

# Guidance for Teachers

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*first*

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# Overview

*The wonder of water* explores healthy water systems, why we need them and how we use them. The workshop considers the impacts of the climate crisis on water systems and supports pupils to make changes to ensure preservation of water systems. Activities encourage care for oceans, lakes, rivers and even sewer systems with simple ways to take action now against the climate emergency.

The workshop is comprised of presentations and art and writing activities, including making fish postcards and writing from the perspective of a marine animal. Curriculum-linked presentations and activities will support pupils to consider how we can preserve and improve water systems and protect them from the climate crisis.

The following document provides guidance on each activity and presentation including equipment needed, curriculum links and main concepts covered.

We recommend watching the presentations and completing the activities in the suggested order below. Please feel free to also pick and choose which activities you would like to do and which presentations you would like to watch.

We will be holding a pupils' assembly on June 15th, 1pm-2pm to celebrate and share pupils' art and writing. The assembly will also feature a panel of experts and leaders, considering how to take forward the ideas of pupils.

If you and your pupils would like to attend and share art, writing and/or climate pledges, please email Sonya Peres at [sonya.peres@sustainabilityfirst.org.uk](mailto:sonya.peres@sustainabilityfirst.org.uk) or register [here](#).

## Presentations and Activities

Presentation 1: Wonder of Water

Activity 1: Postcard from a Fish

Presentation: How can we create healthier water systems?

Presentation 2: Creative Writing Activity

Resources

## Sustainability *first*

The United Nations Global Goals for Sustainable Development were developed in 2013 to provide an agenda for the future of sustainability. The Goals are used across member states and sectors to assess and understand progress and have developed into a common language to discuss sustainability. Many teachers across the globe use the SDGs to embed sustainability within education.

The following workshop series supports the realisation of various Global Goals, including:



## Equipment:

- Device to share video
- Pencils, paper and/or computers for pupils' to write questions, comments, concerns etc.

## Main concepts:

- Exploring water cycles and water systems
- Exploring how water gets to our homes
- Understanding the impacts of the climate crisis on water systems

## Curriculum Linking:

- **England**

Key Stage 2: Science, pupils recognise that environments can change and that this can sometimes pose dangers to living things.

- **Scotland**

Social Studies (People, place and environment): I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally- responsible way. SOC 2-08a

- **Wales**

Science: Pupils should use and develop their skills, knowledge and understanding by investigating how animals and plants are independent yet rely on each other for survival.

They should be given the opportunity to investigate:

-the environmental factors that affect what grows and lives in those two environments, e.g., sunlight, water availability, temperature.

-how humans affect the local environment, e.g., litter, water pollution, noise pollution.



## Wonder of Water Presentation Transcription

Planet earth is big – it has to be, to provide a home for nearly 7 billion people.

Oceans, rivers, lakes and other bodies of water make up almost three quarters of planet earth – and when we consider how big the earth is – that's a lot of water! Water is what makes life possible. When we look for signs of life on other planets, we first look for signs of water.

Every living thing needs water to survive – from the tiniest microorganism to an Antarctic blue whale – water is the reason we're all alive, and here today, learning together.

As humans, we need water for a number of reasons:

Firstly, water makes sure all our organs work properly by delivering oxygen to all parts of our body.

Water hydrates us so we can feel well-rested and comfortable.

You know when you play football outside and start to sweat? That's your body using water to make sure your body doesn't get too hot!

When we eat food, we use saliva, or our spit, to make sure we can swallow and properly digest our food.

We need water to flush out waste from our bodies, like when we use the loo.

We also need water to cook our food so that we can remain strong and healthy! Think about pasta – we need boiling water to cook pasta! And what about when we make a warm bowl of soup on a cold day? We need water to make to make it!

We also use water to clean our homes and our schools. When we spill something, we can use water to clean up the mess. In our bathrooms, we use water to brush our teeth and to clean ourselves after a long day playing outside.

That's just a few of the ways we use water! We need to keep drinking water to make sure our bodies can support us to run, eat and be happy! We need water to cook our food and clean our homes.

These are the wonders of water!

But how do we get this water? Where does it come from?

