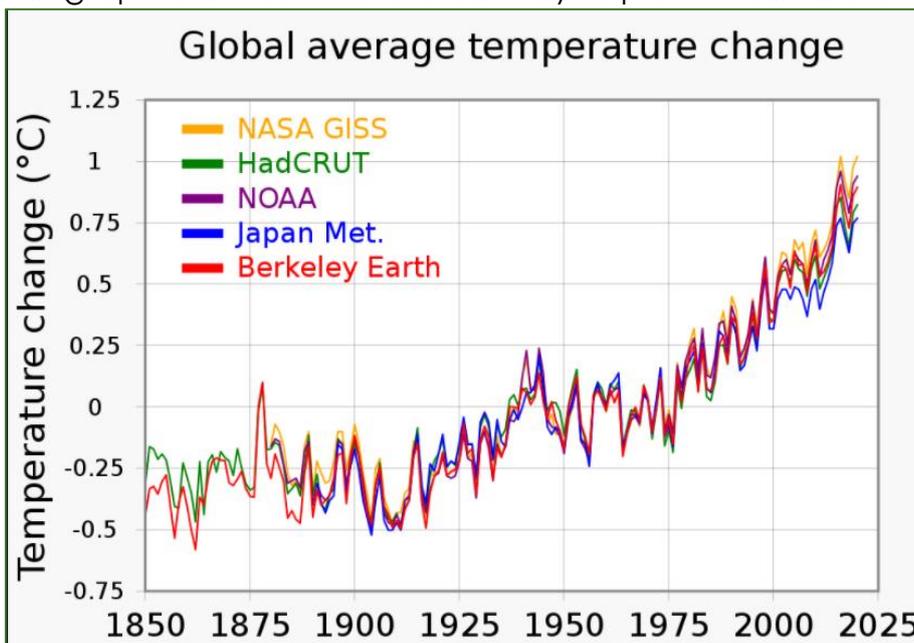


Picture Credit:

By Ed Hawkins, climate scientist at University of Reading - Hawkins, Ed, 2018 visualisation update / Warming stripes for 1850-2018 using the WMO annual global temperature dataset.. Climate Lab Book (4 December 2018). Archived from the original on 17 April 2019. "LICENSE / Creative Commons License / These blog pages & images are licensed under a Creative Commons Attribution-ShareAlike 4.0 International License." (Direct link to image)., CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=80976980>

It's not one of the usual ways to present data, but it does give a clear message.

This graph is a much more usual way to present climate change data:



Picture Credit:

By RCraig09 - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=88535596>

Which way of presenting the data do you think would have the most impact on ordinary people?

Which one would be more useful for giving you precise information?

How else could the data be presented? How could you do it?

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Tell the World

How could you help other children and young people understand more about climate change? Here are some suggestions:

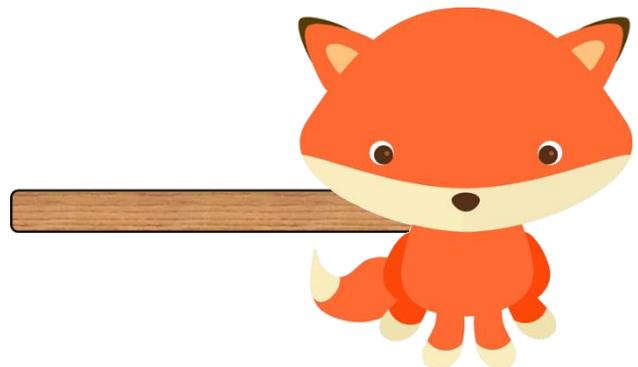
Make a video – you and one other person could **record an interview** as if you were on TV. One of you could be the interviewer and the other could be a climate scientist, a politician, or an inventor.

Which would be the best questions to ask? What would some good answers be?

OR you could make some kind of **animation** – maybe using figures made from play-dough or clay. If you did that, you could have a tree explaining how it could help to undo climate change, a container full of oil making lots of excuses about why we still needed it – or some other imaginative idea of your own.

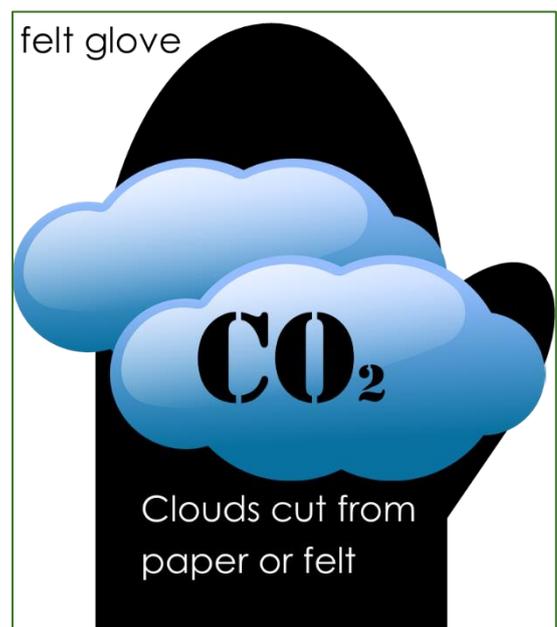
Write a Play – you could write a play where lots of characters explain about climate change and put forward their point of view. You could have a play with human characters – someone who owns an oil well, a forester, a person who lives in the rainforest, a car designer, a fashion designer, a poor person whose home has just been washed away in a flood.....

