

The Three Tonne Club Handbook



Women's
Environmental
Network

3 Tonne Club



Lightening the load

This small handbook is the tip of an iceberg. A huge body of sources have contributed to each section and assisted the calculation of savings. Special thanks go to Jean Leston (whose idea this was), Ian Campbell of Carbon Independent, Chris Goodall, Laurie Michaelis, Sue Sheehan, all at WEN for ideas and feedback, Jamie Andrews, Rose Taw, Cait Weston, Richard Hudson, all the friends we tested out footprinting on, and the other people from many organisations who gave information and encouragement. We are also grateful for the support of Calouste Gulbenkian Foundation.

Women's Environmental Network is a non-profit membership organisation working to educate, inform and empower women and men who care about the environment. To join online or find out about affiliation see www.wen.org.uk.

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ISBN 978-1-874137-24-5
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Supported by



**CALOUSTE
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FOUNDATION**

Printed on recycled paper using vegetable-based inks

Contents

The Three Tonne Club	p5
The nitty gritty	p7
Calculating your carbon footprint	p11
Home energy	p17
Land travel: car, bus and train	p26
Flying	p33
Food	p39
Tricky tonnage	p47
Offsetting	p56
Agony Aunt Three Tonne Tina	p60
Further reading	p65

The Three Tonne Club

The Three Tonne Club takes the weight off your feet, helping to get your carbon footprint down to a slyph-like three tonnes.

Your **carbon footprint** is the amount of greenhouse gas you create through your consumer behaviour, activities and lifestyle every year.

Three tonnes is the goal. We have to achieve this to limit global warming to 2°C this century and prevent catastrophic climate change. At the moment, with our current lifestyles, we need more than three planets to keep us all going. And the world's sharply rising population and increased demands on energy will make things even worse. We have to act now.

Green living is not all about guilt trips and earnest endeavour. Far from it – going green should be fun! And, as members of the Three Tonne Club, you show each other how it's done.

Three tonnes sounds heavy enough, but when your starting point is over 13 tonnes it's not going to be plain sailing. You're going to need help, and this is where the Three Tonne Club comes in. Getting together in groups, with friends and neighbours, gives you support and enables you to support others as you work towards the Three Tonne target. Just as slimming clubs help thousands of people to achieve and maintain their target weight, the Three Tonne

Club is designed to help you to slim down your carbon footprint. The Three Tonne Club is where you can share your ideas and enthusiasm, your difficulties and concerns, and work together for a healthier lifestyle and a healthier world.

The first session will help you to calculate your own carbon footprint. Following this, monthly meetings focus on individual topics such as home energy, air travel or food, so that members can share problems and solutions, identifying the easy things to do and helping each other through the uphill struggles.

This guide and the supporting resources on www.wen.org.uk provide information and activities for a year. However, we don't expect you to get down to three tonnes quite so quickly and your club can keep going as long as you want it to while you continue to shed those tonnes.

The average person's CO₂ footprint in the UK is **13.4 tonnes**.

The emphasis is on fun, and the website is full of things to do to explore the monthly themes, but you are welcome to introduce your own ideas and entertainments. One month you might be enjoying an organic wine tasting or cooking and eating a local and seasonal meal, while another, you could be using your creativity to make recycled gift wrap or 'swishing' – swapping unwanted clothes. Unlike those slimming clubs there's no restriction on bringing wine, beer, buns

or chocolate to your monthly meetings so go on, indulge yourselves while you lose tonnes!

Virtually all climate scientists now agree that **climate change** is real, and is **caused by human activity**.

Taking action

The next few years are crucial. Some people are already taking action to reduce their footprint, but it is vital that everyone does, and that governments and businesses play their powerful part instead of waiting to be pushed.

Early estimates suggested that we might see global temperatures rise by up to 1.5 degrees this century. However, things are worse than they seemed.

Now, to prevent the disastrous climate change which is predicted if temperatures rise by over two degrees, we have to reduce our carbon emissions by 80% or even more by 2030.

To you and me, that means getting our footprints down to three tonnes a year. And this is what the Three Tonne Club aims to help you achieve.

Some people in the UK have already managed or exceeded this – but more of us need to. The government target is likely to be an 80% cut by 2050.

But this is clearly not soon enough. A temperature rise of 2 degrees could happen as soon as 2030. It's essential that we act now to prevent things getting even worse. To stay within this limit, global greenhouse emissions must peak and be falling irreversibly by 2015.

Oil and power companies stand to gain if we think it is difficult to shed the tonnes, so remember that if you feel surrounded by pessimism, often it is their influence over the media which unconsciously forms our opinions.

The way we work, play, eat, travel and shop is carbon heavy. But it doesn't have to be that way. To enjoy a sustainable future we just need to consider our priorities, lighten up and shake off the excess tonnage.

We can halve our footprint, and then halve it again, getting to three tonnes and below by simple changes in our lifestyles. We may not realise how powerful we are! Why are the supermarkets suddenly attempting to go green? Partly because they now accept that climate change is real, but mostly because they want to keep their customers happy.

Individual action makes a difference, but those benefits multiply when people share their concerns, knowledge and ideas. By getting together with friends and neighbours you can lose your carbon weight, enjoy a more sustainable lifestyle and have a whole lot of fun along the way. As well as helping the climate, this builds resilience in ourselves and our communities to prepare for a continued rise in fuel prices.

By joining the Three Tonne Club, you are becoming a leader in addressing climate change and your actions will help spur government and business into further action. By reducing your tonnage now you are helping to secure the future while others take time to catch up.

The nitty gritty

What is climate change?

Gases such as **carbon dioxide**, **methane** and **nitrous oxide** trap heat in the atmosphere creating a warmer environment, similar to the effect in a greenhouse.

We live in a layer of air on the surface of the earth. It's thin, like the dew on an apple compared with the size of the planet itself. Gases like carbon dioxide (CO₂) keep us warm by trapping the heat of the sun in the air. If there is too much CO₂ the average temperature of the air gets too high and makes the climate unstable.

When gases are released either naturally or from processing or burning things we call them emissions. Using energy causes CO₂ emissions when fossil fuels are burnt to generate it.

This is already happening and affecting the poorest people in the world. There are more storms, droughts and floods, and some places are unexpectedly colder, as in China in the

winter of 2007/8. Unfortunately what are still relatively minor changes could soon breed bigger ones. In a warmer climate, the forests we need to cool our climate suffer and so are less effective. The air warms the oceans, and once they start to warm, greenhouse gases stored in the ocean floor are released and so the process is difficult to stop.

Where the gases come from

CO₂ is the main greenhouse gas. There is naturally a small amount in the air from everything we do, including farming, composting and breathing! We have been adding to this by burning fossil fuels like oil, gas and coal and at the same time cutting down the forests that absorb CO₂. Other greenhouse gases such as methane and nitrous oxide are more powerful warmers.

► Carbon dioxide

CO₂ is made when fossil fuels burn and when vegetation burns or breaks down in the air.

► Methane

This gas is 21 times as strong as CO₂. It comes from animals, slurry and landfill and other places where vegetation rots without air.

► Nitrous oxide

A gas 310 times stronger than CO₂. It comes from things like industrialised farming and air travel.

We think of gases as light, but they still weigh something. If we could see a tonne of CO₂ it would be the size of two

five-room houses and weigh roughly the same as a car. The average carbon footprint for each person in the UK is 13.4 tonnes of CO₂ per year and it is at least five times bigger than necessary to be sustainable.

This 13.4 tonne CO₂ footprint is higher than some you may see because it includes emissions from the products and services we use including our share of government services. We refer to it as tonnes of CO₂ but other greenhouse gases are included in the calculations.

About this Handbook

The Three Tonne Club Handbook is designed as a tool to help you measure your carbon footprint and find the most effective ways to reduce it. We are confident that by using the handbook and by joining with other people, over the course of a year or so you will help each other to find carbon-light solutions and be working your way down to a dainty three tonnes!

You could bring the Handbook to your toddler group, book club, PTA or office meeting to recruit club members. Otherwise, simply start by sharing this handbook with a friend and measuring each other's footprints. Your branch of the Three Tonne Club can start with just two people. So long as there is someone to bounce ideas off, you're on your way to lighter living.

Using the Handbook

The handbook identifies areas where you can make reductions to your carbon footprint and shows how to get going.

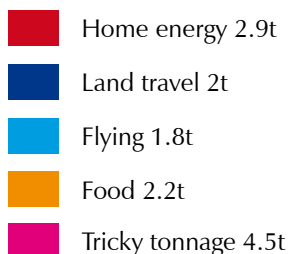
For a start you'll need to know what your own carbon footprint is. You can work that out by following the steps on pages 11-16. If you prefer to work online and have the sums done for you, visit www.carbonindependent.org. Expect big differences. Some individual footprints may be as low as 3 or 4 tonnes while others may be as high as 33 tonnes. Don't worry, the higher it is, the easier it should be to start shifting those tonnes.

The chart opposite shows how the **average 13.4 tonne footprint** is made up.

The Handbook shows how you can reduce your footprint in each of these areas with 'Easy Green Gains'. Start where you want to, maybe with Home Energy or Food, and end with the Tricky tonnage and Offsetting. Each section explains how the major damage is done, where the biggest savings can be made and how to go about shifting those tonnes.

Following the initial session where you calculate your personal carbon footprint, each meeting of the Three Tonne Club should concentrate on one section of the Handbook. You'll find further information and full details of group activities to liven up your monthly meetings on the website.

Breakdown of average footprint



The Handbook is geared to provide the information you need for a year's meetings of the Three Tonne Club. In order to progress to three tonnes you will need to go further than we bring you in this guide. But you'll help each other to do that. We are confident that having worked through some of our suggestions, you will come up with some brilliant ones of your own. Please keep in touch and let us know of things that work well for you. We'd like to share them with other branches of the Three Tonne Club to spread the support across the network.

Group activities

We have devised a number of activities suitable for your monthly meetings. It is easiest for meetings to focus on one area for action: home energy, land travel, flying, food, tricky tonnage or offsetting, so we have suggested group activities geared towards each of these topics with some extra ideas for your initial introductory session.

Activities for first group session

Film show

A film is a good way of sparking off a group discussion for your first meeting. WEN has a number of DVDs available for local groups to borrow for non-commercial showings including *Sisters on the Planet*, *An Inconvenient Truth* and *The Power of Community: How Cuba Survived Peak Oil*. Group viewings mean many of you see the film but only one TV or computer is needed and only one room needs to be heated. So you all save energy and have the opportunity to discuss your responses afterwards – perhaps over a cup of tea and a slice of cake!

The energy game

An icebreaker for the first session – details available on www.wen.org.uk. As people arrive the organiser gives everyone a piece of paper containing the name of a household appliance and the length of time it is on. People introduce themselves by name and according to their description. For example "My name is Tina, and I am a

fridge on for 24 hours”.

Then everyone moves around the room trying to put themselves in order of most energy used, going down to least. You will end up standing in a line. There will probably be a lot of discussion as people try to justify where they think they have to put themselves. The organiser knows the answers and doesn't let on until the end. It's quite simple and fun to do.

Support and advice

The **Women's Environmental Network** website has more information including details of how to run various group activities with materials to download for the energy game.

T 020 7481 9004 www.wen.org.uk

Calculating your carbon footprint

This section enables you to calculate your carbon footprint by making a series of simple calculations of how much CO₂ you cause in different areas of your life each year. Work out your totals for each section and then fill in the Weigh-in chart on page 16. There is also a Weigh-out chart on page 16 which you can complete a year later in order to see your progress. If you prefer to use an online service we recommend www.carbonindependent.org.

Home energy

If you are short of time use our quick start info to give you an approximate figure. Divide the household emissions by the number of occupants to determine your personal share.

Quick start

Gas	Type of house	kWh per year	tonnes CO ₂
	Small house or flat	12,000	2.4
	Average house	18,000	3.7
	Large house	27,000	5.5

These are for houses that use gas for heating, cooking and washing.

tonnes CO ₂		house occupants		add to Weigh-in/Weigh-out chart
	÷		=	

Electricity	Type of house	kWh per year	tonnes CO ₂
	Small house/flat	2,300	1.2
	Average house	3,700	1.9
	Large house	5,500	2.9

These are for houses that do not use electricity for heating. If you do heat with electricity, the emissions and the bills will tend to be higher.

tonnes CO ₂		house occupants		add to Weigh-in/Weigh-out chart
	÷		=	

The real measure

To make an accurate calculation you will need to refer to your household fuel bills over a twelve month period. Avoid using one quarterly/monthly bill as this will not take into account seasonal variations of energy use. If you don't keep your bills, your energy company should be able to supply you with the information you need.

For each utility you need to establish how many kilowatt hours (kWh) or litres of oil you are using in a year. Once you have established this you will be able to measure any reductions you are able to make.

Gas

kWh per year		kg CO ₂		kg CO ₂		tonnes CO ₂
	x	0.203	=		÷ 1,000	=
tonnes CO ₂			house occupants			add to Weigh-in/Weigh-out chart
	÷		=			

Electricity

kWh per year		kg CO ₂		kg CO ₂		tonnes CO ₂
	x	0.527	=		÷ 1,000	=
tonnes CO ₂			house occupants			add to Weigh-in/Weigh-out chart
	÷		=			

Oil

litres per year		kg CO ₂		kg CO ₂		tonnes CO ₂
	x	3.0	=		÷ 1,000	=
tonnes CO ₂			house occupants			add to Weigh-in/Weigh-out chart
	÷		=			

Land travel

Quick start for car

Based on average mileage of 9,000 miles per year

Small 3.5 tonnes CO₂

Medium 3.9 tonnes CO₂

Large 5.4 tonnes CO₂ Add to Weigh-in/Weigh-out chart or:

The real measure

A car's MOT certificates or service history can give you mileage information for the past year.