All water on earth is a part of something called the water cycle. The water cycle explains how water moves around our earth in different forms, including as a solid, liquid and gas.

The water cycle occurs when water from lakes, rivers, and oceans heats up and rises, or evaporates into the atmosphere. Plants also contribute to the water cycle: when plants sweat out water from their stems and leaves, water also goes into the atmosphere. This is called transpiration. The water in the atmosphere becomes a gas, travelling higher and higher up into the sky until it becomes liquid in a rain or snow cloud, this is called condensation. Then, when the cloud is full and heavy, the water falls back down to earth in the form of snow, or rain – sometimes even hail – this is called precipitation! The water falls into lakes, rivers, the soil and underground and into oceans. The cycle then starts up again when water rises from these bodies of water into the air!

An ecosystem is all the living things in nature, such as in a river or lake. In an ecosystem, all living things rely on one another and work together to create a suitable place to live – they create a wonderful community that allows them to live happily and also makes our lives better! How so? When we drink water from rivers, lake and even streams that water has passed through fish, tree branches, bacteria which can clean the water from pollutants and other things we wouldn't want to drink.

Even though the earth is made up of 71% water – we can't drink most of this water because it is too salty! I'm sure many of you have gone swimming in the ocean and tasted the saltiness of the sea! Human beings need water without salt because our bodies cannot have too much salt otherwise we'll get sick. It costs a lot of money, and uses a lot of energy to take salt out of seawater and so most of the water we drink comes from freshwater sources like rivers where there isn't much salt.

So where does the water in our homes come from?

In the UK, a lot of the water we drink, or use to cook and clean, comes from lakes, rivers or reservoirs (which are lakes used for storing water). Some of the water we use comes from water under the ground, like from an aquifer, which is a layer of rock under the ground that is a bit like a sponge that holds water. Water from rivers, lakes and aquifers isn't salty, which is why we're able to use it.

Water companies across the UK, take water from rivers, lakes, reservoirs and underground, and clean the water to make sure it is safe for us to use and to drink – this means cleaning out branches and other waste as well as making sure there are no dangerous germs or bacteria in the water that can make us ill.

Once all the water is clean and safe for us to drink and use, it is stored in a manmade lake, called a reservoir. Then, a system of underground pipes and pumps brings water from the reservoir into our homes! Isn't that neat?

In the UK, we're lucky to be able to access clean water so easily. In other countries, access to clean water may be difficult because people don't have underground pipes and pumps like we do, or they don't have the ability to clean water as quickly as we do. Sometimes, even within a city in some other countries, communities have different access to clean water, where richer people are able to access clean water, and poorer neighborhoods are unable to.

While we've mostly been talking about drinking water, let's think how water we are unable to drink is also important to life on earth. Saltwater in oceans is home to many living things that are very important in making planet earth a home for us.

For example, plants and tiny living things called plankton in the ocean breathe out oxygen – which we also need to breathe! In fact, ocean ecosystems contribute to over half of the oxygen we need to live. This is just one reason why oceans are so incredible!

### The Climate Crisis

It's amazing that water, in all its forms, helps all life on earth in so many ways.

Unfortunately, like much of the earth, water systems are suffering due to things that people do that are bad for the planet.

Let's start with something called pollution:

Pollution means putting something into the environment that shouldn't be there, or that is harmful to the environment. There are many different types of pollution, let's start with plastic pollution:

People throw away a lot of stuff, and often, that stuff is plastic. You know when you buy food from the shop and it comes in a plastic bag, or when you buy some juice and it comes in a plastic bottle – what happens to all this plastic? Well, for most people, it is thrown away to sit in a landfill – a place where waste is collected – and sometimes it is thrown in rivers where pieces of plastic make their way to the sea – affecting plants and animals in both marine and river ecosystems when they eat plastic or get stuck in it.

## Wonder of Water Presentation Transcription Continued

An organisation called the EarthWatch Institute made a list of the top 10 plastic items most commonly found in rivers. Do you want to hear what the top five are? While I read out the list, have a think about whether or not you use these things, and how you may throw them away.

Drumroll please!

The most common plastic item found polluting rivers is the .... plastic bottle!

