

SPICe Briefing

Climate Change: The Role of the Individual

13 July 2012

12/47

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The Climate Change (Scotland) Act 2009 sets targets for Scotland to reduce its greenhouse gas emissions by 42% by 2020 and 80% by 2050, based on 1990 levels. In order to achieve this target, it is widely recognised that individuals have a very important role to play in lowering their carbon footprint. This briefing discusses factors that affect such behaviour change, such as leadership, cost and social norms. In addition, the briefing examines the key areas where individuals can change their behaviour to lead a more sustainable lifestyle and describes associated policy encouraging people to do so. So called “environmentally-friendly behaviour” can be associated with positive social, health and financial impacts.



Image Source: Earth Times



CONTENTS

EXECUTIVE SUMMARY	3
INTRODUCTION	5
CARBON FOOTPRINT	6
FACTORS AFFECTING BEHAVIOUR CHANGE	7
<i>Government Leadership</i>	7
<i>Organisational Leadership</i>	8
<i>Cost</i>	9
<i>Awareness</i>	9
<i>Social Norms</i>	10
<i>Values, Attitude & Motivation</i>	10
<i>Habits</i>	10
<i>Infrastructure</i>	11
<i>Socio-demographics</i>	11
<i>Image</i>	11
<i>Aspirations</i>	12
<i>Significant Life Events</i>	12
CLIMATE CHANGE BEHAVIOUR AREAS	13
TRAVEL BEHAVIOURS	13
<i>Support for Bus Operators</i>	16
<i>Smarter Choices Smarter Places (SCSP)</i>	16
<i>E-cosse</i>	16
HOME ENERGY BEHAVIOURS	16
<i>Energy Assistance Package</i>	18
<i>Home Energy Report</i>	18
<i>Landlord Responsibilities</i>	19
FOOD & DRINK BEHAVIOURS	19
WASTE BEHAVIOURS	20
WATER BEHAVIOURS	22
SHOPPING BEHAVIOURS	24
<i>Choice Editing</i>	25
COMMUNITY ENGAGEMENT	25
APPENDIX 1: AVERAGE CARBON FOOTPRINT IN SCOTTISH LOCAL AUTHORITY AREAS	26
SOURCES	29
RELATED BRIEFINGS	36

EXECUTIVE SUMMARY

The [Climate Change \(Scotland\) Act 2009](#) makes it a legal requirement for Scotland to reduce its greenhouse gas emissions by 80% by 2050 and sets an interim target of 42% by 2020, based on 1990 levels.

The key behaviour areas where environmentally-friendly behaviour is encouraged so that people can lower their carbon footprint are:

- Travel;
- Home energy;
- Food & drink;
- Waste;
- Water usage;
- Shopping.

In addition to the environmental benefits of individuals adopting lower carbon lifestyles, there may be physical health benefits (e.g. people walking and cycling more instead of using the car for short journeys) and mental health benefits (e.g. mental health benefits associated with using green-space and cycling paths as a break from modern life). There may also be financial benefits (e.g. simple energy saving around the home).

There are two main types of environmentally-friendly behaviour change:

- 1) Sustained realistic changes to everyday lifestyle and habits;
- 2) One off decisions about purchasing & upgrading.

Current policies focus on providing individuals with information and making them aware of the link between their behaviour and climate change. By providing information, it is hoped that this will change people's attitude; however, there is sometimes an attitude-behaviour gap and changing behaviour is more difficult than changing attitudes.

One of the main barriers to behaviour change, especially with regards to decisions about purchasing & upgrading, is cost. Simple behaviour around the home (e.g. switching off lights when not in use and turning down the heating) will result in immediate savings on energy bills. However, decisions such as upgrading to renewable energy sources or more energy-efficient products may require financial investment and although they are likely to pay-off in the long term, cost is a barrier for many people. To encourage people to make such environmentally-friendly decisions, there are some government policies in place, such as the "Boiler Scrappage Scheme" and the "Green Deal".

Encouraging environmentally-friendly behaviour is a real marketing challenge. Research has shown that environmental attitudes differ amongst age groups, sex and socio-economic status. An example of targeted marketing is Eco-Schools Scotland which promotes environmentally-

friendly behaviour amongst children in schools, who are encouraged to take the lead on educating parents/guardians to implement behaviour changes at home.

Targeted marketing as part of promoting action on climate change is likely to be most effective in promoting behaviour change. For example, strategies targeting those leaving home for the first time, moving home, retiring or those who have just become parents are likely to be most effective as people's outlook and values in life change at these key events and they may be open to changing their environmental behaviour.

In addition to attitude, many other factors affect behaviour. Leadership provided by government and businesses is essential to promote environmentally-friendly behaviour. Supermarkets can "choice-edit" products for their carbon impact; for example, by removing or limiting products associated with high carbon emissions.

People's aspirations, image and social norms are also barriers to behaviour change. These barriers must become motivators for change if greenhouse gas emissions targets are to be met. Generally, people want to do what is the social norm. For example recycling is the social norm now, but was not 10-15 years ago. This is due to effective awareness strategies, improved recycling infrastructures at national and local levels and a societal shift in attitude.

With effective strategies, people's aspirations can be changed so that they aspire to lead a more sustainable lifestyle. An example is changing attitudes so that people aspire to drive electric or hybrid vehicles instead of fast, energy inefficient vehicles.

Although communication strategies can be effective in raising awareness and promoting attitude change, there are people who do not take on board the information about the link between behaviour and climate change and others who are aware, but choose not to engage with environmentally-friendly behaviour. For this group, environmentally-friendly options need to be the easiest option.

It is claimed that awareness strategies are not suitable for tackling climate change, given the predicted severity of the impacts of climate change and the speed at which we need to act. Some academics have argued that the government should legislate for environmentally-friendly behaviour, even though it is may be unlikely to be popular with the electorate. They point to policies such as the smoking ban in public places introduced in Scotland in 2006, which only became a popular policy after it was legislated for. This approach argues that behaviour change can lead to attitude change, whereas current strategies rely on attitude change leading to behaviour change. The recent Waste (Scotland) Regulations 2012 set legislative targets for local authorities and businesses and are an example of legislation that is introduced after attitude change. Interestingly, this legislation does not target individuals, perhaps because societal attitude has changed and most people now recycle.

The 2009 Act requires the Scottish Government to deliver a public engagement strategy to promote awareness of climate change and explain how environmentally-friendly behaviour can help combat climate change. The strategy outlines the steps that the Scottish Government is taking to:

- Inform people about climate change targets set in the legislation;
- Encourage people to help contribute towards these targets being met;
- Identify actions people may take to lead more carbon sustainable lifestyles.

INTRODUCTION

It is widely accepted that the earth's climate is changing due to human attributed greenhouse gas (GHG) emissions. The temperature in Scotland has risen by around 0.8°C between 1980 and 2009 (UK Climate Projections, 2009). Scotland has been experiencing dryer summers, reduced snowfall and winters with heavier, more severe, rainfall.

To combat climate change, the [Climate Change \(Scotland\) Act](#) ('the Act') was passed unanimously by the Scottish Parliament in 2009. The Act sets long-term targets to reduce Scotland's GHG emissions by 80% by 2050, based on 1990 levels. It set an interim target of a 42% reduction in emissions by 2020. The Act is considered to be one of the most ambitious pieces of legislation in the world with regards to tackling climate change. Mary Robinson, President of the Mary Robinson Foundation – Climate Justice (MRF CJ) commented:

"I am impressed by the leadership Scotland has shown in the area of climate change... Scotland is numbered amongst the few countries in the world to adopt climate change legislation – the most meaningful signal of a nation's commitment to act."
(Mary Robinson, 2011).

Scotland must also comply with UK and EU legislation on climate change, although the interim targets are less ambitious than those set by Climate Change (Scotland) Act (see Table 1).

Table 1: Scotland, UK and EU climate change legislative targets for reduction in emissions, based on 1990 levels. (Audit Scotland, 2011).

	2020 Target	2050 Target
Scotland	42%	80%
UK	34%	80%
EU	20%	No target

In order to achieve the targets, the Act set a requirement for Scottish Ministers to:

- "Inform people in Scotland about climate change targets specified by the Act;
- Encourage them to contribute towards the achievement of these targets;
- Identify actions people in Scotland may take to contribute to the achievement of those targets" (Climate Change (Scotland) Act 2009).

The Scottish Government has said:

"We want Scotland to be a leading nation in sustainable living, reducing the impact we have on both our local and global environment. Our current consumption patterns are unsustainable" (Scottish Government, 2011a).