You can find the **factor** most suited to your car by using this table.

car size	engine size	miles per gallon	CO ₂ per mile	annual CO ₂ per 9,000 miles
small	less than 1.5 litres	37	0.39 kg	3.48 tonnes
medium	1.5 - 2.0 litres	33	0.43 kg	3.9 tonnes
large	over 2.0 litres	24	0.6 kg	5.36 tonnes

miles per year	x	see chart for kg CO ₂ per mile	=	kg CO ₂	÷ 1,000	=	tonnes CO ₂
		0.39 or 0.43 or 0.6					

tonnes CO ₂	÷	car occupants	=	add to Weigh-in/Weigh-out chart

Rail, bus and coach

miles per year	x	kg CO ₂	=	kg CO ₂	÷ 1,000	=	tonnes CO ₂ – add to Weigh-in/Weigh-out chart
		0.1					

Flying

hours flight per year	x	tonnes CO ₂	=	tonnes CO ₂ – add to Weigh-in/Weigh-out chart
		0.25		

Food

Quick start

UK personal average is 2.2 tonnes. Add to Weigh-in/Weigh-out chart or:

The real measure

Find your personal footprint by adding or subtracting tonnage from the national average according to your own shopping, eating and waste habits.

Average UK footprint from food can be increased or reduced if:	2.2 tonnes
meat and dairy produce make up 50% of your diet	+ 0.2 tonnes
you eat a lot of imported out of season food	+ 0.2 tonnes
lacto-vegetarian	- 0.2 tonnes
vegan	- 0.4 tonnes
completely organic	- 0.7 tonnes
70% organic	- 0.5 tonnes
50% organic	- 0.35 tonnes
30% organic	- 0.2 tonnes
15% organic	- 0.1 tonnes
almost everything you eat is local	- 0.3 tonnes
you grow and buy about half locally	- 0.1 tonnes
90% of your food is not processed or packaged	- 0.2 tonnes
you compost/recycle all food waste and packaging	- 0.2 tonnes
you waste only half the usual 20% of good food thrown away	- 0.1 tonnes
your personal total	

add to Weigh-in/Weigh-out chart

Tricky tonnage

All of the other products you buy and services you use will also contribute to your total carbon footprint. The average CO₂ from this Tricky Tonnage is 4.5 tonnes per person which includes 1.1 tonnes for government services eg. schools, hospitals etc.

Consider your spending power and buying habits and calculate accordingly. This is your spending on clothing, furnishings, equipment and appliances, home improvements, entertainment and leisure.

Most people don't know what they spend on consumer goods. The UK average is £5,500. If you are a high spender, it may be that you have two homes, visit the gym and health clubs a lot, and dine out twice a week in expensive restaurants. If you

are on a small pension or other benefits, and cannot afford to go out or on holiday much, then you can probably count yourself a low or ultra low spender.

Quick start

Ultra low spenders: 2.5 tonnes
 Low spenders: 3.5 tonnes
 Average spenders: 4.5 tonnes
 High spenders: 6.1 tonnes Add to Weigh-in/Weigh-out chart or:

The real measure

Find your personal Tricky Tonnage by subtracting tonnage from the national average according to your own practice.

Average UK footprint from tricky tonnage: can be reduced if you	4.5 tonnes
recycle paper, glass, cans	- 0.67 tonnes
recycle plastic	- 0.14 tonnes
have reduced spending on clothing and footwear, buy ethically and second hand	- 0.2 tonnes
use sustainable building materials and buy second hand furniture	- 0.4 tonnes
avoid energy intensive leisure activities eg. gym and health club	- 0.2 tonnes
buy 20% less than average cleaning products and toiletries	- 0.2 tonnes
have reduced use of cleaning products and toiletries by around half	- 0.4 tonnes
your personal total	

add to Weigh-in/Weigh-out chart

These reductions are a rough guide only – it's difficult to be exact.

Offsetting

You can take positive actions to help offset the emissions you are unable to reduce. Here are some examples:

Invest £300-600 in a wind energy generation enterprise	1 tonne
Persuade a small company (50 employees) to reduce its energy use by 10%	10 tonnes
Persuade a larger company (500 employees) to reduce its energy use by 10%	100 tonnes
Help a church or community centre to reduce energy use	2 tonnes
Work from home	0.8 tonnes
your personal total	

add to Weigh-in/Weigh-out chart

Weigh in	dd/mm/yy	Tonnes CO₂
Home energy	gas	
	electricity	
	oil	
Land travel	car	
	rail/bus/coach	
Flying		
Food		
Tricky tonnage		
Total		

Weigh out	dd/mm/yy	Tonnes CO₂
Home energy	gas	
	electricity	
	oil	
Land travel	car	
	rail/bus/coach	
Flying		
Food		
Tricky tonnage		
Offsetting		
Total		

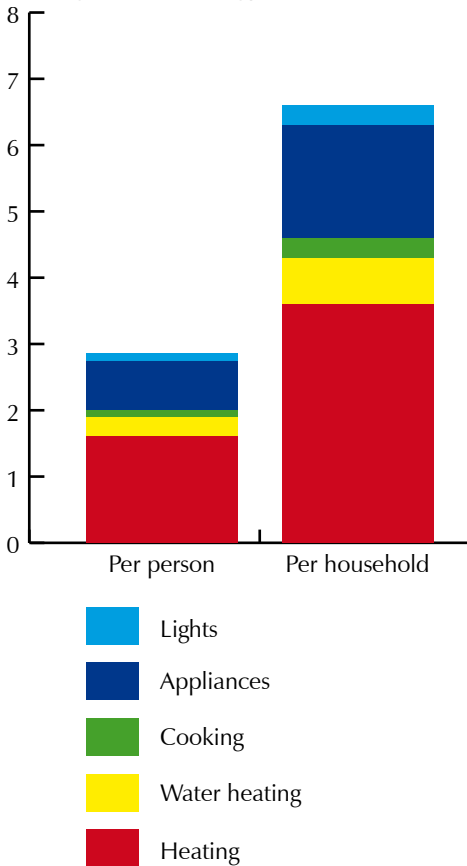
Home Energy

22% of average footprint

Easy Green Gains: 7% of average footprint

You can shift 1 tonne off your personal carbon footprint with home energy savings, or 'Easy Green Gains', which will benefit everyone else you live with and save you money.

Average home energy use



UK average home energy CO₂



Easy Green Gains

Easy Green Gains are the easiest weight to shift.

The average UK household creates around 6.6 tonnes of CO₂ from the gas, coal, oil and electricity that is used to power and heat the home. Heating causes the most, but household and garden appliances, lighting, cooking, washing and drying all contribute. This includes the 10% of UK homes which are heated with oil, electricity and coal and which have a much higher carbon weight. Your share of your home's CO₂ burden depends on how many people live there. Our savings are calculated for an average-sized three bedroom house. Larger homes, especially those with little insulation or very old heating systems could save far more. On average 2.3 people live together so the average personal share of this is 2.9 tonnes. Obviously no household has 2.3 people so it is better to work out your own share of your household's energy in Calculating your carbon footprint, p9. If there are more people in your household, then your share will be less. You may already be way below average levels, which is great – keep it up. If your tonnage is high, don't worry, cutting it

will be easier. Just like weight loss, the first pounds are the easiest to shift.

The home is a great place to start reducing your carbon footprint, because anything positive you do as an individual will affect the whole household.

Increased insulation will keep everyone warmer, energy efficiency will keep bills lower and the reduction in CO₂ will help to combat climate change.

It is possible to reduce house energy consumption drastically. Each of us can save a tonne of CO₂ from home heating, washing, lighting and appliances such as TVs. This is the average and obviously individual houses will vary.

Don't be cold

We all need to be comfortably warm to stay well. Make sure you are heating your home and not the street outside!

Start by stopping waste and then build up energy efficiency. Heat escapes from our homes through the roof, walls, floors, windows and ill-fitting doors. Insulation and draught proofing are simple and inexpensive. 40% of heat is lost through external walls so as fuel prices rise, even the more expensive measures such as solid wall insulation become more attractive with shorter pay back periods. 20% escapes through

windows and double glazing will reduce this to 10% or less but is relatively expensive. There are grants available in some areas and the Energy Saving Trust has the details. If you are over 60 or in fuel poverty a lot of help may be free.

In a super-insulated room with the sun shining and a computer on you might keep warm in winter without any other heat. Our own bodies help to heat our houses too.

Energy is wasted by things left on when not in use. We waste 7% of our electricity bills on standby alone. Turning off lights when you leave the room, using a timer to control your heating so you don't waste energy heating the house while you're out, and switching things off at the wall to save on standby will all save a surprising amount of energy.

Waste also arises from over heating or over cooling. You shouldn't go around in a T-shirt in winter any more than you would wear a jumper during a summer heat wave. 55°C is high enough for hot water, above that and it deposits lime scale in hard water areas. Thermostatic valves on radiators allow you to control the temperature in individual rooms. Dishwashers and washing machines work fine at lower temperatures, choose the lowest that works. Clothes wash well and last longer at 30°C.

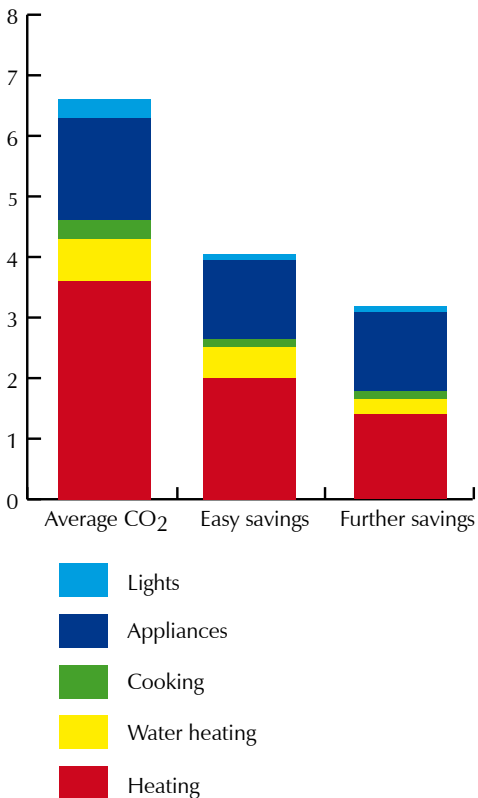
A kWh of electricity causes two and a half times as much CO₂ as a kWh of gas.

Efficiency is really straightforward. It's a matter of having the most energy efficient appliances you can and using them properly. When replacing appliances, look for water and energy efficiency. Fridges and freezers are especially important as these stay on all the time.

The bigger savings are made by larger insulation jobs such as wall insulation.

Going green means living life to the full. A full fridge uses less electricity and full loads in the dishwasher and washing machine save energy and water. Getting your teenagers to check that their clothes are actually dirty before dumping them in the wash also helps. If your boiler is over 15 years old then you should consider replacing it with a condensing boiler which could save 30% of your heating costs. Make sure it's the right size for your energy efficient house. Rising fuel prices will make the installation more attractive.

This shows where the average sized home can easily cut over two tonnes from its CO₂ emissions.



Where house heat comes from

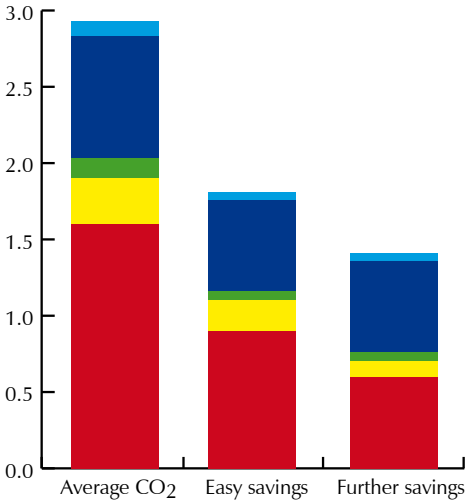
The boiler produces 64%, the rest comes from our bodies, the sun, lights, appliances, hot water, cooking.

How our heat escapes

loft	7%	draughts	15%
walls	40%	floor	8%
windows	20%	doors	5%
ventilation	5%		

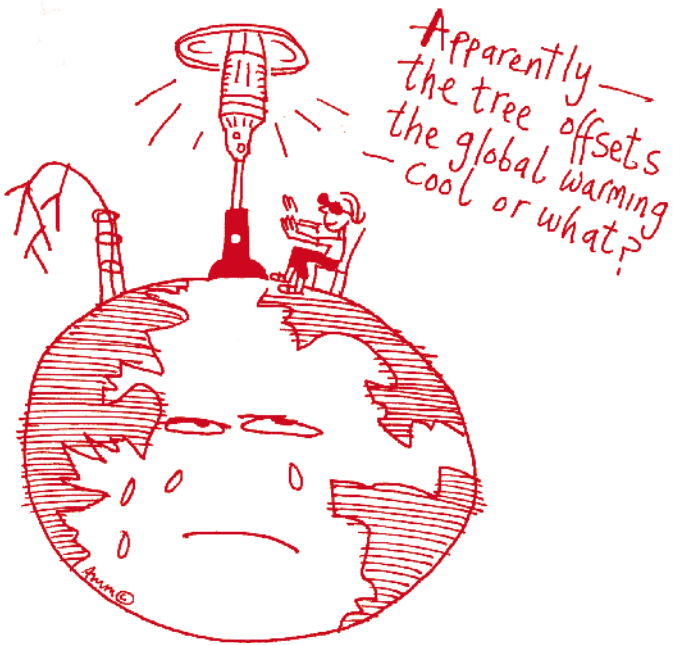
An individual in this house saves more than a tonne.

Cut your home energy bills by 40% with Easy Green Gains.



- Lights
- Appliances
- Cooking
- Water heating
- Heating

We've identified some ways to achieve Easy Green Gains and start working your way towards the three tonne target. Some of them may cost a bit, but they will soon pay their way in energy savings. You and your group will come up with many more things to do.



Easy Green Gains

The energy savings from insulation are bigger than you might think because the boiler only tops up the other sources of heat. A reduction in the requirement for heat makes a bigger reduction in fuel use. If the savings don't add up, it is because of the complex way house heat works.

Keep out the cold

**1.6 tonnes per household
or 24% of home energy CO₂
or 40% off the gas bill**



Better insulation saves 1.6 tonnes CO₂ per household or nearly 0.7 tonnes per person on average. Walls, roofs and floors are the order of priority for most houses. Insulation is relatively cheap and pays its way in saved heating costs. You could reduce your gas bill by 40%. As heating costs rise, the payback time gets quicker.

