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energy advice book 2

Carbon Footprint

Treading Lightly



Foreword

Clackmannanshire Council is committed to reducing the emission of greenhouse gases that contribute to climate change through a range of initiatives such as improved energy efficiency, the development of a green travel plan and reduction of waste and increased recycling.

In January 2007, the Council signed Scotland's Climate Change Declaration. The Declaration has been signed by all of Scotland's local authorities and Scottish Ministers and acknowledges that:

- ▲ Climate change is occurring and human activities are having a significant negative and possibly dangerous influence
- ▲ Climate change will have far reaching effects on Scotland's people and places, impacting on our economy, society and environment
- ▲ There are significant social, economic and environmental benefits in taking action to combat and prepare for climate change
- ▲ We all in Scotland have duties and responsibilities to take action to both mitigate and adapt to climate change, and to promote the sustainable development and well being of our local communities.

To meet the targets of Scotland's Climate Change Declaration and the Council's own sustainability aspirations, Clackmannanshire Council is implementing a Carbon Management Programme which aims to reduce CO₂ emissions by 15% from the baseline figure of 52,753 tonnes in 2007.

To do this the Council will focus on six areas:

- ▲ Council Buildings
- ▲ Transport Activities
- ▲ Street Lighting
- ▲ Waste
- ▲ Council Housing
- ▲ Staff Commuting Habits

This is a challenge that will develop a 'whole council' approach, where everybody living and working within Clackmannanshire area can participate in and continue to experience the benefits of a more sustainable society.



What Is a Carbon Footprint?

According to the Energy Saving Trust, 'Carbon footprint' is a measure of the emissions of the greenhouse gas carbon dioxide (CO₂) resulting from the everyday actions of a person or household, usually through their use of energy from fossil fuels. We can also talk about the 'carbon footprint' of a business, product or country.

The size of your carbon footprint is important because it gives an indication of how much you are contributing to global climate change.

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The Greenhouse Effect

Carbon dioxide is known as a 'greenhouse gas' because it is one of the gases found in the earth's atmosphere which contributes to the 'greenhouse effect'. The greenhouse effect helps keep the Earth's temperature high enough to sustain life: the cloud of gases acts like a blanket around the earth, which traps the sun's energy and keeps the planet warm.



Carbon dioxide is produced naturally by living creatures and can be absorbed by plants as they make food by photosynthesis. However, burning fossil fuels such as gas, oil and coal, for example to generate electricity or power vehicles, and the destruction of forests, leads to more carbon dioxide being produced than can be absorbed, and this is released into the atmosphere. This build-up of gases in the atmosphere means that more of the sun's energy is trapped, so the planet gets hotter. This is known as 'global warming' and it can lead to more extreme and unpredictable weather all over the planet, which is referred to as 'climate change'.

The Effects of Climate Change

The global effects of climate change are likely to include:

- ▲ **Sea level rise**
Densely settled coastal plains would become uninhabitable with just a small rise in sea level, which would happen with the melting of the ice caps.
- ▲ **Impacts on agriculture**
Global warming could have major effects on agricultural productivity, leading to food shortages in parts of the world.
- ▲ **Reduction of the ozone layer**
Warming would result in increased high cloud cover in winter, allowing chemical reactions to take place in the atmosphere, which could result in depletion of the ozone layer.
- ▲ **Increased extreme weather**
A warmer climate could change the weather systems of the earth, meaning there would be more droughts and floods, and more frequent and stronger storms.
- ▲ **Spread of diseases**
Diseases would be able to spread to areas that were previously too cold for them to survive in.
- ▲ **Ecosystem change**
As with the diseases, the range of plants and animals would change, with the net effect of most organisms moving towards the North and South Poles.

In Clackmannanshire we are likely to see changes to growing seasons for crops, changes in our plant and animal species and more frequent and more severe storms. We are already seeing an increase in the number and severity of flood events in Clackmannanshire, and there is also likely to be more damage to buildings due to high winds. There has been an increase in the occurrence of non-native invasive plant species, which can affect both our biodiversity and the stability of our riverbanks. There is also the possibility of heatwaves and droughts, which can lead to water shortages as well as the risk of health problems.

As you can see, the effects of carbon dioxide emissions could be extremely far reaching and cause major problems. Due to our past emissions of greenhouse gases, we are already “locked in” to a certain amount of climate change, which we will all need to adapt to. However, there is the potential for even worse impacts across the world, and for us to reach a tipping point after which global warming runs out of control as carbon that has been stored in the ecosystem is released into the atmosphere.

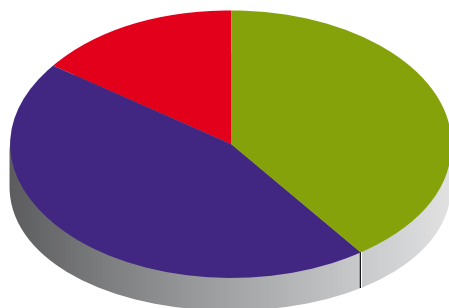
Scientists and world leaders are agreed that in order to avoid this dangerous climate change, we must limit global warming to 2°C above pre-industrial levels. Global average temperatures are currently 0.7°C above pre-industrial levels: in order to keep below 2°C we need to reduce global greenhouse gas emissions to 50% below 1990 levels by 2050,

which means that richer countries, including Scotland, will need to reduce their emissions by 80%. This is a big challenge, and one which will need everyone to play their part.

Modern lifestyles tend to be energy-intensive: according to the Energy Saving Trust, 27% of carbon dioxide emissions entering the atmosphere come from the energy we use in our homes, with a further 25% coming from domestic transport. We can reduce our contribution to climate change by adopting habits that require less electricity and less fuel consumption. Even a small reduction in household emissions could help to alleviate the problems future generations are likely to face.

The Average Carbon Footprint

The average carbon footprint for an individual in the UK is 4.48 tonnes of carbon dioxide per year. This is made up of 2 tonnes from the home (heating, lighting and hot water), 0.68 tonnes from appliances and 1.80 tonnes from travel.



- Appliances (15%)
- Travel (40%)
- Home (45%)

Travel

Carbon emissions due to road transport are on the increase. Private road transport (mainly cars) produced 77.4 million tonnes of CO₂ in 2007. This is 14% of the UK's emissions of carbon dioxide. From 2005 to 2025, it is expected that the number of cars on the road will double - this will lead to a huge rise in carbon emissions.



The carbon emissions from air travel are more difficult to allocate to a country. However, in 2006, the air travel industry in the UK produced 37.5 million tonnes of carbon.