CARBON FOOTPRINT

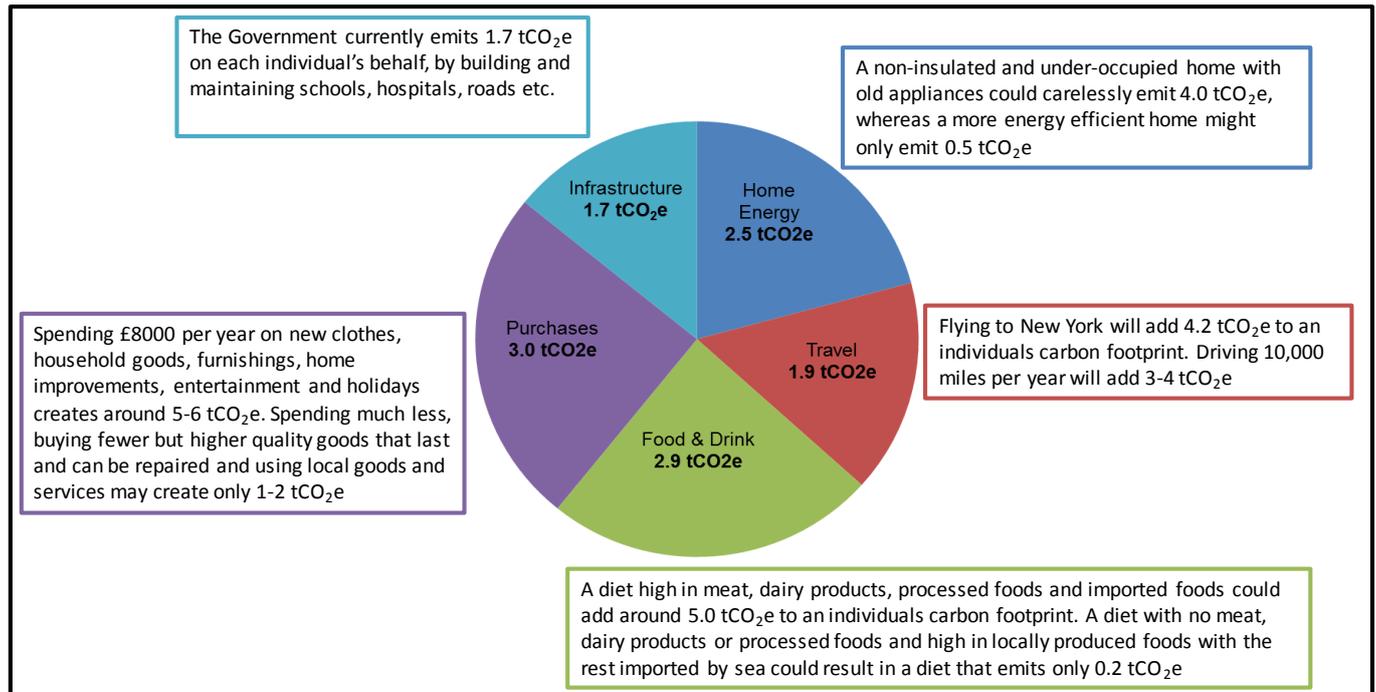
Carbon footprint is a measure of all GHG emissions¹ and is a term that can be applied to a country's, an organisation's, a community's or an individual's carbon emissions. Everything we do and everything we consume has a carbon footprint associated with it. The Scottish Government define carbon footprint as the emissions generated at home or abroad in the production and transport of the goods and services we consume (Scottish Government, 2012a).

In the publication '[Low Carbon Scotland: Public Engagement Strategy](#)' (Scottish Government, 2010a), the Scottish Government describes how it will encourage people to reduce their carbon footprint. An individual's carbon footprint depends upon:

- How much energy an individual uses to heat their home, the electronics and appliances used in their home, how energy efficient the home is and the products they buy;
- Method of transport used on a day-to-day basis including how often an individual uses air transport;
- The food that an individual purchases, taking packaging and source of food into account;
- How much water an individual uses in the home and garden.

The average carbon footprint of someone in the UK is 12 tCO₂e per year² but this varies throughout local authority areas (Appendix 1). Figure 1 shows a break down the 12 tCO₂e into key areas.

Figure 1: Breakdown of the UK average carbon footprint. This information and accompanying figure text is taken and adapted from information provided by Norfolk County Council (2011).



¹ GHGs are defined in the Act as carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. The Act does, however, make provisions for Scottish Ministers to be able to add a gas or modify the description of a gas if agreement is made at European or international level.

² Carbon footprint relates to the carbon equivalent of emissions and is expressed in tonnes of CO₂ equivalent (tCO₂e) per year.

FACTORS AFFECTING BEHAVIOUR CHANGE

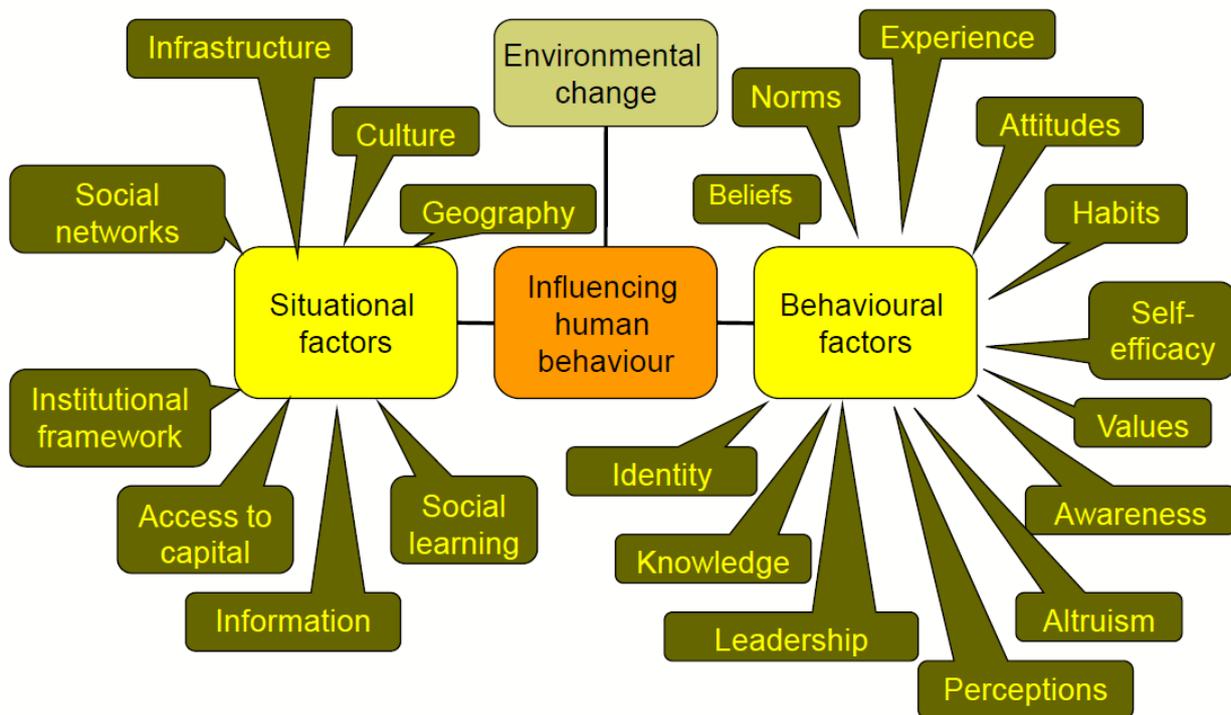
The Scottish Government is keen to send out clear messages about the implications of climate change and the benefits of a low carbon society (Scottish Government, 2010a). Environmentally-friendly behavioural change can fall into two distinct categories:

1. Sustained realistic changes to everyday lifestyle and habits;
2. One-off decisions about purchasing & upgrading.

Glasgow City Council has reported that although environmentally-friendly views are common in Scotland, a significant shift in behaviour hasn't yet happened (Glasgow City Council, 2010). Understanding what drives behaviour change is complex and promoting behaviour change is even more complex.

Defra (2011) produced a Sustainable Lifestyles Framework which is a tool to support organisations understand human behaviour change and develop effective approaches to influence behaviours. Figure 2 illustrates the complexity of behavioural factors, combined with situational factors that can affect environmental behaviour. Some factors are discussed further in the text below.

Figure 2: Situational and behavioural factors influencing environmental behaviour (Defra, 2011).