Number two is food wrappers, like crisp packets

Number three are cigarette butts

Number four is takeaway containers from when you order food – such as the boxes you might get a burger or kebab in

Number five – cotton buds you use to clean your ears that have plastic sticks!

Are you surprised by this?

Another way we may contribute to polluting rivers is through what we pour down the kitchen sink or what we flush down the loo. For example, lots of people pour cooking oil down the kitchen sink, or flush wet wipes down the toilet, all of this contributes to big lump of waste that block pipes and make it really difficult for water companies to deal with the wastewater from our homes. We call these big lumps of waste fatbergs – like an iceberg but made of fat. “Fatty McFatberg” is a fatberg that was found under the streets in London – it was over twice the length of two Wembley football pitches. Parts of it are now on display in the Museum of London!

There are also other types of pollution that affect rivers, seas and lakes. There are many factories around the world that make all the plastic, cars, clothes and other items that we are encouraged to buy. Farmers can also use chemicals on the things they grow to make them grow bigger and faster. Sometimes, dangerous chemicals from these factories and farms find their way into rivers, lakes and oceans, which also affects all the living things in that ecosystems – including people!

For example, In the United States, in a town called Flint, river pollution from car factories nearby has contributed to dangerous drinking water which has affected the health of people living in the town. It has taken the government a long time to fix the issue – people living in Flint have had to deal with this very serious problem for over 6 years.

It is important we understand that access to clean water can differ amongst countries and even communities in the same country! Sometimes, poorer communities, or Black or Indigenous communities are treated differently by governments and may not be able to access clean water as easily as other communities are able to do.

Wherever we can, we need to help these communities by speaking about unequal access to water around the world and making sure other people know that this is happening.

Our society at the moment relies on oil and gas to power our cars and planes, to run factories, to heat our homes and our water and for many other things. Oil and gas are found in very specific parts of the world, so often, ships are used to transport oil across the world .

And this is where another type of pollution comes in: oil spills. This type of pollution occurs when ships carrying oil spill oil into oceans. Have you ever heard of this happening?

There have been several really big oilspills in the past. When oil is spilt into oceans it is very hard to clean up. Birds and fish living in or near oceans can become covered in oil, which harms their feathers and skins.

Our use of oil and gas affects oceans in another way. When we use oil and gas, we release greenhouse gases into the atmosphere. Too many greenhouse gases contribute to the warming of our planet, which impacts people, plants, animals and ecosystems.

Ocean ecosystems for example, are affected by warming temperatures. When the earth's temperature increases, it means oceans are getting warmer. When ocean water gets warmer, oceans expand and they can flood cities and villages on the coasts. Warming oceans can also affect fish, plants and animals in the ocean.

Have you heard of the great barrier reef? The great barrier reef is in Australia and is home to 25% of all known marine species. It is so big, you can see it from space!! The great barrier reef is made up of coral reefs which provide shelter for different fish and marine animals. As temperatures rise and the ocean gets warmer, coral reefs will be affected and won't be able to act as habitats for fish.

Because we are releasing so many greenhouse gases, the ocean is becoming more acidic, which means it is becoming a more difficult place for animals and plants to live, like the Great barrier reef and all the fish that rely on it.

## Equipment:

- Card - cut to A6 size
- Water based paint
- Brushes
- PVA glue
- Masking tape
- Silver foil (e.g waste time foil or crisp packet)
- Other mixed media materials (e.g. string, dry soil or sand)
- Something with a straight edge (e.g. a shower squeegee)

## Main concepts:

- Connection to water and the underwater world of wildlife.
- The role of artists in communicating environmental messages, not just what they see, also how they feel in individual ways.
- Using natural and recycled materials in artworks.
- Imagining how a fish might feel - through drawing and writing.

## Curriculum Linking:

- England

**Art and Design:** Pupils should be taught to develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of art, craft and design.

- Scotland

**Expressive Arts:** I can create and present work that shows developing skill in using the visual elements and concepts.

**Expressive Arts:** I have the opportunity to choose and explore an extended range of media and technologies to create images and objects, comparing and combining them for specific tasks.  
EXA 2-02a

- Wales

**Art and Design:** Pupils should be given opportunities to 1. describe and make comparisons: • between their own work and that of others 2. experiment with and examine the methods used by other artists, craftworkers and designers from different: • periods • places • cultures and to investigate the natural and made environment using a variety of materials.