The average CO₂ emissions for flights are:

Short haul flight (e.g. Scotland to Spain) = 600 kg per passenger

Medium haul flight (e.g. Scotland to USA) = 1,300 kg per passenger

Long haul flight (e.g. Scotland to Australia) = 3,700 kg per passenger

General

The world's population produces 16 million tonnes of carbon emissions every 24 hours, of which the UK is responsible for 13%.

The concentration of carbon in the atmosphere has increased by 40% since the Industrial Revolution began.

A forest planted with the aim of offsetting the UK's carbon emissions would cover the entire UK and half as much again.



Treading Lightly At Home

Around a quarter of all carbon dioxide emissions we produce comes from energy to heat and light our homes, and power household appliances. Using this energy more efficiently will reduce emissions and save money on fuel bills too.



Change your light bulbs

One of the simplest things you can do to reduce your carbon footprint is replace your home's conventional light bulbs with energy-saving ones. Recently, prices have dropped dramatically and they come in all shapes and sizes, as well as different wattages and colours. Low-energy light bulbs can last up to 12 times longer than conventional ones, you could save £37 a year and £590 over the lifetime of the bulbs and 40kg of carbon dioxide.

Insulate

Insulate your loft, walls and hot water cylinder, if you have one.

Almost a quarter of heat loss is through the roof, but adequate loft insulation can save you around £150 and one tonne of CO₂ a year.

Similarly, cavity wall insulation will cut your heat loss through the walls, saving you around £115 and one tonne of CO₂ a year. Walls leak more heat than any other part of your home, so if you have cavity walls (and not everyone does), get them filled with insulation.

Finally, your hot water cylinder. Fit an insulation jacket and you can save around £20 and 150kg of CO₂ a year. You should also lag your pipes to save energy and money.



Control your heating

Check your central heating timer setting, and make sure that your home is only being heated when it needs to be, there is no point heating the house after you have left for work. Time it to switch off half an hour before you leave home.

If you have a boiler over 15 years old, it's almost certainly inefficient and is costing you money, as conventional boilers can be only 60% efficient and waste up to 40% of their heat.



All new boilers have to be energy-efficient condensing ones, which retain heat from the gases usually expelled down the flue. Have one of these fitted by a Gas Safe-registered installer and you could cut your heating bills by around a third and emit one tonne less of CO₂ a year.

Turning down your thermostat by one degree can save 240kg over the year - the equivalent of the CO₂ that would be absorbed by eight trees and cut your fuel bills by up to 10%.

Combine this with upgraded heating controls and the reduction may be as much as 40%. Thermostatic radiator valves, for example, allow you to precisely control the output of each radiator in your home, so you need never have a radiator turned up too high.

Draughtproofing & double glazing

Single-glazed windows and poorly insulated frames can result in a fifth of all heat loss. Double glazing can reduce this loss by 50% and save you around £80-£100 and 570kg of CO₂ a year. If you can't afford double glazing (or secondary double glazing), invest in draught excluders for your windows and doors (both internal and external) instead. Draught proofing your doors and windows will save you around £20 and 140kg of CO₂ a year.

There are lots of inexpensive draught-excluding measures you can do yourself, including weather stripping, draught-excluder brushes, long, lined curtains (though don't cover warm radiators with them) and fabric 'sausages' for the bottom of doors.

Full loads only

Never put a washing machine or dishwasher on without it being full, unless you have an economy or half-load programme, because you're wasting water as well as energy. Wash your clothes at 30° and you'll save around 40 per cent of the energy your washing machine uses.

According to research, as a nation, we're wasting £170m worth of energy a year by washing our clothes at higher temperatures.

Energy-sapping tumble-drying should also be ditched in favour of drying clothes outside, on clotheshorses or in the airing cupboard. Tumble driers are one of the worst offenders in the home for CO₂ emissions, not using yours could save you around £75 and 635kg of CO₂ each year.



Enough water for your needs

It's all too easy to turn the tap on and fill the kettle up without considering how much water you actually need, but again you're wasting both water and electricity.

Only boil enough water for your needs and you'll make big savings.



Heating water costs CO₂ emissions, so take a short shower (3 minutes is the optimum) that will use 30 litres of water instead of a bath that will use around 77 litres. But a power shower requires the same amount of hot water as a bath.

It's estimated that if we all stopped "filling" the kettle, enough energy would be saved to power between 50% - 75% of the UK's streetlights.

Conserve energy when cooking

Chop food into small pieces when cooking, as it will cook quicker and use less energy. It's also important to put the saucepan lid on and to ensure the pan's the right size for the burner or ring you're using, otherwise energy will be lost around the sides. Too small a pan, and as much as 40 per cent of the energy could escape.



Ovens and saucepans can be turned off before the food is completely cooked because it will continue cooking in the boiling water or hot air.

Heating meals in a microwave rather than in a conventional oven uses less energy. Four minutes in the microwave creates just 22g of CO₂ as opposed to 385g by using the oven to cook the same meal.

There are a number of plugs and socket kits available for your home entertainment systems and computers, that automatically cut off the power when you leave an appliance on standby.

Many energy companies are offering them either free or at a discounted price to their customers.

Contact your energy supplier to find out more.

Don't leave appliances on standby

Remember that you can't switch most electronic goods off just with the remote control, to turn off an appliance completely, use the power switch on the appliance itself or turn it off at the plug. Any appliance with a charger or an external power pack will still use power unless turned off at the plug (you can tell because the charger or power pack stays warm or may have a light on).

That little coloured standby light uses 10-60 per cent of the energy needed to power the appliance when in use, so always switch it off at the socket. Eight per cent of UK households' energy, or four million tonnes of CO₂ annually, is wasted by appliances left on standby.

Televisions and phone chargers are the worst culprits. Stamp out standby and unplug chargers. You could save as much as £130 and 560kg of CO₂ a year.

On your computer, the screen saver only does what it says - it saves the screen and most up-to-date computers don't need it anyway. When you are not using your computer, turn it off as the screen saver uses almost the same amount of energy as powering the whole machine.

Unplug your Freeview/digital box, it may say it needs to be constantly plugged in to receive downloads, but it's using around 50 per cent of its energy just to blink lights at you.

Choose green energy

Everyone can now choose a green electricity tariff. Buy your electricity from a supplier that supports renewable energy sources, such as wind power and biomass. This will reduce your carbon footprint contribution from electricity.



When you use electricity on a green energy tariff, the supplying company will put energy from renewable sources back into the National Grid.

