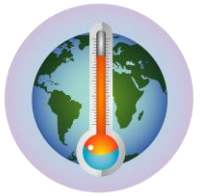
United Curriculum

Sustainability



United Curriculum
Primary
Part of United Learning

Why a Sustainability Curriculum?

Why is sustainability important?

In nature, each ecosystem has a carrying capacity. This is the maximum number of individuals that the area can sustain. The population will fluctuate around this carrying capacity and, when numbers become too high, the population is naturally reduced. This is not the case for humans. We live in a world where humans are the dominant species; we evolved such that we have been able to increase our population to a point that is not sustainable, one which is effectively beyond that natural carrying capacity.

The resources we rely upon for our own existence are ultimately finite. It is therefore important humans seek to live sustainably, not only for us, but for the species we share this planet with and for future generations. Living unsustainably not only threatens the lives of the animals and plants around us, but also the lives of our own species.

What does DfE say?

In April 2022, the then Education Secretary Nadhim Zahawi announced the Department of Education's *Sustainability and Climate Change: A Strategy for the Education and Children's Services Systems*. He announced the education sector's ambition to become a world leader in climate education.

The UK government acknowledged that children and young people are concerned about climate change and the impact that it is having, and they recognised that DfE has a role to play in preparing children for the challenges that this will present. In the policy paper they recognise that:

'The challenge of climate change is formidable. For children and young people to meet it with determination and not with despair, we must offer them not just truth, but also hope. Learners need to know the truth about climate change – through knowledge rich education. They must be given the hope that they can be agents of change, through hands-on activity and, as they progress, through guidance and programmes allowing them to pursue a green career pathway in their chosen field.'

Biodiversity

What is Biodiversity?

Biodiversity is essentially all the different kinds of life that you find in a particular area. This includes the variety of plants, animals, fungi and microorganisms. But it is more than just the different types of living things, it is also about the differences that we observe in the individuals of the different species and also about how those different species interact with each other (ecosystems and biomes).

The most common method of measuring biodiversity is to simply count the number of different species – but this is not easy. Humans have identified 1.6 million species on Earth, but the percentage of species yet to be found could be as high as 84%. To measure biodiversity on the genetic level we would need to study DNA.

What do we want pupils to know by the end of KS2?

We want pupils to understand what the term biodiversity means, we want them to appreciate the huge variety of living things on this planet – of different and the same species – and to understand that this does not simply refer to the animals, but also the plants, fungi and microorganisms. If we do not appreciate what biodiversity is, we cannot appreciate why it is important and why we need to protect it.

Progression in Vocabulary

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
animal	**carnivore**	**biodiversity**	**extinction**	**biome**	**endangered**	**genetic variation**
plant	**herbivore**	**fauna**	**pollinator**	**classification**	**vulnerable**	
	omnivore	**flora**	**pollution**	**ecosystem**		
		food chain		**food web**		
		organism		**monoculture**		
		overfishing		**species (2)**		
		species (1)				

Biodiversity

Vocabulary Definitions

EYFS

- **animal** [noun]: living thing that moves from place to place.
- **plant** [noun[: living thing that moves but stays in the same place.

Year 1

- **carnivore** [noun]: living thing that eats only animals.
- **herbivore** [noun]: living things that eats only plants.
- **omnivore** [noun]: living thing that eats plants and animals.

Year 2

- **biodiversity** [noun]: all the different living things in an area.
- **fauna** [noun]: animal life.
- **flora** [noun]: plant life.
- **food chain**: [noun] diagram of a feeding relationship in a habitat, which shows where energy is transferred.
- **organism** [noun]: a living thing.
- **overfishing** [noun]: taking more fish than the sea or ocean can sustain.
- **species (1)** [noun]: a group of living things that are the same type.

Year 3

- **extinction** [noun]: the process that leads to a group of animals or plants becoming extinct (dying out).
- **pollinator** [noun]: an animal that transfers pollen from one plant to another.
- **pollution** [noun]: the introduction of a substance into the environment that has harmful effects.

Year 4

- **biome** [noun]: a large-scale, global ecosystem
- **classification** [noun]: the sorting or grouping of things according to their characteristics.
- **ecosystem** [noun]: all the organisms and the non-living features of an area.
- **food web** [noun]: diagram of interdependent feeding relationships in a habitat, which shows where energy is transferred.
- **monoculture** [noun]: the growing of only one type of plant species in an area.
- **species (2)** [noun]: a group of individuals that can breed to produce fertile offspring

Year 5

- **endangered** [adjective]: a living thing that is found in such small numbers it is a risk of becoming extinct
- **vulnerable** [adjective]: a living thing that is at risk

Year 6

- **genetic variation** [noun]: the differences observed in living things as a result of their genes

Climate Change

What is Climate Change?

The Met Office defines climate change as a "large scale, long-term shift in the planet's weather patterns and average temperatures". Therefore, climate change is not just global warming – which is only about temperature – but it is more than that. It could be about flooding in one place or a drought in another. But of course, global warming will cause climate change.

The COP26 international climate conference in 2021 reinforced the importance of not exceeding 1.5˚C of warming as a global average, in order to preserve the future of life on our planet as we know it. It is important to understand that global warming and climate change are natural phenomena; but that the huge acceleration in both global warming and climate change has been caused by human activity.

What do we want pupils to know by the end of KS2?

Throughout KS1, pupils will be introduced to the concepts of weather and temperature and how these factors effect living organisms. By the end of KS2, pupils should understand the natural phenomena of the greenhouse effect, how human activity is creating an enhanced greenhouse effect, and how this in turn is leading to wider climate change. Pupils will see some examples of mitigations and adaptations at local, national and global scales.

Progression in Vocabulary

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
weather (1)	**arable farming** **extreme weather** **pastoral farming**	**agriculture** **climate** **environment** **gas** **global warming** **oxygen** **temperature** **weather (2)**	**carbon dioxide**	**atmosphere** **climate change** **COP26** **deforestation** **global atmospheric circulation** **weather (3)**	**drought** **enhanced greenhouse effect** **greenhouse effect** **greenhouse gases** **heatwave**	**mitigation**

Climate Change

Vocabulary Definitions

EYFS

- **weather (1)** [noun]: short term conditions like sunny rainy.

Year 1

- **extreme weather** [noun]: unexpected and severe weather conditions.
- **environment** [noun]: the surrounding conditions in an area.
- **pastoral farming** [noun]: farming animals.
- **arable farming** [noun]: farming plants.

Year 2

- **agriculture** [noun]: the process of farming (arable or pastoral)
- **climate** [noun]: long-term weather patterns.
- **environment** [noun]: the conditions or surroundings in which organisms live.
- **gas** [noun]: one of the three states of matter.
- **global warming** [noun]: increasing average temperatures on Earth.
- **oxygen** [noun]: a gas living things need to survive.
- **temperature** [noun]: how hot or cold something is.
- **weather (2)** [noun]: short-term conditions in the environment.

Year 3

- **carbon dioxide** [noun]: a gas found in the air.

Year 4

- **atmosphere** [noun]: the layer of air around the Earth.
- **climate change** [noun]: any change in long-term weather patterns
- **COP26** [noun]: Conference of the Parties (international climate change conference)
- **deforestation** [noun]: the clearing or cutting down of an area of forest
- **global atmospheric circulation** [noun]: the movement of air within the atmosphere
- **weather** (3) [noun]: short-term conditions in the atmosphere

Year 5

- **drought** [noun]: lack of rainfall.
- **enhanced greenhouse effect** [noun]: the unnatural warming of the planet due to increased greenhouse gases in the atmosphere.
- **greenhouse effect** [noun]: the natural warming of the planet to its habitable temperature, caused by trapping heat in the Earth's atmosphere.
- **greenhouse gases** [noun]: gases that trap heat within the atmosphere.
- **heatwave** [noun]: an extended period of hotter than expected weather (usually at least 3 days).

Year 6

- **adaptation** (to climate change): changing the way we behave to adapt to the changing climate.
- **mitigation** (of climate change): reducing or reversing the effects of climate change.

Living Sustainably

What do we mean by 'Living Sustainably'?

Sustainability is all about making sure that the needs of people (and our planet) today are met, while ensuring that future needs are also met. To live sustainably, we must make informed choices, and to do this we need to know what we need to conserve and why conserving those resources is important. Once we appreciate that, we can make our own decisions about the way we wish to live. The individual choices we all make contribute to changes in demand on a large scale, and this in turn can have a huge impact on the future of the world we live in.

