

Calculating¹ your carbon footprint

There are several online calculators which you can use. But before you try out an online calculation, we suggest that you do this easier version on paper. It is adapted from the carbon footprint calculator under www.carbonindependent.org.

1 Household²

a) Answer the questions in section 1 first. Some of the notes will help you.

Questions	Notes (All calculations relate to the UK.)
1. How many people are there in your household? <input type="text"/>	You can enter a decimal, e.g. 3.5, if you have a family member who is away from home for part of the year.
2. Power	
a) How much electricity is used in your household? Select one option: <input type="checkbox"/> Small house / flat (3,000 kWh) <input type="checkbox"/> Medium house (4,800 kWh) <input type="checkbox"/> Large house (7,000 kWh) <input type="checkbox"/> Tick the box if your electricity comes from one of the green tariffs.	Electricity use is measured in kilowatt-hours (abbreviated to kWh). <i>The CO₂ emission factor for electricity is taken³ to be 0.527 kg / kWh.</i> There is a reduction of 25% in CO ₂ emissions for a green tariff.
b) How much gas is used in your household? Select one option: <input type="checkbox"/> Small house/flat (12,000 kWh) <input type="checkbox"/> Medium house (18,000 kWh) <input type="checkbox"/> Large house (27,000 kWh)	<i>The CO₂ factor for natural gas is 0.203 kg/ kWh</i>
c) Is heating oil used in your household? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="text"/> Number of litres per year?	<i>The CO₂ factor is 2.96 kg/litre.</i>
3. How many cars are used by your household? <input type="text"/> Select for each car: car size 12-month car mileage ⁴ <input type="checkbox"/> Small (37 mpg) <input type="checkbox"/> Low (6,000 miles) <input type="checkbox"/> Medium (33 mpg) <input type="checkbox"/> Average (9,000 miles) <input type="checkbox"/> Large (24 mpg) <input type="checkbox"/> High (12,000 miles)	Select the size of car according to: Small: < 1.5 litres Medium: 1.5 – 2.0 litres Large: > 2.0 litres <i>Emissions are taken to be 14.3 kg CO₂ per gallon⁵.</i>

b) Which source of power in your home has the lowest emissions factor?

c) Which household item has the highest emissions factor?

¹to calculate ['kælkjələɪt] – *rechnen*; ²household ['həʊshəʊld] – *Haushalt*; ³to take (to be) ['teɪk] – *annehmen als*;
⁴mileage ['maɪlɪdʒ] – *Meilenzahl*; ⁵gallon ['gælən] – *Gallone (4,54 Liter)*

2 Personal

a) Now use the notes to answer the questions in section 2.

Questions	Notes (Average here means 50 % unless figures are given.)
4. Food	
a) How much of the food that you eat is organic ? <input type="checkbox"/> None <input type="checkbox"/> Some <input type="checkbox"/> Most <input type="checkbox"/> All	Non-farmed fish counts as organic. The fertilizer ¹ used in growing food that is not organic causes greenhouse gas emissions through nitrous oxide released ² from the soil, and through CO ₂ emissions from the manufacture and transport of fertilizer.
b) How much meat/dairy do you eat personally? <input type="checkbox"/> Above-average (every day) <input type="checkbox"/> Average (4-5 days a week) <input type="checkbox"/> Below-average (2-3 days a week) <input type="checkbox"/> Lacto-vegetarian (never meat) <input type="checkbox"/> Vegan (never meat or dairy)	Meat and dairy production generates methane ³ from animals and slurry, and CO ₂ from the energy used in farm operations.
c) How much of your food is produced locally ? <input type="checkbox"/> Very little (much foreign/out of season food) <input type="checkbox"/> Average <input type="checkbox"/> Above average <input type="checkbox"/> Almost all	Food transport, packaging and processing ⁴ all require energy, releasing CO ₂ .
d) How much of your food is packaged/processed (e.g. 'ready meals', tins)? <input type="checkbox"/> Above average <input type="checkbox"/> Average <input type="checkbox"/> Below average <input type="checkbox"/> Very little	
e) How much do you compost ⁵ (potato peelings ⁶ , leftover and unused food, etc.)? <input type="checkbox"/> None <input type="checkbox"/> Some <input type="checkbox"/> All	Food decomposition in landfill sites releases methane.
f) How much food do you waste (on average, over one fifth of edible ⁷ food is thrown away)? <input type="checkbox"/> Above average <input type="checkbox"/> Average <input type="checkbox"/> Below average <input type="checkbox"/> Very little	Edible food can be wasted because too much is prepared, or because it has gone past its use-by date and so on. <i>Some greenhouse gas emissions are currently⁸ almost impossible to avoid: methane and CO₂. These amount to around 0.2 tonnes per person.</i>

