



**Surrey Environment Partnership**  
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an initiative by  
**yppte**  
young people's trust  
for the environment

# TEACHER'S GUIDE TO LESSONS ON WASTE, RECYCLING AND THE ENVIRONMENT IN SURREY

## INTRODUCTION

### What is this guide?

Thank you for downloading this teacher's guide to lessons on waste, recycling and the environment in Surrey. This guide and the associated slides were produced by the Surrey Environment Partnership (SEP) in collaboration with the Young People's Trust for the Environment (YPTE). You are welcome to modify it by adding your own slides to the presentations or deleting ones you don't need.

The lessons have been designed to support learners in Upper Key Stage 2 (Years 5 and 6) with understanding how to recycle household waste and the beneficial effects that recycling can have, both locally and for the environment as a whole. The lessons explain how it is important to conserve natural resources, many of which are non-renewable. Children learn that the creation of new resources create greenhouse gas emissions, which can accelerate climate change. They draw links between recycling and helping to protect the environment.

SEP comprises Surrey County Council and the eleven district and borough councils in Surrey. It aims to manage Surrey's waste in the most efficient, effective, economical and sustainable manner. Discover more about SEP at <https://www.surreyep.org.uk> or get in touch at: [comms@surreyep.org.uk](mailto:comms@surreyep.org.uk)

YPTE wants to encourage more and more young people to learn about taking care of our world and their website is a great starting point for this. You can

find lots more supporting information by visiting the 'Explore' section of <https://yppte.org.uk>

This package of lesson plans consists of four lessons:

- **Lesson 1:** Waste and the environment
- **Lesson 2:** Waste reduction
- **Lesson 3:** Food waste: recycling and reduction
- **Lesson 4:** Recycling right - contamination

## Links to National Curriculum

- Science
  - Compare and group together everyday materials on the basis of their properties (*Year 5, Properties and changes of materials*).
- Citizenship
  - Understand that resources can be allocated in different ways and that these economic choices affect individuals, communities and the sustainability of the environment. (*Key stage 2*).

## Notes to teachers

- These teaching notes and activities run alongside PowerPoint presentations and all slides are referred to in the notes. The information can be adapted to suit different learners at different stages by adding/deleting slides on the presentation and varying the level of detail used from the teacher notes.
- Although these lessons are designed to run in sequence, you may choose to teach each as a standalone session. If choosing this approach, it would be helpful to refer back each time to the slides from lesson 1 which explain the impact that waste can have on climate change.
- Activities given are suggestions only. The main purpose of these resources is to provide key information and visual aids for teachers to adapt to their needs.

# LESSON 3: FOOD WASTE RECYCLING AND REDUCTION

## Learning Objectives

- Children will understand that uneaten food can be bad for the environment.
- They will recognise that using a food caddy means that food waste can be used to make energy.
- Children will be able to suggest some ways to reduce food waste.

## Suggested starter activity

### Slide 3: KEY QUESTION: WHERE DOES OUR FOOD COME FROM?

**Discussion activity:** Ask students to think about the food that they eat at home and where it comes from. Do any of them help with food shopping, or even with food growing, such as on an allotment? Do they go to lots of different places to get food, or one big shop? Obviously this exercise requires sensitivity if you work with young people who are experiencing food scarcity. You might prefer to base discussions on a fictional character instead.

## Teacher notes for Powerpoint presentation

**Slide 4:** Uneaten food is bad for the environment because lots of resources and energy go into its production and distribution, meaning that it's wasted effort if it isn't eaten.

**Provide children with some biscuits.** Make a big show of opening the packaging (A box of biscuits may have both an outer wrapper and a plastic insert which can also be discussed!)

**Research activity - work in groups:** What are the different ingredients in these biscuits? Look some of them up and explore where they have come from. You might like to set each group the challenge of researching an ingredient, where it might have come from and some of the processes that have made it ready to be in a biscuit.

All the foods that we buy from a supermarket have been picked, packed, processed and transported in some way. Some have not gone through many processes and they arrive on the shelves much as they were found in the field. Others, such as pizza or biscuits might be made of various ingredients, all of which are processed in different ways and then re-combined into the familiar products that we see on the shelves.

**Slide 5:** Food crops are planted and fed with fertilisers. Synthetic fertilisers containing nitrogen and phosphorus have helped double the rate of food production since World War Two. They are very useful for increasing the yields of crops such as wheat, corn and rice. However, these chemicals have been used so much that they are now present in dangerous amounts. Excess nitrogen in the soil leads to nitrous oxide being emitted, which is one of the most harmful greenhouse gases.