Government Leadership

Behaviour change on a large-scale is likely to only be achieved when governments, local authorities and businesses are seen to act first and provide effective leadership. It has been suggested that the UK Government has failed to secure large-scale environmentally-friendly behaviour change because it has made the assumption that providing information will change people's attitudes and that behaviour change will follow (Ockwell *et al.*, 2010).

According to Downing and Ballantyne (2007) most people in the UK think that the government should take the lead on climate change and should legislate for behavioural change. The Economic & Social Research Council (ESRC) argues that behaviour change backed by

regulation and energy rationing through price rises and allowances is required in addition to substantial personal sacrifice and behaviour change (ESRC, 2010). Ockwell *et al.* (2010) report that legislation is required to regulate people's environmental behaviour, even though it is unlikely to be popular with the electorate. They point to the London congestion charge and national smoking ban which are now popular policies, despite initial unpopularity. However, this may not reflect the complexity of environmentally-friendly behaviour changes. Legislating against an individual behaviour (e.g. smoking in a public building) can only be measured by compliance or non-compliance. Environmentally-friendly behaviours span many behaviour areas and greater complexity is required to measure impact and compliance. The UK Government Behavioural Insights Team works specifically on finding innovative ways of encouraging, enabling and supporting people to make better choices for themselves (Cabinet Office, 2011). For example, they work on ways of making it easier for people to make energy efficiency measures in the home. The UK Government recognises the benefits of 'nudge' approaches but do not see them as alternatives to policy approaches (Cabinet Office, 2011).

Although individual, voluntary or community action is preferred by the Government, it does not take personal or structural barriers to change into account nor does it accept that many people are unable or unwilling to adopt a low-carbon lifestyle (Ockwell *et al.*, 2010). Voluntary and community action is extremely useful; however, its effects are limited by the seriousness of climate change and the urgency of action required (Ockwell *et al.*, 2010). Ockwell *et al.* (2009) argue that a combination of top-down (legislation) and bottom-up (community) action is required to effectively tackle the problem of climate change. There is also a perception that if climate change is serious enough, then the government would regulate supermarkets to promote low carbon products (Dresner *et al.*, 2007).

In June 2012, as part of an SNP manifesto commitment to "seek to phase out free plastic bags in supermarkets" the Scottish Government launched a consultation on its proposal to introduce a 5p charge for carrier bags. It proposes that it would become a requirement for all retailers to charge for carrier bags and that this would include all thin gauge/disposable carrier bags regardless of material. In Wales, where charging for carrier bags is already a legislative requirement, research has shown that the introduction of charging for carrier bags has resulted in a 90% reduction in carrier bag use by some supermarket chains (BBC, 2012).

Organisational Leadership

The workplace has a role to play in reducing its own carbon footprint and in encouraging the workforce to do so. Research has shown that workplaces tend to start off by focusing on energy consumption and waste/recycling initiatives, simply because changing travel behaviour is more difficult (Cox *et al.*, 2012). Policies such as mandatory recycling seem to have strong impacts. and involving workers in environmentally-friendly behaviour change initiatives is likely to be more effective in encouraging long-term change than a top-down approach. Changing food behaviours are difficult for workplaces that do not offer catering or canteen facilities. It is estimated that around 20-30% of people take part in voluntary low carbon activities at work (Cox *et al.*, 2012). There is evidence that some environmentally-friendly behaviours learned and encouraged in the workplace are 'spilled over' to the home, especially travel and recycling behaviours. This is partly driven by exposure to climate change and environment education as part of low-carbon initiatives (Cox *et al.*, 2012). Individuals have the opportunity to provide leadership by encouraging environmentally-friendly behaviour change within the organisation and amongst their co-workers.

Organisations that are committed to reducing their carbon footprints have seen benefits that go beyond being an environmentally-friendly company. These include improving their reputation as an environmentally-friendly brand; improved sales and customer retention; the ability to recruit and retain high quality staff and reduced operations costs (Cox *et al.*, 2012). The role of

companies in influencing individual's behaviour should not be underestimated. Organisations have a large influence over an individual's carbon footprint. For example, Marks & Spencer (M&S) launched their sustainability programme in 2007 called 'Plan A' (*because there is no Plan B*) which has set 180 commitments to be achieved by 2015 to meet their goal of becoming the world's most sustainable retailer (M&S, 2012a). One of the high profile commitments is the decision to charge for the use of carrier bags, to encourage people to re-use their bags and change their environmental behaviour. The revenue raised from this was used to fund environmental 'Groundwork' projects throughout the UK. As of June 2012, in the 6 weeks since the launch of M&S Shwopping initiative (buy one item, give one item), over half a million items have been 'shwopped' in M&S stores, with every item being donated to Oxfam for re-sale, re-use or recycling (M&S, 2012b). Notably, organisations can negatively impact on an individual's carbon emissions, such as being so inaccessible for active or public transport, that employees and customers need to use cars.

The Scottish Parliamentary Corporate Body (SPCB) detailed its environmental achievements and ambitions in the SPCB Environmental & Sustainability Annual Report (2011). SPCB became the first public sector organisation to meet the requirements of CEMARS (Certified Emissions Measurement and Reduction Scheme). CEMARS status is awarded to organisations that have demonstrated a robust commitment and plan to reduce GHG emissions. By 2011, SPCB had reduced its carbon emissions by 12% based on 2005/06 levels. However, there are challenges and targets to be met, including SPCB targets for a 20% cut in emissions by 2015, 42% by 2020 and 80% by 2050. Most of the carbon reductions made to date have been because of a reduction in electricity consumption. Changing the way that SPCB employees, visitors and MSP's travel to and from the Scottish Parliament building remains an issue to be considered.

Cost

One of the key factors affecting environmentally-friendly behaviour change is cost. Cost can be both a barrier and motivator of behaviour change (Platt & Retallack, 2009). Some environmentally-friendly behaviours such as simple home energy saving behaviours or reducing food waste can save money, so this is a good motivator for change. On the other hand, changes that require payment up front may be a barrier, even if they pay-off in the long term, such as installing solar panels or upgrading an inefficient boiler. The Energy Act (2011) makes provisions for the "Green Deal"³ which removes the need to pay up-front for energy efficient home improvements and instead provides the reassurance that the cost of the measures will be covered by savings on energy bills.

Awareness

Lack of awareness or knowledge is a key barrier to behaviour change. Although awareness of the concept of climate change at a basic level is very high, a sophisticated understanding of the issue is random and inconsistent (Anable *et al.*, 2006). This high level of general knowledge is not reflected in the understanding of behavioural impacts on climate change (The Royal Society of Edinburgh, 2011). For example, a lack of awareness about energy efficient products and practices is a barrier to behaviour change (Scottish Government, 2011b). There is also a lack of awareness and understanding about the amount of behavioural change that is required to meet the 80% target set in the Act. Some people may be aware of the impacts of climate change and

³ The Green Deal provides homeowners with a loan of up to £10,000 to make home energy efficiency improvements. It removes any up-front costs that would otherwise need to be paid. Unlike any other loan, costs are paid back through the energy bill over time and if an individual sells their house after Green Deal financing, the bill stays with the property, not the seller.

have a psychological fear of its effects. Environmentally-friendly policies can make people feel empowered to make sustainable behaviour changes.

Social Norms

Social psychologists have long recognised that people's behaviour is influenced by the behaviour of people around them. Climate change behaviours are therefore influenced by what is the social norm. A good example of where changing social norms over the past 10 years have dictated behavioural change is in recycling, where it is now the social norm to recycle household waste. This change in attitude and behaviour is partly as a result of local government waste regulations and improved recycling infrastructure & services. Social norms are influenced by government regulations and this is likely to be more essential than ever in promoting behavioural change to help meet the targets set in the Act. Research by Asda has found that customers think environmentally-friendly choices should be made to seem the "normal" and "intelligent" choice (Asda, 2011). It is also worth noting that some people who have already changed their behaviour may feel isolated and can be at risk of reverting back to a higher carbon footprint.

Values, Attitude & Motivation

People who are genuinely concerned (attitude) about the effects of climate change are likely to be motivated to make environmentally-friendly behavioural changes. Government strategies for behavioural change have focused on providing information and changing attitudes; however, this does not take the attitude-behaviour gap into account. For example, some people who are very concerned about climate change don't make the transition to changing their behaviour and might, for example, be regular air travellers despite their environmental concerns. Changing attitude is more difficult than changing behaviour as legislation can force behaviour change, regardless of attitude. A successful example of behaviour change leading to attitude change is the 2006 Scottish smoking ban in public places which legislated for behaviour change and attitude change followed thereafter.