Warmer walls

**1.3 tonnes per household
or 20% home energy CO₂
or 30% off the gas bill**



Cavity wall insulation is the cheapest and most effective single action to take. Good cavity wall insulation could save 1.2 tonnes per household or half a tonne per person. A house that needs more heating, such as a big detached house, could save 2.2 tonnes. A smaller house, or one in a terrace that needs less heating, might save 0.7 tonnes. Grants are available, making it cheap or even free for some. If the walls are solid, look into insulation on the inside of the

house. It reduces the size of the rooms slightly but if done on a DIY basis pays for itself in two years and can be even more effective than cavity insulation. Outside insulation is more expensive but with savings of about £300 a year from your heating bill, still pays its way over six years. The Energy Saving Trust has details of grants.

Top up up top

**up to 0.8 tonnes per household
or 12% home energy CO₂
or 17% off the gas bill**



Your loft insulation should be nearly one foot thick. Grants are available and the saving will be about three quarters of a tonne of CO₂ per year. Most houses don't have enough insulation, even topping up your old stuff saves about 0.2 tonnes. Use recycled paper insulation or sheep's wool – these take the least energy to make and are sustainable products. For houses with attic rooms it's more tricky – ask for advice, and investigate insulating the sloping surfaces on the inside. Recent loft conversions should have adequate insulation.

Brushing up on draughts

**0.7 tonnes per household
or 10% home energy CO₂**



Draught proofing cuts 10% of heat loss, more in older houses. It's relatively straightforward, filling gaps beneath the skirting and between floorboards, fitting draught proof brushes around doors and windows, and you can do a lot of it yourself to cut costs.

Cut your losses

**0.9 tonnes per household
or 14% home energy CO₂**

Double glazing saves up to 70% of heat lost through windows, saving up to a tonne per house for the best kinds. Although it is costly for the saving you get, it helps prevent draughts and makes the temperature more even for a more comfortable environment. Even the best glass lets out more heat than a wall, and this is why heated conservatories are such a disaster. Turn off the heating and keep the doors shut from the main house.



Wrap up

**0.2 tonnes per household
or 3% home energy**

A hot water tank jacket will permanently reduce your heat loss. It might cost £20 but will save you that in the first six months and even more as heating costs rise. You save about 160kg (0.16t) of CO₂ with a new three inch thick jacket and another 60kg of CO₂ with pipe insulation.



Teen temperatures

**0.7 tonnes per household
or 10% home energy CO₂
or 15% off the gas bill**

Turn down your thermostat to 19°C and see if anyone notices the difference. Reducing room temperatures by just 1°C cuts 15% off your heating costs and nearly half a tonne of CO₂ for the average household or 0.22 tonnes per person. The saving on your heating bills will be welcome too. As you get warmer with better insulation, make sure you don't let temperatures creep up.



Out with the old – in with the low CO₂

**1 tonne per household
or 17% home energy CO₂
or 30% off the gas bill**

Old boilers waste a third of their energy. Replacing a gas boiler that's over 15 years old with a new condensing boiler saves up to 30% energy creating over 1 tonne less CO₂ per household or 0.45 tonnes per person.



Wood works

**2 tonnes per household
or 30% home energy CO₂**

Wood burning stoves and boilers are considered to be carbon neutral and many areas have a surplus of sustainable wood. A simple stove saves 2 tonnes CO₂ for the house or 0.9 tonnes per person by reducing the need to use the gas boiler. Stoves are expensive, around £3,000 installed, but will save money for anyone heating with oil, and grants are available for some types. The Energy Savings Trust and Low Carbon Buildings have details. A wood stove that heats radiators and water saves more but is also more expensive to install.



Take control

**0.4 tonnes per household
or 6% home energy CO₂
or 9% off the gas bill**

Make sure the heating is off when you are out or away. Central heating timers and thermostatic controls on individual radiators avoid wasting energy when the house, or individual rooms, are unoccupied. Thermostatic radiator



controls also enable you to choose the temperature for individual rooms, so that you can have a cool bedroom while your living room stays snug.

See the light

**0.2 tonnes per household
or 70% lighting costs**



Replace all your light bulbs with low energy, long life ones and switch them off when you're not in the room to save 0.2 tonnes CO₂ per household and 75% of your lighting costs. A variety of shapes and sizes and a dimmable version are now available. Prices are still falling and as these bulbs can last up to twelve years, you could save up to £60 per bulb.

Starve energy hungry appliances

**0.5 tonnes per household
or 8% home energy CO₂**



TV monitors, fridges and tumble dryers are energy hungry. Fridges and freezers are on 24 hours a day so opting for an energy efficient model is most important. A full fridge uses less electricity. Opting for a small TV, an efficient fridge and doing without a tumble dryer will cut 0.2 tonnes per person or nearly half a tonne of CO₂ per household.

Miss out the mains

Choose appliances that don't use mains electricity: wind-up/solar powered radios, mp3 players, torches and garden lights; manual razors and toothbrushes, whisks, graters and



carpet sweepers. For every weekly hour's vacuuming replaced with a broom or carpet sweeper you could save 0.03 tonnes CO₂ per year.

Keep the lid on!

0.15 tonnes per household



Covering the pan when cooking saves energy. Make sure the pan size suits the ring and boil only what you need. Pressure cookers halve the energy used for boiling. Gas cookers give out less CO₂ than electric ones because of the energy wasted at the power station.

It is better to use a microwave rather than an oven to re-heat food. Cooking helps heat the house so you reduce boiler use in winter.

Keep it quick

**0.25 tonnes per household
or 4% home energy**



Cut CO₂ by 0.1 tonnes per person with shorter showers and shared baths. Limit showers to five minutes. A fifteen minute shower could use as much water as a bath while power showers use even more.

Flick the switch

0.07 tonnes per teenager



Switch everything off at the wall to avoid wasting energy on standby. This makes small but regular savings that mount up. Teenagers' gadgets account for a quarter of a tonne of CO₂ each per year. Almost a third of this is wasted on standby.

Go for green electricity

**Up to 2 tonnes per household
or up to 95% electricity CO₂**



Sign up to a 100% renewable energy supplier to send a strong signal to government and industry that this is where investment should be made. Because of the complicated electricity market it's difficult to be precise about the CO₂ savings achieved. At the moment only 5% of the UK's electricity is provided from renewable sources so although all your electricity may be generated in this way, it is still important to minimise your use. It will be a long time before the UK becomes self sufficient in renewable energy and until then energy efficiency is still key. For impartial information about suppliers see www.greenelectricity.org.

House sharing

Your share of your home's CO₂ burden depends on how many people live there. If you no longer need a family house, consider moving, dividing it into flats, or taking in lodgers. If you do move, use the opportunity to make your new home more energy efficient.



Further green action

Once you have reduced your home's hunger for energy, look into solar hot water and electricity. Unless you are in a windy rural area, small wind turbines do not generate enough energy to be worth installing. There are other carbon saving options including ground and air source heat pumps, and efficient

wood burning stoves. Although these technologies have been around for a long time, the number installed in the UK is still small, so experience tends to be lacking. Look for reputable suppliers and investigate grants. The Centre for Alternative Technology (CAT) has a free information service and the Low Carbon Buildings Programme has a list of certified installers.

Solar hot water

**0.5 tonnes per household
or 8% home energy CO₂**



Solar hot water is cheaper than solar electricity. It can halve your hot water bills and cut household emissions by half a tonne a year even in the UK.

Heat pumps

Ground source and air source heat pumps work like fridges in reverse, taking heat from soil or air outside and warming pipes in the house. There are grants towards these, especially in areas without mains gas. Contact the Energy Saving Trust for details. However, they are only worthwhile in areas where gas is not an option. These pumps don't save a lot of emissions unless the house has been made very energy efficient, and they work best with underfloor heating.

Renewable electricity

Generating your own solar or wind electricity has a very long payback time at present. But an increasing number of people who can afford to are doing so to help develop the technology and the green economy.

Group activities

Home energy evening

Host a home energy evening. Invite someone from a local energy advice organisation to speak. Energy Saving Trust local centres or CAFE, Community Action for Energy, may be able to provide an advisor. Advice should cover draughtproofing, insulation, energy efficiency, lighting, heating and renewable energy.

Club together

Club together to buy a meter that monitors electricity use in your home. You can see how much is being used, the increase when a particular appliance is turned on, and notice if something is on when it shouldn't be. Pass the meter around the group and compare results. Prices range from £12 to over £100.

Challenge each other to come up with five top energy saving tips, share your ideas and try out new things using the meter to monitor the savings.

Sharing the load

Allocate topics for different group members to research, depending on their interests. It might be wall insulation solutions for the style of housing in your neighbourhood, the feasibility of installing solar power, or the best options for a new boiler – you choose! Sharing your findings will increase the knowledge base of the group and save each of you valuable time.

Home work

Whilst *you* may be keen to be energy efficient at home, you may find the biggest challenge is trying to motivate those you live with to do their bit too. Use your group meetings to share your tips for galvanising good behaviour and let off steam!

Support and advice

Centre for Alternative Technology
T 01654 705 989 www.cat.org.uk

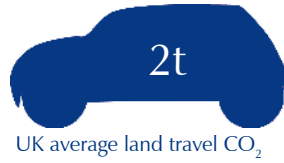
Energy Saving Trust have Local Energy Efficiency Advice Centres, offer a Home Energy Check which is a good starting point, and have details of energy efficiency grants available.
T 0800 512 012 www.est.org.uk
www.energysavingtrust.org.uk/cafe

Green Homes Concierge service provide an energy audit, tailored advice, help with finding products and installers and 12 months back up. Available in London and to be piloted nationally in 2008.
T 0800 089 0098
www.greenhomesconcierge.co.uk

Low Carbon Buildings
T 0800 915 0990
www.lowcarbonbuildings.org.uk

National Consumer Council has information on green tariffs for domestic customers.
T 020 7730 3469
www.ncc.org.uk

Land travel: car, bus & train

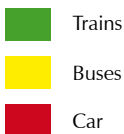
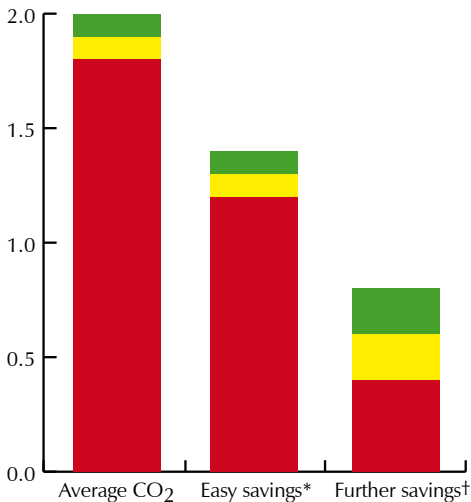


15% of average footprint

Easy Green Gains: 5% of average footprint

We all need to get around, to work and school, to visit friends and family, for shopping and leisure. Journeys made by car represent 13% of the average footprint. The most effective and cheapest way to cut emissions is to use the car less.

Average land travel and potential savings



* Medium to smaller car, the best low emissions car or a small manual diesel & 7,000 miles rather than 9,000.

† Using a car club instead of own car.

It's the daily routine journeys which cause the bulk of your land travel footprint.

The average person walks only four miles a week. This includes babies and some other people who do not walk at all, but it is still low, and has been falling since the mid-nineties. A quarter of the population never walks for twenty minutes at a time. Healthy recommendations are to have half an hour of moderate exercise five times a week, equivalent to walking a mile in 20 minutes about eight times a week. Even a smaller increase in walking such as half a mile a week would be enough to help stop putting on weight. Cycling for a similar amount of time instead would be of similar benefit.

CO₂ produced per mile by:

Car	0.43kg
Motorbike/scooter	0.2kg
Bus/train per passenger	0.1kg
Coaches could be even better over long distances.	

But we're not all sloths. Just over

half of primary school children walk to school, as do 41% of secondary school students despite the greater distance to school.

The average car spews out nearly 4 tonnes of CO₂ every year.

Statistically, just over two people share a car so that's 1.8 tonnes per person. If you don't have a car, your footprint is 1.8 tonnes lighter. Although we share ownership, we often drive alone.

With four sharing a car, it's just as good as using public transport.

The biggest savings can be made from regular journeys to work, school and shopping, not holidays. Cutting car mileage by cycling would save 1.58 tonnes a year for the average 8 mile return journey to work and is good for you in other ways too. Using public transport for the same journey could save 1.3 tonnes a year. Sharing the car with another commuter halves each person's share to 0.79 tonnes. Sharing with two brings it to 0.52 tonnes, a saving of 1.1 tonnes each, if you were all driving your own cars before. For detailed savings from commuting and school journeys see p32

30% of children are driven to school with an average journey of 2.5 miles, or a 5 mile round trip. But the car does the round trip twice a day, doubling the

environmental impact. By comparison, walking, cycling and travelling to school on public transport make even greater savings than a commute to work.

Driving a motorcycle is as good for CO₂ emissions as sharing a car between two. However, old bikes also emit a lot of polluting hydrocarbons.

In comparison to driving, travelling by public transport saves CO₂ in most cases. However bus and rail travel does cause emissions, and in the long term, carbon savings can be made by living closer to work or school, or working at home some days a week. In the shorter term, it is good to keep up the demand for public transport. If the bus is running anyway at low capacity, it is better to use it and encourage other people to do the same.

If CO₂ were suddenly rationed, we would not buy a new car because of the emissions of making one *and* we would drive much less. We would walk more, share journeys, reduce speed and try to keep the car going by careful driving. Rising oil prices are likely to push us in this direction in the next few years, and we can prepare by thinking in this way now.

Running a motorbike or scooter is half as damaging as the average car. So for solo journeys bikes are better. But if your car is always shared, there isn't much saving.

If you don't have a car and rely on public transport, your land travel footprint could be below 0.6 tonnes.

Year on year new cars are getting more efficient, but it's usually better to buy second hand because of the impact of manufacture. Running a smaller, more fuel-efficient car saves around 1 tonne per car per year or 0.45 tonnes per person. But even by just delaying buying a new car, or buying second hand, you avoid the 3 to 5 tonnes of CO₂ which comes from making a car. Think of the metal being extracted and melted, the plastic being made from oil and the factory machinery operating. It doesn't make sense to buy a slightly more efficient new car until the old one is beyond economic repair. If you don't keep your old car, someone else is likely to have it as a second car. A very efficient hybrid, electric car or small manual diesel will save enough to be

worthwhile buying new. This encourages manufacturers to make more low carbon cars, so is worth it if affordable. In London, low emission cars pay no congestion charge. If you keep a car going 15 years instead of the average ten, 0.1 tonnes of emissions will be saved each year.