Or you could make puppets and put on a play with them. If you used puppets, you could have the Sun and the Earth as characters, along with carbon dioxide clouds, smoking chimneys, and endangered animals such as orangutans.



Making puppets needn't be daunting – you can simply stick pictures into lolly/popsicle sticks, like this:

Or you could make simple glove puppets from felt, like this:



You can then cut out a 'screen' in a cardboard box and make your puppets look as if they were on TV. What would you like your play to be about? Who are your characters?



SECTION 4: Working for Team Earth

Working for Team Earth

What's in this Section?

How to shrink your carbon footprint

- How big is your carbon footprint?
- Eat organic, grow your own vegetables and make compost.
- Recycle – find new stuff to recycle. stamps/ food wrappers
- Buy local
- Insulate homes/shut doors/shut curtains/turn off lights
- Learn to make/upcycle clothes (fashion industry)
- Upcycling project – shopping bag
- The Maths of pollution
- The Team Earth Hero Game

What's your Carbon Footprint?

Your “Carbon Footprint” sounds like something you'd make if you walked through some soot and then tramped it onto your living room carpet! But it's just a way of talking about the amount of carbon dioxide that gets released by all that you do as a family – by how you heat your home, how you travel, what you eat, and what you buy. There are several online calculators to help you work it out, but the best one I have found is this one, by The World Wildlife Fund:

<https://footprint.wwf.org.uk/#/> **How Big is your Carbon Footprint?**

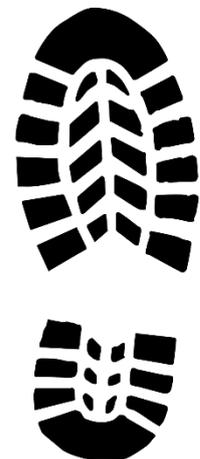
You can also download a WWF app for your smartphone, which has the footprint calculator on it, and also has lot of challenges you can set yourself to reduce the amount of carbon dioxide you produce.

This can be good fun – once you know roughly what your family's carbon footprint is, it can be quite a challenge to find ways to reduce it. It's like the Tesco motto, “Every Little Helps.” It may seem like almost nothing if you turn down your central heating by 1°C or use a quicker, cooler, wash-cycle every now and again, but if you multiply that tiny difference by a few million people all trying to do the same, you can see what a big difference we can make if we all work together.

So, let's look at some of the ways we can all make a difference:

Eat Organic

Farming organically, without chemical sprays and fertilisers, produces rich, fertile soil, full of bacteria, soil fungi, and lots of micro-organisms. These tiny creatures lock up carbon in the soil – and the soil can hold really a lot of carbon. I have seen estimates that if everyone on Earth switched to organic farming, the soil could hold



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40% of all the carbon that's now in the atmosphere. We could not only stop climate change from getting worse, we could start to reverse it. It may not be possible for you to switch to a totally organic diet, because some foods are hard to find, and organic foods may sometimes be too expensive. But see what you can do.

A simple solution is to grow more of your own food. Carrots and tomatoes are both quite easy to grow in pots, and potatoes are fairly easy to grow if you have a spare patch of garden.

Make Compost

If you don't already make compost for your garden, it's really worth starting now. There are lots of sites online that give you clear and simple instructions.

Here's a fairly easy and short video: <https://youtu.be/M1klpCBD3UI>

The Perfect Compost Recipe - How to Get Your Compost Heap Cooking!

What you're doing when you make compost and add it to your garden is to increase the ability of the soil in your garden to hold carbon. So, you're actually helping to reverse climate change.

Recycle, Reuse, Replace



In the last decade or so, we've all got much better at recycling and almost all councils provide a good collection service for rubbish that can be recycled. So, how could you improve on what you're already doing? What else could you possibly recycle?

Although there are still a few things that can't be recycled at all, it's becoming possible to recycle more and more things. So it's worth keeping a look out for shops that now offer to recycle their food wrappers, cling film and so on.

It's also worth finding if any local shops offer refills for beauty products such as shower gel and shampoo, or household cleaners such as washing liquid and surface cleaner sprays. This means that you can make one set of plastic bottles last you for a long time, without buying more.

There are also companies who are producing household cleaners in new forms – as tablets you dissolve in water, as concentrated gel capsules, or as sheets of concentrated detergent. All these new forms can be packaged in small cardboard boxes and need minimal or no plastic packaging at all. Avoiding pointless plastic is a good basic rule of thumb for good planetary housekeeping!

There are also more companies producing alternatives to plastic. From washing up sponges made of bio-degradable cellulose or natural loofah seaweed rather than foam plastic, to re-usable water bottles and drinks cups made from bamboo, it's worth buying non-plastic replacements when you can.