## Step by Step Guidance

Pupils will make postcards from a fish, which can be displayed together as schools of fish. A school of fish is an organised group of fish moving together to find food and protect themselves from predators.

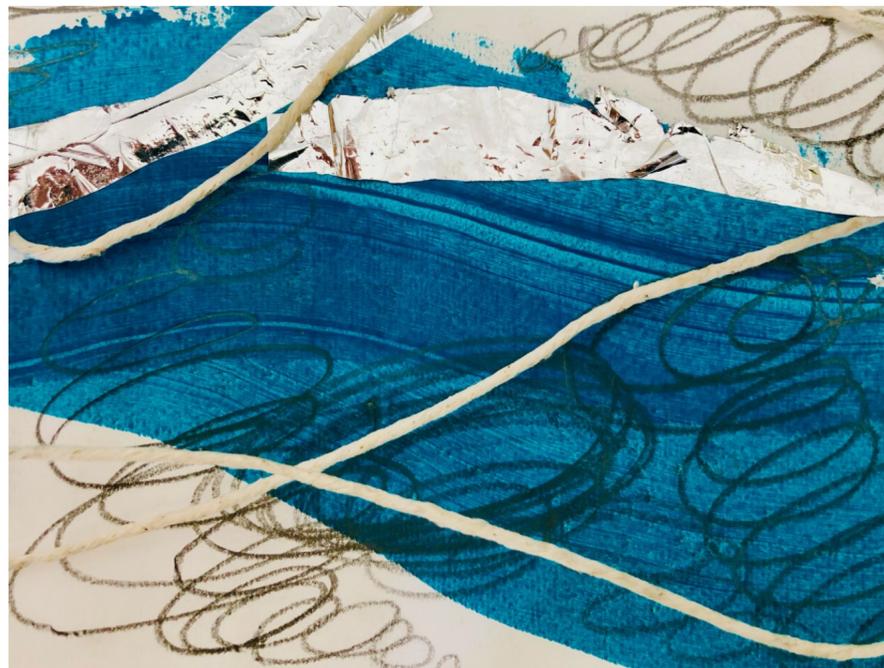
**Step 1.** Choose a fish to focus on. Research what that fish looks like, what kind of environment it lives in and how it might behave.

**Step 2.** Create texture on the postcard with paint. You could press paint into the paper in a wave motion using a flat edge. You could also glue dried soil or sand on the card like the sea floor.

**Step 3.** Cut out a few shapes from shiny paper and glue these on. You could add other mixed media materials such as string to create a narrative.

**Step 4.** On the back of the postcard write something from the perspective of a fish. This could be a poem. You can also put the address lines and stamp mark so it looks like a postcard.

Please share your artworks using the Sustainability First uploader form and/or on social media using #postcardfromafish



**Share with us  
so we can  
learn with you!**

**Make sure to upload your work [here](#) so we can learn with you and share your work widely with waste experts at our June 15th pupils' assembly!**

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# Creating Healthier Water Systems

## Equipment:

- Device to share video
- Pencils, paper and/or computers for pupils' to write questions, comments, concerns etc.

## Main Concepts:

- What can pupils do to protect water systems in various areas of their lives?
- Why is it important to work together to protect water systems from climate change?
- What are other people doing to protect water systems?

## Curriculum Linking:

- **England:**

Human and physical geography describe and understand key aspects of physical geography, including climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle.

human geography, including types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.