Your land travel CO₂ should fall by nearly two thirds if you use taxis or a car club, as you consider and pay for each journey. This saves 1.2 tonnes per person or 2.6 tonnes if you are the sole car user. Car clubs are run by commercial companies in urban areas where parking is difficult. Local councils provide free parking spaces. You pay to join and get a key, and the nearest car should be only a few minutes away.

A full tank (45 litres) of petrol creates 142 kg CO₂ so every time you fill up, you will be sending out 0.14 tonnes of CO₂ into the world.



Easy Green Gains

Keep fit for a healthy planet

Walking or cycling two miles to work instead of driving saves 400 kg CO₂ per year.



Get your skates on

Walk, cycle, scoot or skate to school – anything it takes to get you off the road and onto the pavement. If you ditch the car to walk the average 1.5 miles to primary school you save 0.25 tonnes a year. Journeys to secondary schools are longer, averaging 3.4 miles so you stand (or cycle!) to save 0.57 tonnes CO₂ a year.



Don't run, walk!

Reduce the school run – use a walking bus. 20% of rush hour traffic is caused by the school run. Each walking bus has an adult 'driver' at the front and adult 'conductors' accompanying the children. The children walk to school along a set route picking up additional 'passengers' at specific 'bus-stops' along the way.



Be a smooth operator

Driving smoothly, anticipating when traffic will be speeding up or slowing down so as to reduce the use of accelerator and brake uses less fuel and causes less CO₂. With lower speeds of 55-60 mph, a car with two occupants saves 0.15 tonnes per person per year.



Join the club

Joining a car club instead of having your own car can save 2.6 tonnes per car, or 1.2 tonnes per person on average, out of a personal share of 1.8 tonnes. Do you really need to own a car? If you only use a car for occasional journeys, join a car club to save money and the environment.



Do your homework

Work from home once a week, fortnight or month to save up to 20% of CO₂ from travel to work.



Miles better

Every thousand mile reduction in car travel saves 0.43 tonnes of CO₂ – more for gas guzzlers!



Fill it up

If you can't use anything but the car, fill it up. The more people that share the car, the lower the personal CO₂ burden of each journey. So share the school run or journey to work. Four in a car and it's as good as public transport.



Small is beautiful

When choosing a new car, go for the smallest, most fuel efficient model possible. The tax banding provides information on emissions but www.whatgreencar.com combines this with information on the energy and resource use in manufacture for a more comprehensive assessment.

Keep the pressure up

A well maintained car is more fuel efficient. Ensure tyres are kept at optimum pressure and the engine serviced regularly to minimise emissions.

Fuel for thought

LPG is no longer an obvious choice due to the efficiency of diesel and petrol engines. Biofuels have not been proven to be beneficial and the increased demand for land causes food prices to rise and the destruction of rainforest. The production of ethanol from maize consumes substantially more energy than it produces. Due to health concerns related to particulates in diesel emissions, choose diesel only if most of your mileage is on roads out of built up areas. Investigate local suppliers of diesel fuel from waste oil, which is almost carbon neutral.

Group activities

Step out together

Get together for a walk and enjoy your area. Choose a pleasant route to go to the shops, explore little used paths and alleys. You might want to end up at a good pub or café where you can discuss how you each get out and about on a daily basis. If you are car dependent consider why – is it because of work, schools, shopping etc? Are there changes you can make that will make you less car dependent? Share tips and advice and investigate any opportunities for lift-sharing on those regular journeys that you need to make.

On your bike

Cycling is carbon neutral and keeps you fit. It can serve as a simple means of transport or a leisure activity in itself. Organise a group bike ride to remind those of you who have been out of the saddle for a while what good fun cycling can be. Sustrans can provide details of cycle routes in your area.

Alternatively, if there are inexperienced cyclists in your group, organise a cycle training workshop. A local cycling campaign may well be able to help you out. The Cycle Campaign Network has details of local campaigns.

Getting down to the nuts and bolts

Hold a bicycle maintenance workshop. Recruit an experienced enthusiast or bicycle mechanic from your local bicycle shop or further education college to run it for you. Otherwise share experience from within the group.

Clubbing

Contact Car Clubs and find out if there is a car club operating near you. Invite them to come and talk to your group about how it all works.

Public spirit

We've become so car dependent that many of us have forgotten how easy it is to get around by bus and train. Organise a group outing to a not so local event. Some venues give discounts to people who arrive by public transport so you can reap rewards on top of any group booking discounts you may get.

Support and advice

Campaign for Better Transport is a pretty good all-round site, including information on how to campaign for safer cycle and walking routes.

T 020 7613 0743

www.bettertransport.org.uk

The Cycling Campaign Network has details of local cycling campaigns.

www.cyclenetwork.org.uk

Cycling England work to make cycling enjoyable, safe and welcoming for all.

www.cyclingengland.co.uk

Cyclists' Touring Club (CTC) provides cycle training, maps, routes and advice.

T 0844 736 8450 www.ctc.org.uk

London Cycling Campaign run cycle training, produce maps and campaign for better cycling in London.

T 020 7234 9310 www.lcc.org.uk

The Ramblers Association is promoting walking for health in cities as well as countryside.

T 0207 339 8500 www.ramblers.org.uk

Sustrans is the charity behind the National Cycle Network and Safe Routes to Schools.

T 0845 113 0065 www.sustrans.org.uk

The Walking Bus movement aims to get children out of cars and onto the pavements.

T 01707 356269 www.walkingbus.co.uk

Car sharing/car clubs

Car Plus promotes responsible car use and has details of car sharing and car clubs in the UK.

T 0113 234 9299

www.carplus.org.uk

Streetparty has examples of different ways to car share. www.streetparty.org.uk

Energy efficient driving tips

Department for Transport

www.dft.gov.uk/Actonco2

Environmental Transport Association

T 0845 389 1010

www.eta.co.uk

Energy efficient new cars

What Green Car assesses the environmental impacts associated with a car's use and manufacture.

T 0117 929 8855

www.whatgreencar.com

These sites assess cars based on their fuel efficiency.

www.dft.gov.uk/Actonco2

www.vcacarfueldata.org.uk

Emissions

Multimap enables you to calculate the carbon emissions of any car journey.

www.multimap.com

Transport Direct provides travel routes and compares the emissions of cars with train and bus for the same distance.

www.transportdirect.info

Table 1

Travelling 16 miles (8 miles to work and back) by:	Emissions (kg) per person for 5 days a week, 46 weeks a year	Emissions in tonnes	Emissions (kg) saved annually by changing to lighter mode of transport one day per week	
			Cycle/walk	Bus/train
Walking/cycling	0	0	-	-
Bus/train	368	0.37	74	-
Motorcycle/scooter	736	0.74	147	73
Car 4 occupants	396	0.4	79*	-
Car 3 occupants	527	0.53	105*	31*
Car 2 occupants	791	0.79	158*	84*
Car single occupant	1,582	1.58	317	243

* Savings only happen if car doesn't travel at all, and occupants travel by other means.

Table 2

Travelling 5 miles (average 2.5 miles to school and back) by:	Emissions (kg) per person, 5 days a week, 39 weeks a year	Emissions in tonnes	Emissions (kg) saved annually by changing to a lighter mode of transport one day per week	
			Cycle/walk	Bus/train
Walking/cycling	0	0	-	-
Bus/train	97.5	0.1	20	-
Motorcycle/scooter	195	0.2	40	20
Car 4 occupants	210	0.21	42*	22*
Car 3 occupants	280	0.28	56*	36*
Car 2 occupants	420	0.42	84*	64*

* Savings only happen if car doesn't travel at all, and occupants travel by other means.

Table 3

Average personal CO₂ emissions (tonnes) from land travel per year

Type of travel	Average person	Moderate changes*	Use car club instead of having car.	Car use reduced by 4,000 miles	Medium car 3,000 miles, increased use of bus or train	No car, increased bus and train
Driving	1.8	1.2	0.4	0.7	0.6	No car
Bus	0.1	0.1	0.2	0.5	0.5	0.38
Train	0.1	0.1	0.2	0.1	0.1	0.2
Total	2.0	1.4	0.8	1.3	1.2	0.58

*Moderate changes: change from medium to smaller car, the very best low emissions car or a small manual diesel and drive 7,000 miles rather than 9,000.

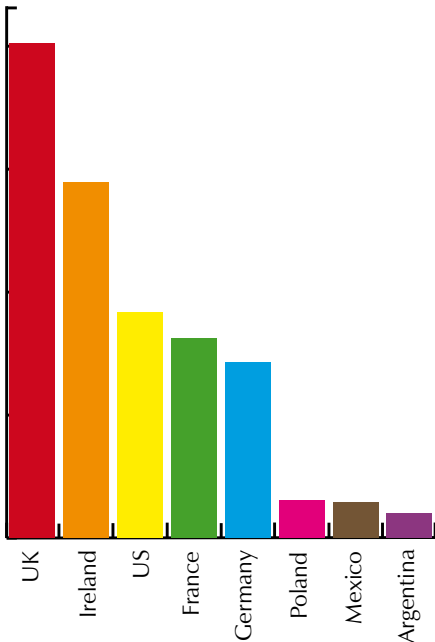
Flying

13% of average footprint

Easy Green Gains: 6.5% of average footprint

We think of the USA as the world's worst polluters, but along with Ireland and the Netherlands, Britain has the highest emissions per person in the world from flying, far higher than the US!

High flyers: UK flying emissions compared with other countries



Research suggests that Britons emit 40% more CO₂ from flying per person per year than the Irish, and twice as much as Americans.

For many people in the UK, the single most effective way of reducing your CO₂ burden is by avoiding or reducing air travel.

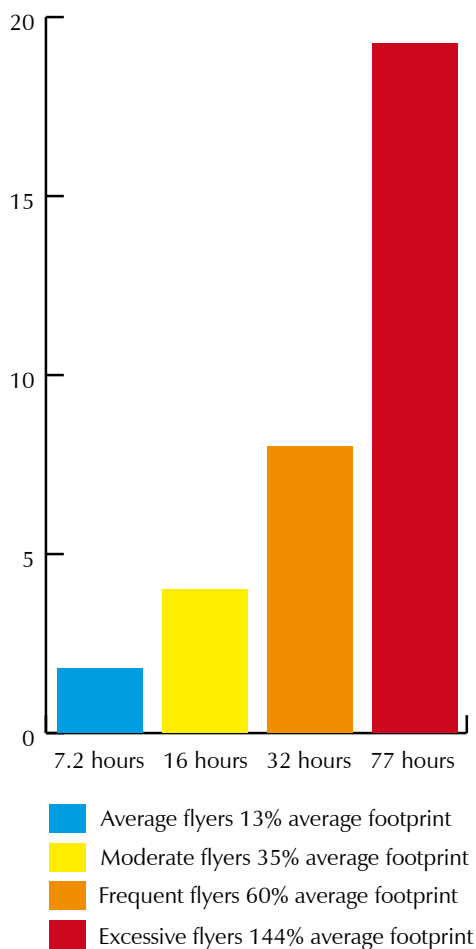
Aviation accounts for 13% of the country's entire climate impact and is growing.

Leaving business travel aside, on average we each cause 1.8 tonnes of CO₂ from flying every year. However this average is deceptive. A quarter of us never take to the air and if you fly even a moderate amount you'll be notching up 4 tonnes or 35% of the average person's footprint! At the top end of the scale, very frequent flyers cause over 19 tonnes or nearly one and a half times the average personal 13.4 tonne footprint!

1 hour's flight or 500 miles creates 0.25 tonnes CO₂

Iris shares a large house with two others. Her share of house energy is 3 tonnes. She flies to Denmark once a year and to Italy four times causing 4.75 tonnes CO₂. She travels 1,000 miles a year by train: the emissions from this are only 0.1 tonnes. Her overall footprint is 13.84 tonnes, just over average, but flying is 34% of this.

Impact of pleasure flights in tonnes CO₂ and % of average footprint



Cheap fares encourage affluent people to fly many times a year. 8 tonnes CO₂ from flying is typical for reasonably well-off individuals. One in five people cause more than half of all transport climate change gases from the UK, and most of these are men earning over £40,000 a year. For excessive leisure travellers, flying is responsible for nearly 60% of their typical personal footprint of 33 tonnes.

‘Offsetting’ has been developed to enable guilt ridden travellers to balance the amount of CO₂ produced by a flight. You buy into a scheme which claims to reduce the same amount of CO₂ in the atmosphere. There is as yet no effective accreditation system for offsetting schemes, which may be of dubious benefit. Put simply, offsetting is not going to prevent climate change. Only a change in our behaviour can do that.

Flying is targeted by environmentalists for three good reasons:

- the huge scale of flight emissions compared with home energy or car use;
- the rapid growth in air transport;
- the fact that the emissions are released high up in the atmosphere.

The 2 tonnes of CO₂ caused by a return flight for two from London to Rome is equivalent to the average year’s car use.

One return flight to South Africa emits 6 tonnes, the same as the average annual household energy use.

High up in the atmosphere harmful gases have twice the environmental impact that they would have at ground level.

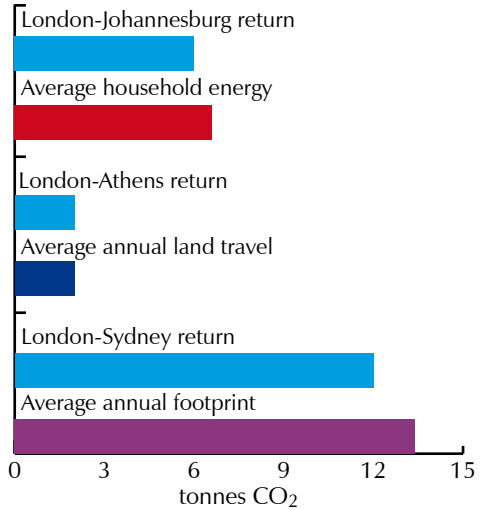
UK carbon emissions from flying doubled between 1992 and 2000 and with current growth rates, this pattern is set to continue. This single factor would make it impossible for the UK to meet existing CO₂ reduction targets by 2050.