**Slide 6:** Watering all the crops uses a huge amount of water. Globally, agriculture accounts for an enormous 70% of all freshwater usage. Much of this water has to be redirected to the crop land from a natural water source (such as an aquifer - an underground water source - or river) by means of a process called irrigation. This need for water is only set to increase as a growing population requires more and more crops to eat. Experts have predicted that water extraction for irrigation may rise by 15% or more by 2050.

**Slide 7:** The food production factories around the world use electricity to run their machines, heating and lighting. Most of the electricity is produced by burning fossil fuels.

**Slide 8:** Unfortunately, when fossil fuels are burned, they release gases (such as carbon dioxide, sulphur dioxide, methane and nitrous oxide) into the atmosphere as waste products. We now understand that these gases can harm the environment and lead to climate change.

Carbon dioxide (CO<sub>2</sub>) is released into the atmosphere as a waste product. It then acts as an invisible blanket, trapping heat from the sun and warming the Earth - this is called the greenhouse effect. The more fossil fuels that are burned, the thicker the blanket becomes and the more heat is trapped.

**Slide 9:** As we have seen, CO<sub>2</sub> emissions lead to global warming, and this is accelerating climate change. You might like to recap this information from lesson one.

**Slide 10:** Oil (another fossil fuel) is used to make petrol and diesel to power most of the vehicles that are used to transport all the foods from the places in the world where they are grown to the factories where they are processed and then to the shops where they are sold. These oil-powered vehicles emit still more greenhouse gases into the atmosphere.

Vehicles also emit tiny particles from their tyres and brakes as well as from their exhausts. These particles enter the atmosphere and cause air pollution which harms the environment and people's health.

**Slide 11:** None of the food waste thrown away in Surrey goes to landfill, which is good, as rotting food waste produces methane, a gas that has much more powerful warming effects than carbon dioxide. But if Surrey residents throw their food in the ordinary bin, it is burned, which produces more emissions than if it is disposed of in a food caddy.

**Slides 12 - 13:** As we have seen in previous lessons, greenhouse gases cause heat from the sun to be trapped in the Earth's atmosphere, making the planet heat up. Over time, this is causing global warming which is accelerating climate change. You might like to recap this information by watching the following video on the greenhouse effect: <http://yppte.org.uk/videos/the-greenhouse-effect>

**Slide 14:** The average person in Surrey puts **36kg** of food waste a year into their rubbish bin. It's a waste of valuable resources when we throw food away, not to mention all the water and fertilisers used to grow it, the gases used to refrigerate it and the fuel used to transport it. Producing, harvesting, transporting, and packaging the food we waste each year emits 3.3 billion tonnes of carbon dioxide.

**Slide 15:** Putting food waste in a caddy instead of into a general rubbish bin means that it isn't thrown away. Instead, the food is recycled. In Surrey, food waste is turned into useful products such as fertiliser - and even electricity! 100% of food waste that is put in Surrey's food caddies is recycled in the UK.

**Slide 16: KEY QUESTION: How can your unused food scraps become useful electricity?** Using a process called 'anaerobic digestion' the food is turned into gas that can be used as a fuel. The food goes into a big tank where there is no oxygen. Bacteria break the waste down, creating a biogas. This can be used as fuel in a power station! Using food scraps to create energy means that we don't have to use as many fossil fuels. **Watch this short animated video to show the process:** <https://www.youtube.com/watch?v=WdZViehrUks>

**Slide 17:** Over half of the food waste Surrey residents produce is put into rubbish bins and isn't recycled. Just think how useful all those food scraps could be if they were recycled instead. Instead of causing harm to the environment, they could actually **help** the environment, because the more

electricity we can generate from those scraps, the less we need to get from fossil fuels!

**Slide 18: Discussion activity - work in groups:** So what puts people off using a food waste caddy? Do they have a food waste caddy at home?

Sometimes people have a few doubts about what to put in the caddy, or what kind of bag to use. Here are some useful facts:

- All food waste can be recycled.
- You can use any type of plastic bag to line your family's food waste caddy.
- Using a caddy is clean, hygienic and doesn't cause smells in your kitchen!

**Slide 19:** Surrey residents produce 93,414 tonnes of food waste a year. This is the equivalent to the weight of about 950 blue whales! What a HUGE amount of waste that is!