In the curriculum, we consider 'living sustainably' to have two key parts: **1. Managing natural resources** and not harvesting or mining or fishing more than the environment can take; and **2. Managing waste** to ensure that we do not pollute the world and destroy habitats with the things we no longer need or want.

What do we want pupils to know by the end of KS2?

We want pupils to understand what the term sustainable means; we want them to appreciate that to live sustainably we need to conserve finite resources. We want pupils to have awareness of where the things they use or eat may come from or how they were made. We want them to have an understanding of the concept of waste, and where waste can end up. Having this understanding will enable pupils to make informed choices about how they choose to live.

Progression in Vocabulary

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
man-made **natural**		**natural resource** **overfishing** **reduce** **reuse** **recycle** **sustainability** **waste**			**demand** **food miles** **fossil fuel** **non-renewable** **renewable**	

Living Sustainably

Vocabulary Definitions

EYFS → Year 1 → Year 2 → Year 3 - - →

- **natural** [adjective] describing something found in nature, which has not been made by humans.
- **manmade** [adjective]: describing something that has been made by humans.

- **natural resource** [noun]: a useful thing or material that is found in nature, such as food, water, wood.
- **overfishing** [noun]: the situation where humans have taken more fish than the water can sustain.
- **reduce** [verb]: to use less of something.
- **reuse** [verb]: to use something again.
- **recycle** [verb]: to change waste into a material we can use again.
- **sustainability** [noun]: meeting the needs of today, while making sure we can meet the needs of the future.
- **waste** [noun]: something that is left over.

- - → Year 4 → Year 5 → Year 6

- **demand** [noun]: how much people want something
- **food miles** [noun]: the distance (measured in miles) that the food you eat has travelled to your plate.
- **fossil fuel** [noun]: a (chemical) store of energy, formed over millions of years from dead plants and animals.
- **non-renewable** [adjective]: describing something that cannot be replaced as fast as it used (that will run out).
- **renewable** [adjective]: something that can be replenished as fast as it is used.

Background Knowledge

Sustainable Development Goals

"The **2030 Agenda for Sustainable Development**, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

At its heart are the **17 Sustainable Development Goals (SDGs)**, which are an urgent call for action by all countries – developed and developing – in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests." (UN)

Within the United Learning Primary curriculum, the goals that we will feature at are:

- **Goal 11 – Sustainable cities and communities**
- **Goal 12 – Responsible consumption and production**
- **Goal 13 – Climate action**
- **Goal 14 – Life below water**

We will consider how we as individuals can make a difference, how communities can work together and how we can have an impact globally.

The key message throughout will be about how our own personal choices affect our immediate environment, but also how those choices ultimately contribute to a greater global problem, or solution.

Biodiversity

Climate Change

Living Sustainably

What is biodiversity? ⇨ Why is biodiversity important? ⇨ What are threats to biodiversity? ⇨ What are consequences of reducing biodiversity? ⇨ How can we help maintain biodiversity?

Biodiversity

Climate Change

Living Sustainably

What is biodiversity? ⇨ Why is biodiversity important? ⇨ What are threats to biodiversity? ⇨ What are consequences of reducing biodiversity? ⇨ How can we help maintain biodiversity?

In **EYFS,** pupils explore the natural world around them; they make observations about **animals** and **plants** in most units (*All Creatures Great and Small*, *On the Farm* and *Spring in Our Step*). During continuous provision, areas are set up so that pupils can investigate living things such as insects and other invertebrates ('minibeasts').

In **Year 1**, pupils will be introduced to some ideas of biodiversity. We do not use the term itself, and instead focus on the variety of life on this planet. In Science Aut1, pupils are taught about plants and are shown a vast range of plants that exist on this planet. In Science Aut2, pupils are taught about animals and explore the vast array of different **carnivores**, **herbivores** and **omnivores** that make up the five vertebrate groups.

This concept is reinforced in Geography Spr, when pupils study **arable** and **pastoral** farms, and rural and urban areas. They are shown the different types of animals and plants that are frequently observed in these areas.

In **Year 4**, pupils are formally introduced to classification, and how biologists can categorise and group organisms. They expand their awareness of the range of animals by examining invertebrates as well as the five vertebrate groups. They also refine their definition of **species**, as a group of individuals that can breed to produce fertile offspring.

EYFS	Year 1			Year 2			Year 3		Year 4	Year 5	Year 6	
	Science Aut1 Plants	**Geography** Spr Where We Are	**Science** Sum1 Animals	**Science** Spr2 Living things & habitats	**Geography** Spr Hot and cold deserts	**Geography** Sum Rivers, seas and oceans	**Art & Design** Aut2 Prehistoric Art	**Science** Spr2 Plants	**Science** Aut1 Classifying organisms		**Science** Aut2 Evolution	**Science** Spr2 Further classifying

In **Year 2**, pupils are explicitly taught the term **biodiversity** – *bio*, meaning living things, and *diversity* meaning variety – in Science Spr2. They consider the variety of **organisms** within two places (hot and cold deserts in Geography Spr) and are introduced to the idea that living things are adapted to their environments. Pupils will also be explicitly taught a placeholder definition for **species**, which is 'a group of similar living things' (which will be refined in Year 5), and key terms **flora** (plant life) and **fauna** (animal life).

In Geography Sum, pupils are taught about bodies of water on Earth, and the range of living things that can be found there.

In **Year 3**, pupils will see the range of living things that have existed on Earth in its history, including dinosaurs in the introductory History lesson in Aut1, and megafauna in Art & Design Aut2.

Pupils will be taught about **pollinators** in the context of flowering plants in Science Sp2. They consider the variety in different pollinators, and also begin a discussion about the importance of these animals (see 'Why is biodiversity important?').

So far, pupils' awareness of biodiversity has been focused on differences between species. In **Year 6**, pupils are explicitly taught about the importance of **genetic variation** within species in Science Aut2. They also build on their knowledge of classification, and start to use classification groupings that biologists use in Science Spr2.

Biodiversity

Climate Change

Living Sustainably

What is biodiversity? ⇨ **Why is biodiversity important?** ⇨ What are threats to biodiversity? ⇨ What are consequences of reducing biodiversity? ⇨ How can we help maintain biodiversity?

In **Year 2**, we introduce pupils – at the most basic level – to the idea that biodiversity is important. Through learning about **food chains** in Science Spr2, we introduce pupils to the idea that animals and plants rely on each other for food (as well as shelter), and so we need lots of different types of plants and animals. This will be formalised when pupils are introduced to the concept of interdependence in Geography in Year 4.

In **Year 4**, in Science Aut1, we teach explicitly why biodiversity is important: the natural resources some species provide (food, oxygen and water, medicine, materials like wood, cotton and rubber); the importance of interdependence in **ecosystems**; and the aesthetic arguments for maintaining biodiversity. This is covered in two lessons dedicated to solely to this topic. The importance of biodiversity is further reinforced when learning about tropical rainforests in Geography Spr.

Pupils are also introduced to the term **biome** as a global ecosystem in Geography Spr.

EYFS	Year 1	Year 2	Year 3	Year 4		Year 5	Year 6
		Science Spr2 Living Things & Their Habitats	**Science** Aut2 Plants	**Science** Aut1 Classifying Organisms	**Geography** Spr Tropical Rainforests		

In **Year 3**, we develop the idea of the importance of biodiversity further in the Science Sum1 unit. Pupils learn about the particular importance of **pollinators** to plant life (and therefore other organisms) in our world.

In **Year 4**, in **Science** Aut1, we explicitly teach about other threats to biodiversity, including arable **monocultures**, habitat loss (some through **climate change**) and hunting. Pupils also revisit overfishing in **Science** Aut2.

In **Geography** Spr, pupils are taught about **deforestation** of tropical rainforests and how this threatens biodiversity.

In **Science** Sum2, pupils are taught about chemicals like DDT and TBT, and how overuse of these chemicals threaten biodiversity.

In **Year 6 Geography**, pupils will study the threat of plastic to biodiversity. They look at our everyday use of plastic straws, cotton buds and plastic bags, and how these items end up creating pollution in some of the world's habitats.