Ipsos MORI reported that general media coverage impacts the population's attitude towards climate change, showing reduced concern for climate change between 2005 and 2010, and that the action people say they will take is more environmentally-friendly than the actions they actually take (Page, 2010). This increases the importance of making environmentally-friendly behaviour the easy option, and not focussing solely on environmental benefits.

Changing environmental attitudes in itself is an extremely difficult task. People need to be given the space and time to examine their feelings, emotions and beliefs in order to change attitudes leading to behaviour change. In that sense, providing information isn't enough to promote environmentally-friendly behaviour change but encouraging people to think about their values will help. There is a problematic gap between encouraging environmentally-friendly behaviours and the fact that society and individuals are totally geared towards the benefits of image, money and status (Kasser & Crompton, 2011). People might feel they are receiving mixed messages when encouraged to save money by adopting environmentally-friendly behaviour changes whilst society contradicts this by promoting spending, the benefits of material wealth and the importance of image and status. Therefore, discussions about feelings, emotions and benefits have a huge role to play in helping people change attitudes which will ultimately lead to sustainable behaviour change.

Habits

Habits are vital to our behaviour and destructive behaviours must be adjusted for environmentally-friendly behavioural change to occur. If new environmentally-friendly routines fit

easily into existing routines, then this is likely to change habits over time. For example, changing the habit from travelling to work using a car to using public transport is only likely to be achieved if it fits into the existing routing with a similar or quicker travel period and a good, consistent and affordable service. In Ireland and Wales, where legislation requires shops to charge for plastic bags, people taking their own shopping bags with them when they go shopping is now habitual behaviour (New Economics Foundation, 2005).

Infrastructure

Appropriate infrastructure is essential to promote behavioural change. Local authorities now provide recycling bins with a regular collection service, so the infrastructure is in place for recycling household waste. Development of cycling lanes and bus lanes are essential to promote use of these modes of transport, as is the frequency, connectivity and directness of public transport. The Act makes a range of provisions for promoting energy efficiency in buildings. For example, section 72 amends the [Town and Country Planning \(Scotland\) Act 1997](#) so that development plans for new buildings contain policies for reducing GHG emissions by installing low carbon technologies. The London Underground, combined with the congestion charge, is a good example of infrastructure combined with policy resulting in sustainable travel behaviours. Most people in London travel to work using the public transport system as it is generally perceived to be an excellent, reliable service. Using active or public transport in London is the social norm, highlighting the benefit of a co-ordinated public transport infrastructure. National government and local authorities working together to develop infrastructure for walking, cycling and low carbon vehicles (e.g. charging points for electric vehicles) is essential to promote behaviour change as poor infrastructure hinders the public's ability to adopt environmentally-friendly behaviours.

Socio-demographics

Research has shown that people on medium to high incomes are more engaged with climate change than those on lower incomes (Barrett *et al.*, 2006). Those on higher incomes are likely to be more environmentally-friendly in their food choices, by eating more locally produced, seasonal and organic foods than those on lower incomes (Gazella, 2011). However, they are more likely to demonstrate less sustainable travel behaviour than those on lower incomes by driving cars with larger engines, travelling more often by car, flying more often and having lower public transport usage (Thornton *et al.*, 2011).

Age group is another demographic that affects climate change behaviour. Young people are more likely to be engaged with climate change and behavioural impacts than those aged 55+ (Eurobarometer, 2009). In addition, females are more engaged with climate change and behavioural impacts than males, even though males feel better informed than females (Eurobarometer, 2009).

Image

Behaviour is influenced by the way that people want to be perceived by others and the image they want to create or maintain. Organisations such as the [Global Cool Foundation](#) target 'the mainstream' or 'trendsetters' by using celebrities to highlight that an environmentally-friendly lifestyle is cool, fun and aspirational. An example is their recent 'Wrap up for Winter' campaign, encouraging people to "*turn up the style and turn down the heat*" by wearing winter jumpers to save energy and lower their carbon footprint. Making a sustainable lifestyle more achievable could be facilitated by using local and community figures to promote a positive image of how local people are benefiting from environmentally-friendly behaviour.

Aspirations

People aspire to having status symbols like big houses, fast cars, the latest gadgets and overseas holidays. As Solitaire Townsend (Co-founder of [Futerra](#), a communications consultancy which advises the UK Government on its climate change communications strategy) pointed out:

“You can’t stop people wanting status symbols, but you can make them aspire to different ones” (Rogers, 2007).

Instead of aspiring for status symbols associated with high carbon emissions, people can be encouraged to aspire for low carbon status symbols, like having solar panels on their roofs or driving electric or hybrid cars. Townsend points out that the media and popular soap operas can be used to “de-status” things by making them appear as non-aspirational. An example she gives is that if driving a 4x4 is portrayed as being such an embarrassment that children don’t want to be in it with their parents or dropped off at school in it, then it will be successful in promoting environmentally-friendly behaviour change (Rogers, 2007). Ideally, children should be walking or cycling to school, or using public transport. If a car is required, aspirations and attitude must change so that it is socially unacceptable to be dropped off at school in a high carbon vehicle.

One particular difficulty in promoting environmentally-friendly behavioural change with regards to car usage and ownership is that people can become emotionally attached to their cars and can feel a sense of loss if they were not able to use their car or had to reduce their usage.

Significant Life Events

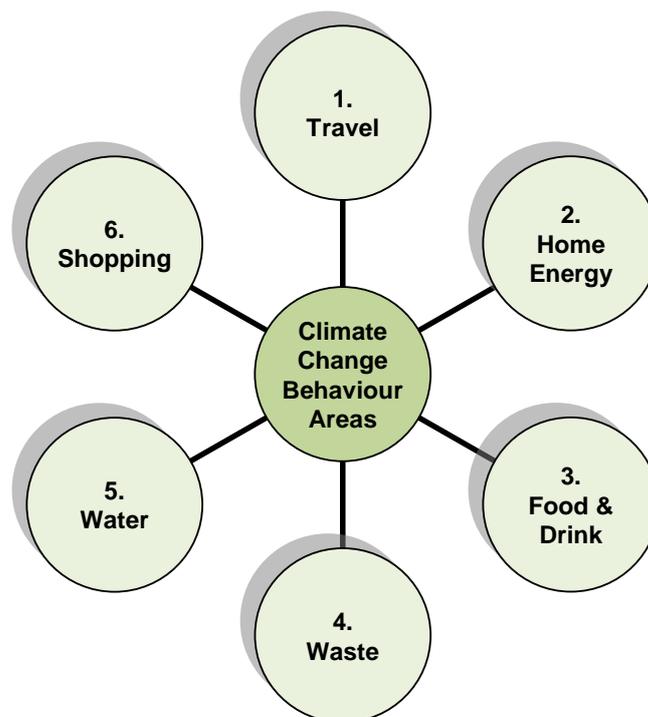
Significant life events are key events that can result in environmentally-friendly behaviour change. These events include leaving home for the first time, transition to parenthood, moving house, retirement, changing jobs, getting married or divorced; although the evidence for this is yet to be firmly established (Thompson *et al.*, 2011 & Southern *et al.*, 2011). Recovering from serious illness is also a significant event as it can trigger people to want to make significant lifestyle changes. These events are significant in relation to environmentally-friendly behaviour change as new skills and habits around food, travel, waste, home energy, water and shopping behaviours are formed and developed. Transition to parenthood is a particularly powerful event for environmentally-friendly behaviour change as it can promote an emotional value-based approach to environmental behaviour and spark real concern about climate change impacts on future generations. Significant life events also tend to be times that require financial outlays and many choices to be made, highlighting the need to make environmentally-friendly behaviour an easy option that doesn’t cost more than the alternatives.

CLIMATE CHANGE BEHAVIOUR AREAS

In order to meet the targets set in the Act, it is widely recognised that individuals have a vital role to play by reducing their carbon footprint. If every person in Scotland was expected to reduce their carbon footprint by 80% by 2050 to help meet the targets set in the Act, this would require each person to lower their carbon footprint to 2.4 tCO₂e (based on the current UK average carbon footprint of 12 tCO₂e per year), requiring a substantial change in lifestyle.

Key behaviour areas with regards to carbon footprint can be broken into 6 categories (Figure 3). Appropriate behaviour change within these categories will result in lower carbon footprints for individuals.

