Calculate your school's carbon footprint

Eco-Schools | With KEEP BRITAIN TIDY

Calculate your school's carbon footprint

Eco-Topics:


School Grounds


Energy


Transport


Waste


Water

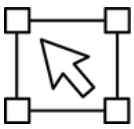

Healthy Living

This hands-on activity gets students involved in collecting data to help calculate their school's carbon footprint using Count Your Carbon. They'll meet with staff, run surveys, and learn about how their school's activities can create carbon emissions. A staff member will be required to collect some additional data, and then you'll be able to sit down with your students and complete your calculation. Understanding your carbon footprint is the first step in reducing it!

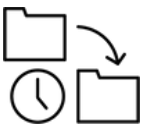
Green Skills and Learning

Young people will develop the following skills in a green context:


Technical


Digital skills


Collaboration


Project Management

Young people will develop their knowledge of:

- Activities carried out by schools that produce carbon emissions.
- Gathering, analysing and entering data to calculate a carbon footprint.

The Issue

Every day, humans create energy, drive cars, grow food, and power factories, all of which release huge amounts of carbon into the atmosphere. The total amount of carbon created by the activities of an individual, business, or country is called a 'carbon footprint'.

In England, all the schools combined have a total carbon footprint of over **10 million tonnes per year.**

Carbon traps heat and stops it from escaping the planet, and this is creating climate change. It is already having a negative impact on weather, ecosystems, human health, and our food supply.

The good news is that we can do something about it. By learning about your school's carbon footprint, you're taking the first step to making a difference. When we understand where we're creating carbon emissions, we can find ways to reduce them, and ultimately protect our planet's future.

Find Out More

- BBC Newsround - Climate change - your questions answered (video)
- Department for Energy, Business and Industrial Strategy - My 2050 (game)
- NASA - Climate kids
- WWF - Climate change resources for schools
- STEM Learning - Climate change resources for KS1 and KS2

Follow These Steps

A note for staff: We would recommend registering your school with Count Your Carbon (www.countyourcarbon.org) and gathering the data not covered in this activity before sitting down with students to complete a calculation. You'll need to collect data on: school vehicles, school trips, purchasing and uniform. Download the list of calculation questions from www.countyourcarbon.org/getting-started, for support.

To help students to understand how the areas that they are collecting data for produce emissions, share the 'Why does _____ produce emissions?' fact sheet with them. This can be found on page 8 of this resource.

1. Gather energy, waste, and water data.

Your first task is to Identify a member of staff who can access data on your school's energy use, water use, and waste production. In most cases, this will be your school's finance manager or site manager. Once you've identified the right person, arrange a meeting with them. During the meeting, use the '**Gather Energy, Waste & Water data**' worksheet (**pages 9, 10, and 11** of this resource) to help you record the necessary information.

Tip: It's a good idea to share the worksheet with the staff member ahead of your meeting so they can gather the relevant data in advance.

2. Gather staff and student commuting data.

Use the '**Gather Staff and Student Commuting data**' worksheet (**pages 12, 13, 14, and 15** of this resource) to conduct a survey that captures how far people travel to school and their mode of transport. The survey includes two key questions:

1. What mode of transport do you use to travel to school most often?
2. What distance do you travel to get to school?

You should aim to survey at least 20% of your school's staff and students. For example, if your school has 10 classes, aim to survey at least 2 of them. Visit your selected classes and ask these questions to both students and staff. Read out the answer options and ask participants to raise their hand to indicate their response, keeping a tally.

Tip: If your schoolmates aren't sure how far they commute, Google Maps can help. It's a good idea to let everyone know in advance what you'll be asking, so they can check with their teacher or family how far they travel to school.

3. Gather food data.

To collect food-related data, you'll need to work closely with staff members from your school canteen. Use the '**Gather Food data**' worksheet (**page 16** of this resource) to help.

Some questions on this worksheet, such as whether hot meals are served, may be easy to answer. However, others, like "In an average week, how many plant-based meals does your school serve?", may be more challenging if this data isn't routinely recorded.

If that's the case, work with canteen staff to decide how best to gather this information.

- You could create a simple tally chart for staff to record how many meat, vegetarian, and plant-based meals are served each day.
- Alternatively, you might ask to observe and record the data yourself by standing beside the serving area. Different pupils could take turns doing this each day.