**KEY QUESTION: HOW DO YOU THINK YOU COULD REDUCE THAT AMOUNT?**

**Slide 20: Some key ways to reduce food waste are:**

- Reducing the amount of food you buy
- Not wasting the food you have
- Making sure any scraps stay out of the general waste bin

You should make sure that you buy only the food that you need, that you eat the food you buy and that if you do throw food away, you recycle it in a food waste caddy.

**Slide 21:** Food often goes to waste because people don't meal-plan by deciding in advance what they will eat and how much of each ingredient they will need. Instead, they buy more than they need or they are attracted into buying extra things by special offers and sales. The food that they don't end up eating gets wasted. This happens in homes and in restaurants too.

Planning your meals in advance, making a shopping list based on the plan and then only buying what is on the list can help reduce this problem.

**Slide 22:** If someone serves you a portion of food that is bigger than you can eat, the leftover food is often just scraped into the bin. One way to make sure that you get the right portion size for you is to have the food in the middle of the table, so that each person can serve themselves to the amount they are

able to eat. If you are still hungry after the first serving, you can reach some more!

**Slide 23:** Food labels have to show lots of different information, such as where the food was grown or what sort of ingredients it contains. Packaging also has different dates on it. One is a 'sell by' date which is the latest date that the food can be on the shelf. Another is the 'best before' date, which is a suggested date by which time the food should still be at its freshest. Finally, there are 'use by' dates, which are generally on products like meat or dairy, where it can sometimes be dangerous to eat them after a certain time.

However, many people think that they need to eat their food by the 'best before' date and throw it out if the date passes - even if there is nothing wrong with the food. It's usually possible to see and smell when food is no longer good to eat. There are some companies that specialise in selling food that has passed its 'best before' date for bargain prices. Sadly, a lot of it ends up in the bin.

If you DO have food approaching a 'use by' date - you can often freeze it before it goes off and then eat it another day.

**Slide 24:** If you have leftover food after a meal, this can be kept in the fridge or freezer to be eaten another day. Some leftover food can be added to another meal and then used in a different way. You can stir fry leftovers or add them to a tasty soup. Get creative with your recipes and help reduce the amount of food that is thrown away!

**Slide 25:** If your family doesn't already use a food caddy, starting to use one could be the biggest difference you could make to the impact of your household waste. Food waste is collected from houses in Surrey every week on the same day as your waste or recycling. It's really easy to get a food waste caddy if you don't already have one - just visit your local district or borough council's website to order one and to check which day your collection is on.

**Slide 26:** Dealing with food waste is an expensive business. If all the food waste in rubbish bins across Surrey was recycled it would save £4 million a year! Imagine what the council could be doing with that money instead.

**Slide 27:** According to the UN, 820 million people don't have enough to eat, which is around 1 in every nine people in the world. Another 1.3 billion people don't have access to enough nutritious food, so they don't get a balanced,

healthy diet. At the same time, 1 third of food produced for humans (around 1.3 billion tons) gets wasted every year. That all adds up to a phenomenal amount of wasted resources and effort, as well as a huge burden on the environment. **We can all play our part in reducing the problem of food waste.**

## Suggested follow-up activities

### School food waste audit

Ask the school kitchen or canteen staff if children can monitor the amount of food waste left after lunch times each day for a week. There are different ways you could monitor this, such as by weight, or just by conducting a visual check. Pupils might like to make their own checksheets to complete. Are there certain days when food waste is greater? Are there particular foods that seem to be wasted more than others?

### Family meal planner example

In groups, ask children to plan the meals for a week for an imagined family of four. They should investigate recipes, calculate the correct amounts of ingredients, and use these to plan out a shopping list. They could even cost up the ingredients using the websites of different supermarkets, or local shops. Don't forget to plan for school packed lunches and to consider how you could minimise packaging waste! Once they are completed, these suggested meal plans could be sent home or published on the school website for families to use.

### Home food waste investigation

Ask students to complete a diary of all the food scraps that they throw away. You might need to be sensitive when suggesting this activity and do not use it if you believe you have pupils who are experiencing food scarcity. There is a food waste diary that you might like to use here:

<https://www.zerowastescotland.org.uk/sites/default/files/ZWS1054%20LFHW%20Education%20Pack%20PRIMARY%204-6%20UPDATED%20JUNE%202021.pdf>

### Anaerobic digestion explanation writing

Use the explanation of how food waste can be turned into useful energy provided in this video <https://www.youtube.com/watch?v=WdZViehrUks> as the basis for a piece of explanation writing. Children can make flow charts to show the process and then build these into a longer piece.