Figure 3: Carbon Footprint Behaviour Areas



The rest of this briefing considers key behaviour changes that are required by individuals if the targets set in the Act are to be met. Although it is not an exhaustive list of behaviour changes required, it gives an insight into some of the key behaviour changes required at individual level. Notably, there is some degree of overlap between the key behaviour areas. The briefing will also examine actions taken by the Scottish and UK Governments to promote environmentally-friendly behaviour change.

TRAVEL BEHAVIOURS

Transport accounts for 24.4% of Scotland's emissions (Scottish Government, 2012b). The Scottish Government's [Climate Change Delivery Plan](#) requires "almost complete decarbonisation of road transport by 2050 with significant progress by 2030, through whole scale adoption of electric cars and vans" (Scottish Government, 2009a). Behaviour change in some travel areas is likely to save individuals money and can also have positive impacts on physical and mental health (e.g. walking and cycling).

The [National Transport Strategy \(NTS\) \(2006\)](#) set a long-term vision for Scotland’s transport policies. The NTS introduced three strategic outcomes for future transport policies including:

- “Improve journey times and connections between our cities and towns and our global markets to tackle congestion and provide access to key markets;
- Reduce emissions to tackle climate change; and
- Improve quality, accessibility and affordability of public transport, to give people the choice of public transport and real alternatives to the car.” (Scottish Executive, 2006).

Table 2 describes key areas where travel behaviour can be changed and outlines the impacts of such behaviours.

Table 2: Travel behaviours and their carbon footprint impacts

Behaviour	Impact
Using public transport as an alternative to using a car	Using public transport instead of a car will save on fuel consumption, ease congestion, reduce pollution, improve air quality and decrease harmful pollutants such as diesel particulates whilst contributing towards a lower carbon footprint. A convenient way of using public transport might be to use “Park and Ride”. This allows individuals to park their car and use public transport to travel to a busy area, such as a city centre.
Active transport (e.g. walking, cycling) as an alternative to using a car	Around 34% of all car journeys in Scotland are less than 2 miles in length (Transport Scotland, 2012a). This could be covered by cycling (10-15 minutes) or brisk walking (30-50 minutes). The Scottish Government’s Cycling Action Plan Scotland (CAPS) Report (Scottish Government, 2010b) sets the vision that by 2020, 10% of all journeys taken in Scotland will be by bike, compared to the current 1%. To achieve this, the Scottish Government has invested in cycling training (e.g. to school children) and has invested in communities, local authorities, Cycling Scotland and Transport Scotland to promote cycling as a healthy, fun and sustainable method of transport. The Scottish Government announced in May 2012 that it will introduce a National Walking Strategy which is planned to have health and environmental benefits (Scottish Government, 2012c).
Fuel efficient driving	Fuel efficient driving saves fuel consumption by around 15% (Energy Saving Trust, 2012a). Fuel efficient driving includes driving more smoothly, moving up to a higher gear as early as possible, driving at a lower speed, ensuring tyres are properly inflated and removing excess and weighty items from the car (including roof boxes and racks) (Energy Saving Trust, 2012a). Combining trips and forward planning will also help reduce emissions. The Energy Saving Trust has received funding from the Scottish Government to provide training courses for HGV and long-distance drivers on fuel-efficient driving.
Car sharing	Since 69% of all journeys to work in Scotland are by car, schemes that involve car sharing can save on fuel consumption, ease congestion, reduce pollution and

	<p>improve air quality whilst contributing towards lower carbon emissions (Transport Scotland, 2012b). Car-sharers can save up to £1000 per year on travel costs (South East of Scotland Travel Partnership).</p>
Car Clubs	<p>The Developing Car Clubs Scotland (DCCS) Programme aims to start car clubs in Scotland as part of the Scottish Government's strategy for energy efficiency and carbon reduction in transport usage. DCCS has funded a number of community based car clubs and city-based schemes in Aberdeen and Dundee. Car clubs also give members the change to experience driving low carbon vehicles.</p>
Hybrid and electric vehicles	<p>Use of hybrid and electric vehicles form part of a long term strategy to reduce emissions. In order to meet the Scottish Government's plans for "almost complete decarbonisation" of road transport by 2050, hybrid and electric vehicles are likely to become common modes of transport. UK Government grants of 25% are available towards the cost of a hybrid/electric vehicle up to a maximum of £5000 (Department for Transport, 2012). Scottish local authorities have received funding from the Plugged in Places scheme, totalling £8m over 2010-2012 to buy low carbon vehicles and install infrastructure. As a result, around 270 low carbon vehicles have been procured and over 300 charging points have been, or are in the process of being, installed (Scottish Government, personal communication).</p>
Use alternatives to flight transport	<p>In 2006, air travel accounted for 6.4% of UK CO₂ emissions and if no action is taken, it will account for 10% of CO₂ emissions by 2020 (Directgov, 2012a). Alternatives to flight transport include holidaying within the UK, travelling by train and encouraging employers to use teleconferencing instead of having international business meetings. If an individual must travel by air, they should consider taking public transport to the airport and carbon offsetting. Carbon offsetting is a term that is used when an individual pays to reduce carbon emissions in one area to compensate for emissions made elsewhere. Such schemes provide funding for carbon projects that could not otherwise be funded. For a carbon offset to be credible, it must meet a quality assurance standard and must not be considered an offset if it couldn't have happened without the additional finance (The Carbon Neutral Company, 2012).</p> <p>High Speed Rail UK (HSR:UK) is a group of 11 British cities (including Glasgow & Edinburgh) calling for HSR between British cities and cites economic and environmental benefits (over short haul flights) as reasons to develop HSR (HSR:UK, 2012).</p>
Holiday within the UK	<p>81% of Scottish people think that holidaying in Scotland is just as good as going abroad (Visit Scotland, 2010). Holidaying within the UK is a good way of avoiding travel</p>

emissions associated with flying. Another holiday environmentally-friendly behaviour change could include taking one longer holiday instead of numerous weekend breaks throughout the year. The overall length of holiday could be achieved with only one return flight.

Support for Bus Operators

Transport Scotland administers the Bus Service Operators Grant ([BSOG](#)) with the aim of this grant to benefit passengers. It does so by keeping fares down and enables operators to run services that might not be commercially viable otherwise, thus contributing to the maintenance of the overall bus network (Transport Scotland, 2012c). The [Scottish Green Bus Fund](#) also incentivises operators to purchase low carbon vehicles by funding the difference in cost between a low carbon bus and its diesel equivalent. In 2011, the Scottish Green Bus Fund resulted in the delivery of 48 new hybrid buses in Scotland (Transport Scotland, 2012d).

Smarter Choices Smarter Places (SCSP)

[SCSP](#) is a Scottish Government / COSLA partnership designed to increase active travel and public transport use and tackle emissions in 7 communities across Scotland. Funding was made available to these communities from 2008 to fund a range of programmes that promote sustainable transport behaviours. These included programmes to improve the walking and cycling infrastructure to make it a more comfortable and convenient way to get around actively; bus infrastructure including service and stop improvements; personal travel planning by travel advisors visiting over 50,000 homes to promote each project and the opportunities for active and sustainable travel available locally. Furthermore, programmes included improving signposting and branding, promotion and marketing of all the schemes ensuring local identity (Transport Scotland, 2012e).

E-cosse

[E-cosse](#), launched in March 2012, is a collaboration with the Scottish Government, WWF Scotland, industry and other key stakeholders working together to advance wholesale adoption of electric vehicles in Scotland. It aims to look at innovative ways of establishing Scotland as an electric vehicle pioneer.

HOME ENERGY BEHAVIOURS

Around one third of Scotland's CO₂ emissions are a direct result of the energy we use to heat and provide electricity to our homes (Energy Saving Trust, 2010). In order to meet the targets set in the Act, the household sector might be expected to make cuts of more than 80% by 2050 in order to compensate for lower cuts in other areas (Energy Saving Trust, 2010).

Environmentally-friendly home energy behaviour changes are generally associated with immediate financial savings. Most people are aware of the energy and cost savings associated with switching off lights, appliances and plugs when not in use and using energy-saving light bulbs. However, not all home energy behaviour will result in immediate financial savings. Some require an initial investment; for example, upgrading to renewable energy sources, but this is likely to pay-off in the long term.

Table 3 gives some examples where an individual can reduce their carbon footprint from home energy usage.