Green energy currently costs more to produce, however some suppliers do not charge a premium, so green electricity shouldn't cost any more than you pay with your current supplier. In fact, if you also transfer your gas supply to them it may be cheaper.

The more people who sign up to green energy the cheaper it will become in the future, and remember, many suppliers are already selling it as cheap or even cheaper than you may currently be paying for your electricity.

Recycle

Reduce the amount of waste you generate by avoiding over-packaged goods, saying no to unwanted plastic bags and re-using materials where possible.



Buying recycled goods (something many of us forget but which is vitally important) and increasing your home recycling by just 10 per cent will save around 90kg of CO₂ a year. And don't overlook charity shops, donate to and buy from these to improve your recycling credentials.

Get into a recycling routine. Place recyclable objects by the front door so you take them out with you each morning to put in your recycling bin, or set up a special bin or bins in your kitchen for recyclable goods

Recycling in Clackmannanshire

Clackmannanshire Council now has one of the highest recycling rates in Scotland. We are recycling and composting 44% of all household waste.

However there is still more to do, we need to recycle and compost 50% of all household waste by 2013 and 70% by 2025 to meet Scottish Government targets.

To help you recycle more, we are providing new blue recycling bins in addition to the blue boxes and brown bins. Because of this, there have been changes to the items that you can put in each container.

Blue Bins

The following materials can be recycled using the blue bin:

- ▲ Cardboard
 - Cereal boxes
 - Cardboard boxes
 - Brown corrugated cardboard boxes
 - Toilet roll tubes
- ▲ Cans and tins - aluminium and steel
- ▲ Plastics
 - Plastic bottles (clear and coloured)
 - Plastic milk bottles
 - Food trays and containers
- ▲ Food and drinks cartons - e.g. Tetrapak
- ▲ Empty aerosols - no lids please

Britain's recycling record is one of the worst in Europe, according to the most recent comparable figures, with only Greece and Portugal recycling less. Of the 600kg of waste generated by each of us in Britain a year, 74% goes to landfill, 8% is incinerated and just 18% is recycled or composted, compared to 65% in the Netherlands and 58% in Germany. However, Clackmannanshire has 44%, the highest in Scotland.

- ▲ Paper
 - Envelopes (including windowed envelopes)
 - Magazines
 - Newspapers
 - Office paper
 - Yellow pages
 - Brochures
 - Catalogues
 - Leaflets

Blue Boxes

The following items can now be recycled using the blue box:

- ▲ Textiles
 - Clothing
 - Shoes - tied into pairs
 - Bags
 - Belts
 - Blankets
 - Quilt covers, pillow cases and sheets
 - Duvets

- ▲ Glass bottles and jars
 - Wine bottles
 - Beer bottles
 - Cooking sauce jars
 - Jam jars
 - Baby food jars
- ▲ Small electrical items
 - Toasters
 - Kettles
 - Hairdryers
 - Games consoles
 - Irons
- ▲ Batteries - All household batteries

Brown Bins

Items suitable for your brown bin:

- ▲ Grass cuttings
- ▲ Hedge trimmings
- ▲ Flowers, plants, weeds and leaves
- ▲ Wood shavings, twigs and small branches.

Forthbank Recycling Centre

Forthbank Recycling Centre is at Bowhouse Road, Alloa, FK10 1DA. Please make use of local recycling facilities, but avoid making special recycling car journeys.

Banks

- ▲ Cans
- ▲ Clothes and textiles
- ▲ Glass
- ▲ Paper, including yellow pages
- ▲ Tetra pak cartons
- ▲ Plastics that are colourless and marked HDPE 2 and PET 1
- ▲ Books, CDs and DVDs.

Bays

- ▲ Car batteries and gas cylinders
- ▲ Soil & garden waste
- ▲ Stone and rubble
- ▲ Woodchip.

Skips

- ▲ Metals including washing machines, cookers and prams
- ▲ Waste electrical and electronic equipment
- ▲ Wood except worktops, creosote, MDF and hardboard
- ▲ Cardboard that is clean and flat packed.

Additional facilities exist for the sorting of computers, mattresses, refrigerators, tyres pesticides, paint and waste oil. Please ask at the gatehouse for assistance and direction.



Waste for landfill

In addition to the recycling skips there are also skips for general waste. All waste deposited in these skips will be land-filled.

For further information on waste and recycling and to receive the Clackmannanshire Waste and Recycling Guide, contact waste services on freephone 0500 545 540.

Composting

If you have a garden, you could be making your own compost.

To help you to compost at home, Falkirk, Clackmannanshire and Stirling Councils together with WRAP (the Waste & Resources Action Programme) are providing subsidised compost bins to Clackmannanshire residents.

Alternatively, build a timber frame for your compost heap and cover it with old carpet or plastic sheeting to retain the moisture and heat. As well as green and food waste, you can compost all kinds of things including kitchen roll, shredded paper and cardboard.

You could even have a communal compost bin if you live in a block of flats.

Other benefits of composting include less in your wheelie bin to contend with when putting out the rubbish, knowing you're contributing less to landfill and having an end product that will enrich your garden and house plants.

To order your composting bin, please call 0845 076 0223 or alternatively, you can order it online from the Home Composting page on the Waste Aware Scotland website. www.wasteawarescotland.org.uk When ordering please quote the number FOV04W

See useful contacts at the back of the booklet.

Treading Lightly As You Shop

Producing, transporting and eating food is responsible for nearly a third of our climate change effects.



Some foods have a bigger effect on climate change than others. For example:

- ▲ The production of meat and dairy products has a much bigger effect on climate change and other environmental impacts than that of most grains, pulses and outdoor fruit and vegetables.
- ▲ Transporting food by air has much larger climate change effects than transporting it by sea, rail or road.
- ▲ Some foods require particularly large amounts of energy to produce, like tomatoes grown in heated greenhouses.

A healthy balanced diet contains plenty of fruit and vegetables, plenty of starchy foods such as wholegrain bread, pasta and rice, some protein-rich foods such as meat, fish, eggs and lentils and some dairy foods. It should also be low in fat (especially saturated fat), salt and sugar.

Food Miles

Food miles are the distance that food travels from the farm or producer to your plate.

Food travels further nowadays for three main reasons:

1. We like buying seasonal food all year round.
2. We buy more processed food.
3. We like to pay as little for it as possible.

Food transport is responsible for the UK adding nearly 19 million tonnes of carbon dioxide to the atmosphere each year. Over 2 million tonnes of this is produced simply by cars travelling to and from shops.