EYFS	Year 1	Year 2	Year 3	Year 4			Year 5		Year 6
		Geography Sum Rivers, Seas & Oceans	**Science** Aut2 Light	**Science** Aut1 Classifying Organisms	**Geography** Spr Tropical Rainforests	**Science** Sum2 Properties of Materials	**Science** Spr1 Life Cycles	**Geography** Sum2 Climate Across the World	**Geography** Aut2 Improving the Environment

In **Year 2**, pupils will be introduced to one way (of the many ways) that biodiversity is threatened. When learning about Rivers, Seas and Oceans in **Geography** Sum, pupils are taught about **overfishing** and the impact that this could have on the biodiversity of the oceans.

In **Year 3,** in **Science** Aut2, light **pollution** and the impact it can have on animals such as sea turtles is considered.

In **Year 5 Science** (Spr1) pupils are taught about the effect of climate change (a term that they will have been taught in Year 4) on habitats and the organisms that live there, with a focus on pollinators and the spawning, migration and hibernation of some species.

In **Geography** (Sum2), vulnerable biomes are introduced, with a focus on **vulnerable** and **endangered** species. The threat of climate change to habitats is revisited in this unit.

In **Year 3** Science Aut1, pupils are taught about one of the consequences of the reduction of biodiversity: **extinction**. We define this as there being no more of a particular species left on the planet.

Pupils will learn about how depleting the number of individuals of a species puts them at risk, and that if numbers fall dangerously low then it is likely that the species will go extinct.

In **Year 6** Science Aut2, pupils are taught about variation between individuals of the same species, and the consequences of a reduction in **genetic variation**. The example of cheetahs is used. The consequences of being unable to adapt to changing environments is discussed, and how this can lead to extinction.

EYFS	Year 1	Year 2	Year 3	Year 4		Year 5	Year 6
			Science Aut1 Rocks	**Science** Aut2 Food & Digestion	**Geography** Spr Tropical Rainforests	**Science** Spr1 Life Cycles	**Science** Aut2 Evolution

In **Year 4**, in Science Aut2, pupils apply their knowledge of **food webs** to explore the impact that overfishing of one species has one a wider food web and the biodiversity of the ecosystem.

In Geography Spr, pupils should be able to talk about the consequences of **deforestation** as the inverse of why the tropical rainforests are important.

In **Year 5** Science Spr1, pupils will look at pollinators in more detail and consider how a reduction in their numbers pose a threat to our own food supply.

In **Year 4**, in **Science** Aut1, pupils consider firstly how we can take action locally to stop the overfishing of Atlantic cod. They are also taught about what actions government and industry can take (and have taken) to address the problems.

In **Geography** Spr, pupils consider how actions at a local level (e.g. buying fewer products containing palm oil) and at the global level (e.g. actions from COP26) can reduce deforestation and therefore reduce the threat to biodiversity.

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Science Spr2 Living Things & Their Habitats		**Science** Aut1 Classifying Organisms	**Geography** Spr Tropical Rainforests	**Geography** Aut2 Improving the Environment

In **Year 2**, in **Science** Spr2, pupils will be introduced formally to the terms reduce, reuse and recycle. These are in the context of waste (see Living Sustainably). These ideas are relevant to reducing the threat to biodiversity, though pupils not be taught explicitly about that connection until later.

In **Year 6** **Geography** Aut2, pupils will conduct some local fieldwork. A focus of this fieldwork could be to identify positive ways that we can help improve the biodiversity of an area. Pupils will review all learning of biodiversity and consider ways we can, for example, reduce/reuse/recycle plastic waste, or reduce our use of palm oil.

Biodiversity

Climate Change

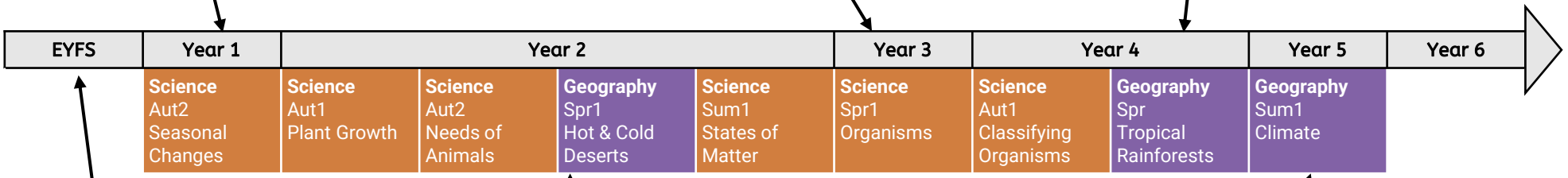
Living Sustainably

What is global warming and climate change?	Why is global warming and climate change accelerating?	What are the impacts of global warming and climate change?	How can we adapt to and mitigate climate change?

In **Year 1** Science Aut2, pupils continue to develop their understanding of seasons and weather, and extend this to consider **extreme weather** (particularly events that have occurred recently). Later, pupils will see that new patterns of extreme weather are one aspect of climate change.

In **Year 3**, in Science Spr1, pupils are introduced to **carbon dioxide**, in the context of all plants needing carbon dioxide to make food (in addition to oxygen, which is needed by all organisms). The term photosynthesis is not used.

In **Year 4**, in Science Aut1, pupils are introduced to the concept of **climate change**. In Geography Spr in the context of the tropical rainforests, pupils are introduced to the term **atmosphere**, and are taught about **global atmospheric circulation** as a way of explaining global weather patterns. They are introduced to the idea that 'too much carbon dioxide in the atmosphere is a bad thing', though this is not explained in the context of greenhouse gases and global warming (which comes in Year 5).



In **EYFS**, there is a focus on pupils observing the **weather** and the seasons. Pupils should <u>not</u> be taught about climate until Year 2, because to introduce weather and climate at the same time will likely result in misconceptions.

In **Year 2**, pupils are introduced to some of the key vocabulary that will later be used to describe and explain climate change. **Temperature** is described as a measure of how hot or cold something is (a placeholder definition until KS3) in Science Aut1, and the **environment** is introduced in Science Aut2. **Climate** (but not 'climate change') is introduced in Geography Spr1 when learning about hot and cold deserts. **Global warming** is introduced in Science Sum1, in the context of temperature and changing states of matter. Global warming is introduced at a different time to climate change to help make the distinction between the two terms clear for pupils.

Pupils will also learn about the name of a **gas**, **oxygen**, in Science Aut2, before learning about carbon dioxide in Year 3.

In **Year 5** Geography Sum, pupils are explicitly taught about the **greenhouse effect** as a natural process, and about the acceleration of global warming through the **enhanced greenhouse effect**. They will be taught about the **greenhouses gases** that contribute to this, but will only name carbon dioxide (a gas that was named in Year 3).

By the end of **EYFS**, pupils will be familiar with the concept of farms, and will be able to name a range of farm animals.

In **Year 2** Geography Sum, pupils are introduced to the term **agriculture**, though its links to climate change will not be made explicit until Year 5.

In **Year 5**, pupils will have been introduced to the enhanced greenhouse effect, and global warming that is being accelerated by human activity. In Geography Sum1, they will focus on three main causes: agriculture, burning **fossil fuels** (a term first introduced in Geography Aut) and deforestation.

In Geography Aut, pupils will be introduced to the terms **renewable** and **non-renewable** in the context of natural resources. They also consider food miles when learning about imports and exports, and the impact that this can have on the environment.

EYFS	Year 1	Year 2	Year 3	Year 4		Year 5		Year 6	
	Geography Spr Where We Are	**Geography** Sum Rivers, Seas & Oceans		**Geography** Aut Looking at S. America & Brazil	**Geography** Spr Tropical Rainforests	**Geography** Aut Investigating World Trade	**Geography** Sum1 Climate Across the World	**Science** Aut1 Electricity	**Science** Sum2 Chemical Reactions

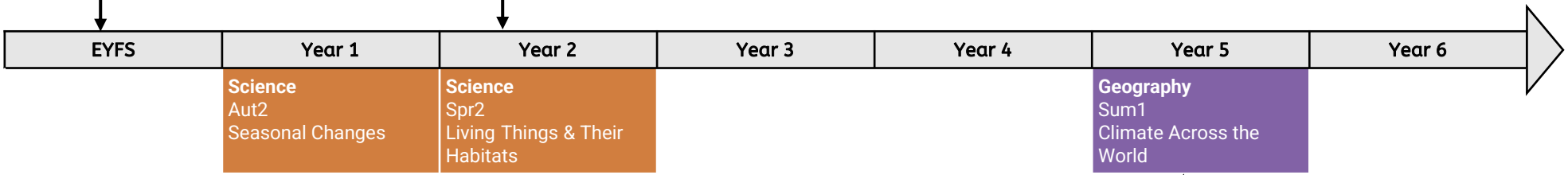
In **Year 1** Geography Spr, pupils are introduced to farming of animals (**pastoral**) and plants (**arable**). To avoid too much new vocabulary, the term agriculture is not introduced until Year 2. The link between farming and climate change will not yet be clear for pupils (and we should not attempt to make it), but an understanding of different types of farming will be an important foundation to build on in later years when considering the relative impact of farming corn vs. beef on climate change.