Taking fewer flights is an especially powerful way to reduce your carbon footprint. See on p36 how dramatically the CO₂ burden is reduced when just one flight is replaced with a shared car or train journey it is plain how seriously we should consider our air travel habit.

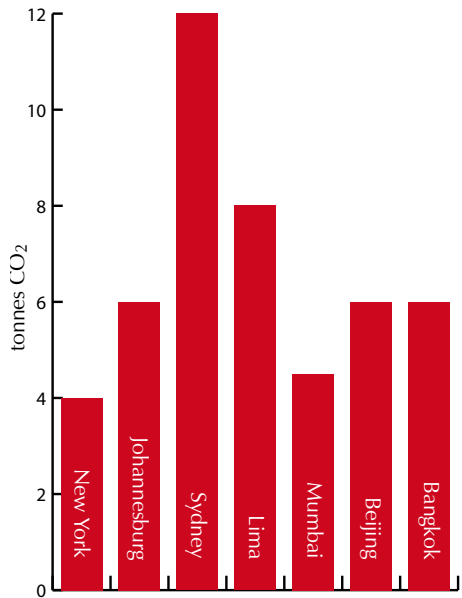
Here we have calculated flight emissions assuming that gases released in the air have double the impact of those on the ground. This is a conservative estimate and the picture could well be a lot worse.

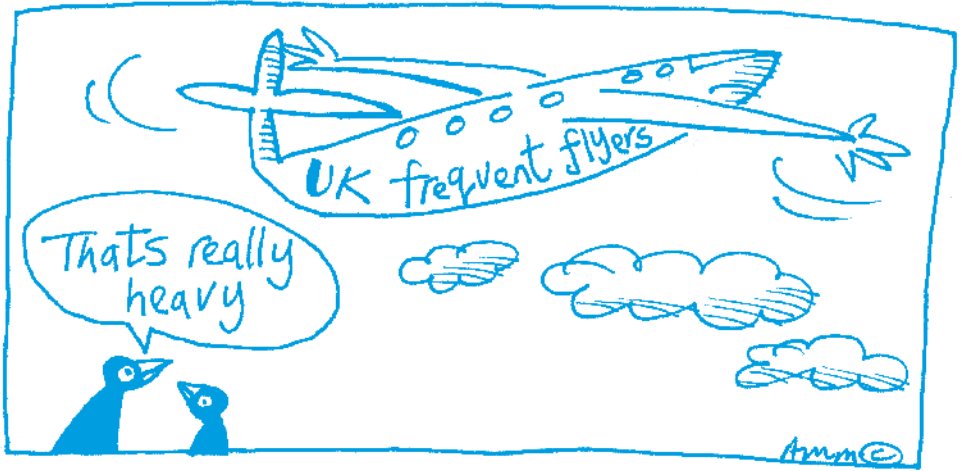
- London – Prague by train
1287 miles, saves 0.76t
- London – Barcelona by train
1424 miles, saves 0.84t
- London – Edinburgh by train
395 miles, saves 0.23t
- London – Dublin by coach/ferry
291 miles, saves 0.17t

Reducing flights is an easy way to cut your CO₂ footprint

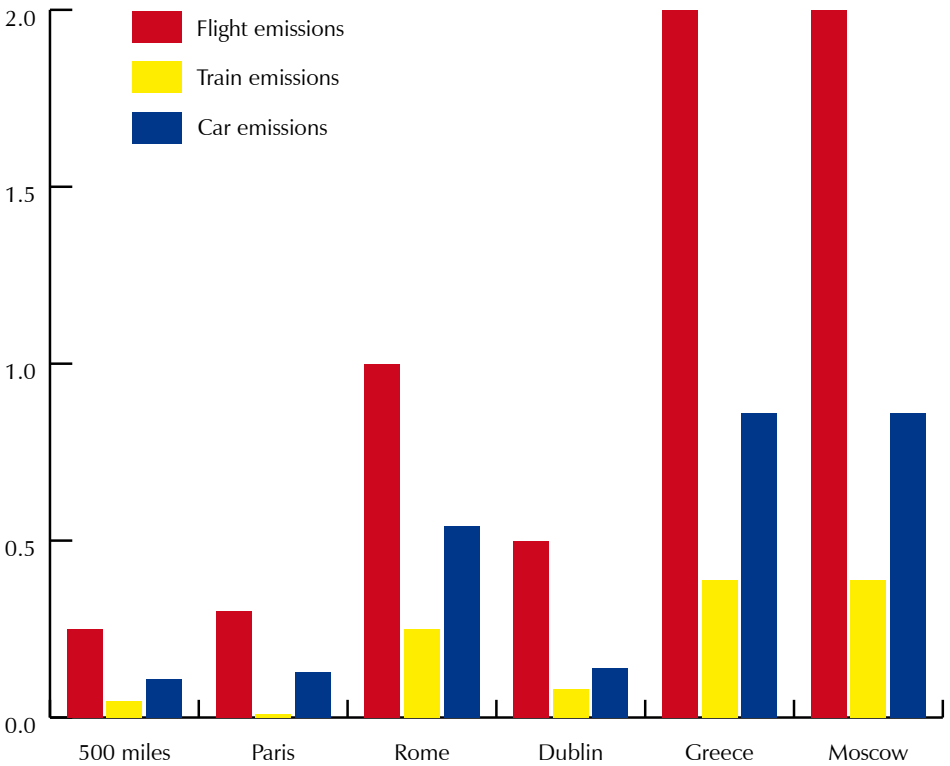


Cutting intercontinental trips is especially effective





Comparative emissions for different destinations



Easy Green Gains

Short cut

Cut out one short haul, 2 hour flight a year save 0.5 tonnes.



Cut out one return flight to US East coast save 4 tonnes.



Cut out one return flight to US West coast save 4.5 tonnes.



Take the train

Use the train for all UK and European short haul destinations. A return flight to Paris causes 0.3 tonnes CO₂ while the train causes just 11kg, but this is exceptional. As more fuel is used during takeoff and landing, in general the shorter the journey, the greater the saving. A London to Newquay flight has six times the impact of the rail journey.

Lower hotel bills

Taking the overnight sleeper to short haul destinations including Edinburgh could save the cost of a hotel bill.

Ferry good idea

Make the most of ferry crossings to European destinations and save on car hire costs at the other end. You can take the ferry to Belgium, the Channel Islands, Denmark, France, the Netherlands, Iceland, the Isle of Man, Ireland, Norway and Spain directly from UK ports. If you have a dog and it has had the necessary vaccinations, you can take it along too, saving on kennel fees.

Long distance cargo

For some people, cargo ships can offer an alternative to long-haul flights. Here the journey becomes a major part of the experience. You revert to an age old pace of travel where weeks are spent on board giving time to acclimatise as you travel from one part of the world to another.

Holiday close to home

Save 0.25 tonnes for every hour's flight saved. It is only a relatively recent trend that has seen us swarm abroad in such numbers for our holidays. There is plenty on offer here in the UK and it's worth finding out if you could have just as much fun closer to home. Toddlers don't really mind whether it's Fishguard or France for their bucket and spade specials, and sun is a hazard for young skin. Teenagers will have just as much fun surfing in Cornwall as in Spain. And Scotland's scenery is as spectacular as any you'll find on the continent.

Fleet decisions

Just as with cars, in general the newer the aeroplane the more fuel efficient it is. Choose airlines with a modern fleet which could be 12-40% more fuel efficient than older planes. Look for information on fuel per passenger for guidance. However, the growth in flights is far outstripping the increase in efficiency so we still need to cut down on flying.

Offsetting

For unavoidable flights, compensate the impact with offsetting. Avoid commercial offsetting organisations which are as yet unaccredited and which may have questionable benefit.

There are alternative suggestions as to how to go about offsetting unavoidable CO₂ in the chapter on Offsetting (p56).

Group activities

Inspirational holidays

Here's a chance to show everyone those holiday snaps. The UK has much to offer as a holiday destination. Hold an evening where group members present their holiday ideas. Share your enthusiasm – you may have people reminiscing about favourite childhood holidays or telling you how to book a break in a yurt!

The presentations may inspire you to take a completely different type of holiday. Never been fell walking, canoeing, cycling or horse-riding? Never camped or stayed in a B&B? Never gone on holiday without the car? Try something new that produces less carbon than your usual holiday. Have a get-together afterwards to share your experiences along with the photos.

Challenge and celebrate

Challenge yourself or each other to reduce your flying habits. Replace one, two or even three flights a year with alternative means of travel or a different destination. Celebrate your successes.

Support and advice

Overland travel options

Eurostar will provide information and bookings to Avignon, Brussels, Lille, Moutiers and Paris.

T 08705 186186 www.eurostar.com

The **Interrail** pass provides access to the European rail network.

www.interrailnet.com

Rail Europe has comprehensive details of European rail travel.

T 08448 484064

www.raileurope.co.uk

Seat 61 is an independent website with details of how to travel across Europe by rail and other means of land travel. It is full of practical advice including how to get the lowest fares.

www.seat61.com

Eurolines is a European coach network.

T 08717 818181 www.eurolines.co.uk

National Express is the UK coach network with some very low fare routes.

T 08717 818181

www.nationalexpress.com

Details of all the ferry crossings available from the UK are available here:

www.aferry.co.uk

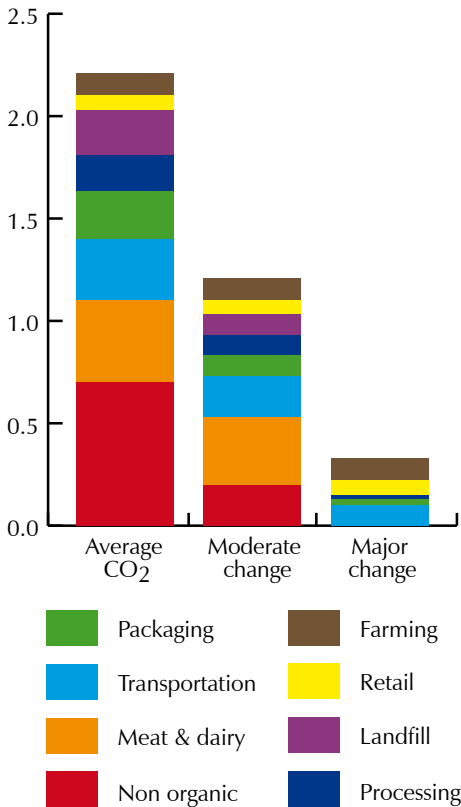
Food

16% of average footprint

Easy Green Gains: 7% of average footprint

Our food causes more CO₂ emissions than flying! As we in the UK are amongst the world's worst polluters from air travel, that's really saying something.

Average food and potential savings



UK average food CO₂



Easy Green Gains

The good news is that with moderate changes and a healthier diet you can cut this CO₂ in half.

Producing, transporting, retailing and wasting food creates an average 2.2 tonnes of CO₂ per person, more than the average 1.8 tonnes from flying. Food is responsible for 16% of the average person's CO₂ footprint.

When stuff rots in landfill it creates methane gas which is 21 times worse than CO₂.

One third of the food purchased in the UK ends up in the bin. When food rots in landfill it produces methane, a greenhouse gas over 20 times more potent than CO₂. Simply by cutting out unnecessary food waste and composting the rest you could save the equivalent of nearly half a tonne of CO₂ every year.

With home growing, organics and low packaging you can save even more, so all in all the potential easy CO₂ savings add up to over a tonne.

Synthetic fertilisers are responsible for nearly a third of the damage. Their manufacture uses fossil fuel, and when fertilisers are applied to the ground, they react with the soil to release

nitrous oxide (N_2O), a greenhouse gas 310 times more potent than CO_2 . Buying organic food which does not use synthetic fertilisers or pesticides cuts this out. Going completely organic saves 0.7 tonnes CO_2 . If 70% of what you eat is organic you save half a tonne. Although the organic market is growing rapidly, it is still makes up only about 2% of the UK average diet so there's huge potential for growth.

Households with children waste £600 worth of good food every year. A third of food bought in the UK is thrown away, and half of this is edible, out of date, or left to rot at the back of the fridge. The rest is peelings, bones and teabags. If you buy less and use up leftovers while they are still OK, you save all the emissions connected with the food. Halving the amount of good food thrown away saves 0.26 tonnes on average.

Halve your food waste and compost the rest to save 0.4 tonnes CO_2 .

Food waste makes methane. The major danger with any food thrown away is that it goes to landfill and is responsible for another potent greenhouse gas, methane, 21 times stronger than CO_2 . By composting food waste along with any biodegradable food packaging, you save 0.15 tonnes.

Packaging adds to the problem. Oil is used to manufacture and process packaging. Methane from biodegradable packaging rotting in landfill adds to the

impact. Together these make up 0.23 tonnes per person, over one-tenth of food emissions, all for stuff we cannot actually eat. Virtually all of this can be avoided by buying loose fruit and veg. and composting any paper packaging. Compostable plastic is problematic, you often have to remove adhesive labels, it is difficult to home compost and causes more problems in landfill than ordinary plastic.

Tolhurst Organic Produce near Reading sells their farm produce through a box scheme which supplies 400 customers in Oxford and Reading. The farm creates just 29 tonnes of CO_2 a year, making it 90% more efficient than non-organic produce bought from a supermarket.

Processed food, especially chilled ready meals, emits 0.18 tonnes CO_2 nearly as much as packaging, and of course, it is often heavily packaged. You would think that cooking in bulk would be more efficient, but apart from some bottled and canned items, this is not so. On average people eat at least one ready meal per week. So cut down on the ready made, save money and 0.1 tonnes CO_2 for every regular highly processed or ready meal you replace with home cooking every week.

Supermarkets use enormous amounts of energy: Tesco uses four times the energy per square metre of the average house and other supermarkets are similar. Shops and supermarkets are responsible for 4 million tonnes of CO_2

a year. Per person this is less than 0.1 tonnes but halving your use of big stores sends an important signal and supports more direct and local food suppliers.

Growing Communities is a social enterprise in Hackney that runs a box scheme, an urban market garden and a farmers' market. They source as much local produce as possible: salad bags are grown on Soil Association certified growing sites in Hackney, potatoes and apples come from small farms in Kent and Essex and oranges come from a cooperative in Italy. Last year over 80% of their vegetables came from the UK with only their Fair Trade organic bananas coming from outside Europe.