Choosing food that is local and in season means it does not have to travel so far. Reducing food miles can have a dramatic effect on reducing carbon dioxide emissions.

Did You Know?

- ▲ Imports of foods that can be grown in the UK, rose from 13.5m tonnes in 1992 to 16.1m tonnes in 2002.
- ▲ 95% of fruit and 50% of vegetables eaten in the UK are imported.
- ▲ The amount of food air-freighted around the world has risen by 140% since 1992.

Buy fresh and in season

Buying food and drink when locally in season, and unprocessed or lightly processed food, is likely to mean that less energy has been used in its production. Buying food that has travelled less can also be a positive choice as it reduces transport emissions, particularly in comparison to produce transported by air.

Buying direct from producers is a good way to source fresh, seasonal produce and reduce packaging. Buying directly from the producer also means you can ask them how their food was produced.



If you buy foods out of season at the supermarket, then it is likely that it has either been flown or shipped in from far away, all adding to your carbon footprint.

When food has travelled a long distance, the effect it has on climate change depends on the method of transportation. Long distance transportation of produce by boat (eg bananas and apples) has much lower climate change effects than transporting produce by air (eg many fresh flowers, very perishable fruit and vegetables).

Local Food

A good way of buying direct from producers is to shop at your local farmers market.

The farmers market at Sterling Mills, Tillicoultry is on the 4th Sunday of every month, 11am to 4 pm. It has a wide range of local produce, including; meat, seasonal fruit and veg, cheese, eggs and home made foods

Another local food source is the Tullibody Healthy Living Centre's, Fruit Barra.

This is a fruit and veg box that can be ordered weekly. It currently costs £5 and you get, 2 kilos of tatties, 1 kilo of carrots, half a kilo of onions, 10 pieces of fruit and a soup bag.

You can also pick up free simple, healthy recipes for soups, stir fries, wraps and dips!

For further details contact Donna at the Fruit Barra on 01259 724374 .

Grow your Own

It's rewarding and healthy and you don't need a big garden to cultivate your favourite fruit and vegetables. You can grow them in containers, grow bags and even hanging baskets.

Great reasons for growing your own:

- ▲ You can grow without pesticides
- ▲ You can decide what your family eats
- ▲ Home grown food is cheap and nutritious
- ▲ Nothing beats the fresh taste
- ▲ Your food will be truly local
- ▲ Children will learn where food really comes from
- ▲ You'll get fresh air and exercise and rediscover the seasons



Reduce your food waste

The average UK household spends £424 a year on food that goes in the bin - if this ends up in landfill it produces methane, a greenhouse gas judged to be more than 20 times as powerful as carbon dioxide. Throwing less food away produces less methane and reduces other harmful environmental impacts from producing, packaging and transporting food.

Packaging

Packaging used for food can play an important part in helping preserve food and cut waste. However, it often has an environmental cost as resources and energy are used to make the packaging, and transport the finished product. Things you can do include:

- ▲ Avoid buying goods with unnecessary, or excessive, packaging.
- ▲ Buying products in packaging that can be recycled (and recycle it).
- ▲ Choose food packaging that is labelled as biodegradable or compostable, it will break down quickly rather than remaining in landfill sites for many years.

Instead of throwing out an average of 14kg of food packaging every week, buy unpackaged fruit and vegetables

New Appliances

If choosing a new appliance, such as a fridge, freezer or washing machine, ask for energy efficient models.

Look for the Energy Saving Recommended label or European energy label rating of A or higher. Energy-efficient appliances are easy to find and aren't necessarily more expensive.



Look for appliances showing the Energy Saving Recommended label, as these are among the top 20 per cent most efficient available and for European Union (EU) energy labels on fridges, freezers and washing machines, showing how energy-efficient an appliance is on a scale of A to G (where A is most efficient and G is least efficient).

Treading Lightly As You Travel

Around 25% of carbon emissions come from domestic transport. There are a number of steps you can take to reduce your environmental impact from travelling.

Public Transport

Travelling can take a large chunk out of your precious time every day and increase your carbon footprint. We spend so much of our daily lives travelling everywhere we need to go that it always seems quicker and easier to take the car. Why not try to use public transport for all or part of the journey? It is often less stressful, cheaper and emits less CO₂ per traveller. Using public transport has never been easier. Traveline Scotland will help you obtain all the information you need to make your journeys, on the web or by phone. For public transport information contact Traveline Scotland on 0871 200 22 33 or visit www.travelinescotland.com.

The Council's 'Active Travel' booklet provides more information on travelling by bus or train. Pick up a copy from the Council's Kilncraigs offices or view it at www.clacksweb.org.uk

Active Travel

If you live close enough, why not walk or cycle from home to work, instead of driving or taking public transport? Your finances and health with both benefit.

Clackmannanshire has a comprehensive network of rights of way and other paths, as well as roadside footways. Details can be found on Clacksweb at www.clacksweb.org.uk/environment/pathmap/

Cut down on your car journeys

Reducing your travel reduces your carbon footprint. Shopping locally, using local leisure facilities, and working from home sometimes (if this is possible) all help to reduce your environmental impact. Reducing travel helps to reduce local air pollution as well as the effects of climate change.

Leaving your car at home and walking or cycling has health benefits as well as reducing the negative environmental impacts of driving. Taking the train or bus will also make an important contribution to reducing your carbon footprint.

If you do have to travel by car, investigate the possibility of car-sharing. Organising a lift share for at least one short journey a week will reduce traffic by 12-15% according to the Office of National Statistics.

See if your employer will give you an interest-free loan for a public transport season ticket or to buy a bike. Some firms offer a cycle mile allowance for work journeys undertaken by cycle.

TripshareClacks

Clackmannanshire Council and the South East of Scotland Transport Partnership (SEStran), have created TripshareClacks to match up journeys.

Car sharing with someone who works in the same area as you could save you money, reduce congestion and help reduce pollution.

TripshareClacks can be used to search for other people who are doing similar journeys at similar times. It is not however limited to car journeys, you can also search for people to share a taxi with or to walk or cycle with.

The scheme is open to everyone and is free to join and use. Simply register your details and your journey, TripshareClacks will then search for possible matches. It doesn't matter where you live or work, the scheme can match up journeys throughout the UK.

You can get more information at www.tripshareclacks.com or by phoning 08700 11 11 99.