In **Year 4** Geography Spr, pupils learn about deforestation of tropical rainforests, and how this will increase the amount of carbon dioxide in the atmosphere. They will consider **deforestation** at a commercial scale, which is damaging (Spr) and will review slash-and-burn agriculture (Aut) and how this 'deforestation' at a local scale is sustainable, and has been for thousands of years.

In **Year 6**, in Science Aut1, pupils are taught about electricity generation through renewable (wind, solar, thermal and hydrological) and non-renewable (fossil fuels) sources of electricity. In Sum2, pupils are taught about chemical reactions, and consider carbon dioxide as a product in combustion reactions.

By the end of **EYFS**, pupils will be familiar with the concept of farms, and will be able to name a range of farm animals.

In **Year 2** Science Spr2, when pupils are learning about hot and cold deserts, pupils are introduced to the idea that ice caps are melting and this is impacting polar bears' (and other living things') habitats. The term climate change is not used here.



In **Year 1**, in Science Aut2, when pupils are learning about seasonal weather, they will learn about extreme weather and the impacts that it can have on their local community.

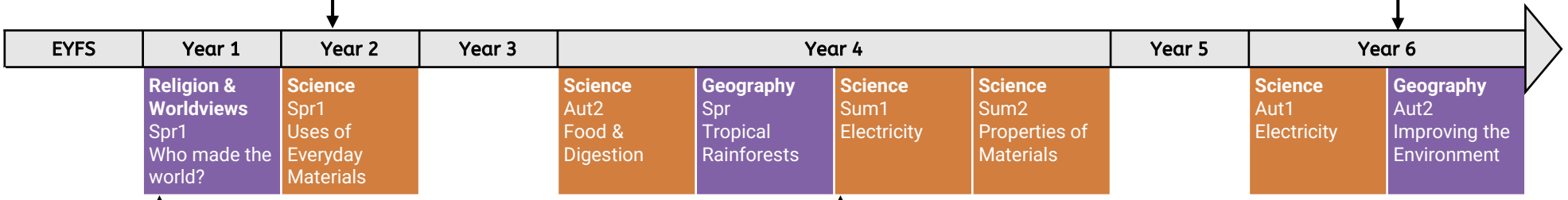
In **Year 5** Geography Sum1, pupils are taught about the enhanced greenhouse effect. They will then consider impacts of global warming and climate change. In the UK, these will include the impacts of **droughts** and/or **heatwaves** (which pupils may have first considered in Year 1). They will consider the non-human impacts too, including to **vulnerable** species.

On a global scale, pupils will be taught about further extreme weather events and the impacts they can have, sea level rises and the wider threat to Earth's biodiversity, particularly in the world's vulnerable biomes.

In **Year 2**, Science, pupils are introduced to the importance of reduce, reuse, recycle. However, this is in the context of 'Living Sustainably', and the links between this and climate change (e.g. reducing the amount of waste that needs to be incinerated) is not made explicit.

In **Year 6** Geography, pupils Aut2 learning picks up directly where it leaves in Year 5 Sum2. Having been taught about the causes and impacts of global warming and climate change, pupils will explore ways humans can adapt to the new climate (**adaptation**), and ways we can slow down and reverse climate change (**mitigation**). This will be done at the local, national and global scale, and pupils will consider examples in the UK and around the world.

One example of mitigation will be explored in more depth in Science Aut1, in the context of renewable sources of energy (wind, solar, geothermal and hydrological power).



In **Year 1**, in Religion & Worldviews, pupils consider looking after the Earth in the context of stewardship. At this stage, it is limited to rubbish and litter; the link between this and climate change is not made explicit (see also, Living Sustainably).

In **Year 4**, pupils will be introduced to some of the ways that humans can help mitigate the impacts of climate change at the local scale (though this terminology will not be used). In Science, pupils are taught how a plant-based diet can provide all the nutrients that humans need; how we can all reduce our consumption of electricity around the house; and how humans use thermal insulation in homes to reduce the transfer of heat to our surroundings.

Pupils are also taught about the importance of international agreements to affect change at the global scale, during Geography when being taught about **COP26** (and subsequent global conferences).

Biodiversity

Climate Change

Living Sustainably

Managing Natural Resources

Waste Management

Biodiversity

Climate Change

Living Sustainably

Managing Natural Resources

Waste Management

In **EYFS**, pupils will be aware of natural resources like food and water, but will not use the term 'resource' (which is introduced in Year 2). They will, however, have started to explore materials that are **natural** or **man-made**.

In **Year 2**, pupils will be introduced to the term **natural resources** in Science Aut2 and, in the first instance, will recognise food and water as examples of natural resources. Other natural resources, such as fossil fuels, will be covered in Year 5.

Pupils will be introduced to the term **sustainability** in Science Spr1 and will consider how some of the resources and materials that we use need to be conserved and used in a more sustainable way. Pupils will focus on the importance of **reducing, reusing**, and **recycling**.

The idea of sustainability will be developed in Geography, where pupils are introduced to the economic and social reasons to value the natural resources in the oceans. They will consider **overfishing**, including the impact it can have, and how fish management can help prevent overfishing (see also 'Biodiversity'). In English, pupils will use their writing to explore ideas of sustainability and maintaining forests.

EYFS	Year 1	Year 2				Year 3			
	Science Spr1 Everyday Materials	**Science** Aut2 Needs of Animals	**Science** Spr1 Uses of Everyday Materials	**Geography** Sum Rivers, Seas & Oceans	**English** Sum2 Writing Instructions	**History** Aut Prehistoric Britain	**Science** Spr1 Organisms	**Geography** Spr Volcanoes	**Geography** Sum Looking at Europe & Tourism

Click here for Year 4-6

In **Year 1**, pupils build on knowledge from EYFS in Science Spr1. They group materials into those that are natural and man-made. They will also be shown photographs of where we get some of the natural materials from, to help pupils to connect the materials they see in objects with where they have come from. For example, they see rubber trees and cotton plants.

In **Year 3**, pupils explore land as a natural resource in Geography in the context of volcanic eruptions.

They also consider further, concrete examples of sustainable management of natural resources. This includes eating a plant-based diet to conserve fish and meat stocks in Science, and management of land use in Geography, when learning about tourism in two European locations. In History, pupils also learn about the agricultural revolution and the first humans in Britain to start farming land.

Managing Natural Resources

Waste Management

In **Year 4**, pupils revisit water as a natural resource in **Science**, with the introduction of the water cycle. Pupils are also taught that the water on Earth is finite, and that it mostly exists as saltwater, with only a tiny proportion existing as freshwater in rivers and lakes. They also revisit overfishing in **Science** Aut2, and consider the impacts on food webs if natural resources (fish) are not managed sustainably.

In **Geography**, pupils start to link scale to sustainable living. When deforestation occurs on a local scale it can be done sustainably, but when large-scale commercial deforestation occurs it is no longer sustainable.

In **Year 6**, pupils will focus on renewable energy sources as a way of sustainably meeting humans' demand for electricity. They will explore in a detailed case study the use of wind power in the UK (considering the ecological, political, social and environmental issues) in **Geography**, and learn about solar, hydrological and geothermal power in **Science**.

Click here for EYFS-Year 3

Year 4			Year 5	Year 6	
Science Aut2 Food & Digestion	**Science** Spr1 Particle Model	**Geography** Spr Tropical Rainforests	**Geography** Aut Investigating World Trade	**Science** Aut1 Electricity	**Geography** Aut2 Improving the Environment

In **Year 5 Geography**, pupils extend their knowledge of natural resources from food, water and land, to include **fossil fuels**. They will be taught that these natural resources are unevenly distributed across the world, and they will group natural resources as finite/infinite, and **renewable** and **non-renewable**.