- **Scotland**

Sciences (Materials) I have investigated different water samples from the environment and explored methods that can be used to clean and conserve water and I am aware of the properties and uses of water. SCN 2-18a

- **Wales**

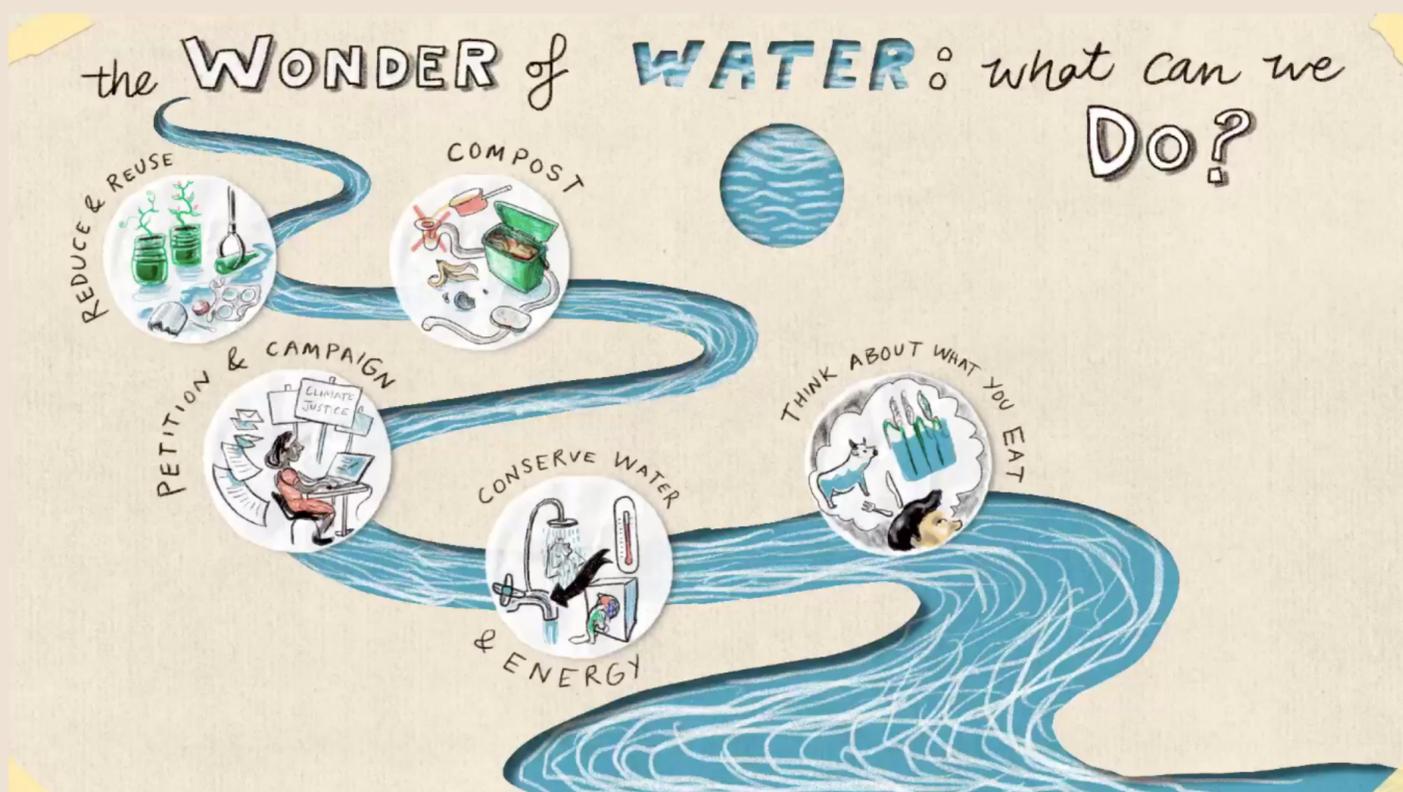
Science: They should be given the opportunity to investigate:

the environmental factors that affect what grows and lives in those two environments, e.g., sunlight, water availability, temperature.

how humans affect the local environment, e.g., litter, water pollution, noise pollution.

## Step by Step Guidance:

- Watch the video and encourage pupils in groups, or as a class, to consider how they protect water systems including rivers, oceans and lakes, through actions they can do at home, at their school and in their community.
- Ask pupils to highlight what actions they will do and why they have chosen these actions to take.
- Share pupils' climate messages using our uploader - we will share them at our pupils' assembly on June 15th and can share responses from experts with pupils!



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## Creating Healthier Water Systems Transcription

What can we do?

Anyone, no matter how old they are, can help protect water ecosystems and help ensure communities everywhere have access to clean water.

One of the simplest things we can do is reduce the amount of pollution in rivers, lakes and oceans.