Buying a new car

Aim to save yourself money and reduce your environmental impact when buying a new car. Consider the type of car you need before buying – generally smaller cars are more fuel efficient and emit less carbon than larger cars. There are numerous websites providing information on vehicle fuel economy, tax and emissions, try visiting www.vacarfueldata.org.uk. The Council's "Sustainable Car Use" booklet provides further information on what to look for when buying a new car.



Greener driving

Driving efficiently, planning your journey in advance, and good vehicle maintenance are important considerations for reducing your carbon footprint.

Driving smoothly can reduce fuel consumption – check the road ahead, anticipate traffic and avoid harsh acceleration and braking.

Modern engines are designed to be most efficient when you just get in and go. Keeping the engine running or pumping the accelerator wastes fuel, increases engine wear and increases emissions.

Check your tyre pressures regularly, under-inflated tyres can increase your fuel consumption by up to three per cent.

Remove unnecessary weight and roof racks, they increase the weight and air resistance and so they increase the amount of fuel you use.

Air conditioning and other on-board electrical devices (like mobile phone chargers) increase fuel consumption, so only use them when necessary.

The Council's booklet on "Sustainable Car Use" provides lots of tips for greener driving. Pick up a copy from the Council's Kilncraigs offices or view it at www.clacksweb.org.uk

Car disposal

Unwanted vehicles should be taken to one of the 1400 Authorised Treatment Facilities (ATF) in the UK. They arrange for vehicles to be disposed of in an environmentally-friendly way and give owners a certificate which shows they are no longer responsible for it. Since January 2007, vehicle manufacturers have arranged for free disposal at ATFs for owners.

You can find your nearest ATF by phoning 0800 5422002.

Car use is growing, but many journeys are unnecessary. Around 22% of all journeys that people make are less than one mile, and 42% are less than two miles

Reduce air journeys too

Aviation is the fastest growing source of greenhouse gases, with emissions more than doubling between 1990 and 2005 (DEFRA). Flights can add dramatically to your carbon footprint and so the need to fly should be carefully considered. Flights are estimated to account for around 7% of the nation's carbon emissions at present but this is forecast to increase to around 25% in the coming decades. The Government's recent decision to expand major airports to allow a huge increase in air travel has the potential to increase this source of carbon dioxide even more.

Travel by train and coach rather than air on domestic and short-haul journeys and reduce your carbon footprint. Modern electric trains emit around 75% less carbon dioxide per passenger compared to cars and domestic flights.

Consider alternatives to travelling by air and reduce the number of flights you take, for example taking fewer, longer breaks if possible instead of several short ones. Taking more holidays closer to home also reduces the need for air travel.

Many short-haul journeys in the UK and Northern Europe can be easily undertaken by rail or sea. The website www.seat61.com is an excellent resource to help you plan more sustainable journeys.

Renewable Energy

Renewable energy is the term used to describe energy flows that occur naturally and continuously in the environment, such as energy from the wind, waves or tides. The origin of the majority of these sources can be traced back to either the sun, where energy from the sun helps to drive the earth's weather patterns or the gravitational effects of the sun and the moon. This means that these sources are sustainable and will not run out.



It is possible to generate your own energy from renewable sources: this is often referred to as "micro-generation" and "micro-renewables". These technologies are much more readily available now than they were in the past, and are becoming a more common sight on buildings across Scotland.

The following information has been taken from the Energy Saving Trust.

It is important to remember that you may need planning consent and/or a building warrant before you can install them.

Solar Water Heating

Solar water heating systems use heat from the sun to work alongside your conventional water heater. There is a large choice of equipment to suit many applications.

The typical installation cost for a domestic system is £3,000 - £4,500. Evacuated tube systems are more advanced in design than flat plate, and so tend to be more expensive

How does it work?

For domestic hot water there are three main components:

1. Solar panels or collectors - are fitted to your roof. They collect heat from the sun's radiation. There are 2 main types of collector:
 - ▲ Flat plate systems - which comprise of an absorber plate with a transparent cover to collect the sun's heat
 - ▲ Evacuated tube systems - which comprise of a row of glass tubes that each contain an absorber plate feeding into a manifold which transports the heated fluid
2. A heat transfer system - uses the collected heat to heat water
3. Hot water cylinder - stores the hot water that is heated during the day and supplies it for use later.

The benefits

Solar water heating can provide almost all of your hot water during the summer months and about a third all year round. The average domestic system reduces CO₂ by around 350 - 400kg per year, depending on the fuel replaced.

Is it suitable for my home?

Solar water heating can be used in the home or for larger applications, such as swimming pools. You will need 3-4 square metres of southeast to southwest facing roof receiving direct sunlight for the main part of the day for a domestic system. You'll also need space to locate an additional water cylinder if required.



Choosing a system suitable to your needs requires consideration of a range of factors, including the area of south facing roof, the existing water heating system (e.g. some combi boilers aren't suitable) and your budget. Solar water heating systems tend to require little maintenance.

PV systems produce no greenhouse gases and each kWp can save approximately 325kg of carbon dioxide emissions per year, adding up to about 8 tonnes over a system's lifetime

Maintenance costs

Solar water heating systems generally come with a 5-10 year warranty. A yearly check by the householder and a more detailed check by a professional installer every 3-5 years should be sufficient.

Solar electricity

Solar PV (photovoltaic) uses energy from the sun to create electricity to run appliances and lighting. PV requires only daylight, not direct sunlight, to generate electricity and so can still generate some power on a cloudy day.

How does it work?

Photovoltaic systems use cells to convert sunlight into electricity. The PV cell consists of one or two layers of a semi conducting material, usually silicon. When light shines on the cell it creates an electric field across the layers causing electricity to flow. The greater the intensity of the light, the greater the flow of electricity. PV cells are referred to in terms of the amount of energy they generate in full sunlight, known as kilowatt peak or kWp.

Is it suitable for my home?

You can use PV systems for a building with a roof or wall that faces within 90 degrees of south, as long as no other buildings or large trees overshadow it. If the roof surface is in shadow for parts of the day, the output of the system decreases.

PV arrays now come in a variety of shapes and colours, ranging from grey 'solar tiles' that look like roof tiles to panels and transparent cells that you can use on conservatories and glass to provide shading as well as generating electricity.

Solar panels are not light and the roof must be strong enough to take their weight, especially if the panel is placed on top of existing tiles.

Costs and savings

Prices for PV systems vary depending on the size of the system to be installed, type of PV cell used and the nature of the actual building on which the PV is mounted. The size of the system is dictated by the amount of electricity required.