Biodiversity

Climate Change

Living Sustainably

Managing Natural Resources

Waste Management

In **EYFS**, through their routines and school environment, pupils will be familiar with practices of putting rubbish in a bin and not littering. Pupils would also be expected to place paper in the recycling bin.

In **Year 2**, pupils learn about seasonal fruits and vegetables, and how we can eat foods that are 'in season' to reduce **waste** of these foods in Science Aut1.

Pupils are introduced to the term **sustainability** and revisit the importance of reducing waste in Science Spr1. Pupils are taught that by **reducing, reusing** and **recycling** plastic and other materials, we are creating less waste.

In **Year 4** Geography Aut, pupils look at the concept of sustainable living through using the entirety of a resource, therefore, leaving no waste. Pupils research a small indigenous community in Brazil to compare their human impact on the environment with larger scale operations.

In **Year 5** Geography Aut1, pupils are introduced to the term **food miles** and imports and exports of natural resources. Pupils revisit the importance of eating seasonal foods, and we now consider the environmental impact of our **demand** for certain food types all year round, and the waste this industry creates.

EYFS	Year 1	Year 2		Year 3	Year 4	Year 5	Year 6		
	Religion & Worldviews Spr1 Who made the world?	**Science** Aut1 Plant Growth	**Science** Spr1 Uses of Everyday Materials	**Science** Spr1 Organisms	**Geography** Aut Looking at South America & Brazil	**Geography** Aut1 Investigating World Trade	**Geography** Aut2 Improving the Environment	**English** Aut2 Persuasion: Reducing Waste	**Art & Design** Aut2 Recycled Materials

In **Year 1** Religion & Worldviews Spr1, pupils consider God's description of the world as 'very good' in Genesis. They consider why the world may no longer be considered 'very good', with a focus on litter and overflowing bins in their local community and further afield.

In **Year 3**, the need to manage our waste is developed further through food waste in the Science Spr1 unit. Pupils will discuss the scale of food waste and will be encouraged to think of ways that we can all reduce the amount of food we waste each year.

In **Year 6** pupils look more closely at our plastic usage and the environmental problems associated with plastic production and waste in Geography Aut2. They consider the responses to the problem (incineration, export, tax and changing consumer habits), and decide if these measures are effective and dealing with the scale of this issue.

In English Aut2, pupils write a persuasive campaign to reduce waste, using the knowledge they have been taught in this strand.

In Art & Design Aut2, pupils examine how artists have highlighted the issue of waste in our world and used/reused waste materials to create sculptures. Pupils create their own installation using materials that would otherwise go to waste.

Biodiversity

Climate Change

Living Sustainably

Biodiversity

Climate Change

Living Sustainably

What is biodiversity?	Why is biodiversity important?	What are threats to biodiversity?	What are consequences of reducing biodiversity?	How can we help maintain biodiversity?

In **EYFS,** pupils explore the natural world around them; they make observations about **animals** and **plants** in most units (*All Creatures Great and Small*, *On the Farm* and *Spring in Our Step*). During continuous provision, areas are set up so that pupils can investigate living things such as insects and other invertebrates ('minibeasts').

Pupils will not yet have seen anything in these strands.

Biodiversity

Climate Change

Living Sustainably

What is global warming and climate change?	Why is global warming and climate change accelerating?	What are the impacts of global warming and climate change?	How can we adapt to and mitigate climate change?

In **EYFS**, there is a focus on pupils observing the **weather** and the seasons. Pupils should <u>not</u> be taught about climate until Year 2, because to introduce weather and climate at the same time will likely result in misconceptions.

Pupils will not yet have seen anything in these strands.

Biodiversity

Climate Change

Living Sustainably

Managing Natural Resources

In **EYFS**, pupils will be aware of natural resources like food and water, but will not use the term 'resource' (which is introduced in Year 2). They will, however, have started to explore materials that are **natural** or **man-made**.

Waste Management

In **EYFS**, through their routines and school environment, pupils will be familiar with practices of putting rubbish in a bin and not littering. Pupils would also be expected to place paper in the recycling bin.

Biodiversity

Climate Change

Living Sustainably

Biodiversity

Climate Change

Living Sustainably

What is biodiversity?	Why is biodiversity important?	What are threats to biodiversity?	What are consequences of reducing biodiversity?	How can we help maintain biodiversity?

By the end of EYFS, pupils should know the names of plants and animals in their community.

In **Year 1**, pupils will be introduced to some ideas of biodiversity. We do not use the term itself, and instead focus on the variety of life on this planet. In Science Aut1, pupils are taught about plants and are shown a vast range of plants that exist on this planet. In Science Aut2, pupils are taught about animals and explore the vast array of different **carnivores**, **herbivores** and **omnivores** that make up the five vertebrate groups.

This concept is reinforced in Geography Spr, when pupils study **arable** and **pastoral** farms, and rural and urban areas. They are shown the different types of animals and plants that are frequently observed in these areas.

Pupils will not yet have seen anything in these strands.

Biodiversity

Climate Change

Living Sustainably

What is global warming and climate change?

By the end of **EYFS**, pupils will be confident in naming types of weather, and will have observed the weather across seasons.

In **Year 1** Science Aut2, pupils continue to develop their understanding of seasons and weather and extend this to consider **extreme weather** (particularly events that have occurred recently). Later, pupils will see that new patterns of extreme weather are one aspect of climate change.

Why is global warming and climate change accelerating?

By the end of **EYFS**, pupils will have been exposed to farms, and some common farm animals in the UK.

In **Year 1** Geography Spr, pupils are introduced to farming of animals (**pastoral**) and plants (**arable**). To avoid too much new vocabulary, the term agriculture is not introduced until Year 2. The link between farming and climate change will not yet be clear for pupils (and we should not attempt to make it), but an understanding of different types of farming will be an important foundation to build on in later years when considering the relative impact of farming corn vs. beef on climate change.

What are the impacts of global warming and climate change?

In **Year 1**, in Science Aut2, when pupils are learning about seasonal weather, they will learn about extreme weather and the impacts that it can have on their local community.

How can we adapt to and mitigate climate change?

Through the routines of **EYFS**, pupils will be familiar with practices of putting rubbish in a bin and not littering. Pupils would also be expected to place paper in the recycling bin.

In **Year 1**, in Religion & Worldviews, pupils consider looking after the Earth in the context of stewardship. At this stage, it is limited to rubbish and litter; the link between this and climate change is not made explicit (see also, Living Sustainably).

Biodiversity

Climate Change

Living Sustainably

Managing Natural Resources

In **EYFS**, pupils will be aware of natural resources like food and water, but they will not use the term natural resource or resource (which is introduced in Year 2). They will, however, have started to group materials into those that are **natural** or **man-made**.

This broadly continues into **Year 1**, where pupils are given opportunities to reinforce this knowledge. In **Science** Spr1, pupils will again group materials into those that are natural and man-made. They will also be shown photographs of where we get some of the natural materials from, to help pupils to connect the materials they see in objects with where they have come from. For example, they see rubber trees and cotton plants.

Waste Management

In **EYFS**, through their routines and school environment, pupils will be familiar with practices of putting rubbish in a bin and not littering.

In **Year 1**, in **Religion & Worldviews**, pupils consider what happens when we do not put rubbish in a bin or we litter; the Earth becomes less 'good' (when compared to the 'very good' world as described by God in Genesis). They consider some of the simple things that they should do to help make the world 'good' again.