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Buy Local

Food from far away may have got here via air freight – which puts a lot of carbon dioxide into the air. The other alternative is that it has been shipped in chilled lorries or boats, which can keep it looking fresh for a long time. But once vegetables and fruits have been picked, their vitamin content starts to decrease. You tend to get better nutrition as well as fewer food miles by buying food produced by local farmers wherever possible.

Save Energy at Home

Simple acts like shutting doors and windows to reduce draughts, and turning off lights in rooms you're not currently using really add up over time. I've seen estimates online that turning down your heating by just 1°C can save the average UK household around £80 per year. Now that could come in very handy! The fact that you're also helping the planet is an added bonus.



Using thicker curtains or thermal blinds in the Autumn and Winter is also a good idea. It's a good idea to have a family brainstorm. What other good ideas can you think of that would save energy in your home?

Learn to make clothes

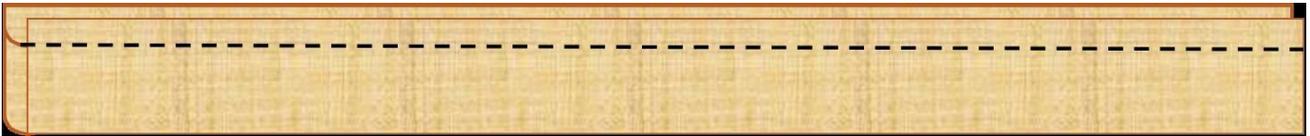
The fashion industry is very wasteful, causes enormous amounts of pollution, often employs workers on minimal wages in dreadful conditions and then, after all that, 80% of all clothing ends up in landfill. So it's good to investigate alternatives.

- **Buy to last**
Often, paying a bit more in the first place can really pay off as better quality clothes tend to last much longer than very cheap ones.
- **Upcycle, repair and refresh**
Can you give unloved clothing a new lease of life? Sometimes, putting 3 or 4 faded t-shirts in a dye-bath can make them look new again. You can buy dyes that work in your washing machine and are very easy to use. Could you change the appearance of a shirt or a pair of jeans with a bit of embroidery or a design with fabric paint? Could you cut up two or three old shirts or skirts and use the fabric to make something new? There are lots of books and videos to give you ideas and it feels great to wear clothes that you have made completely unique!
- **Make your own**
There are sewing patterns that are designed to be super-easy for beginners. If you've never made a garment before, start with something really simple like a loose top with no shaping or simple shorts with an elasticated waist. Look out for online classes, videos on YouTube, or classes run by local fabric stores to help you.

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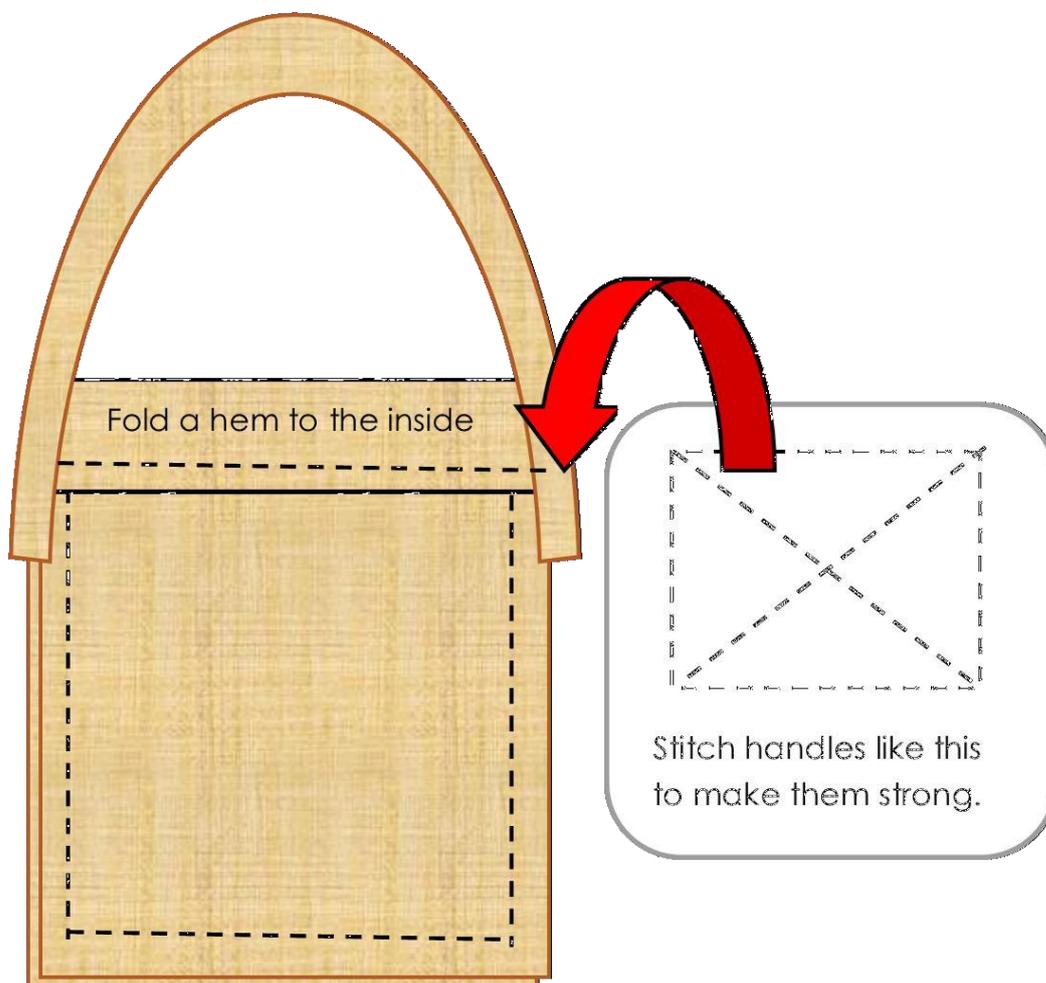
Upcycling Project – make a shopping bag