For the average domestic system, costs can be around £4,000- £9,000 per kWp installed with most domestic systems usually between 2 and 2.5 kWp. Solar tiles cost more than conventional panels and panels that are integrated into a roof are more expensive than those that sit on top.

If you intend to have major roof repairs carried out it may be worth exploring PV tiles as they can offset the cost of roof tiles.

You could be saving up to 800 kilograms of CO² a year.



Grid connected systems require very little maintenance, generally limited to ensuring that the panels are kept relatively clean and that shade from trees has not become a problem. The wiring and components of the system should be checked regularly by a qualified technician.

Stand-alone systems, i.e. those not connected to the grid, need maintenance on other system components, such as batteries.

Wind Turbines

Wind turbines use the wind's lift forces to rotate aerodynamic blades that turn a rotor which generates electricity. In the UK we have 40% of Europe's total wind energy. But it's still largely untapped and only 0.5% of our electricity requirements are currently generated by wind power.



How does it work?

Most small wind turbines generate direct current (DC) electricity. Systems that are not connected to the national grid require battery storage and an inverter to convert DC electricity to AC (alternating current - mains electricity).

Wind systems can also be connected to the national electricity grid. A special inverter and controller converts DC electricity to AC at a quality and standard acceptable to the grid. No battery storage is required. Any unused or excess electricity may be able to be exported to the grid and sold to the local electricity supply company.

There are two types of wind turbines.

1. Mast mounted - which are free standing and located near the building(s) that will be using the electricity.
2. Roof mounted - which can be installed on house roofs and other buildings.

Benefits

Wind power is a clean, renewable source of energy that produces no carbon dioxide emissions or waste products.

Is it suitable for my home?

Individual turbines vary in size and power output from a few hundred watts to two or three megawatts (as a guide, a typical domestic system would be 1 - 6 kilowatts).

You should consider the following issues if you're thinking about small scale wind power:

- ▲ Wind speed increases with height so it's best to have the turbine high on a mast or tower.
- ▲ Generally speaking, the ideal site is a smooth top hill with a flat, clear exposure, free from excessive turbulence and obstructions such as large trees, houses or other buildings.

Small-scale wind power is particularly suitable for remote off grid locations where conventional methods of supply are expensive or impractical.

Small-scale building-integrated wind turbines suitable for urban locations are also available to install in homes and other buildings.

Please note that the electricity generated at any one time by a wind turbine is highly dependent on the speed and direction of the wind. Ideally, you should undertake a professional assessment of the local wind speed for a full year at the exact location where you plan to install a turbine before proceeding. In practice, this may be difficult, expensive and time consuming to undertake. Therefore we recommend that, if you are considering a domestic building mounted installation and electricity generation is your main motivation, then you only consider a wind turbine under the following circumstances:

- ▲ The local annual average wind speed is 6 m/s or more. An approximate figure for your location can be checked on the DTI website (<http://www.dti.gov.uk/energy/sources/renewables/renewables-explained/wind-energy/page27326.html>).
- ▲ There are no significant nearby obstacles such as buildings, trees or hills that are likely to reduce the wind speed or increase turbulence.

Planning issues such as visual impact, noise and conservation issues also have to be considered.

Costs and savings

Roof mounted - These cost from £1,500. The amount of energy and carbon that roof top micro wind turbines save depends on several things including size, location, wind speed, nearby buildings and the local landscape. At the moment there is not enough data from existing wind turbine installations to provide a figure of how much energy and carbon could typically be saved.



Photo courtesy of Freedom Housing

Mast mounted - Larger systems in the region of 2.5kW to 6kW would cost between £11,000 - £19,000 installed. These costs are inclusive of the turbine, mast, inverters, battery storage (if required) and installation; however it's important to remember that costs always vary depending on location and the size and type of system.

Turbines can have a life of up to 20 years but require service checks every few years to ensure they work efficiently. For battery storage systems, typical battery life is around 6-10 years, depending on the type, so batteries may have to be replaced at some point in the system's life.

Biomass

Biomass is produced from organic materials, either directly from plants or indirectly from industrial, commercial, domestic or agricultural products. It is often called 'bioenergy' or 'biofuels'. It doesn't include fossil fuels, which have taken millions of years to be created.

Biomass crops differ from the annual arable crops and grassland they are likely to replace, in the habitat they provide, in their life cycle, growth characteristics and general appearance. If badly-managed, the increased production of biomass crops may intensify farming and forestry, impacting upon biodiversity and soil and water resources.

Biomass fall into two main categories:

- ▲ Woody biomass includes forest products, untreated wood products, energy crops and short rotation coppice, which are quick-growing trees like willow.
- ▲ Non-woody biomass includes animal waste, industrial and biodegradable municipal products from food processing and high energy crops. Examples are rape, sugar cane, maize.

For small-scale domestic applications of biomass the fuel usually takes the form of wood pellets, wood chips or wood logs.

The benefits

Producing energy from biomass has both environmental and economic advantages.

The CO₂ released when energy is generated from biomass is balanced by that absorbed during the fuel's production. Furthermore, biomass can contribute to waste management by harnessing energy from products that are often disposed of at landfill sites.

It is most cost effective when a local fuel source is used, which results in local investment and employment and also minimises transport miles to your home.

How it works

There are two main ways of using biomass to heat a domestic property:

1. Stand alone stoves providing space heating for a room. These can be fuelled by logs or pellets but only pellets are suitable for automatic feed, where the pellets are put in a hopper and are automatic released in to the stove. Generally they are 6-12 kW in output, and some models can be fitted with a back boiler to provide water heating.
2. Boilers connected to central heating and hot water systems. These are suitable for pellets, logs or chips, and are generally larger than 15 kW.

Unlike other forms of renewable energy, biomass systems require you to pay for the fuel. Fuel costs generally depend on the distance from your supplier and whether you can buy in large quantities

Is it suitable for my home?

You should consider the following issues if you're thinking about a biomass boiler or stove. An accredited installer will be able to provide more detailed advice.

- ▲ It's important to have storage space for the fuel, appropriate access to the boiler for loading and a local fuel supplier.
- ▲ The flue material must be specifically designed for wood fuel appliances and there must be sufficient air movement for proper operation of the stove. Chimneys can be fitted with a lined flue.
- ▲ Wood can only be burnt in exempted appliances, under the Clean Air Act.

Costs and savings

Stand alone room heaters generally cost around £3,000 installed. Savings will depend on how much they are used and which fuel you are replacing.