How do we do this? We can start by reducing the amount of plastic we use. Earlier, we spoke about how much of the pollution in rivers, oceans and lakes is from plastic things like bottles and food wrappers. If we use less of these items, we can ensure they won't end up in the river. We can use less plastic by using reusable bottles, containers and wrapping for our food and drinks. If we end up buying something that comes wrapped in plastic or in a plastic bottle, we can make sure to reuse it. There are many ways to use your creativity to reuse a plastic item – for example, you can grow plants in plastic bottles, or use plastic bottles to store fresh juice that you can make with your parents, or carers!

We can also reduce the amount of plastic in rivers by going litter picking along rivers! Litter picking is a great way to make sure rivers can stay clean so that fish and animals like otters and tiny little minks are safe and happy. Make sure you go with an adult!

To reduce pollution you can make sure you don't contribute to fatbergs. How do you do this? Well, when you are cooking with an adult, make sure they don't pour oil down the sink, and you can make sure you don't flush wet wipes down the toilet. Try to also put all food waste in the food recycling or compost bin instead of letting it go down the drain while you are washing dishes.

Lastly, ask the government to help you, your community and others! In the UK, you can write to your local council or the Environment agency if you are concerned with pollution in a river or lake near you.

As I mentioned, people across the world have unequal access to clean water. You can help these people by starting petitions to get government to help, or by fundraising to support local communities to keep their water systems clean, if the government won't help them.

We can also work to conserve water, by trying to save water and energy

Less than 2.5% of all water is freshwater, or water that we can drink. As the climate is getting hotter, our water cycle is becoming unpredictable – sometimes we get lots of rain in a real downpour or flood and sometimes we don't get enough. In the UK, there is expected to be a lot less summer rainfall. We need to really look after and save our water as we cannot be sure how this will affect water supply. Currently, over 2 billion people in 40 countries experience water shortages.

Some areas in the UK, like the south and east of England are already under something called “water stress” which is when demand for water is high compared to how much water is available. Because of this, we need to be aware of how much water we’re using and try and use less.

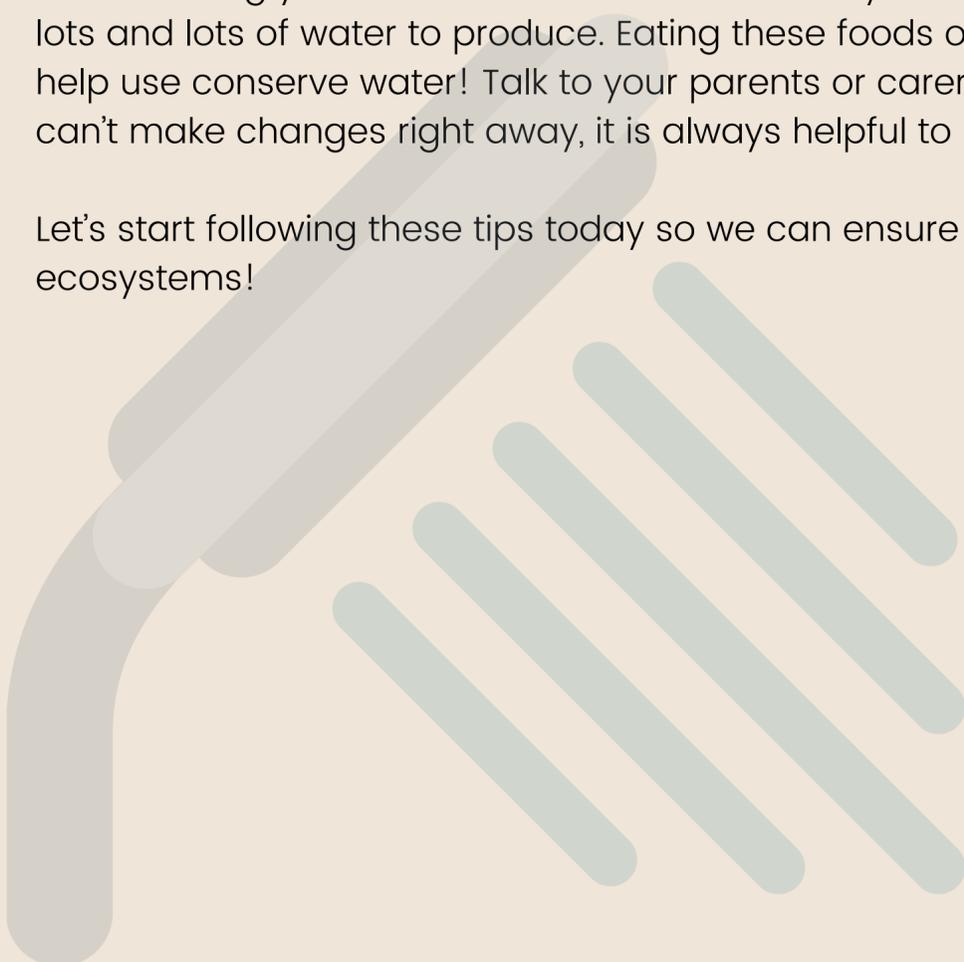
Also, water companies use lots of energy to clean our water so that we can use it. When we use energy, often, we release greenhouse gas into the atmosphere which contributes to the climate crisis and affects water systems – if we try and use less water, we are using less energy! This can also save us money!