4. Calculate your carbon footprint.

Now it's time to calculate your carbon footprint. First, make sure you have all of the data you and your Eco-Coordinator have gathered to hand.

Then have your Eco-Coordinator head to www.countyourcarbon.org and sign in. Start a new calculation, and make your way through the questions, making sure to double-check your answers as you go. Your Eco-Coordinator will need to input any additional data that they have gathered too. If you get stuck or can't access some of the required data, there is an option to skip and use average figures, although this will make your footprint report less accurate.

Once you've reached the end of the questions, click submit. At this point, your carbon footprint figure will be revealed.

5. Share your results.

Once you've completed your carbon footprint calculation, it's time to share it with your teachers and classmates so that you can start taking action!

The report should be shared with your school's leadership team and operational staff so that they can create a plan of action to reduce your school's emissions.

Then, make sure it's shared with your fellow students, so that they can begin taking climate action too. This might be through an assembly, sharing details in your school newsletter, or creating a Count Your Carbon display board.

Green Careers

Carbon Accountant

Carbon Accountants investigate how much carbon businesses produce by gathering data on their operations, and calculating their carbon footprint. They analyse and report on this information, and provide companies with advice on how their emissions can be reduced in order to help the planet stay healthy.

Retrofit Coordinator

Retrofitting means to install new materials and technology into older buildings, to help them become more energy efficient and reduce carbon emissions. Retrofit Coordinators assess buildings, planning and overseeing upgrades, like adding insulation to stop heat escaping, or installing solar panels to generate green electricity.

Academic Researcher and Lecturer

Combating climate change and creating a sustainable society takes cutting-edge research and innovation. Academic Researchers and Lecturers work at universities, where they become experts in one special topic - for example food sustainability, renewable energy, or eco-friendly materials. They teach students - helping to inspire the next generation of planet protectors, and conduct research with other experts to solve real-world problems.

Go Further

- Explore The Playground! The Playground is a fun tool that you can find through the Count Your Carbon dashboard. It takes your school's real footprint data and lets you explore how making changes in school can help to reduce your carbon footprint.

- Work with your teachers to create a decarbonisation plan for your school. Explore the different actions you could take to reduce your school's footprint, and create a plan to help make them a reality.

Curriculum Ideas

Maths

Take your school's carbon footprint and think about the best way to show it using data visualisations such as charts and graphs. Create some interesting visuals to help share your footprint data with the rest of the school.

English

Write a report about how you calculated your school's carbon footprint, what the results showed, and the actions that you think could be taken to reduce it, to share with your school's senior leadership team.

PSHE and Citizenship

Research and discuss what simple actions students can take in school to help reduce carbon emissions. Design a poster communicating these to be displayed around school.

Why does _____ produce emissions?

Electricity

Electricity often comes from non-renewable, carbon emitting sources such as fossil fuels and nuclear reactions, however there are renewable sources too, such as the sun (solar energy), wind, water (hydroelectric), and even organic matter such as food waste (biomass).

Fuel

A fuel is a substance that is used to provide heat or power, usually by being burned. Types of fuel include gas, oil, coal, and wood. When fuels such as gas, oil, coal, and wood are burned to produce heat or power, it creates carbon emissions.

Waste

All waste has to be transported to its point of disposal in vehicles, and this produces carbon emissions. Most methods of waste disposal, whether that be landfill, incineration, or industrial composting, create emissions too.

Water

Water itself doesn't emit carbon, but in order for it to be used it must be treated and transported. These processes require energy, and generating energy can emit carbon.

Staff and Student Commuting

Each method of transport has its own related carbon emissions. These depend upon a range of factors such as whether it uses fuel or electricity, and how many people can travel within one vehicle.

Food

Food creates emissions because producing, processing, packaging, and transporting it all require electricity, water, and fuel. Plant-based foods typically produce less emissions than meat.

Gather Energy, Waste and Water data

Speak to the person in your school who has data on energy, waste, and water. Ask them the questions below and note down their answers in the boxes provided. Then pass these on to your Eco-Coordinator for safekeeping.

Fuel

Your school might use a combination of fuels e.g. Natural gas for heating, Diesel in generators. You do not need to ask about fuel used in vehicles.