Biodiversity

Climate Change

Living Sustainably

Biodiversity

Climate Change

Living Sustainably

What is biodiversity?	Why is biodiversity important?	What are threats to biodiversity?	What are consequences of reducing biodiversity?	How can we help maintain biodiversity?
By the end of **Year 1,** pupils will know that there are lots of types of plants and animals in the world. They will have looked at the five vertebrate groups (mammals, birds, fish, amphibians and reptiles), and herbivores/carnivores/omnivores. In **Year 2,** we develop the idea of the 'variety' of animals and plants by formally introducing the term **biodiversity** in Science Spr2. In the contexts of hot and cold deserts, pupils will look at the biodiversity of each place. We also teach pupils the key vocabulary of **species** (a placeholder definition of 'a group of one type of living thing' is used until pupils can access the accurate definition in Year 4), **flora** (plant life), **fauna** (animal life) and **organisms** (all living things). In Geography, pupils are taught about bodies of water on Earth, and the range of living things that can be found there.	In **Year 1**, pupils were being introduced to what biodiversity is, and so this strand has not yet been developed. In **Year 2**, we introduce pupils – at the most basic level – to the idea that biodiversity is important. Through learning about food chains in Science Spr2, we teach pupils that animals and plants rely on each other for food and shelter, and so we need lots of different types of plants and animals. This will be formalised when pupils are explicitly taught the concept of interdependence in Geography in Year 4.	In **Year 1**, pupils were being introduced to what biodiversity is, and so this strand has not yet been developed. In **Year 2**, pupils will be introduced to one way (of the many ways) that biodiversity is threatened. When learning about Rivers, Seas and Oceans in Geography Sum, pupils are taught about **overfishing** and the impact that this could have on the biodiversity of the oceans.	In **Year 1**, pupils were being introduced to what biodiversity is, and so this strand has not yet been developed. In **Year 2**, pupils will be introduced to one way (of the many ways) that biodiversity is threatened. When learning about Rivers, Seas and Oceans in Geography Sum, pupils are taught about **overfishing** and the impact that this could have on the biodiversity of the oceans.	Pupils will not yet have seen anything in this strand.

Biodiversity

Climate Change

Living Sustainably

What is global warming and climate change?

By the end of **Year 1**, pupils should be familiar with the weather and will have seen some examples of extreme weather.

In **Year 2**, pupils are introduced to some of the key vocabulary that will later be used to describe and explain climate change. **Temperature** is described as a measure of how hot or cold something is (a placeholder until KS3) in Science Aut1, and the **environment** is introduced in Science Aut2. **Climate** (not 'climate change') is introduced in Geography Spr1 when learning about hot and cold deserts. **Global warming** is introduced in Science Sum1, in the context of temperature and changing states of matter. It is introduced at a different time to climate change to help make the distinction between the two terms clear for pupils.

Pupils will also learn about the name of a **gas**, **oxygen**, before learning about carbon dioxide in Year 3.

Why is global warming and climate change accelerating?

By the end of **Year 1**, pupils should be familiar with two types of farming: pastoral and arable.

In **Year 2** Geography Sum, pupils are introduced to the term **agriculture**, though its links to climate change will not be made explicit until Year 5.

What are the impacts of global warming and climate change?

By the end of **Year 1**, pupils will have focused only on local impacts of global warming and climate change (but will not have used these terms). They will have seen a range of extreme weather events (e.g. drought or heatwave).

In **Year 2** Science Spr2, when pupils are learning about hot and cold deserts, pupils are introduced to the idea that ice caps are melting and this is impacting polar bears' (and other living things') habitats. The term climate change is not used here.

How can we adapt to and mitigate climate change?

By the end of **Year 1**, pupils should be familiar with the need to not litter and to recycle their own paper in the classroom.

In **Year 2**, Science, pupils are introduced to the importance of reduce, reuse, recycle. However, this is in the context of 'Living Sustainably', and the links between this and climate change (e.g. reducing the amount of waste that needs to be incinerated) is not made explicit.

Biodiversity

Climate Change

Living Sustainably

Managing Natural Resources

By the end of **Year 1**, pupils will be familiar with some examples of naturally occurring and manmade resources, including cotton, rubber, wood, glass and plastic.

In **Year 2**, pupils will be introduced to the term **natural resources** in **Science** Aut2 and, in the first instance, will recognise food and water as examples of natural resources. Other natural resources, such as fossil fuels, will be covered in Year 5.

Pupils will be introduced to the term **sustainability** in **Science** Spr1 and will consider how some of the resources and materials that we use need to be conserved and used in a more sustainable way. Pupils will focus on the importance of **reducing, reusing**, and **recycling**.

The idea of sustainability will be developed in **Geography**, where pupils are introduced to the economic and social reasons to value the natural resources in the oceans. They will consider **overfishing**, including the impact it can have, and how fish management can help prevent overfishing (see also 'Biodiversity'). In **English**, pupils will use their writing to explore ideas of sustainability and maintaining forests.

Waste Management

By the end of **Year 1**, pupils' understanding of waste management will be limited to being responsible for our own waste and making sure that we put our rubbish in the bin and do not litter.

The idea of waste management is first introduced in **Year 2** in **Science** Aut1, where pupils look at seasonal fruits and vegetables. Pupils are taught that one of the reasons to eat fruit and vegetables that are 'in season' is to reduce the amount of waste. The term **waste** is defined in this unit.

The introduction of **sustainability** in **Science** Spr2 (as in left column) also reinforces the idea of reducing waste. By **reducing**, **reusing** and **recycling** plastic and other materials, we are creating less waste. In **Science** Spr2, the idea is revisited again in the context of water usage in creating denim products.

Biodiversity

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Living Sustainably

Biodiversity

Climate Change

Living Sustainably

What is biodiversity?	Why is biodiversity important?	What are threats to biodiversity?	What are consequences of reducing biodiversity?	How can we help maintain biodiversity?
By the end of **Year 2,** pupils should understand what we mean when we talk about biodiversity, organisms, flora and fauna and species. They have also had more exposure to examples of living things on this planet with a focus on ocean biodiversity. In **Year 3**, pupils will see the range of living things that have existed on Earth in its history, including dinosaurs in the introductory **History** lesson in Aut1, and megafauna in **Art & Design** Aut2. Pupils will be taught about **pollinators** in the context of flowering plants in **Science** Sp2. They consider the variety in different pollinators (see 'Why is biodiversity important?').	By the end of **Year 2,** pupils will have learnt about food chains, and considered that the different organisms in the food chains rely on each other to survive. In **Year 3**, in **Science** Sum1, pupils will learn about the particular importance of **pollinators** to the plant life (and therefore other organisms) in our world.	By the end of **Year 2,** pupils will have been introduced to overfishing and the impact that this could have on the biodiversity of the oceans. In **Year 3,** in **Science** Aut2, light **pollution** and the impact it can have on animals such as sea turtles is considered.	Pupils will not yet have seen anything in these strands.	

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What is global warming and climate change?

By the end of **Year 2**, pupils should have definitions (or placeholder definitions) for temperature, environment, climate (not climate change), global warming, gas and oxygen.

In **Year 3**, in Science Spr1, pupils are introduced to **carbon dioxide**, in the context of all plants needing carbon dioxide to make food (in addition to oxygen, which is needed by all organisms). The term photosynthesis is not used, and pupils will not yet be taught about carbon dioxide's role in the enhanced greenhouse effect.

Why is global warming and climate change accelerating?

By the end of **Year 2**, pupils should be familiar with two types of farming: pastoral and arable agriculture. They will not yet understand how this links to climate change; this is explored in Year 5.

What are the impacts of global warming and climate change?

By the end of **Year 2**, pupils will have implicitly seen some impacts: impacts of extreme weather events and the melting of ice caps impacting polar bears' (and other organisms') habitats.

How can we adapt to and mitigate climate change?

By the end of **Year 2**, will have only implicitly seen some ways we can mitigate climate change: through reducing, reusing and recycling.

Biodiversity

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Living Sustainably

Managing Natural Resources

By the end of **Year 2**, pupils should be familiar with the terms natural resources, sustainability, and overfishing (having considered an example of overfishing in the Rivers, Seas & Oceans unit).

In **Year 3**, pupils explore land as a natural resource in **Geography** in the context of volcanic eruptions.

They also consider further, concrete examples of sustainable management of natural resources. This includes eating a plant-based diet to conserve fish and meat stocks in **Science**, and management of land use in **Geography**, when learning about tourism in two European locations. In **History**, pupils also learn about the agricultural revolution and the first humans in Britain to start farming land.

Waste Management

By the end of **Year 2**, pupils should have an understating of what waste is and have started to think about how we can manage our waste. The focus in Year 2 is on plastic waste, identifying objects that are made of plastic and suggesting alternative materials that could be used to make these objects. The idea of **reduce, reuse and recycle** as a method to reduce waste is introduced within the context of plastic waste.

In **Year 3**, the need to manage our waste is developed further through food waste in the **Science** Spr1 unit. Pupils will discuss the scale of food waste and will be encouraged to think of ways that we can all reduce the amount of food we waste each year.

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What is biodiversity?

By the end of **Year 3**, pupils should know the words **species** and **biodiversity** and will have seen (through their science and geography lessons) the range of species of plants and animals that live on this planet.