The cost for boilers varies depending on the system choice; a typical 15kW (average size required for a three-bedroom semi detached house) pellet boiler would cost around £5,000 - £11,000 installed, including the cost of the flue and commissioning. A manual log feed system of the same size would be slightly cheaper. A biomass powered boiler could save you up to £450 a year in energy bills and 6 - 7 tonnes of CO₂ per year.

Ground Source Heat Pumps

Ground source heat pumps use a buried ground loop that transfers heat from the ground into a building to provide space heating and, in some cases, to pre-heat domestic hot water. As well as ground source heat pumps, air source and water source heat pumps are also available.

The benefits

The system does not require any external fuel and is designed to heat a whole building.

The efficiency of a ground source heat pump system is measured by the coefficient of performance (CoP). This is the ratio of units of heat output for each unit of electricity used to drive the compressor and pump for the ground loop. Typical CoPs range from 3 to 4. This means that for every unit of electricity used to pump the heat, 3-4 units of heat are produced, making it an efficient way of heating a building. A ground source heat pump can have lower running costs than oil, LPG, coal and electric heating systems, however it can be more expensive than mains gas. If grid electricity is used for the compressor and pump, then you should consult a range of energy suppliers to benefit from the lowest running costs, for example by choosing an economy 10 or economy 7 tariff.

How it works

There are three important elements to a ground source heat pump:

1. The ground loop

This is comprised of lengths of pipe buried in the ground, either in a borehole or a horizontal trench. The pipe is usually a closed circuit and is filled with a mixture of water and antifreeze, which is pumped around the pipe absorbing heat from the ground. The ground loop can be:

- ▲ Vertical, for use in boreholes
- ▲ Horizontal, for use in trenches or
- ▲ Spiral, coil or 'slinky', also for use in trenches.

Costs of installing a typical 6-8 kW system range from about £7,000 to £13,000, but this can vary with the type of property and location. On average you can save £650 - £750 on your heating bills and 4.5 - 5.5 tonnes of CO₂ per year .

2. The heat pump

In the same way that your fridge uses refrigerant to extract heat from the inside, keeping your food cool, a ground source heat pump extracts heat from the ground, and uses it to heat your home. A ground source heat pump has three main parts:

- ▲ The evaporator absorbs the heat using the liquid in the ground loop.
- ▲ The compressor moves the refrigerant round the heat pump and compresses the gaseous refrigerant to the temperature needed for the heat distribution circuit.
- ▲ The condenser gives up heat to a hot water tank which feeds the distribution system.

3. Heat distribution system

This consists of under floor heating or radiators for space heating and in some cases water storage for hot water supply.

Is it suitable for my home?

You should consider the following issues if you're thinking about installing a ground source heat pump.

- ▲ You will need space outside your house for the ground loop.
- ▲ The ground will need to be suitable for digging a trench or borehole.

What fuel is being replaced? If it's electricity, oil, LPG or coal the payback will be more favourable than gas. Heat pumps are a good option where gas is unavailable.

Ground source heat pumps can be combined with radiators but these will normally be larger than with standard boiler systems. Under floor heating is better as it works at a lower temperature.

Want to be 100% renewable? Buy green electricity, or install solar PV or some other form of renewable electricity generating system to power the compressor and pump.

Combining the installation with other building works can reduce costs.

Have you installed insulation measures? Wall, floor and loft insulation will lower your heat demand and make the system more effective.

Air and water source heat pumps

Air and water source heat pumps use air or water respectively. They do not rely on a collection system and simply extract the heat from the source at the point of use.

Air source heat pumps can be fitted outside a house or in the roof space and generally perform better at slightly warmer air temperatures. Water source heat pumps can be used to provide heating in homes near to rivers, streams, lakes and lochs for example.

Grants for Renewables

Low Carbon Buildings Programme

- ▲ The programme provides grants for the installation of microgeneration technologies
 - Solar Thermal Hot Water / Solar PV
 - Wind Turbines
 - Ground Source / Air Source Heat Pumps
 - Wood Fuelled Boilers / Pellet Stoves
- ▲ Householders can apply for grants of up to £2,500
- ▲ The property must have appropriate insulation measures carried out
- ▲ The grants are only available for approved technologies installed by certified installers

Energy Saving Scotland home renewables grant scheme

- ▲ Grants available for private householders for the installation of renewables
 - Solar photovoltaic
 - Micro hydro-electric
 - Micro wind
 - Solar water / space heating
 - automated wood fuel heating systems (boilers and room heaters/stoves)
 - heat pumps (ground, air and water source)
- ▲ Householders can apply for grants of up to 30% of the costs of the installation, to a maximum of £4,000
- ▲ The installer and product must be accredited.

Carbon Offsetting

The most important way to reduce your carbon footprint is to prevent and reduce emissions. Where carbon emissions are unavoidable then carbon offsetting is a way of compensating for the emissions we produce with an equivalent carbon dioxide saving.

An increasing number of carbon offsetting schemes are being offered, particularly in the area of air travel. Travellers who want to reduce the impact of their journey's carbon footprint can calculate it and then make a monetary donation to "offset" their emissions through a tree-planting scheme or renewable energy project for example.



For further information contact the Energy Saving Scotland advice centre on 0800 512 012 or visit www.energysavingtrust.org.uk/scotland

Will offsetting solve climate change?

Carbon offsetting is not a failsafe method of eliminating the effect of your carbon emissions since the science of climate change and carbon sequestration (storage of carbon by trees for example) is inexact at best. However, carbon offsetting can offer certain benefits:

- ▲ It provides a means to calculate the emissions resulting from our activities and helps to raise awareness of our own impact on climate change. Paying to offset can provide a useful stepping stone to reduce the impact of our way of life on the environment while we adjust the way we do things to cut our carbon emissions at source.
- ▲ Where undertaken responsibly, it can benefit developing countries by enabling projects that boost sustainable development (e.g. through provision of renewable energy and investment in low carbon and alternative technology) and can go some way to reduce the impact of carbon emissions globally on a temporary basis.

Carbon Offsetting involves calculating your emissions and then purchasing 'credits' from emission reduction projects that have prevented or removed the emission of an equivalent amount of carbon dioxide elsewhere

Carbon offsetting is not a cure for climate change but it can help raise awareness and reduce the impact of our actions. The best action to take is to reduce emissions

If you decide to offset, you can use a company that is approved by the Government that follows strict criteria when applying carbon offsets.