The first step is to make your bag. You can use any kind of strong fabric for this. Cotton or linen work well, so you could use an old shirt, a skirt, or even an old pair of jeans. You could also use an old hoodie or something similar. For the handle you can buy webbing or use tape. Or you can cut a long rectangle of cloth, fold it in half lengthways and sew down the long open edge like this:



Turn it right side out and you have a nice strong handle.

Assemble your bag like this



Finally, turn your bag the right way. You can use it as it is, or you can decorate it with embroidery, buttons, badges, or fabric paint. (Most fabric paint works best on cotton or linen and will wash off synthetic fabrics, so do check)

The Maths of Pollution

It's estimated that 12 million metric tonnes of plastic gets dumped in our oceans each year.

Most of that plastic comes from towns and cities - from sewer overflows, beach visitors, poor waste disposal and management, factories and industry, construction sites and from illegal dumping. Ocean-based plastic originates mainly from the fishing industry, from stuff thrown off ships and from fish-farms.

That sounds like a lot – so let's make the numbers more meaningful. A full grown, male African elephant can weigh as much as 6 tonnes. So how many elephants worth of plastic gets thrown into the ocean each year?

Can you imagine that? I can't! The number is too big for me to make a picture of it in my mind. So let's do some more maths.

So how long would that parade of elephants be?

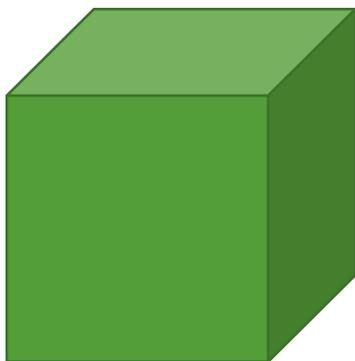
A big elephant might be about 4 metres long. So how many elephants would you need to make a line 1 kilometre long? (1000 metres)

If you've worked that out, you can probably work out how long a line of 1000 elephants would be. Got that?

Now, one million equals 1000 x 1000. So how long would a line of 1,000,000 elephants (1 million) be? if you started at your house and travelled that far, where would you end up? Does that help you make sense of how much plastic gets dumped in the ocean each year?

Let's think about carbon dioxide next.

People talk about how many tonnes of carbon dioxide get released into the atmosphere. But how big is a tonne of carbon dioxide?

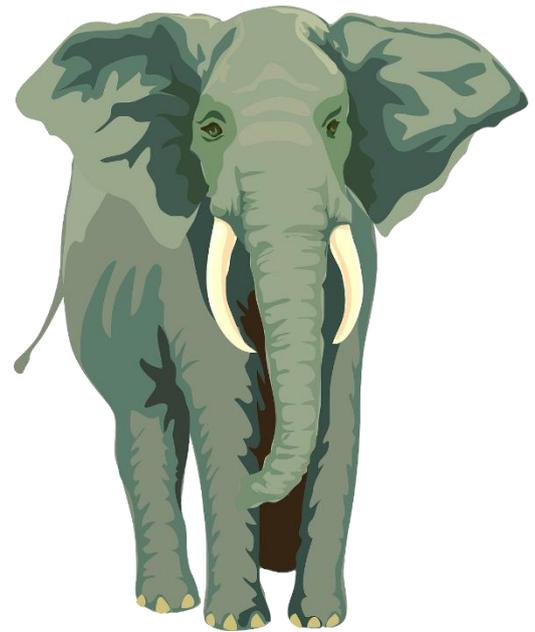


if you had a cube that measured 820 cm x 820 cm x 820cm a tonne of carbon dioxide would just about fit inside it.

How big is that? Get a measuring tape and measure your living room. Is it bigger or smaller than a tonne of carbon dioxide?

What about your garden? Could you fit one tonne of carbon dioxide into your garden?

Now – think about your carbon footprint, that you have calculated online, or using the WWF app. If you lined up the right number of cubes, how far down your street would your carbon footprint stretch?