In **Year 4**, pupils are formally introduced to classification, and how biologists can categorise and group organisms. They expand their awareness of the range of animals by examining invertebrates as well as the five vertebrate groups. They also refine their definition of **species**, as a group of individuals that can breed to produce fertile offspring.

Why is biodiversity important?

By the end of **Year 3**, pupils will have been introduced to why conserving species is important in relation to food chains.

In **Year 4**, in Science Aut1, we teach explicitly why biodiversity is important: the natural resources some species provide (food, oxygen and water, medicine, materials like wood, cotton and rubber); the importance of **interdependence** in **ecosystems**; and the aesthetic arguments for maintaining biodiversity. This is covered in two lessons dedicated to solely to this topic. The importance of biodiversity is further reinforced when learning about tropical rainforests in Geography Spr.

Pupils are also introduced to the term **biome** as a global ecosystem in Geography Spr.

What are threats to biodiversity?

In **Year 2**, pupils were taught about overfishing as a threat to biodiversity.

In **Year 4**, in Science Aut1, we explicitly teach about other threats to biodiversity, including arable **monocultures**, habitat loss (some through **climate change**) and hunting. Pupils also revisit overfishing in Science Aut2.

In Geography Spr, pupils are taught about **deforestation** of tropical rainforests and how this threatens biodiversity.

In Science Sum2, pupils are taught about chemicals like DDT and TBT, and how overuse of these chemicals threaten biodiversity.

What are consequences of reducing biodiversity?

In **Year 2**, pupils were taught about food chains.

In **Year 4**, in Science Aut2, pupils apply their knowledge of **food webs** to explore the impact that overfishing of one species has one a wider food web and the biodiversity of the ecosystem.

In Geography Spr, pupils should be able to talk about the consequences of **deforestation** as the inverse of why the tropical rainforests are important.

How can we help maintain biodiversity?

Before Year 4, pupils will not have explicitly explored ways to maintain biodiversity.

In **Year 4**, in Science Aut1, pupils consider firstly how we can take action locally to stop the overfishing of Atlantic cod. They are also taught about what actions government and industry can take (and have taken) to address the problems.

In Geography Spr, pupils consider how actions at a local level (e.g. buying fewer products containing palm oil) and at the global level (e.g. actions from COP26) can reduce deforestation and therefore reduce the threat to biodiversity.

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What is global warming and climate change?

By the end of **Year 3**, pupils should have definitions (or placeholder definitions) for temperature, environment, climate (not climate change), global warming, gas, oxygen and carbon dioxide. However, they will not have been taught how these fit into an explanation of climate change.

In **Year 4**, in Science Aut1, pupils are introduced to the concept of **climate change**. In Geography Spr in the context of the tropical rainforests, pupils are introduced to the term **atmosphere**, and are taught about **global atmospheric circulation** as a way of explaining global weather patterns. They are introduced to the idea that 'too much carbon dioxide in the atmosphere is a bad thing', though this is not explained in the context of greenhouse gases and global warming (which comes in Year 5).

Why is global warming and climate change accelerating?

By the end of **Year 3**, pupils should be familiar with two types of farming: pastoral and arable agriculture. They will not yet understand how this links to climate change; this is explored in Year 5.

In **Year 4** Geography Spr, pupils learn about deforestation of tropical rainforests, and how this will increase the amount of carbon dioxide in the atmosphere. They will consider **deforestation** at a commercial scale, which is damaging (Spr) and will review slash-and-burn agriculture (Aut) and how this 'deforestation' at a local scale is sustainable, and has been for thousands of years.

What are the impacts of global warming and climate change?

By the end of **Year 3**, pupils will have implicitly seen some impacts: impacts of extreme weather events and the melting of ice caps impacting polar bears' (and other organisms') habitats.

How can we adapt to and mitigate climate change?

By the end of **Year 3**, will have only implicitly seen some ways we can mitigate climate change: through reducing, reusing and recycling.

In **Year 4**, pupils will be introduced to some of the ways that humans can help mitigate the impacts of climate change at the local scale (though this terminology will not be used). In Science, pupils are taught how a plant-based diet can provide all the nutrients that humans need; how we can all reduce our consumption of electricity around the house; and how humans use **thermal insulation** in homes to reduce the transfer of heat to our surroundings.

Pupils are also taught about the importance of international agreements to affect change at the global scale, during Geography when being taught about **COP26** (and subsequent global conferences).

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Managing Natural Resources

By the end of **Year 3**, pupils have developed their knowledge of what a natural resource is, focusing on examples of water, food (fish in particular) and land. They should be familiar with agriculture (arable and pastoral).

They should have seen some concrete examples of sustainable management of natural resources. This includes eating a plant-based diet to conserve fish and meat stocks in Science, and management of land use in Geography, when learning about tourism in two European locations. In History, pupils also learn about the agricultural revolution and the first humans in Britain to start farming land.

In **Year 4**, pupils revisit water as a natural resource in **Science**, with the introduction of the water cycle. Pupils are also taught that the water on Earth is finite, and that it mostly exists as saltwater, with only a tiny proportion existing as freshwater in rivers and lakes. They also revisit overfishing in **Science** Aut2, and consider the impacts on food webs if natural resources (fish) are not managed sustainably.

In **Geography**, pupils start to link scale to sustainable living. When deforestation occurs on a local scale it can be done sustainably, but when large-scale commercial deforestation occurs it is no longer sustainable.

Waste Management

By the end of **Year 3**, pupils will have continued to develop their understanding of waste which was introduced in Year 2. Pupils will have considered whether food waste is socially acceptable and will have thought of ways to help minimize the amount of waste (reducing, reusing and recycling).

In **Year 4** **Geography** Aut, pupils look at the concept of sustainable living through using the entirety of a resource, therefore, leaving no waste. Pupils research a small indigenous community in Brazil to compare their human impact on the environment with larger scale operations.

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What is biodiversity?

By the end of **Year 4** pupils will have been introduced to formal classification, and how biologists can categorise and group organisms. Their awareness of the range of animals will have expended as they will have studied by invertebrates as well as the five vertebrate groups.

They should also have refined their definition of **species**, as a group of individuals that can breed to produce fertile offspring.

This will not be developed further until Year 6.

Why is biodiversity important?

By the end of **Year 4** pupils will have been taught explicitly why biodiversity is important: they will understand that we need living organisms for the natural resources they provide (food, oxygen and water, medicine, materials like wood, cotton and rubber); the importance of interdependence in ecosystems; and the aesthetic arguments for maintaining biodiversity.

This is not developed further until Key Stage 3.

What are threats to biodiversity?

By the end of **Year 4**, pupils should know about monocultures (agriculture), deforestation and some toxic chemicals like DDT and TBT, as threats to biodiversity.

In **Year 5** Science (Spr1) pupils are taught about the effect of climate change (a term that they will have been taught in Year 4) on habitats and the organisms that live there, with a focus on pollinators and the spawning, migration and hibernation of some species.

In Geography (Sum2), vulnerable biomes are introduced, with a focus on **vulnerable** and **endangered** species. The threat of climate change to habitats is revisited in this unit.

What are consequences of reducing biodiversity?

By the end of **Year 4**, pupils will have studied the what impact that overfishing of one species has one a wider food web and the biodiversity of the ecosystem.

In **Year 5** Science Spr1, pupils will look at pollinators in more detail and consider how a reduction in their numbers pose a threat to our own food supply.

How can we help maintain biodiversity?

By the end of **Year 4**, in pupils will have considered how we can take local action to stop the overfishing of Atlantic cod and help maintain natural stocks. They will have discussed actions government and industry can take (and have taken) to address such problems.

This will not be developed further until Year 6.

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What is global warming and climate change?

By the end of **Year 4**, pupils should have definitions (or placeholder definitions) for temperature, environment, atmosphere, global warming, climate change, gas, oxygen and carbon dioxide. However, they will not have been taught how these fit into an explanation of climate change.

In **Year 5** Geography Sum, pupils are explicitly taught about the **greenhouse effect** as a natural process, and about the acceleration of global warming through the **enhanced greenhouse effect**. They will be taught about the **greenhouses gases** that contribute to this, but will only name carbon dioxide (a gas that was named in Year 3).

Why is global warming and climate change accelerating?

By the end of **Year 4**, pupils will have been taught about deforestation of tropical rainforests. They should know that one impact of this is more carbon dioxide in the atmosphere. They will know this is bad, but will not know why.