In the last 12 months, what types of fuel, and how much fuel, did you use in your school buildings? (Fuel type, amount, units)
Fuel type options: Natural Gas / Butane / CNG / LNG / LPG / Propane / Burning Oil / Fuel Oil / Coal / Biogas / Landfill Gas / Biopropane / Biomethane / Wood Chips / Wood Logs / Wood Pellets / Grass/Straw **Unit options:** kg, tonnes, kWh, cubic metres, litres, GJ

Electricity

Your school may also generate electricity on-site via solar panels or wind turbines - you'll need to find out about this.

In the last 12 months, how much electricity, in kWh, did you use in your school?	
In the last 12 months, did you use 100% renewable electricity? Select yes if your school does any of the following: Buy 100% renewable electricity from your energy supplier, generate 100% of your electricity on-site via solar panels or wind turbines, or a combination of the two where 100% of your electricity supply comes from renewable energy sources.	Yes / No
In the last 12 months, did your school generate energy onsite from renewable energy systems?	Yes / No
Roughly how much energy, in kWh, did your school generate onsite from your renewable energy systems?	

Water

Make sure to combine fresh (drinking) water usage and sewerage (also referenced as treatment or waste) to get the total water usage.

In the last 12 months, roughly how much water, in m3, did your school use?	
In the last 12 months, roughly how much did your school spend on water?	

Waste

The Site Manager might have this information. If they don't, go on a walk around school to count how many bins there are and their types. There's a diagram at the bottom of the page to help with this. Only count the big bins that are collected by the waste company.

50L
73cm x 45cm

120L
95cm x 50cm x 50cm

240L
107cm x 58cm x 74cm

660L
1200cm x 1370cm x 770cm

1100L
1400cm x 1200cm x 1000cm

In the last 12 months, how many of the following size bins could be found in your school and approximately how many times per month were they collected? (bins/collections)

Type of bin	**50L**	**120L**	**240L**	**360L**	**660L**	**1100L**
General			/	/	/	/
Recycling			/	/	/	/
Garden Waste			/	/	/	/
Food Waste	/	/	/			

In the last 12 months, did your school compost garden waste? If yes, approx. what percentage of your garden waste did you compost?	Yes / No ____ %
In the last 12 months, did your school compost food waste? If yes, approx. what percentage of your food waste did you compost?	Yes / No ____ %

Gather Staff and Student Commuting data

Ask staff and students the survey questions and keep a tally of their responses below. Then hand your results to your Eco-Coordinator for safekeeping.

What mode of transport do you use to get to school on an average day?

Mode of transport	Students	Staff
Car		
Battery EV (Electric car)		
Plug-in hybrid EV (Hybrid car)		
Bus		
Tram/train		
Walk/wheel		

What distance do you travel to get to school?

Distance travelled to school (one-way)	Students	Staff
0-5 miles		
5-10 miles		
10-15 miles		
15-20 miles		
20-25 miles		
25-30 miles		
30+ miles		

Count up the total number of people you surveyed and note these figures down here.

Total students surveyed	Total staff surveyed

Optional: Transport mode percentages

The Answers Sheet where you'll be recording your data will turn your survey results into percentages automatically, however if you'd like to test your maths skills, why not try calculating them yourself below?

Begin by counting up your tallies and noting these figures down in the 'count' column. Then, use this formula to calculate the percentages:

(total for mode of transport ÷ total no of staff/students surveyed) × 100.

For example, if you asked 60 students in total and 15 said that they walk to school: Calculate 15 ÷ 60, which equals 0.25. Multiply that by 100. Answer = 25% of students walk to school.

Students	Count	Percentage
Car		%
Battery EV		%
Plug-in hybrid EV		%
Bus		%
Tram/train		%
Walk/cycle/scoot		%

Staff	Count	Percentage
Car		%
Battery EV		%
Plug-in hybrid EV		%
Bus		%
Tram/train		%
Walk/cycle/scoot		%

Gather Food data

Speak to the person in your school who has data on food served in school. Ask them the questions and note down their answers in the boxes below. Then pass these on to your Eco-Coordinator for safekeeping.

In the last 12 months, did your school serve hot meals?	Yes/No
In an average week, how many meals including meat, does your school serve?	
In an average week, how many vegetarian meals does your school serve? Vegetarian = meat and fish free but can include dairy and eggs.	
In an average week, how many plant-based meals does your school serve? Fully plant-based meals = no meat, fish, dairy, or eggs.	
In an average week how many 100% meat-free days does your school offer?	
In an average week, how many 100% plant-based days does your school offer?	