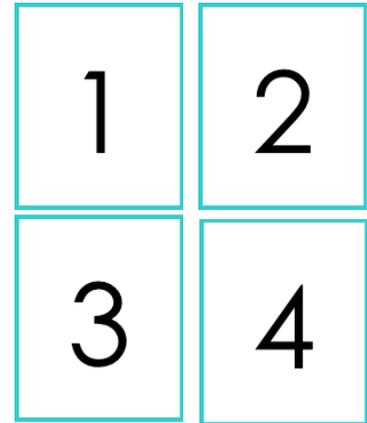


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Team Earth Hero game

Print the game board onto thin card if you can. Cut out the 4 game board pieces, and stick them together carefully with glue or tape. so they line up. (You may want to leave 1cm of white paper around each piece to start with. Once you've got the pieces lined up, cut the top sheet along its outline, but leave the spare paper on the bottom sheet. This lets you overlap the pieces which makes stronger joins.) Print the 6 sheets of cards and cut them out, too.

In case it's not obvious, the game board sections are numbered and go together like this:



If your printer won't take card, print your game board and cards onto paper and then glue them to some card.

You'll also need a dice and some counters. We used buttons but you could use the counters from another board game or LEGO people. You'll also need a piece of paper and a pen, to keep track of everyone's score.

Start on the START square. (Surprise!) Every time you land on a plain blue square, you can change direction. So you can move from the outer circuit to the inner ones, from one inner circuit to the next one, or from one of the inner circuits back to the outer circuit again.

The idea of the game is to collect the most points. How you get points is by collecting Wake-Up News items as you travel round the outside circuit of the game board and by collecting bright ideas from the inner circuits. You collect a news item (or a disaster) whenever you land on an appropriate square on the outer circuit.

You collect a bright idea card when you land on the inner circuit squares with the appropriate logos. So, for example, you'd collect a World Water bright idea card if you landed on a square like this:



Each inner circuit also has 2 or 3 squares with disasters on – forest fires, storms, more plastic in the ocean, or increased carbon dioxide emissions. If you land on one of these squares, you have to go to the Think Tank.

To get back in the game from the Think Tank, you have to throw a 6. (For younger children you could change the rule, so that if they haven't thrown a 6 after 3 turns, they're back in the game anyway) When you come out of the Think Tank, you go back to any blue square on the circuit you were on before.

There are two different scoring systems, and you can choose which one you use:

Scoring System 1 – for younger children and/or a quicker game

Score one point for each news item you land on (Green stars) Subtract two points for each disaster or extinction you land on. (Red explosions) Score two points for each bright idea card you collect.

Scoring System 2 – for older children and/or a game that promotes more discussion

For each square you land on, on both inner and outer circuits, discuss how much difference that would make to climate change. Would it scare or shock people into changing what they're doing? Would it inspire people to take action themselves? Would it make very little difference? Would it lull people into complacency, or make them give up in despair? Allocate points from 1-5 for each square, after discussing it between all the players. This makes for a very interesting game!

You could even discuss how something could be made to have **more** impact by the way it was reported in the news or on social media. So something that is tiny in itself, such as you fixing all your dripping taps, could turn into a social media phenomenon if you wrote a rap about it and made a funny video of yourself performing it, for example. (You may be surprised at how inventive your kids can be!)

The game ends when one person has collected at least one bright idea from each of the six inner circuits. At this point, you stop and add up the scores. The winner is the person who has collected the most points. They are today's Team Earth Hero.



The aim of the game is partly to raise everyone's awareness of the issues around climate change. But it's also to empower the players to feel that this is not an insurmountable problem. There are a lot of things that can be done to start bringing everything back into balance.

Some of the wake-up news items and bright ideas are things that have already happened or are already in development. Some may never happen, though they are potentially possible. But the idea is to get everyone thinking and finding out about some of the solutions that are already being applied and perhaps to think of other things that **could** be done.

If your children want to adapt the game, they could make their own bright ideas cards. maybe changing one of the inner circuits to a topic they care passionately about, but don't feel has been adequately covered by the game as it is. So, they could rewrite one of the circuits to be about animal conservation, or the rights of indigenous peoples, or changing our diet, or the fashion industry, for example.

They could also invent a much more active role for the Think Tank. Maybe, when you're in there, you have to come up with a bright idea of your own? Or invent something that will help? Or suggest something you could all do as a family?

This is a game that is very open to adaptation – make it your own!

	World Water	Stricter controls on fishing to conserve fish populations
	World Water	Several billionaires create a fund to clean up all the world's rivers.
	World Water	The United Nations develops a Bill of Rights for coral reefs.
	World Water	Desalination plants running on solar energy mean almost free water for all
	World Water	Your family uses only ecological cleaning products
	World Water	You fix the dripping taps in your home
	World Water	All commercial whaling is made illegal.
	World Water	You use the economy wash cycle more often
	World Water	A new type of ship can pull 1,000 tons of plastic per day out of the ocean.
	World Water	Scientists work on new ways to grow crops with less irrigation.