¹fertilizer ['fɜ:tilaɪzə] – *Dünger*; ²to release [r'i:ls] – *freisetzen*; ³methane ['mi:θeɪn] – *Methan*; ⁴to process ['prəʊses] – *verarbeiten, konservieren*; ⁵to compost ['kɒmpɒst] – *kompostieren*; ⁶peelings ['pi:lɪŋz] – *Schalen*; ⁷edible ['edɪbl] – *essbar*; ⁸currently ['kʌrntli] – *momentan, zur Zeit*

<p>5. Which country do you live in?</p> <p><input type="checkbox"/> UK</p> <p><input type="checkbox"/> Other</p>	<p><i>Carbon dioxide is generated by the health service, schools, social services, the armed forces¹ and so on. This amounts to 1.1 tonnes per person per year for the UK. You have no direct control over this amount, which is generated on your behalf², but you can join campaigns to make public services more energy efficient, especially if you work within one of them.</i></p>
<p>6. Public transport</p>	
<p>a) What does your bus travel amount to?</p> <p>Miles travelled in the last year</p> <p>Regular mileage each week: <input type="text"/></p> <p>Regular mileage each month: <input type="text"/></p> <p>Other mileage in the year: <input type="text"/></p>	<p>You can estimate the average journey time or multiply by average bus speeds (roughly 15mph for urban³ journeys and 20mph for rural⁴ journeys).</p> <p><i>The CO₂ emission factor for bus travel is taken to be 100 g/mile</i></p>
<p>b) What does your train travel amount to?</p> <p>Miles travelled in the last year</p> <p>Regular mileage each week: <input type="text"/></p> <p>Regular mileage each month: <input type="text"/></p> <p>Other mileage in the year: <input type="text"/></p>	<p>You can list the train journeys or add up the total journey time (remembering to double if return). Multiply by average train speeds (roughly 20mph if suburban, 45mph if cross-country, 70mph if intercity).</p> <p><i>The CO₂ emission factor for rail travel is taken to be 100 g/mile.</i></p>
<p>7. Flights</p>	
<p>a) Any flights between inland airports?</p> <p>Hours spent flying: <input type="text"/></p>	<p>Enter the hours spent on inland flights.</p>
<p>b) Any international flights ...?</p> <p>... to Europe and/or Africa?</p> <p>... to North & South America ?</p> <p>... to Asia & Australasia ?</p> <p>Total number: <input type="text"/></p>	<p><i>The calculator assumes emissions of ¼ tonne CO₂ equivalent per hour flying (roughly 500 g per mile).</i></p> <p>Enter the total number of international return trips.</p>
<p>8. Lifestyle choices</p>	
<p>a) What is your miscellaneous⁵ spending?</p> <p>Above-average (5 tonnes CO₂)</p> <p>Average (3.4 tonnes CO₂)</p> <p>Below-average (2.4 tonnes CO₂)</p> <p>Much below-average (1.4 tonnes CO₂)</p>	<p>Your miscellaneous spending:</p> <p>recreation⁶ and leisure facilities</p> <p>housing</p> <p>household appliances⁷</p> <p>hygiene</p> <p>hotels and other holidays</p>
<p>b) Do you recycle paper, glass and metal?</p>	<p>furnishings⁸</p> <p>clothing & footwear</p> <p>alcohol & tobacco</p>
<p>c) Do you recycle plastic apart from bags?</p>	<p>post and telecommunications</p> <p>books, newspapers, magazines etc.</p>

(adapted from the carbon footprint calculator under www.carbonindependent.org)

b) Which personal areas can you influence and how?

¹armed forces [ˌɑːmd ˈfɔːsɪz] – *Streitkräfte*; ²on your behalf [bɪˈhɑːf] – *für*; ³urban [ˈɜːbən] – *städtisch*; ⁴rural [ˈrʊərəl] – *ländlich*; ⁵miscellaneous [ˌmɪslɪˈeɪniəs] – *verschieden*; ⁶recreation [ˌriːkriˈeɪʃn] – *Erholung*; ⁷appliance [əˈplɑːns] – *Gerät*; ⁸furnishings [ˈfɜːnɪʃɪŋz] – *Mobiliar, Einrichtung*

Lösungen

Lösungsvorschläge Seite 1

Ex.1

- a) *Individuelle Schülerlösungen*
- b) Natural gas
- c) A car

Lösungsvorschläge Seite 2

Ex. 2

- a) *Individuelle Schülerlösungen*

Lösungsvorschläge Seite 3

Ex. 2

- b) Food: more organic products, less meat and dairy produce, more local produce, less packaging, less waste
Travel: don't use buses and trains if you can walk or cycle, fly less often, or go by train/bus
Lifestyle: recycle paper and plastics, join campaigns to make public services more energy efficient, turn off/unplug household appliances/electronics not in use, don't leave water running while showering, use energy-efficient lighting, ...