Transporting food creates 0.3 tonnes of emissions on average per person, not including your own trip to the shops. An eighth of food transport is air freight, and this is rapidly growing supporting the trend for the UK to produce less and less of its own food.

25% of all the heavy lorries on the road are carrying food.

Buying local takes some of the freight off the roads, reducing CO₂, congestion, air pollution, road traffic accidents and road building and contributes to make more efficient journeys for others.

On average, animal products like meat, sausages, milk, cheese, eggs and fish make up 31% of the food we eat at home.

A healthier diet, with the lower amounts of meat and dairy products that are universally prescribed, actually saves 0.15 tonnes CO₂.

Food	UK average	Healthy diet
Milk, cheese, etc	20%	15%
Meat/sausages	9%	2%
Eggs	1%	<1%
Fish	1%	<1%
Total animal foods	31%	19%

By following guidance to cut animal foods by about 40% for a healthy diet you can save 0.15 tonnes of CO₂. Going vegan saves 0.4 tonnes. Cattle and sheep emit methane because their stomachs ferment food. When animals are intensively farmed indoors, their manure is stored and rots producing methane. Huge areas of land are given over to the production of animal feed. It takes 8kg of grain to produce 1kg of beef or 4kg of chicken.

Look at our options for Easy Green Gains on the next page where some achievable and healthy improvements add up to save over a tonne!

Option one	Saving
Go mostly (70%) organic	0.5t
Eat less packaged and processed food (cut out one regular ready meal per week, cut 50% packaging)	0.2t
Reduce your amount of meat and dairy foods by 40%	0.15t
Buy half your food locally	0.1t
Waste less food – halve good food thrown away	0.17t
Combined saving	1.12t

Option two	Saving
Go 30% organic	0.2t
Reduce meat and dairy foods by 20%	0.07t
Compost half food waste	0.07t
Waste less food – halve good food thrown away	0.21t
Combined saving	0.55t

Option three	Saving
Go 20% organic	0.14t
Reduce meat and dairy foods by 10%	0.04t
Waste much less food – throw away 90% less	0.38t
Combined saving	0.56t

Option four	Saving
Reduce meat and dairy foods by 40%	0.15t
Waste less food – halve good food thrown away	0.25t
Combined saving	0.4t

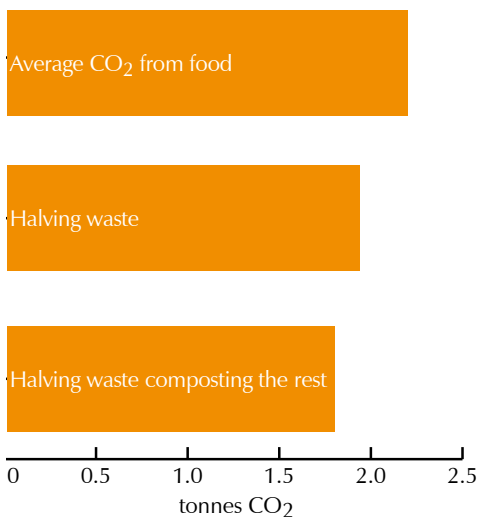
Savings from individual actions may be less than expected because if you have already prevented half a tonne due to synthetic fertilisers by going organic, the saving from wasting less is reduced from 0.26 to 0.17 tonnes.

If you don't waste very much food, say around 10%, you are already saving 0.47 tonnes and the emissions from your food waste will be smaller, so the saving you can make if you do compost it will also be smaller.

Option four costs nothing and doesn't depend on being able to compost.

Your basket not here? Try out different combinations to suit your situation on www.carbonindependent.org.

Managing waste can reduce food CO₂



Easy Green Gains

Shop clever

Buy what you need and use what you buy. One third of the food we buy gets thrown away! Half of this is (or was) good food. A lot of this is due to food going past its sell by date or just left to rot in the back of the fridge. 40% of the edible food is fresh fruit and vegetables. Each household spends £5-7 a week on food that is thrown away uneaten. This is up to £400 a year for the average household or over £600 if you have children. The more you spend, the more you waste. So shop clever to save waste, money and a hefty quarter of a tonne CO₂. You could save nearly half a tonne (0.47) if you waste very little except peelings and bones.



Feed your garden

Do your garden a favour, cut your food waste by half and compost the remainder to save 0.4 tonnes while you cook up some good food for your garden in your compost bin. Your local authority may provide compost bins at discount rates.



Go organic

Eat mostly (70%) organic food to save half a tonne, at 50% you'll save 0.35 tonnes, and at 30% 0.2 tonnes.



Fresh is best

Processed foods carry an increased carbon burden.



Using fresh, unprocessed food saves more than one-fifth of the total emissions from food.

Love local

Buy local food. Check out your local greengrocer or box delivery scheme. Box schemes which deliver a weekly supply of fruit and vegetables vary greatly. Some grow all their own produce and deliver locally. Others buy produce from a wholesaler, much of which could be imported, and deliver over a wide area not very efficiently. Some give assurances that no airfreight is involved. Start with the most local sources, farmer's markets, farm and local shops that identify produce from the local area. Next look for UK and nearby European countries of origin. If you're living in southern England then France and Belgium may be closer than Scotland. Citrus is available from southern Europe. When buying foods from far flung places, make sure they are fair trade. Save 0.1 tonnes if you source 50% locally in a 50 mile radius or a 100 mile radius of a large city.



Grow your own

If you have space, even a window sill, growing your own gives you the freshest most local food possible! Fresh salads save on expensive packs. Get started with Food Up Front or similar support.



If you grow all your own fruit and vegetables organically, eat a healthy diet, compost all food waste and waste less than average, you save 1.5 tonnes.

If you are vegan, grow all your own vegetables and compost as above you save 1.9 tonnes.

Loose living

Avoid packaged food and save a fifth of a tonne. Buy loose fruit and veg. Meat bought from a butcher's counter has less packaging than from the supermarket shelves. Look for returnable and reusable packaging. Avoid over-packaged goods, if enough of us do, the manufacturers will eventually get the message.



Seasonal selection

Choose seasonal produce to avoid the carbon burden of airfreight, heated greenhouses and other unnecessary food emissions. Using local seasonal food saves up to 0.2 tonnes. As a general guide, try to avoid food from beyond Europe.



Meat gets the cut

On average 31% of what we eat is animal based – the equivalent of a chicken breast and lamb chop every day. For some serious meat eaters it could be as high as 50%. By reducing the amount of meat and dairy foods in your diet by 40% you can save 0.15 tonnes and do yourself a favour. Avoiding meat reduces the risk of heart disease and cancer. According to the World Cancer Research Fund you should eat less than 500g (18oz) of red meat per week. Obesity is mainly caused by eating too much low cost energy-dense food and being physically inactive.



'Heavy' meals out

25% of meals are eaten away from home, and these cause more emissions. Eating half of your meals in canteens and restaurants adds 0.1 tonnes to emissions. Don't deny yourself the odd meal out, but consider taking a packed lunch to work or school. You'll save a surprising amount of money too.



Freeze out frozen food

Avoid buying chilled or frozen food that is stored in an energy-guzzling open shop refrigerator. Unlike the supermarkets, you don't keep your fridge open all day. Bear in mind that the fuller your fridge is the less energy it uses. And when you need a new fridge/freezer, get the most energy efficient possible.

Far flung food

Some foods can't be grown in the UK. Try to source them within Europe and avoid all air freighted food. For food grown in developing countries look for the Fairtrade mark which indicates farmers are getting a fair price for their crops.

Are you a 'heavy' drinker?

Enjoy wine from Europe. It doesn't need to be shipped half way around the world to taste great. For an even 'lighter' drink, buy organic where possible. And there's a huge choice of British beer and cider to choose from, more local and even 'lighter' than wine.

Group activities

Party time

Hold an organic wine and beer tasting event. Invite members to bring along a bottle of English or European organic wine, beer or cider. This is an evening which is bound to go with a swing

Cookery club

Some of you will be keen cooks while others prefer to savour the results. Gather together for an evening of local, seasonal or vegetarian food. Some members may have great ideas for using up those leftovers. If you're lacking ideas see www.lovefoodhatewaste.com or www.vegsoc.org.

You could compile a simple book of your group's favourite low-carbon recipes.

Grow your own

Look into local growing opportunities – whether it's a window box, your garden, someone else's (with permission of course!), an allotment or other growing site – many hands make light work and more fun, so recruit friends and make new ones as you grow your own.

WEN's local food project can offer support and advice in setting up a growing group, and members of WEN's Taste of a Better Future (ToBF) network are listed online, so you can search to see if there's a group near you www.wen.org.uk/local_food/directory/index.php. By joining WEN and the ToBF network you can receive further help such as fundraising advice and help with

setting up exchange visits with other groups.

Save money by sowing from seed and swap surplus seedlings at a spring-time meeting. Plan who's going to sow what so that you don't all end up with runner beans!

In the autumn hold a WEN Culture Kitchen event, cooking up your harvest and holding workshops.

Community composting

Where local authorities do not collect compostable waste you might consider setting up a community composting scheme. The Community Composting Network will set you on the right track.

If you personally have spare composting capacity you may be able to provide a non-composting neighbour with a kitchen caddy to collect their peelings for your own bin or heap – it's all good for the garden and the planet.

Local food buying

Find the best local box scheme and tell as many people as possible about it. You may be able to act as a delivery point for a box scheme.

Support small shops and ask them to supply genuinely local produce. If you have a local gem, you may want to publicise it in the local press.

Set up a food co-op, buying in bulk to make healthy food more affordable and devoid of excess packaging: see www.sharedenergy.org.uk/Activities for a guide.

Support and advice

Sustainable food

Sustain, the alliance for better food and farming aims to enhance the health and welfare of people, animals and the environment.

T 020 7837 1228

www.sustainweb.org

The **Soil Association** promotes organic farming and food.

T 0117 314 5000

www.soilassociation.org

Food Up Front promotes growing food in London front gardens.

T 0772 656 0703

www.foodupfront.org

Finding local food suppliers

The **Soil Association's** online directory of organic suppliers is at:

www.whyorganic.org

Big Barn has details of local food suppliers including green box schemes.

T 01234 871005 www.bigbarn.co.uk

Two other online directories are

www.localfoodshop.com and

www.littlelocalfood.com

Community change

Transition Town groups are making practical local plans for a low carbon future, including food, health, energy and much more. Each one has a group concerned with food. There may be one in your area.

www.transitiontowns.org

Reducing meat and dairy

Compassion in World Farming

campaigns to improve the lives of farmed animals. They have recipes and a challenge to reduce animal based foods in your diet.

T 01483 521950

www.ciwf.org.uk

The Vegetarian Society has lots of recipes.

T 0161 925 2000

www.vegsoc.org

The Vegan Society promotes ways of living free from animal products.

T 0121 523 1730

www.vegansociety.com

Reducing food waste

WRAP runs the campaign to reduce food waste and has quick recipes to use up leftovers.

T 0808 1002040

www.lovefoodhatewaste.com

Recycle Now provides advice on home composting and details of councils offering discounted compost bins and kitchen caddies.

T 0845 600 0323

www.recyclenow.com

The **Community Composting Network** promotes and supports community management of biodegradable resources.

T 0114 2580483

www.communitycompost.org

Tricky tonnage

34% of average footprint

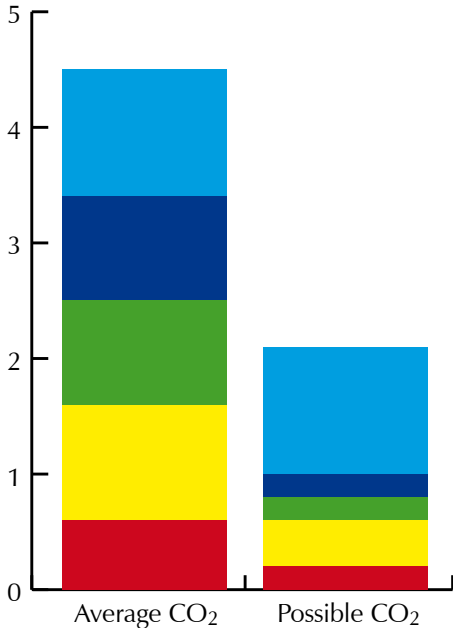
Easy Green Gains: 7.5% of average footprint



Easy Green Gains

UK average tricky tonnage CO₂

Average tricky tonnage and potential savings



- Government services
- Other goods & services
- Leisure activities
- Home improvements/furnishings
- Clothing & footwear

Home energy, land travel, flying and food account for two thirds of our personal CO₂ footprint. The rest comes from the other products and services we use. This is the tricky tonnage which is more difficult to measure:

National and local government services including health, education, the armed forces and waste disposal	1.1t
Other goods and services like water supply, newspapers and television	0.9t
Leisure activities and entertainment	0.9t
Home improvements and furnishings	1t
Clothing and footwear	0.6t

It is predicted that consumer spending in the UK will only grow by 1% in 2008, down from 3% in 2007. The health of our economy is dependent on growth, yet finite resources cannot support continual growth. There are limits to what the world can sustain and it is an insistence on growth that has got us into this environmental mess.

Building a house creates about 50 tonnes CO₂, major alterations 20 tonnes and a small extension 10 tonnes.

Manufacturing even a small new car causes 3 tonnes of CO₂.

Every penny spent has an impact on the environment. Sometimes it's beneficial: planting trees; clearing a river or subsidising land to lie fallow. More often it is harmful. Everything we consume uses energy and resources and often ends up as waste that has to be dealt with. Those of us with a high disposable income will inevitably have a bigger environmental footprint than low earners. But we can all do something about it.

The best is to simply buy less new stuff. Buying things when we need them, rather than on a whim, greatly reduces our spending and our footprint. Add another colour into the mix when shopping. If it's a tough decision between the blue or the purple T-shirt, go for the 'green' one, selecting organic or fair trade. Try to buy energy efficient, durable, well made and repairable items, looking for information on how they are produced. If green shopping seems to push the price up, investigate local furniture and equipment reuse schemes, charity shops and Freecycle which links you up with local donations. Shun hardwood. If it takes hundreds of years to grow, how can it be sustainably harvested to feed our desire for garden furniture? Even selective extraction of trees has a devastating effect on ancient rainforest ecosystems. Softwood items should be FSC (Forestry Service Commission) accredited and/or locally grown.