Table 3: Home energy behaviours and their carbon footprint impacts

Behaviour	Impact
Simple behaviours to save electricity & gas	<p>An individual can reduce their carbon footprint by taking some simple energy-saving measures, including:</p> <ul style="list-style-type: none">• Only putting full loads in the washing machine;• Air drying clothes instead of using a dryer;• Removing furniture from in front of radiators as without this, heating a room will take longer, use more energy and is more expensive;• Only opening the oven door when necessary;• Using a microwave instead of an oven saves two thirds of the energy (C3, 2009);• Turning off electric hob/oven up to 5 minutes (dependant on make or model) before food is ready as they take time to cool down;• Using an electric blanket instead of a bedroom heater.
Turn down heating by 1°C, (progressively to 18°C)	<p>Turning down heating can save the average household 10% on their heating costs per degree they turn down (around £50 savings per year for Scottish households for each degree the heating is turned down) (Directgov, 2012b). If using an immersion heater for hot water, it can be turned down to between 60-65°C to save energy (Energy Saving Trust, 2011).</p>
Install a Smart meter	<p>Smart meters are able to provide information to individuals on how much energy is used and when it is used, allowing the individual to better manage energy costs. The UK Government is committed to installing a smart meter in every home by 2019 (DECC, 2012).</p>
Improve home insulation	<p>Up to 35% of heat is lost in the home through the walls and 25% is lost through the roof (Scottish Power, 2012). Cavity wall and loft insulation can reduce heat-loss from the home. On average, cavity wall insulation costs £250 per household (Energy Saving Trust, 2010). Households can save up to £150 per year on heating bills after cavity wall insulation and £60 per year by topping up loft insulation (Scottish Power, 2012). Installing double-glazing, using shutters and heavy lined curtains will also reduce heat loss.</p>
Draught-proofing homes	<p>Draughts cause heat loss in the home. The draughtiest places are gaps around windows and external doors, keyholes, letterboxes, exposed floorboards and chimneys. Simple inexpensive measures can be taken to combat draughts such as closing curtains from dusk, using a draught excluder at the bottom of external doors and installing a chimney balloon on unused chimneys (Energy Action Scotland, 2011).</p>

Wash clothes at 30°C	Washing clothes at 30°C uses 40% less energy than washing at 40°C (Energy Saving Trust, 2012c) resulting in energy bill savings and a lower carbon footprint.
Use renewable energy	Renewable technologies are used to generate heat or electricity. The main sources of renewable energy are energy from sunlight, the earth, air, water, waste, biomass or the movement of water and wind. Although an initial investment is required for renewable technology, they will pay off in the long-term, especially since Feed-in-Tariffs allow the householder to earn money for each unit of electricity fed back to the National Grid. Using renewable energy reduces demand on fossil fuels and contributes towards job creation in the renewable energy sector (Energy Saving Trust, 2012d). Such behaviour would be facilitated by increased householder understanding and support to negotiate planning and investment requirements.
Upgrade an inefficient boiler	The Boiler Scrappage Scheme ⁴ contributes £400 towards the cost of upgrading an energy inefficient boiler to an Energy Saving Trust Recommended (ESTR) Boiler (note that A-rated boilers do not automatically qualify as ESTR boilers). Once a voucher is received from Home Energy Scotland (see contact details later), an individual can upgrade their boiler and claim back the £400 within 18 weeks of installation (Energy Saving Trust, 2012e).

Energy Assistance Package

The [Energy Assistance Package](#) is a Scottish Government initiative that aims to reduce an individual's energy bills and improve the energy efficiency of their home. By calling the Home Energy Scotland hotline (0800 512 012), individuals can receive expert personalised energy advice and access to the lowest energy rates. Some people who have phoned the Advice Line have discovered they are entitled to as much as an extra £1500 per year in energy benefits and tax credits (Energy Saving Trust, 2012b). Depending on eligibility, free or discounted insulation from an energy provider could be available to make a home more energy efficient. Most energy suppliers provide free loft and cavity wall insulation for those aged 70 or over, or those receiving certain benefits (Energy Saving Trust, 2012b). The helpline also advise on whether or not the Scottish Government can provide money towards central heating or a new boiler and contribute towards enhanced insulation measures.

Home Energy Report

The [Housing \(Scotland\) Act 2006](#) requires that an Energy Report (including Energy Performance Certificate) forms part of the Home Report which sellers of a residential property must make available to potential buyers. The purpose of the Energy Report is to allow buyers to make environmentally-friendly choices by allowing them to compare energy costs between homes and by giving practical advice on how to reduce home energy carbon emissions and save money on energy bills (Scottish Government, 2008). The Energy Report must include:

- The home's energy efficiency rating and its impact on carbon emissions;

⁴ The Boiler Scrappage Scheme was available at the time of publication of this briefing.

- Information on energy costs and contact details for local energy advice centres;
- Recommendations on how the energy efficiency of the home could be improved and how energy bills could be lower.

Landlord Responsibilities

For people who rent a property, it might be difficult to significantly reduce their carbon footprint in home energy beyond simple energy-saving behaviours. Section 64 of the Act gives Scottish Ministers the powers to introduce regulation to require the assessment of energy efficiency and action to reduce the emission of GHGs from existing houses. There are also powers under the [Energy Act 2011](#) to set minimum standards in the private rented sector (PRS) after 2015. In March 2011, the Scottish Government announced that it would not regulate before 2015, and would look to regulate owner occupiers and PRS at the same time. In June 2012, the Scottish Government launched a consultation on Scotland's sustainable housing strategy and this consultation includes a section on legislating in the PRS (Scottish Government, 2012d).

The Landlord's Energy Saving Allowance ([LESA](#)) provides funding of up to £1500 for landlords to make energy saving improvements such as cavity wall and loft insulation, draught proofing and floor insulation to residential properties that they rent out. Local authorities and other public sector housing providers have on-going improvement programmes for the housing they provide, including energy efficiency improvements.

FOOD & DRINK BEHAVIOURS

Greenhouse gas emissions from food depend on how it is produced, processed, packaged and transported. In Scotland, food is responsible for 25% of GHG emissions (Friends of the Earth Scotland, 2012). 'Recipe for Success', Scotland's National Food & Drink Policy, sets out how the Scottish Government will seek to link policy actions across a number of food & drink areas including grow-your-own (GYO) schemes (Scottish Government, 2009b). The actions needed to deliver the GYO aspects of the Food & Drink policy are highlighted in the Community Growing in Scotland Report (Greenspace Scotland, 2011). Table 4 describes food behaviour changes that can lower an individual's carbon footprint.

Table 4: Food choice behaviours and their carbon footprint impacts

Behaviour	Impact
Eat locally-sourced food	Currently, 30.3% of Scottish people buy locally-sourced food, although reasons for this are not only environmental, but include the wish to support local producers & retailers (Scottish Government, 2010c). Food & drink that is locally sourced will have less travel emissions associated with it than food that not locally sourced. Growing your own food is also a good way to lower carbon footprint.
Eat seasonal food	Scotland has a reputation for being able to provide wonderful, enviable, seasonal food all year round (Visit Scotland, 2012). In 2011, the Scottish Government launched the 'Eat in Season' campaign which aims to raise awareness of the benefits of eating food that is produced in-season. In addition to help lower a carbon footprint, seasonal food tends to cost less as production and distribution costs are lower (Defra, 2009).
Eat organic and/or sustainably sourced food	Organic and/or sustainably sourced food does not contain genetically modified organisms (GMOs), and uses a limited range of pesticides and fertilisers. Organic farming results in lower carbon emissions from fertilisers and methods than

	<p>traditional farming. Organic food also contains more naturally occurring vitamins and minerals and flavours develop better than in non-organic food (Crinnion, 2010). Such behaviour may be facilitated by making organic, local and minimal packaging options the obvious 'normal' option (Asda, 2011).</p>
Grow your own food	<p>Growing your own food is an extremely sustainable method of food production. Individuals can apply to their local authorities for allotments or make use of landshare schemes. In May 2012, the Scottish Government announced a £600k package of support to encourage the development of more community growing and launched the GYO website (Scottish Government, 2012e). The Scottish Government is currently drafting a Community Empowerment & Renewal Bill which aims to address access issues over publicly owned land and make it easier for communities to take over unused or underused public sector assets.</p>
Eat less meat and dairy products and eat more fruit and vegetables	<p>The livestock industry in the UK is responsible for 8% of UK GHG emissions (Friends of the Earth Scotland, 2011). Thus, a diet that is low on meat (especially beef and lamb) and dairy products will result in a lower carbon footprint.</p>
Purchase food with minimal packaging	<p>Food packaging is a key area where individuals can seek to reduce their carbon footprint; for example, by rejecting overly packaged goods and choosing goods with recyclable or reusable packaging. Individuals can use their purchasing power to choose the product with less packaging or by emailing and complaining to companies that use excessive packaging.</p>
Reduce food waste	<p>Food waste costs the average Scottish household £430 per year (Scottish Government, 2010c). Reducing food waste will result in lower emissions associated with food production, transport and waste into landfill, which produces methane gas, a GHG more potent than CO₂.</p>
Have a barbeque using sustainable charcoal	<p>Over 90% of the charcoal we use for barbeques comes from non-UK forests, many of which are not replaced when they are cut down. Therefore, using sustainable charcoal (from UK forests) will reduce carbon footprint, partly as it does not have heavy transportation emissions associated (Sustainable Scotland, 2011).</p>

WASTE BEHAVIOURS

There is evidence that attitudes in Scotland with regards to waste and recycling have changed dramatically over the past 10 years with a 58% reduction in total waste being sent to landfill sites (Scottish Environment Protection Agency, 2011). In the same period, there has been an increase from 5% to 37% in the amount of waste collected by local authorities that is recycled or composted (Scottish Environment Protection Agency, 2011).