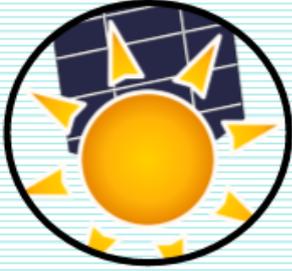
Team Earth Cards 1 – print onto thin card, if possible

	All our Stuff Firms who reduce their packaging pay less tax
	All our Stuff Companies start mining landfill sites for metals instead of digging mines
	All our Stuff Everyone can get taught knitting and clothes-making at school
	All our Stuff You paint your home with eco-paints
	All our Stuff New laws mean all clothes have to last at least 5 years
	All our Stuff All LEGO is now biodegradable - other toys follow
	All our Stuff People who recycle more can pay less tax.
	All our Stuff You learn how to mend furniture
	All our Stuff A famous celebrity only wears up-cycled clothes
	All our Stuff All your family cooperate to make a patchwork quilt

Team Earth Cards 2 – print onto thin card, if possible

	Transport + Travel	New Invention! Modular cars that can change size to carry less!
	Transport + Travel	All new homes must be built with car charging points
	Transport + Travel	Your local council doubles the number of local buses and reduces fares.
	Transport + Travel	All towns now have bicycles and electric scooters to rent
	Transport + Travel	You drive an electric car
	Transport + Travel	Old railway stations in country areas get re- connected to provide rural transport
	Transport + Travel	Your town builds a whole new network of cycle routes.
	Transport + Travel	A local business invents car charging points powered by sun and wind
	Transport + Travel	Long-range airships are developed to replace some aeroplanes.
	Transport + Travel	New holographic video calling makes a lot of travel un- necessary.

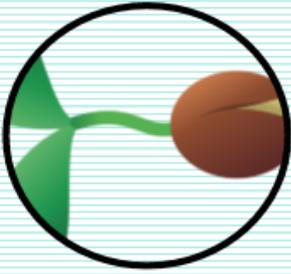
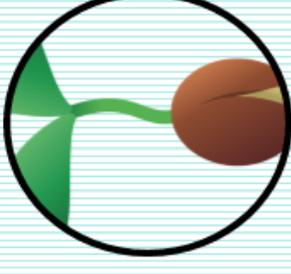
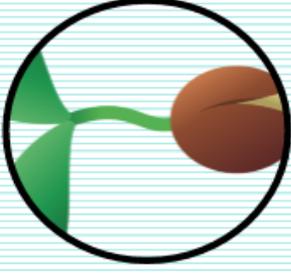
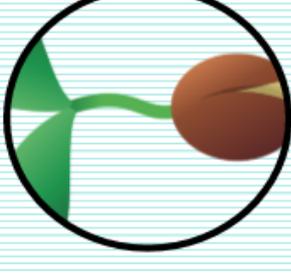
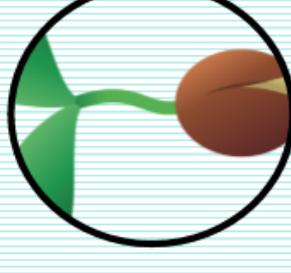
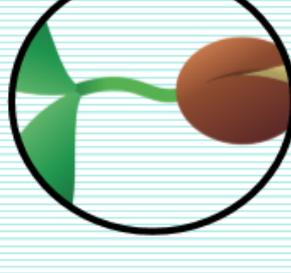
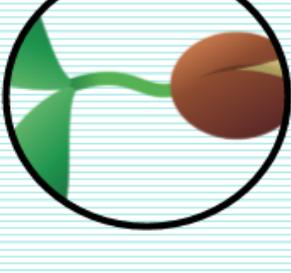
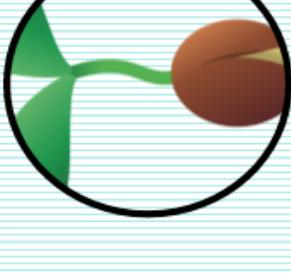
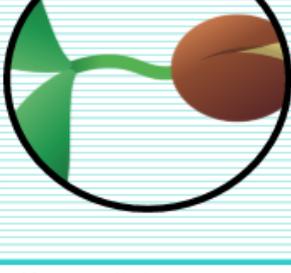
Team Earth Cards 3 – print onto thin card, if possible

	Clean Energy	Super-efficient new radiators use less than half the amount of energy.
	Clean Energy	A new type of wind turbine is developed that is quieter and more efficient.
	Clean Energy	Dubai builds the world's largest solar power plant using giant reflectors
	Clean Energy	Electricity can be generated by the water running through drains.
	Clean Energy	A new type of roofing looks like slate but provides brilliant insulation.
	Clean Energy	Every school and hospital gets a grant to install solar panels.
	Clean Energy	New types of batteries mean electric cars can go 500 miles on a charge.
	Clean Energy	The Government puts massive investment into renewable energy.
	Clean Energy	10 new power stations built on the coast using tides and waves.
	Clean Energy	A new solar paint can turn window panes into electricity generators.

Team Earth Cards 4 – print onto thin card, if possible

	Change the Laws	Strict new laws to protect oceans from chemical and oil pollution
	Change the Laws	Nobel Prizes for Environment are given to individuals and cities.
	Change the Laws	A Bill of Rights is created to protect animals
	Change the Laws	Exporting rubbish to other countries is banned.
	Change the Laws	Fracking is made illegal, all over the world.
	Change the Laws	Supermarkets must find alternatives to all plastic packaging within 5 years.
	Change the Laws	Ecocide is made an international crime.
	Change the Laws	All household cleaning products must be 100% biodegradable.
	Change the Laws	Brazil makes mining illegal in the rainforest
	Change the Laws	Supermarkets must list total food miles on all product labels.