Avoid the worst most wasteful products, single use disposables or poor quality items with a short life expectancy and compensate for what you cannot avoid by offsetting (see p56).

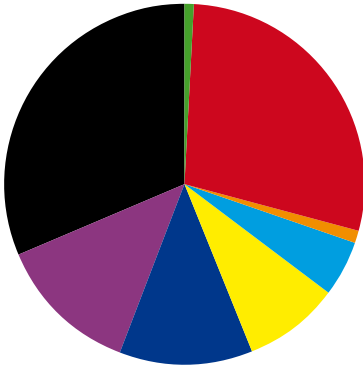
Supplying water to our homes creates about 80kg CO₂ per person per year.

Consumer choice does make a difference and pushes industry to improve their products and services. They do listen. We are already seeing advertising beginning to address carbon concerns.

Cement is energy intensive. One tonne of cement gives off 1 tonne of CO₂.

The other side of consumption is waste. If we are buying more than we need, we are creating unnecessary waste, and that is obvious in the British waste mountain. We are throwing away so much that landfill space is running out. The alternative is incineration with its associated toxic emissions including greenhouse gases. But even more importantly we are throwing away our natural resources. Building materials use fossil fuels when they are mined, made and transported. Then cause more emissions when they are taken away as rubbish!

UK annual waste arising

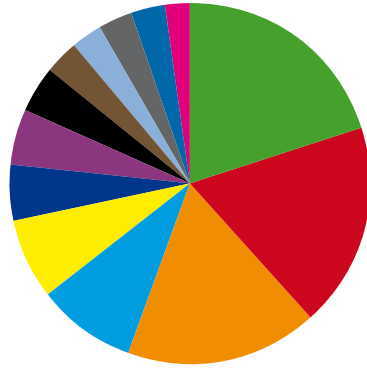


- Agriculture
- Mining & quarrying
- Sewage & sludge
- Dredged materials
- Household
- Commercial
- Industrial
- Construction & demolition

Source: Defra, ODPM, Environment Agency, Water UK

The chart of household waste shows how much potential we are throwing away. Organic matter is a great resource and 37% of our household waste is organic kitchen or garden waste. This can be used to make compost, useful for our gardens and taking the pressure off the peat bogs. Glass, metal, paper and card and some plastic and textiles can be recycled saving energy and resources. Aluminium can recycling is particularly efficient, saving 95% of CO₂.

UK household waste composition



- Garden waste
- Paper & board
- Kitchen waste
- Household sweepings
- Glass
- Wood/furniture
- Scrap metal/white goods
- Dense plastic
- Soil
- Plastic film
- Textiles
- Metal cans/foil
- Disposable nappies

Source: WRAP

Kitchen and garden waste should never go to landfill. When they rot in landfill they give off methane, 21 times nastier than CO₂.

On average we use 120 drink cans each a year – creating 20kg of CO₂. Aluminium recycling reduces this to only 1kg.

If we reduce consumption we reduce waste, but we can also reduce waste and CO₂ by buying less wasteful things. Wooden items, especially if local and sustainable, have a much lower footprint than plastic or metal. And used furniture still goes to landfill, so buying second hand or antique furniture is a great way to reduce your CO₂ footprint.

About a fifth of household waste is made up of paper. If paper rots in landfill, it emits methane as well as CO₂. Avoid disposable paper items and compost any paper you cannot recycle.

Choose reusable items instead of disposables. Reusable carrier bags and lunch boxes help cut down on plastic film. Disposable nappies are such a big problem they have their own waste category. Real nappies are easy to use and save as much as £500 per baby. Clothing is often so cheap these days that people are increasingly viewing tops and t-shirts, skirts and shoes as virtually disposable, bought to wear once and then discarded. Much is low quality and won't last anyway. Whether it's a shopping bag, nappy or a pair of shoes,

buying decent quality durable things saves energy, resources and waste, not to mention all that time spent shopping.

Use 24 washable nappies rather than 5,000 disposables per baby saving a quarter of the emissions and a mountain of waste.

Look for organic and fair trade labels when buying new clothes. Organic cotton avoids the nitrous oxide from fertiliser, enables farmers to grow food between the rows and protects workers from pesticides. Synthetic fabrics are made from oil and have a high footprint. If better options are too expensive, buy from outlets or second hand shops or alter and mend. The Transition Town movement is starting to teach these skills to a new generation.

The Transition Town movement is built on the idea of moving from oil dependency to local resilience, addressing the twin concerns of peak oil and climate change. They're building a range of materials, training courses, events, tools & techniques and resources to help communities follow the 'Transition model'.

We can't easily have an effect on the emissions caused by government activity, so Offsetting, p56 has ideas as to how we can compensate for our share.

Tiger Enterprises in Sussex collects building waste from companies and homes for free, and sells reusable items such as tiles, bricks, slabs and sinks at reasonable prices, often helping homeowners match old types.

Buy recycled paper. A ream of virgin copier paper has caused 3kg of CO₂ before it got to you, and will create more if it ends up in landfill.



Easy Green Gains

Hey, low spender!

You've certainly got the edge when it comes to CO₂ footprints. By spending very little at all on new consumer items you can take 2 tonnes off the normal 3.4 tonnes for products and services. That's 60% below average. If you are on a small pension or other benefits, and cannot afford to go out or on holiday much, then you can probably count yourself as below average or very much below with a footprint of just 1.4 tonnes.

You may have not had much choice, but the skills you have developed while managing on a low income are what others will need to learn as oil prices rise.



Everything in moderation

Save a tonne a year by only buying new things when needed rather than on a whim. Save one and a half tonnes if you spend a lot less than the average £5,500. The same saving if you cut from high spending to average. Most people don't know what they spend on consumer goods. If you are above average, it may be that you have two homes, visit the gym and health clubs a lot, and dine out twice a week in expensive restaurants.



Don't buy, swap

Passing on clothes, furniture, books, CDs, toys, bicycles, sports and baby equipment saves money, resources and energy in



manufacturing new things. If you can't scrounge what you need or find a home for unwanted stuff amongst your friends, Freecycle is an online local network to do just that.

Car booty

One skip full of reused items saves approximately 1 tonne CO₂. Buy second hand, refurbished and reconditioned items. Although car boot sales are crammed with bargain hunters, second hand doesn't always save you money in architectural salvage yards and antique shops.



It's hard to quantify small actions, but they all add up.

Small is beautiful

When choosing new white goods keep them as small as possible for your household: a large fridge might be A+ rated but it contains more metal and plastic than a smaller A+ rated one, as well as using more electricity.

Quality climate control

Quality of workmanship can make a big difference in how long something lasts. Go for long life, durable and high quality products where possible to save the energy and resources used to manufacture multiple short-lived things.

Reap the rewards of repair

The high cost of labour means that we leap to replace before considering repair. However, it's worth bearing in mind the durability, availability of

parts and length of the guarantee when buying things so as to prioritise repair.

Flowers from the ground, not the air

Cut flowers are often flown in from distant lands so grow your own. All you need is a window box, and flowers like sweet peas thrive on frequent pickings. Some farmers' markets sell local and organic flowers and plants in season.

Buy recycled

A single recycled aluminium can saves enough energy to run a television set for three hours! The energy saving from recycling one glass bottle would run a computer for 20 minutes. Recycling just one plastic bottle saves enough energy to power a 60W light bulb for six hours. But you have to buy recycled to provide a market for all these recycled materials.

Skip the waste

Instead of just chucking building waste in a skip, there are wood recycling schemes and companies which help you recycle and sell off anything that can be reused. They are also an excellent source of second hand materials.

Building for the future

Sustainable building materials reduce the environmental impact of house building, extension or refurbishment. Locally grown wood, UK stone, re-used bricks, less energy-intensive cement, etc. all contribute to lowering the CO₂ emissions. Wood can be nearly carbon neutral whereas a tonne of cement gives off a tonne of CO₂.

The metal and plastic purge

When buying new things, avoid anything which is a big lump of metal or plastic as they will be high on CO₂. Computers, games machines and household tools come into this. Question the sheer weight of it and try to buy second hand, refurbished or get things free via Freecycle. Consider sharing garden tools with a neighbour or setting up a community tool shed.

Water waste

Cutting down on water use in the home saves water and the energy used to process and deliver it. Install a water butt. Fit a trigger nozzle to your hose to save up to 1,000 litres of water per hour. Avoid watering the garden by leaving your lawn longer, planting drought resistant plants and mulching. Five-minute showers use a third of the water of a bath. Watch out for power showers though which can use even more than a bath. Fix dripping taps and avoid running water when washing teeth, vegetables or doing the washing up.

Baby footprints

The sheer weight of all the new items bought when a baby arrives will give you an idea of the environmental impact. Cut it down. Choose a relatively light pushchair and use a backpack or sling. Accept anything your friends and family offer to pass on to you. Buy second hand clothes and equipment and just a few beautiful fair trade organic items. Hand them all on later via parents' networks and Freecycle.

Group activities

Film night

Visit www.storyofstuff.com to see the online film *The Story of Stuff* which in twenty engaging minutes really puts our consumer culture into perspective. The excellent, clear presentation makes it suitable for all ages.

Swap 'til you drop

If shopping is out, then swapping is in because, let's face it, we all like a change from time to time.

- Clothes swap parties – 'swishing' – can be a great source of fun and frocks – accommodating all shapes, sizes, ages and sexes.
- Has your taste in music changed? Or have you gone electronic and got a pile of unused cds? Mix it up with your mates and try something new without having to spend a penny.
- Novel idea? If your shelves are full of great books you're not going to read again why not arrange a book swap with your group? It's free, like the library – but there are no fines for overdue books and you can make as much noise as you like.
- Kids stuff generally gets out-grown before it's worn out. Many people pass things to friends or charity shops – but if you arrange a swap party for people with kids of all ages, you (or the kids) could get something back too!

It works best if people only bring things in good condition. Anything left over can be taken to the charity shop.

Make it up

Arrange some crafty sessions and experiment with making things out of reclaimed or recycled materials. You could try making: paper and card; festive decorations; new stuff out of old using for example patchwork or decoupage.

Freecycle is a local online network which helps you to find homes for unwanted stuff and find things for free in your locality.

Support and advice

Second hand

Find your local **Freecycle** group on www.freecycle.org.uk. There are other equivalents – try local authority information.

Sustainable building

For help in overall design and choosing better materials see *The Whole House Book* by Cindy Harris and Pat Borer, CAT Publications 2nd Edition 2005.

For a pocket A-Z guide to reducing your home's carbon footprint see *Green Up!* by Will Anderson; Green Books 2007.

Green Spec promotes sustainable construction including designing for lean construction with minimum waste and energy use and provides information on materials and technologies.

www.greenspec.co.uk

The **National Community Wood Recycling Project** provides details of wood reuse schemes throughout the UK.
www.communitywoodrecycling.org.uk

Tiger Enterprises
www.reuseitdontloseit.co.uk

Sustainable shopping

Ethical Consumer publishes independent research on the social and environmental records of companies.

T 0161 226 2929

www.ethicalconsumer.org

Permaculture is about creating sustainable human habitats by following nature's patterns.

T 0845 458 1805

www.permaculture.org.uk

Offsetting

Government services 8% of average footprint

Easy Offsets: 7% of average footprint

Sometimes it is just not possible to take the low carbon option. There may not be a better alternative to something you need, or you may not be able to afford it. We're pretty much lumbered with the CO₂ tonnage from education, the NHS and other government and local authority services. So, rather than be burdened with guilt there is action you can take – offsetting.

Offsetting is a bit of a dirty word amongst members of the green movement. Many organisations have been set up offering a range of projects which you can buy into ostensibly to plant trees, protect rainforest or take some other action to counteract the carbon we're creating. With no effective overall accreditation system in place, it is impossible for you to know whether you are being conned or actually doing some good.

Until a comprehensive accreditation system is established, a better way to offset your carbon guilt is by doing something yourself. If you're short of time, you could invest in renewable energy where a £300-600 investment in a wind farm will offset 1 tonne CO₂. Some banks and building societies provide schemes for investment in renewable energy.



UK average government services



Potential offsets

However, influencing an organisation to reduce its CO₂ tonnage, even by a little, can easily compensate for some of your own excesses and is much cheaper. You can work with a community centre, school, place of worship or your workplace, a restaurant, club or sports venue.

St Aldhelm's church, North London installed solar panels in 2005 and is saving 8 tonnes of CO₂ per year.

Manufacturing industries, shops, offices and freight are responsible for around 25% of our carbon footprint in the UK. Manufacturing industry has a high CO₂ output but the emissions of offices are actually surprisingly high too.

Research suggests that office-based companies have CO₂ emissions of well over 2 tonnes per employee. Shops are worse.

Some businesses, such as banks, create over 3 tonnes of CO₂ per employee and media companies can exceed 5 tonnes!

With your influence they can make easy savings which will offset your share of government activity and the things you find difficult to cut down.

There are lots of organisations to help you do this. Envirowise helps small and medium sized companies to improve their environmental performance. The Carbon Trust helps businesses and organisations measure their carbon footprint and offers interest-free loans for reduction by replacing or upgrading equipment. For example, an organisation with a fuel bill of £10,000 a year in the health sector could have a footprint of 87 tonnes CO₂. A substantial cut in this would be a major step, and greatly outweigh your personal excesses.

Ecocongregation provides a framework with an award scheme to help churches and their congregations towards improved environmental performance. The Islamic Foundation for Ecology and Environmental Sciences is an international authority on Islam and the environment while the Big Green Jewish website has a humorous approach to encouraging green action.

If you have a choice, you could look for an employer with a lower footprint, or consider working from home at least some of the time.

Easy Green Gains

Getting down to work

Persuading a small company (50 employees at 2 tonnes per employee) to reduce its energy use by 10%. will save 10 tonnes. A larger



company (500 employees at 3 tonnes per employee) could easily save 100 tonnes with small measures.

Money matters

Investing £300-600 in a wind energy generation enterprise could save 1 tonne.



Greening the community

Helping a church or community centre to reduce energy use can bring powerful savings. In one example a church was emitting 2 tonnes from standby alone.