Zero Waste Scotland is a Scottish Government initiative tasked to support the delivery of its Zero Waste Plan. The vision of the Scottish Government is to achieve "a Scotland where

resource use is minimised, valuable resources are not disposed of in landfills, and most waste is sorted into separate streams for reprocessing, leaving only limited amounts of waste to go to residual waste treatment, including energy from waste facilities” (Scottish Government, 2010d).

The [Waste \(Scotland\) Regulations 2012](#) ensure the delivery of key action points within the [Zero Waste Plan](#). Specifically, the regulations require local authorities to:

- Remove recyclables (plastics and metals) from mixed waste prior to incineration;
- Provide householders with a collection service for dry recyclables (metals, plastics, paper, card and glass) (by end of 2013) and food waste (by end of 2015);
- Substantially reduce methane emissions by banning biodegradable municipal waste⁵ being sent to landfill sites (by end of 2020).

Implementing these regulations will enhance local authorities’ existing waste collection services, reduce disposal cost and enable income generation to offset some of the additional costs incurred.

In addition, the regulations require businesses to present dry recyclables and food waste of more than 50 kg/week for collection from the end of 2013, with those businesses producing less than 50 kg/week exempt until end of 2015. Interestingly, these regulations do not require individuals to change their waste behaviours, other than to use the improved infrastructure provided by local authorities.

‘[Too Good To Waste](#)’ (Changeworks, 2010) provides an A-Z of reducing, reusing, repairing and recycling waste. A summary of key areas where individuals can modify their behaviour with regards to waste are summarised in Table 5.

Table 5: Waste behaviours and their carbon footprint impacts

Behaviour	Impact
Reduce home waste	An individual can reduce waste (and their carbon footprint) in the home with some easy behaviour changes: <ul style="list-style-type: none"> • Preventing waste in the first instance by only buying goods that they need; • Buying items with minimal packaging; • Being innovative with left-over food and re-using what they have or freezing food until later; • Reduce paper usage. For example, by not printing unnecessary documents, re-using wrapping paper and opting for electronic billing.
Recycle waste	Local authorities operate recycling bin services (either different coloured bins for different materials or allow co-mingling of materials) that can be used for recycling paper, card, plastics and glass. The Scottish Government has set a target to recycle 70% of all of Scotland’s waste by 2025 (Scottish Government, 2010d).
Re-sell or donate used products; borrow or buy products second-hand	Re-selling or donating used household items, clothing and furniture to second hand shops, and purchasing items second hand, renting or borrowing will contribute to a lower carbon

⁵ Biodegradable Municipal Waste (BMW) is a fraction of municipal waste that can be broken down by organisms and includes food waste, green waste, biodegradable plastics, paper and cardboard. When oxygen is lacking (e.g. in a landfill site) BMW is broken down by anaerobic digestion which leads to the production of methane gas.

	<p>footprint as fewer resources will be used for production and transportation purposes. An example would be to share garden products (e.g. a lawnmower) with friends, family and neighbours.</p>
Re-use items	<p>Re-using products reduces the need for resources. It also means a reduction in waste in items going to landfill sites. The Waste (Scotland) Regulations require the Scottish Government to introduce bans on certain re-usable items being sent to landfill by 2020. Examples where individuals can re-use include using long-life bags or re-using plastic bags; using re-usable nappies instead of instant disposable ones and using re-chargeable batteries instead of disposable ones. Individuals could also re-use items to make something new. For example, decorating a shoe box instead of buying a small storage box.</p>
Reduce unwanted letter mail	<p>To reduce unwanted letters addressed to 'The Occupier', a former person who lived at the address or unaddressed mail, an individual could email the sender to state that they no longer wish to receive mail from them. Individuals can also put a 'No Junk Mail' sticker on their letter box which can reduce the amount of paper flyers and adverts being passed through their letterbox. Royal Mail operates a scheme allowing householders to opt-out of receiving unaddressed mail (Royal Mail, 2012).</p>
Home composting	<p>The Waste (Scotland) Regulations commit the Scottish Government to introduce regulations to ensure separate collection of food waste to avoid contamination of other waste materials and to recover its material and energy. Most Scottish local authorities now operate a brown bin service that can be used for composting including garden and food waste. However, for a lower carbon footprint, an individual can home compost. This removes transport associated emissions from the brown bin service and has also been shown to reduce the amount of methane gas released into the atmosphere (Recycle Now, 2012). Home composting can also contribute towards a better quality of garden soil (Recycle Now, 2012).</p>

WATER BEHAVIOURS

Water behaviours are a complex area relating to an individual's carbon footprint as energy is used in purifying water, heating water and treating waste water. Energy used to heat water accounts for 23% of heating bills (Energy Saving Trust, 2012f). Table 6 describes the impact of water usage behaviour changes with regards to lowering an individual's carbon footprint.

Table 6: Water usage behaviours and their carbon footprint impacts

Behaviour	Impact
Reduce water usage in the home	Many simple measures can be taken to reduce water waste in the home, such as turning off the tap when

	brushing teeth. Measures that can save on water usage and water energy usage include only putting as much water in the kettle as is needed or having a shower (with low-flow showerhead) instead of a bath. Low-flow showerheads use 50% less hot water than other shower heads (Business Know How, 2011). Shower timers are also a good way of saving money, water and energy.
Install a water meter	Water meters measure the exact amount of water a household uses and water charges are based on this, rather than a standard charge in Council Tax (Citizens Advice Bureau, 2012). Water efficient households can save money by moving to a water meter; however, water wasteful households may actually pay more.
Reduce water usage in the garden	Reducing water usage in the garden will result in a lower carbon footprint. Examples of eco-friendly behaviours include: <ul style="list-style-type: none"> • Using a watering can instead of a hose – this uses up much less water and also gives the gardener a better gauge of how much water is being used; • Washing the car with a bucket instead of a hose; • Using a hose with a trigger nozzle as this means it can't be left unattended; • When watering the garden, doing it in the morning or evening, and not during periods of sunshine, as this will reduce evaporation.
Collect rain water	Rain water can easily be collected in water butts and used for washing cars and watering garden plants and grass. Rainwater is actually better for plants than tap water (Free Rain, 2012).
Reduce bottled water usage	By using tap water instead of bottled water, or using tap water to fill a re-usable bottle, an individual will significantly reduce their carbon footprint as bottled water has plastic production, transport, display chilling and waste or recycling emissions associated with it. Interestingly, around 30% of bottled water from supermarkets is tap water (Tapwater.org, 2012).
Install a water displacement device	Toilet flushing accounts for around 30% of home water usage (Waterwise, 2012). A displacement device helps conserve water in cisterns by taking up space that would otherwise be filled by water. Home-made displacement devices are just as effective and be as simple as placing a sealed bottle of water in the cistern. Another option is to upgrade to a low-flush toilet.
Re-use left-over boiled water as weed-killer	Boiled water left over from cooking (eggs, pasta etc.) can be re-used as a weed-killer. The hot water will scald the weeds and cause them to die. It also prevents the use of harmful chemicals being used as weed killer.

SHOPPING BEHAVIOURS

An individual's shopping choices will impact on their carbon footprint. As stated previously, carbon footprint relates to emissions generated in the production and transport of the goods and services consumed. Table 7 describes some shopping behaviour areas and how they can help lower an individual's carbon footprint.