Team Earth Cards 5 – print onto thin card, if possible

	Natural World	You turn all your food waste into compost for your garden
	Natural World	More cities join the Liveable Cities movement
	Natural World	Your town sows all the roundabouts and road dividers with wildflowers
	Natural World	A massive project is begun to re-green deserts in Africa
	Natural World	A tribe in Brazil buys a million acres of rainforest and restores it.
	Natural World	A billionaire gives money to create 1000 new parks in big cities.
	Natural World	Your family grows all its own vegetables
	Natural World	A local group turns some waste ground into a community farm.
	Natural World	Your town creates 1000 new allotments.
	Natural World	A new forest is created to mark the Queen's Jubilee.

Team Earth Cards 6 – print onto thin card, if possible

Team Earth Hero Game 2

STORM!

FOREST FIRE!

2

Hollywood make a blockbuster film about a super-star campaigning to protect a coral reef.

The Government gives every-one in your town a grant to install solar panels

An exciting new computer game comes out about saving the rain forests

A hot pop group record a song about trees

NEW! The Green Olympics!

Scouts plant 2500 trees

EXTINCT!

Clean Earth

World Water

CO₂

Team Earth Hero Game 3

MUDSLIDE!

START

Wake Up News circuit

The Natural World

All o

CO₂

FLOOD!

There's a new TV programme where each week they reclaim waste ground and make it into a garden or a city farm.

3

A famous celebrity plants 10,000 trees.

Someone invents a way to generate electricity from rain.

Wales now makes all its electricity from wind and sun.

Be a Team Earth Hero

Team Earth Hero Game 4



ur "Stuff"



Changing the Laws

Britain has 1% more trees than in 2021. ★



EXTINCT!

New TV series about super heroes who save wildlife. ★

Greta Thunberg gives a powerful speech. ★

Billionaire funds massive solar reflectors in Sahara desert - provides free power to all of North Africa. ★

HEATWAVE!



Hero!

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THE THINK TANK

Throw a 6 to leave here



SECTION 5: **Making it** **Better**

Making it better

What's in this Section?

What would a better world look like?

“Would you tell me, please, which way I ought to go from here?”

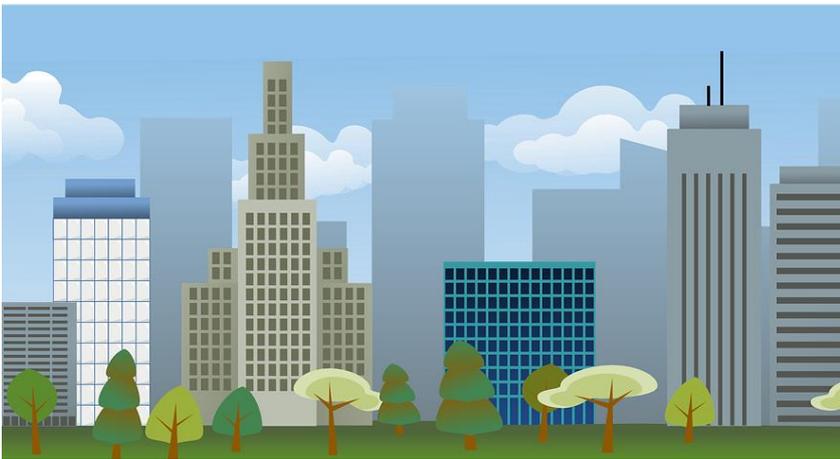
*“That depends a good deal on where you want to get to,”
said the Cat.*

Lewis Carroll: Alice's Adventures in Wonderland

It's difficult to arrive at your destination if you have no clear idea of where you're going! And, as countless scary movies prove, “Away from all of this,” is hardly ever a good direction to run in.

The children and young people of today are eventually going to be the law-makers, the inventors, the farmers and gardeners, the scientists, the healers, the forest guardians, and the leaders of tomorrow. So, it helps to start thinking now about what kind of a world you want to move towards. What kinds of things are important to you? You could simply talk with your family and friends about the kinds of questions we're asking here. Or you could create quite a detailed project, writing, drawing and/or film-making about your ideas.

Cities



By the time you grow up, most people in the world will be living in cities. But it's obvious that – on the whole, many of our cities aren't good places to live right now. We need to change how we 'do' cities. What should cities of the future look like? What kinds of houses should people be living in? How should

people be travelling around? What kinds of work should they be doing? How should the cities get their energy? What should they look like? How much green space should there be?

These are important questions to ask and to find answers for. We're going to need lots of creative architects and engineers, technicians, scientists, and garden designers to rethink our cities.

Business

The way we do business is completely broken. People are encouraged to buy lots of things that they don't really need to make themselves happy. A lot of those

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things are made by workers in the developing world who are paid very little and exposed to pollution and dangerous working conditions. How can we make business fairer? How can we encourage businesses to stop causing pollution? How can we change our societies to make people much happier, without having to buy stuff all the time? Do we even need money? If not, how would we trade our goods and services with each other? Should everyone be paid the same? If not, how do we decide who should get paid the most?

We're going to need lots of creative law-makers, business people, politicians and some revolutionary thinkers to come up with much better ways to do business.