More homework

Work from home and save 0.8 tonnes.



Here are some ideas to make an organisation more energy-efficient:

- Appoint an energy or environment champion responsible for ensuring that energy savings are made.
- Work with staff to make sure lights that aren't in use are turned off.
- Place stickers close to main light switches and doors to remind everybody to turn off lights when leaving a room – 20% of all electricity generated in the UK is used for lighting.
- Encourage staff to turn equipment off overnight and at the weekend. Use computer pop ups as reminders.
- Produce posters to make sure everybody gets into the habit.
- Turn down thermostats by 1°C to reduce heating bills by 10-15%.

- Set heating thermostats to 19°C.
- Fans and ventilation should be prioritised over air conditioning. Set air conditioning to 25°C.
- Replace a boiler over 15 years old with a new condensing boiler for a 30% saving on fuel. Draught proofing and insulation work just as well in the workplace as the home.
- Reduce carbon impacts from the office by buying recycled paper, using lightweight paper for all but the most important, printing on both sides – printers should be set to default to double sided – and recycling paper, printer cartridges and computer equipment.
- Keep it real, avoid disposables by using mugs and glasses instead of plastic or polystyrene cups;
- With London tap water coming third in a blind tasting, there's no excuse to use bottled water which is carbon 'heavy' in its bottling, transportation and retail.
- Introduce a green purchasing policy that favours suppliers with environmental management policies and accreditation especially ISO 14000 series.
- Prioritise green cars for the company fleet.
- Implement a company cycle scheme with racks and showers, tax breaks on bicycle purchase and a staff bike pool to use for local trips.
- Introduce a green meetings policy: Replace every third long distance meeting with a video conference. Reduce the number of staff that

travel to long distance meetings and conferences.

- Flexible working conditions benefit staff while improving a business's environmental credentials: working from home reduces CO₂ from travel to work, flexitime enables staff to travel on public transport outside the rush hour.

Group activities

DIY

Debate the effectiveness of carbon offsetting and perhaps come up with your own offsetting ideas.

Community action

The members of your group could well be members of other local organisations. Select an organisation and hold a joint meeting to exchange experiences of how to go about reducing the carbon footprint of organisations and workplaces.

Carbon cutting event

Alternatively organise an event for local community organisations and businesses where they can learn how they can benefit from adopting environmental practices. The Carbon Trust who advise on greening business may be able to provide a speaker.

Support and advice

Greening business

UNISON is supporting its members to green their workplaces and the TUC has policy on this.

T 0845 355 0845 www.unison.org.uk

The Carbon Trust helps businesses and organisations reduce their CO₂ footprint with a free carbon survey and energy saving advice.

T 0800 085 2005

www.carbontrust.co.uk

Envirowise offers UK businesses free, independent, confidential advice and support on practical ways to increase profits, minimise waste and reduce environmental impact.

T 0800 585794 www.envirowise.gov.uk

Business Link provides advice on environmental performance and efficiency.

T 0845 600 9006

www.businesslink.gov.uk

BestFootForward has developed a programme to measure a business's footprint.

www.footprinter.co.uk

EPAW (Environmental Practice at Work) assists employees wanting to tackle their workplaces and is aimed at supervisors, team leaders and union reps rather than the heads of companies. Much of it is consistent with Level 3 NVQ.

T 01254 381289 www.epaw.co.uk

Greening Schools

Eco-Schools is an international award programme providing a framework to help schools embed green principles into school life, whether they are children's centres, nurseries, primary schools, secondary schools or schools with special status.

T 01942 612621

www.ecoschools.org.uk

Greening places of worship/religions

Eco congregation is run by A Rocha to green up the Church of England with a complete programme of actions and an awards scheme.

T 024 7669 2491

www.ecocongregation.org

Tearfund runs campaigns to help churches to green up their acts.

T 0845 355 8355 www.tearfund.org

Islamic Foundation for Ecology and Environmental Sciences is an international interdenominational organisation based in the UK and a world authority on Islam and the environment.

T 0121 440 3500 <http://ifees.org.uk>

The Big Green Jewish connects Judaism and the environment.

T 020 8123 2859

www.biggreenjewish.org

Agony Aunt

Three Tonne Tina

"I'm so thrilled with my Three Tonne lightweight lifestyle that I want to help everyone get there too."

Tina likes to do her bit, and that means helping out other people when she can. Here she answers some commonly asked questions.

Dear Tina

I've heard it's more efficient to have the heating on all the time and then the house doesn't have to warm up when I come in or wake up. Is that true?

Tina says:

No, because the amount of heat the house loses through walls, windows, etc. is proportional to how hot it is. If you maintain it at a higher temperature, it loses heat at a higher rate all day when you may not be there. Most houses take half an hour to an hour to heat up. If it is really efficient the time may be shorter – indeed the best new houses may not need heating to maintain a healthy 19° C, even in winter. You can buy a programmable time switch or use your existing one to time it to come on half an hour before you wake up or come home and go off before you go out.

• • •



Dear Tina,

I want a new TV – are plasma and LCD screens more energy hungry than old-style cathode ray tube (CRT) TVs?

Tina says:

Small LCD TVs use about the same energy as CRT sets (80Watts), but larger ones can use over 200W and plasma screens can use up to 300W (four times more than a CRT). Do you really need a new TV? If you do, buy the smallest size you can tolerate and switch it off at the wall when not in use.

• • •

Dear Tina

Why should I bother when most other people don't seem to be very concerned?

Tina says:

They are concerned, they just might need a little encouragement to start making some changes! A recent BBC poll of 22,000 people in 21 countries showed that most people are ready to make personal sacrifices to address climate change. The poll suggests the public are more ready than politicians. Four out of five people indicated they were prepared to change their lifestyle – even in the US and China, the world's two biggest emitters of carbon dioxide.

Dear Tina

Isn't it better to keep energy saving lights switched on all the time because they take so much energy to warm up?

Tina says:

No, this used to be true of some old fluorescents, but it doesn't apply to the new compact ones. Put them on when you need them and turn them off when you don't. Even traditional fluorescent tubes should be switched off if you're going to be out of the room for more than 15 minutes.

• • •

Dear Tina

I don't like the look of energy saving bulbs and I think they are expensive.

Tina says:

Energy saving bulbs are available in many shapes and sizes (including

spirals, candle shape and look-a-like incandescent bulbs) and to fit many types of light fitting. Search via Everyclick on www.wen.org.uk for more sources than you can count. The cost of these bulbs has reduced considerably in recent years, in most shops the price difference is not considerable – and the Energy Saving Trust estimates that every bulb can save around £60 in running costs during its lifetime – so you will be saving pounds as well as CO₂.

• • •

Dear Tina

I would like to use energy saving bulbs but I don't think they work with a dimmer switch.

Tina says:

Good news! Energy saving bulbs that work with dimmer switches are now available. Search via Everyclick on www.wen.org.uk for suppliers.

• • •

Dear Tina

What's the point in me reducing my energy use in this country when the booming economies in China and India will swamp any cuts made?

Tina says:

Everything positive you do has a benefit and sets a good example to others. China is already committed to phasing out all incandescent bulbs by 2017, saving more than half Germany's energy use annually. India is likely to follow suit. In rapidly developing countries there are innovators and campaigners who will be encouraged by actions we take here.

Dear Tina

My boiler is over 15 years old, but it's very reliable – surely it would take more energy to install a new one?

Tina says:

By putting in a new boiler you can cut your heating bills by about one third and save 700kg of CO₂ every year. Get one from a reliable source – ask your local energy efficiency organisation for advice. Combination boilers (without a hot water tank) may be more efficient but you will need a tank if you want to install solar hot water in the future. If you are considering solar hot water make sure any new tank is compatible.

• • •

Dear Tina

I have a heap of washing to get through each week, especially with my youngest still in nappies. I'm fed up of listening to the tumble dryer and it's costing me a packet! Can you help?

Tina says:

It's great that you are using real nappies – this is a great choice for a low carbon lifestyle. My laundry tips are: only wash dirty clothes (remind the kids of this policy!), use the lowest possible temperature and wash a full load, choose the highest possible spin cycle to remove the maximum amount of water, line-dry (it works, even on a grey day) or use an indoor airer if you have the space, use your tumble dryer as a last resort and add a dry hand towel to reduce drying times.

Dear Tina

My family all love to take showers rather than baths, they say they're doing their bit to save water, but I still think we're using a lot!

Tina says:

You may well be! Keep showers short for greatest savings, a shower timer can help with that. Avoid power showers – they will use more water than a bath if you shower for more than five minutes.

• • •

Dear Tina,

I live a long way from my children's school, it's too far to cycle and there isn't a suitable bus service so I seem to be perpetually in the car. What can I do about all that pollution?

Tina says:

There are a number of ways you can reduce the impact of your driving. The first is to fill your car. If you're transporting three or more passengers then you shouldn't be causing more CO₂ than using the bus, so a lift share is a good way to ease the burden. The problem lies in the return journeys home when you're on your own. Try to make these journeys work by doing your shopping or recycling to prevent additional journeys.

Secondly make sure your car is as efficient as possible. Use the smallest fuel efficient car you can and have it regularly serviced. Maintain optimum tyre pressure and drive smoothly avoiding rapid acceleration and hard braking to reduce fuel use.

Dear Tina

I'd like the family to eat less meat. I have lots of recipes and advice from vegetarian friends, my problem is the kids protest at the sight of a vegetable!

Tina says:

Ah, now this could be fear of the unknown! My tried and tested advice is: grow some veggies with your kids and watch them nurture them, then munch them up at harvest time! You don't have to have a huge amount of space, and many vegetables can be grown in pots on balconies. Visit www.wen.org.uk/local_food/ for more information.

• • •

Dear Tina

My teenage daughter seems to be obsessed with shopping and is constantly asking for money for new clothes. Her desire for something new never seems to be satisfied and she doesn't seem to care if things fall apart so long as they are cheap. Help!

Tina says:

Getting new stuff is fun and it doesn't have to cost the earth. My light-living fashion tips are: host a clothes swap party/sleepover for your daughter and her friends, remind them how much further their money would go if they shopped in charity shops and at jumble sales; encourage them to be fabulously unique and make their own clothes and accessories from their own outgrown things or second hand items.

• • •

Dear Tina

I'd love to see more of the world and the very cheap flights to Europe are really tempting. Does being carbon light mean I have to stay at home?

Tina says:

It's a wonderful world, so don't stay at home! Check out travelling to Europe by rail – it may work out more expensive but consider: you don't have to wait around for hours at airports, a sleeper train will save you a night in a hotel and the journey itself is part of the holiday! Travelling by car may not be so relaxing, but it's a lower carbon alternative to flying, especially when the car is carrying three or more people.

• • •

Dear Tina

I'm on the PTA and we run a lot of functions. I'm horrified by the amount of waste that's left after a party or school fair but disposables do make clearing up a doddle. Any ideas please?

Tina says:

Why don't you put yourself forward as the green champion on the PTA? Setting up in-school recycling and cutting out disposables can not only save the PTA money, it can help to generate it eg. through aluminium can and printer cartridge collections. Talk to the headteacher about your ideas for greening the school and contact your local council to find out how they can help with recycling and composting. Reducing the school's output of rubbish will save them money on collection

fees – so line up those dads for washing up duty and throw out the idea of disposables.

• • •

Dear Tina

My children are really keen to keep up with the latest technology when it comes to their games. This means that we are buying a new console or computer virtually every year. I don't want to ruin their lives but I am concerned about the amount of equipment that just seems to lie idle.

Tina says:

With games consoles, how about getting a bit communal? How many of your children's friends have exactly the same gear? How about clubbing together and having a rota system? Bribe the kids with the money you'll be saving. With computers, buy the highest specification you can afford, and ensure it has the capacity to be upgraded. With all appliances, aim for those that use least energy to run and turn them off at the wall when not in use. For your total convenience consider an intellipanel plug socket which switches off all peripherals when you turn the TV/ computer off and also has an 'always on' socket for anything that needs constant power. When the time comes, sell your equipment second-hand, Freecycle it or donate to charity.

• • •

Dear Tina

I've just had a win on the lottery. Do you have any tips on how I can use the money to reduce my footprint?

Tina says:

Congratulations! You could start by maximising your home's energy efficiency and powering it with renewable energy; buy local and organic – but not more than you need; treat yourself to an overland trip; support organisations working on climate change and consider investing in renewable energy to offset your remaining footprint and perhaps that of some of your family and friends.

• • •

Further reading

Books

How to Live a Low Carbon Life, Chris Goodall, Earthscan 2007

www.lowcarbonlife.net

Low Carbon Diet, Polly Ghazi and Rachel Lewis, Short Books, 2007

Carbon Detox, George Marshall, Gaia, 2007

Carbon Counter, Mark Lynas, HarperCollins, 2007

Articles

Weighing up the Ethics of Climate Change: Carbon calculators, Ethical Consumer, November/December 2007

Your contribution to Climate Change, Laurie Michaelis, Living Witness Project (Quakers Working for Sustainability), July 2007

Carbon Calculators and Ecological Footprints, Centre for Alternative Technology, 2007

The Carbon Gym – A Brief Introduction, Centre for Alternative Technology, 2007

Websites

Carbon Independent

www.carbonindependent.org

The Carbon Account enables people to track their home and travel emissions.

www.thecarbonaccount.com

Carbon Gym (CAT)

<http://carbongym.cat.org.uk/carbongym>

Centre for Alternative Technology (CAT)

www.cat.org.uk

Living Witness Project

www.livingwitness.org.uk

Resurgence

www.resurgence.org/resources/carbon-calculator.html

WWF

<http://footprint.wwf.org.uk>

We have learnt a lot from all of these. We have found there is a convergence of the most thorough, independent and thoughtful research, and there are minor but not crucial differences between the above. There are bound to be new discoveries which change the total of the UK's emissions, but we believe they will add to the actions recommended here, not negate them. So go ahead and enjoy!

For further detailed sources, see the fully referenced Word document of this handbook on the WEN website.

General contacts

To find other people and groups in your area who are concerned about climate change and reducing emissions, see the long list of organisations on www.stopclimatechaos.org/about_us/9.asp and the Transition Town Network on www.transitiontowns.org.

Notes

ISBN 978-1-874137-24-5
Price £3 where sold