In **Year 5**, pupils will build on their understanding of the enhanced greenhouse effect, and global warming that is being accelerated by human activity. In Geography Sum1, they will focus on three main causes: agriculture, burning **fossil fuels**, and deforestation (which was first seen in Year 4).

In Geography Aut, pupils will be introduced to the terms **renewable** and **non-renewable** in the context of natural resources. They also consider food miles when learning about imports and exports, and the impact that this can have on the environment.

What are the impacts of global warming and climate change?

By the end of **Year 4**, pupils will have implicitly seen some impacts: impacts of extreme weather events and the melting of ice caps impacting polar bears' (and other organisms') habitats.

In **Year 5** Geography Sum1, pupils are explicitly taught about some impacts of global warming and climate change. In the UK, these will include the impacts of **droughts** and/or **heatwaves** (which pupils may have first considered in Year 1). They will consider the non-human impacts too, including to **vulnerable** species.

On a global scale, pupils will be taught about further extreme weather events and the impacts they can have, sea level rises and the wider threat to Earth's biodiversity, particularly in the world's vulnerable biomes.

How can we adapt to and mitigate climate change?

By the end of **Year 4**, pupils will have been introduced to some mitigations (though this terminology will not be used), including how a plant-based diet can provide all the nutrients that humans need; how we can all reduce our consumption of electricity around the house; and how humans use thermal insulation in homes to reduce the transfer of heat to our surroundings. They will also have been introduced to COP26 and subsequent global conferences.

No further adaptations and mitigations are considered in Year 5; they will be explored in depth in the first term of Year 6.

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Living Sustainably

Managing Natural Resources

By the end of **Year 3**, pupils have developed their knowledge of what a natural resource is, focusing on examples of water, food (fish in particular) and land. They should be familiar with agriculture (arable and pastoral).

They should have seen some concrete examples of sustainable management of natural resources. This includes eating a plant-based diet to conserve fish and meat stocks in Science, and management of land use in Geography, when learning about tourism in two European locations. In History, pupils also learn about the agricultural revolution and the first humans in Britain to start farming land.

They should also have started to link scale to sustainable living. When deforestation occurs on a local scale it can be done sustainably, but when large-scale commercial deforestation occurs it is no longer sustainable.

In **Year 5** Geography, pupils extend their knowledge of natural resources from food, water and land, to include fossil fuels. They will be taught that these natural resources are unevenly distributed across the world, and they will group natural resources as finite/infinite, and **renewable** and **non-renewable**.

Waste Management

By the end of **Year 3**, pupils should have a developed understanding of waste. They should have considered food waste and ways to reduce it, and plastic waste and the need to reduce, reuse and recycle. They will also have explored ways of living with minimal waste, through learning about indigenous communities in Brazil.

In **Year 5** Geography Aut1, pupils are introduced to the term **food miles** and imports and exports of natural resources. Pupils revisit the importance of eating seasonal foods, and we now consider the environmental impact of our **demand** for certain food types all year round, and the waste this industry creates.

Biodiversity

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Living Sustainably

Biodiversity

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Living Sustainably

What is biodiversity?	Why is biodiversity important?	What are threats to biodiversity?	What are consequences of reducing biodiversity?	How can we help maintain biodiversity?
By the end of **Year 5**, pupils will have refined their definition of a species, as a group of individuals that can breed to produce fertile offspring. Through classifying plants and animals, they will have been exposed to a range of flora and fauna. So far, pupils' awareness of biodiversity has been focused on difference between species. In **Year 6**, pupils are explicitly taught about the importance of variation within species in Science Aut2. They also build on their knowledge of classification, and start to use classification groupings that biologists use in Science Spr2.	By the end of **Year 4** pupils will have been taught explicitly why biodiversity is important: they will understand that we need living organisms for the natural resources they provide (food, oxygen and water, medicine, materials like wood, cotton and rubber); the importance of interdependence in ecosystems; and the aesthetic arguments for maintaining biodiversity. This is not developed further until Key Stage 3.	By the end of **Year 5**, pupils should know about monocultures (agriculture), deforestation and some toxic chemicals like DDT and TBT, as threats to biodiversity. They should also know about the impact of climate change on biodiversity, sometimes resulting in vulnerable and endangered species. In **Year 6** Geography, pupils will study the threat of plastic to biodiversity. They look at our everyday use of plastic straws, cotton buds and plastic bags, and how these items end up creating pollution in some of the world's habitats.	By the end of **Year 5**, pupils we will have studied pollinators in detail and considered how a reduction in their numbers pose a threat to our own food supply. In **Year 6** Science Aut2, pupils are taught about variation between individuals of the same species, and the consequences of a reduction in **genetic variation**. The consequences of being unable to adapt to changing environments is discussed, and how this can lead to extinction. The example of the cheetah is used.	By the end of **Year 5**, in pupils will have considered how we can take local action to stop the overfishing of Atlantic cod and help maintain natural stocks. They will have discussed actions government and industry can take (and have taken) to address such problems. In **Year 6** Geography Aut2, pupils will conduct some local fieldwork. A focus of this fieldwork could be to identify positive ways that we can help improve the biodiversity of an area. Pupils will review all learning of biodiversity and consider ways we can, for example, reduce/reuse/recycle plastic waste, or reduce our use of palm oil.

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Living Sustainably

What is global warming and climate change?

By the end of **Year 5**, pupils should have a strong understanding of the greenhouse effect and the enhanced greenhouse effect. They will understand the role of carbon dioxide and other (unnamed) greenhouse gases in global warming and climate change.

This will not be developed further until Key Stage 3.

Why is global warming and climate change accelerating?

By the end of **Year 5**, pupils should know about the human activities that contribute to the enhanced greenhouse effect and global warming. They will have focused on agriculture, burning fossil fuels, and deforestation. They will also have an understanding of natural resources, and will be able to group these into renewable and non-renewable resources.

In **Year 6**, in Science Aut1, pupils are taught about electricity generation through renewable (wind, solar, thermal and hydrological) and non-renewable (fossil fuels) sources of electricity. In Sum2, pupils are taught about chemical reactions, and consider carbon dioxide as a product in combustion reactions.

What are the impacts of global warming and climate change?

By the end of **Year 5**, pupils will have been taught about impacts of climate change locally and nationally (the effects of heatwaves and/or droughts) and globally (see levels rising, extreme weather events, and the threat to the world's biodiversity).

This will not be developed further until Key Stage 3.

How can we adapt to and mitigate climate change?

By the end of **Year 5**, pupils will have been introduced to some mitigations (though this terminology will not be used), including how a plant-based diet can provide all the nutrients that humans need; how we can all reduce our consumption of electricity around the house; and how humans use thermal insulation in homes to reduce the transfer of heat to our surroundings. They will also have been introduced to COP26 and subsequent global conferences.

In **Year 6**, pupils explore ways humans can adapt to the new climate (**adaptation**), and ways we can slow down and reverse climate change (**mitigation**). This will be done at the local, national and global scale, and pupils will consider examples in the UK and around the world.

One example of mitigation will be explored in more depth in Science Aut1, in the context of renewable sources of energy (wind, solar, geothermal and hydrological power).

Biodiversity

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Managing Natural Resources

By the end of **Year 5**, pupils will have met most of the natural resources that we need to manage, and they will understand the terms finite, renewable and non-renewable.

In **Year 6**, pupils will focus on renewable energy sources as a way of sustainably meeting humans' demand for electricity. They will explore in a detailed case study the use of wind power in the UK (considering the ecological, political, social and environmental issues) in **Geography**, and learn about solar, hydrological and geothermal power in **Science**.

Waste Management

By the end of **Year 5**, pupils will have explored many ways in which we can reduce waste, they will have studied specific examples to include plastics, food waste as well has minimizing waste in production of a product. They will be familiar with recycling, reusing and reducing as potential strategies.

In **Year 6** pupils look more closely at our plastic usage and the environmental problems associated with plastic production and waste in **Geography** Aut2. They consider the responses to the problem (incineration, export, tax and changing consumer habits), and decide if these measures are effective and dealing with the scale of this issue.

In **English** Aut2, pupils write a persuasive campaign to reduce waste, using the knowledge they have been taught in this strand.

In **Art & Design** Aut2, pupils examine how artists have highlighted the issue of waste in our world and used/reused waste materials to create sculptures. Pupils create their own installation using materials that would otherwise go to waste.