WATER SUPPLY

Water is a renewable resource. The time it spends within the water cycle will vary.

- Within the atmosphere – for a few hours.
- Ice caps/glaciers/oceans – thousands of years.

As it works its way around the water cycle it dissolves gases, eg, oxides of carbon, nitrogen, sulphur and soluble solids.

Water cycle

- Draw a diagram with annotations.

What is water supply?

- The provision of water by public utilities via a system of pumps and pipes.
- Water is collected, purified and passed through pipes for people to use.
- Draw a flow chart of the water treatment/purification process.
- Water companies cannot remove soluble impurities such as nitrates that run off fields into rivers. This is monitored to check that leached nitrates stay below safe levels. What if levels are high?
- Consider the advantages/disadvantages of adding chlorine or fluoride to water supplies.

Water companies within the UK

- List/create a map showing the water supply areas within the UK.
- Can you opt to choose another water supply company, like you can with electric/gas suppliers?

Water supply globally

- Create a map to show how water is used globally.
- Compare water usage in the UK to another country.
- Consider key users of water (different ways water is used) – domestic, industrial, agricultural, tourism, and also consider the impact.
- Compare your findings on a graph.

Safe to drink

- The water we drink is not pure because it contains dissolved substances. It is safe to drink once it has been treated and won't contain anything that can cause harm. Some of the dissolved substances are beneficial to our health but some cause hard water.
- Discuss the advantages and disadvantages of hard water v soft water.
- What is meant by safe water?
- What is potable water?

Hard v soft water

- Scale and scum. What's the difference?
- Think of investigations/experiments to demonstrate this, eg, using reaction strips and samples of soap/ washing up liquid. Does it make a difference using scented or non-scented soap, lower budget or more expensive washing up liquid and if so, why?
- Distinguish the impact/differences of water abstracted from different counties. What are the geographical differences and reasons?
- Explain the difference between temporary hardness and permanent hardness.

Tap water - the benefits and why it is important to us

- Drink about two litres a day (little and often).
- Water flushes out toxins in our bodies. If toxins accumulate, they can cause dehydration, stress, tension, aches, back pain, headaches.
- Water is the only liquid that safely reduces weight by removing the by-product of fat.
- Helps reduce habit of eating more than necessary (zero calories).
- Helps keeps our joints well oiled, helping to prevent joint disease (arthritis).
- Helps our gut work better, helping prevent constipation, irritable bowel syndrome, menstrual problems, insomnia.
- Helps digestion.
- Improves energy and alertness and ability to think.
- Hydrates skin (moisturiser) and combats disorders such as eczema, dry itchy skin, wrinkles, spots.
- Helps prevent the risk of bladder and colon cancer (reduces concentration of cancer-causing agents in urine.

Tap water v bottled water

- Consider the differences including testing.
- Think about the cost per litre.
- For those who are sensitive to chlorine in tap water – how can you overcome this? What happens to the chlorine levels if tap water is stored in a fridge overnight?
- Check the carbon footprint.
- Consider the disposal of and impact on the environment of a single-use plastic bottle.
- All licensed premises serving alcohol in England are required by law to provide free potable water to their customers on request. Why? (This is to combat the effects of binge drinking). However, premises may charge for the provision of a glass and/or their services.
- Unlicensed premises can charge, ie, sports stadiums, leisure centres, swimming pools, health clubs, theatres and cinemas. Why? Is this fair?
- Look out for the signs on cafes allowing you to fill up your own container with free tap water.

Consider the environmental problems with drinking water supply

- Supply and demand. How and why has this increased over the last 20 to 30 years?
- Consider river pollution.

Government input

- Research the current government guidelines re water supply, water efficiency, new homes being constructed.
- What can the government do to make us save water?
- Research recent news articles referring to water efficient appliances. How does this relate, if at all, to energy performance certificates (HPC) which provide home buyers with an indication of the energy efficiency of a property, listing information on energy costs and ways to reduce energy use to make the property more energy efficient?
- Water efficiency appliances save water by reducing wastage through measuring the amount of water used. Consider whether this is feasible if you have old equipment which is not water efficient – can you justify the cost of replacing these appliances?
- Consider the government's responsibilities/input in protecting the environment.
- Should you consider writing a letter to your local MP or Secretary of State for the Environment, Food and Rural Areas?

Water efficiency

- Why do we need to become more water efficient in the UK? Consider the impact of climate change, population growth.
- What impact does a new housing estate/development have on water efficiency? Consider infrastructure and increased water demand.