The companies currently approved are

- ▲ British Airways - www.britishairways.com
- ▲ Carbon Footprint Ltd - www.carbonfootprint.com
- ▲ Carbon Passport - www.carbonpassport.com
- ▲ Clear - www.clear-offset.com
- ▲ PURE the Clean Planet Trust - www.puretrust.org.uk
- ▲ Carbon Retirement - www.carbonretirement.com

Look for the carbon offsetting quality mark



Offsetting will not provide a permanent solution to reducing carbon in the atmosphere or solve climate change.

Useful Contacts

Act on CO₂

Find out what your carbon footprint is and how you can make some simple changes to help tackle climate change.

The Act on CO₂ Calculator has the following key attributes:

- ▲ The data and calculations have been recognised by government
- ▲ You can use the calculator to calculate an individual or household footprint
- ▲ 3 areas of your lifestyle are brought together in one calculator
- ▲ It provides advice more tailored to your needs rather than overly general tips
- ▲ It provides recommendations on reducing and avoiding energy waste, rather than simply offsetting.

Website:

www.actonco2.direct.gov.uk/carboncalc

Carbon Calculator

A easy to use website developed by Warwick University

Website: www.carboncalculator.co.uk

Energy Saving Scotland advice centre

You can get free, impartial and expert advice about all aspects of reducing energy and carbon emissions.

Their experts:

- ▲ Provide impartial information on home energy efficiency as they are an independent, not for profit organisation
- ▲ Can advise you on any grants and offers that may be available to help towards the costs of installing measures
- ▲ Have experience of helping people take effective energy saving actions from the start of the process to the end.

To contact your local Energy Saving Scotland advice centre call 0800 512 012

Energy Saving Trust (EST)

The Energy Saving Trust is one of the UK's leading organisations set up to address the damaging effects of climate change and they have offices in England, Scotland, Northern Ireland and Wales. Their aim is to cut emissions of carbon dioxide (CO₂) by promoting the sustainable and efficient use of energy.

They provide impartial information and advice and have a network of advice centres in the UK specifically designed to help people take action.

Website: www.energysavingtrust.org.uk

Tel: 0800 512 012

Energy Saving Scotland home renewables grant scheme

A one-stop shop offering grants, advice and project support to assist the development of new community and household renewable schemes in Scotland.

The objectives are:

- ▲ To support the development of renewable projects
- ▲ To support the installation of household renewables
- ▲ To raise awareness of renewable technologies and their benefits to Scotland.

Website: www.energysavingtrust.org.uk/

Tel: 0800 512 012

Food Carbon

The Food Carbon Footprint Calculator provides the opportunity to calculate the resultant carbon dioxide from the food you eat, called your "Food Carbon Footprint".

This website also offers personalised and practical ways to reduce the carbon footprint of your diet, reducing your impact on climate change.

Website: www.foodcarbon.co.uk

FreecycleClacks

The Freecycle Network™ is a grassroots movement of people who are giving and getting stuff (big or small - anything from a pack of pencils to a washing machine) for free.

FreecycleClacks is run by a local volunteer. Anyone living or working in Clackmannanshire or able to travel to Clacks to collect items can join. Membership is free.

Our goal: Find a home for things otherwise headed for the landfill.

One constraint: everything posted must be FREE.

Website:
www.groups.yahoo.com/group/freecycleclacks#

Recycling Depot

Forthbank Recycling Centre allows you to recycle or dispose of household waste and some types of commercial waste.

The Forthbank Recycling Centre, Bowhouse Road, Alloa, FK10 1DA.

Tel: 01259 216972

Sustrans

The UK's leading sustainable transport charity - envisions a world in which people choose to travel in ways that benefit their health and the environment. The organisation works on projects to encourage and enable people to walk cycle and use public transport while reducing motor traffic and its adverse effects.

Website: www.sustrans.org.uk

Traveline Scotland

Traveline Scotland aims to provide accurate, up to date and impartial timetable information to get you to your destination by the quickest public transport mode.

Website: www.travelinescotland.com

Tel: 0871 200 22 33.

Lines are open 24 hours a day, 7 days a week

TripshareClacks

A scheme to match care share journeys. Register your details and your journey, TripshareClacks will then search for possible matches. It doesn't matter where you live or work, the scheme can match up journeys throughout the UK.

Website: www.tripshareclacks.com

Tel: 08700 11 11 99.

Vehicle Certification Agency

The Vehicle Certification Agency (VCA) supplies information on New Car Fuel Consumption and Exhaust Emissions Figures. It has long been appreciated that we all have our part to play in reducing the impact of the motor vehicle. The purpose of the site is twofold:

- ▲ To help buyers of new cars to reduce the impact of their vehicle on the environment.
- ▲ Identify the vehicle excise duty and/or the relevant Company Car tax percentage bracket, based on their CO2 level.

Website: www.vcacarfueldata.org.uk

Waste Aware Scotland

Waste Aware Scotland is a national campaign that aims to change public attitudes and behaviour towards waste. Local campaigns are being run to encourage people to Reduce, Reuse and Recycle.

Suzanne Somerville is the Campaign Officer responsible for the Forth Valley Waste Strategy Area.

E-mail:
suzanne.somerville@ksbscotland.org.uk

Website: www.wasteawarescotland.org.uk

Waste Connect

Waste Connect is a comprehensive reference for recycling points throughout the country.

If you can't find what you want through their search engine, then check out their fact sheets for more detailed information on a variety of materials.

Website: www.wasteconnect.co.uk

Calculate Your Footprint

Fill in the annual energy value from your bill or records into the left column, then multiply by the conversion factor and insert that figure in the right column.

	Energy Values	Conversion factor	Result	
	kWh mains electricity	0.43 =		kgCO ₂
	kWh natural gas	0.19 =		kgCO ₂
	therms natural gas	5.50 =		kgCO ₂
	litres gasoil or diesel	2.68 =		kgCO ₂
	litres of petrol	2.31 =		kgCO ₂
	litres of LPG	1.51 =		kgCO ₂
	tonnes of coal	2,419 =		kgCO ₂
	miles in a petrol car	0.36 =		kgCO ₂
	miles on a train or bus	0.1 =		kgCO ₂
	miles in an aeroplane	0.29 =		kgCO ₂
				Total

Bear in mind that around half UK CO₂ emissions come from industry and commerce, supporting our everyday lifestyle. So if your personal profile comes out below about 3,000 kg CO₂ (3 tonnes), you are doing well.

This is a simplified carbon footprint calculator, for more in depth calculators try:

www.carboncalculator.co.uk or www.actonco2.direct.gov.uk



CLACKMANNANSHIRE
COUNCIL

www.clacksweb.org.uk