These are some tips on using less water and energy:

- You can take short showers instead of baths whenever possible – this way, we aren’t using up too much water!
- We can take shallow baths instead of filling up the bathtub all the way to the top! That way we can still enjoy a nice relaxing bath while using less water.
- We can use cold water rather than hot when we can – it takes energy to heat up water, if we use cold water rather than hot water, we are using less energy.
- We can ask our parents and carers to make sure washing machines and dishwashers are full before using them so that we can use them less and use less water.
- We can water plants in the garden with a watering can and not a hosepipe – this saves lots of water!
- We can keep an eye out for leaky taps – does your toilet make a lot of noise? Investigate with your parents or carers – leaky taps are one of the main causes of water waste in homes in the UK!
- We can make sure to turn off taps while brushing our teeth or when they’re not in use.

Another thing you can do is to think about what you eat. Some foods, like beef and rice, require lots and lots of water to produce. Eating these foods occasionally, instead of all the time, can help us conserve water! Talk to your parents or carers to see if this is possible – even if you can’t make changes right away, it is always helpful to be mindful!

Let’s start following these tips today so we can ensure a healthy planet and healthy water ecosystems!



## Equipment:

- Device to play video
- paper, pencils, laptop - anything pupils can use to write

## Main concepts:

- Connection to water and the underwater world of wildlife.
- The role of writing in communicating environmental messages and care for wildlife
- Using creativity to connect and empathise with wildlife
- Creating narratives and storylines about wildlife

## Curriculum Linking:

- **England**

Writing - Pupils should be taught to plan their writing by considering how authors have developed characters and settings in what pupils have read, listened to or seen performed. Draft and write by describing settings, characters and atmosphere and integrating dialogue to convey character and advance the action.

- **Scotland**

Literacy: I can use my notes and other types of writing to help me understand information and ideas, explore problems, make decisions, generate and develop ideas or create new text. LIT 2-25a.

- **Wales**

English: Learners are able to write a comprehensive account of a topic or theme.



## Step By Step Guidance

- Play video for pupils
- Ask pupils to choose an animal that lives in or near a polluted lake, river, ocean etc.
- Ask the pupil to imagine they are that animal and write about:
  - How do I feel about the pollution in my home?
  - How does my polluted home affect my life?
  - How can humans help me?
- Support pupils to get creative- include storylines about the animals' families, childhoods etc.
- Share work through our uploader form!



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## Sources used in Workshop Presentations

[Discover Water - Treatment and Supply](#)

[Great Barrier Reef Foundation](#)

[BP Oil Spill - National Geographic](#)

[Energy Saving Trust: Why we should all be saving water](#)

[Earth Watch Institute: Plastic Rivers](#)

[Five Species Affected by Pollution - The Guardian](#)

[Thirsty Crops - WWF](#)

## Other Resources

[DRY: The Diary of a Water Superhero](#)

[Keep Scotland Beautiful Youth Climate Film Project](#)