Food

The way a lot of our food is grown, using lots of chemical sprays, is turning our soil to dust. We need to understand the importance of having soil that is alive, rich, and fertile – full of micro-organisms. Soil like this makes our food much more health-promoting, full of vitamins, minerals, and all kinds of plant chemicals that help us to have healthy bodies, with healthy immune systems, so we aren't so dependent on drugs and medicines. Soil like this can also lock up lots of carbon and we really, really need that.



How can we best do this? How can we have countryside that grows food for people, but which also supports wildlife, birds, wildflowers, and insects? What's the right balance between wild countryside, natural forests, and farmland? How can we restore farmland that is turning to desert? How can we educate farmers to farm well? How can we educate people to eat well? How can we transport food in less polluting ways? Or can we rearrange the way we do things so we can grow a wider variety of foods in each place?

We're going to need some wonderful, caring farmers, soil scientists, foresters, gardeners, ecologists, and educators to bring our damaged natural world back into balance. We're also going to need more food scientists, doctors, and nutritionists to understand much better the kinds of food we need to eat to stay healthy – it's becoming clear that a lot of what we've believed about healthy eating isn't right, because a lot of people are sick and obese.

Energy

It's obvious to most people already that we need to stop burning oil, coal and gas and make the switch to renewable energy. We're already at the point where energy from renewables costs about the same as energy from fossil fuels – but new technology could make that so much cheaper that the whole world could have almost free energy.

We can already make energy using sun, wind, and water. But what if we could generate energy from rain? For rainy countries like the United Kingdom, that might be just what we need! But it would also be brilliant for countries that have a

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monsoon season, when lots and lots of rain falls in a short period of time – especially as solar power may be less effective during such rainy times. What if we could generate electricity from people’s feet walking down a street, or from traffic driving along a road? What if we could generate energy from sand being blown about in a desert?

What difference would it make to everyone if they could have free or very low-cost heating, cooling, and lighting in their homes? What if the energy that made factories work was free? What if the energy that drove cars, bikes, ships, and trains was free? What difference would it make to the world if everyone was connected to the internet? And what difference would it make to our planet to have no more smoky chimneys, pollution-free roads, and no more cities with dirty air?

We are going to need a whole lot of very clever inventors! But we’ll also need skilled repair people, electricians, many new kinds of technicians, maintenance workers, builders, city planners, and engineers.

Culture

It seems possible that we could be moving into a future where we’d all need to work less. (Or we could be, if we decided that was important) What will we all do with our spare time? Not shopping, for goodness sake! We need beautiful places to walk, art to lift our spirits and inspire us, musicians, dancers and actors, film-makers and authors to make us think, make us laugh, and give us the joy that comes from beauty. And we need to be doing creative things ourselves, not just consuming other people’s creativity.

What kinds of movies do you think there should be more of? What kinds of art, music and dance would you like to see in your world? Or what kinds of home-made art and music would you like to be able to make? What kinds of skills will we need to create a world like that?

The Big Clean-Up



It may take us 100 years or so before we finish cleaning up the mess that’s already been made. We’re going to need people to re-plant forests and grasslands, clean up the oceans, build better homes, make our cities beautiful, and replenish our overworked soil.

What kinds of new jobs do you think we’ll have to invent? What will people have to learn, in order to do them? Do we need to change our education systems to fit in with that? What else will we have to change?

Although there’s a lot of doom-and-gloom around about the state of our planet and the kind of future we’re creating, this could be an opportunity to make a much better world. What could you do, to help make that happen?

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Useful Websites and resources

Young People's Trust for the Environment – fact sheets

<https://ypte.org.uk/factsheets/climate-change/climate-change>

Young Greens – the Green Party for Young People

<https://www.younggreens.org.uk/>

WaterBear – documentaries and movies about conservation and climate change

<https://www.waterbear.com/watch>

NASA – lots of data about climate change and some of the solutions

<https://climate.nasa.gov/>

The Woodland Trust – major tree-planting charity in the UK

<https://www.woodlandtrust.org.uk/>

Wetlands and Wildfowl Trust – major conservation charity

<https://www.wwt.org.uk/#>

World Wildlife Fund – not 'just' about saving endangered species but takes action on the environment, too

<https://www.wwf.org.uk/what-we-do/climate-change-and-energy>

Royal Society for the Protection of Birds – lots of ideas for helping Nature

<https://www.rspb.org.uk/>

Biophilic Cities – a worldwide network of cities, sharing ideas on how to integrate cities and the natural world

<https://www.biophiliccities.org/>

The Liveable Cities Project – rethinking how cities could work

<https://youtu.be/jD2Ma2gFde4>

An introduction to Doughnut Economics - How the Dutch are reshaping their post-pandemic economy - BBC REEL

<https://youtu.be/Ziw-wK03TSw>

The Soil Story

<https://kisstheground.com/thesoilstory/>

Project Drawdown – one of the most ambitious and thought-out plans for starting to reverse climate change

<https://drawdown.org/>

The Centre for Alternative Technology – all kinds of ideas for using technology to help the planet - <https://www.cat.org.uk/>