Table 7: Shopping behaviours and their carbon footprint impacts

Behaviour	Impact
Use public transport to get to the shops	Using public transport (or park and ride) to travel to the shops is a good start to a low-carbon shopping trip. Individuals can plan trips in advance and write shopping lists rather than travelling several times for individual items.
Purchasing of low-carbon products	Low carbon products include products made from recycled materials, second-hand clothes and furniture, low carbon food products (see table 4) and energy-efficient appliances. Everything we consume has a carbon footprint. Therefore, spending less and buying less will significantly lower an individual's carbon footprint.
Purchasing of energy-efficient appliances	Fridge-freezers or washing machines that are over 10 years old will be using around 50% more energy than a new top rated model and will be costing an extra £37 on energy bills per year (OREF, 2012). The most energy efficient models will have an Energy Saving Trust Recommended (ESTR) badge. The EC Energy Labelling Framework Directive requires labels on certain domestic appliances when sold detailing energy efficiency and water consumption.
Using life-long bags	In June 2012, the Scottish Government launched a 3-month consultation on a range of proposals including phasing out free carrier bags. Individuals can reduce their carbon footprint by rejecting carrier bags, re-using bags or using life-long bags. Since some retailers already charge for carrier bags, individuals can save money whilst lowering their carbon footprint by taking their own bags with them when they go shopping.
Innovative environmentally-friendly shopping	Websites such as Freesharing or Freegle allow members to offer and request items free-of-charge from people in their neighbourhood. It is an innovative way of getting rid of old goods without sending them to landfill and getting new goods without using up natural resources. Other innovative examples include shwopping (buy one item, donate one item) or attending/organising a 'Swishing' event e.g. bring 2 items of clothing and leave with 2 different items of clothing.

Choice Editing

Choice Editing is the control or limiting of choices available to consumers so that they can make sustainable and carbon-friendly choices about their purchases. Organisations and policy makers have an extremely important role in choice-editing; for example, B&Q phased out patio heaters and the EU recently phased out all incandescent light bulbs. Research has shown that around 65% of people think that retailers should not stock the most environmentally damaging products (Berry *et al.*, 2008). Choice editing has an important role in making choices easier for consumers amidst growing confusion about what is, and what is not, carbon friendly (Berry *et al.*, 2008). Although progress has been made on carbon labelling of products and in choice editing, a report by the House of Commons Energy and Climate Change Select Committee has suggested that more needs to be done to shape shopping behaviours. (Energy and Climate Change Committee, 2012). The Select Committee Report also highlights how some local authorities have used carbon footprinting to successfully engage individuals to consider the global impact of their behaviours and describes how they are actively promoting policies to target consumption behaviour.

COMMUNITY ENGAGEMENT

Individuals can become more engaged in lowering their carbon footprint by becoming involved in community groups and initiatives such as [Transition Network](#), 'Remade In [...]'⁶ and [Eco-congregation Scotland](#). They could also attend a [Carbon Conversations](#) group. These initiatives bring together individuals who have some concern or interest about climate change and behavioural impacts. They help people lower their carbon footprints and provide a forum for people to discuss personal and social barriers to behavioural change and promote the sharing of environmentally-friendly ideas.

The [Climate Challenge Fund \(CCF\)](#) was established by the Scottish Government in 2008 to help communities tackle climate change and lower their carbon footprint. The CCF provides a maximum level of funding of £150,000 per year for projects that help communities lower their emissions in energy (efficiency & renewables), food, transport and waste (Climate Challenge Fund, 2012). CCF-funded projects have been found to have additional benefits in terms of health and wellbeing, community cohesion and benefits to local economies (Brook Lindhurst and Econometrica, 2011).

Community Planning Partnerships have a role to play in creating community capacity to promote environmentally-friendly behaviours. For example, Fife Council has an officer dedicated to working with local office staff to increase community projects and activities to improve and sustain local environments. St Andrews University run re-use programmes that collect material from the transient student population and redistribute materials in local communities.

⁶ e.g. [Remade in Edinburgh](#)

APPENDIX 1: AVERAGE CARBON FOOTPRINT IN SCOTTISH LOCAL AUTHORITY AREAS

Figures 4 – 8 show the average carbon footprint of people living in the 32 Scottish local authority regions. Waste emissions are embedded in the calculations for each of the four categories (Housing, Transport, Food & Drink and Shopping). Emissions associated with water and home energy usage are combined to show 'Housing' data. Data for Infrastructure / Government capital spending are not included. Figures are from Paul *et al.* (2007).

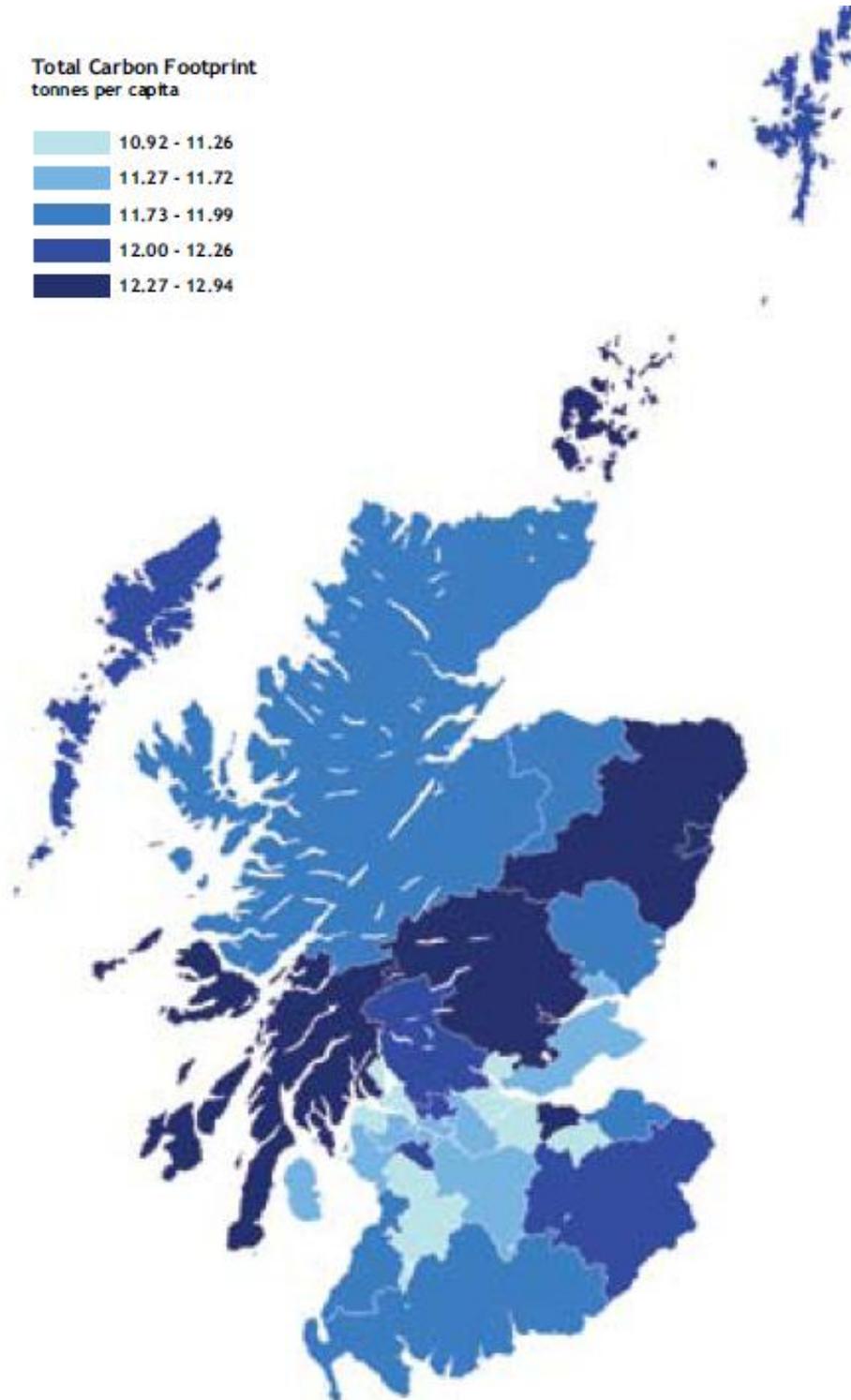


Figure 4: Total average carbon footprint (tCO₂e per year) for Scottish local authority areas (Paul *et al.*, 2007).

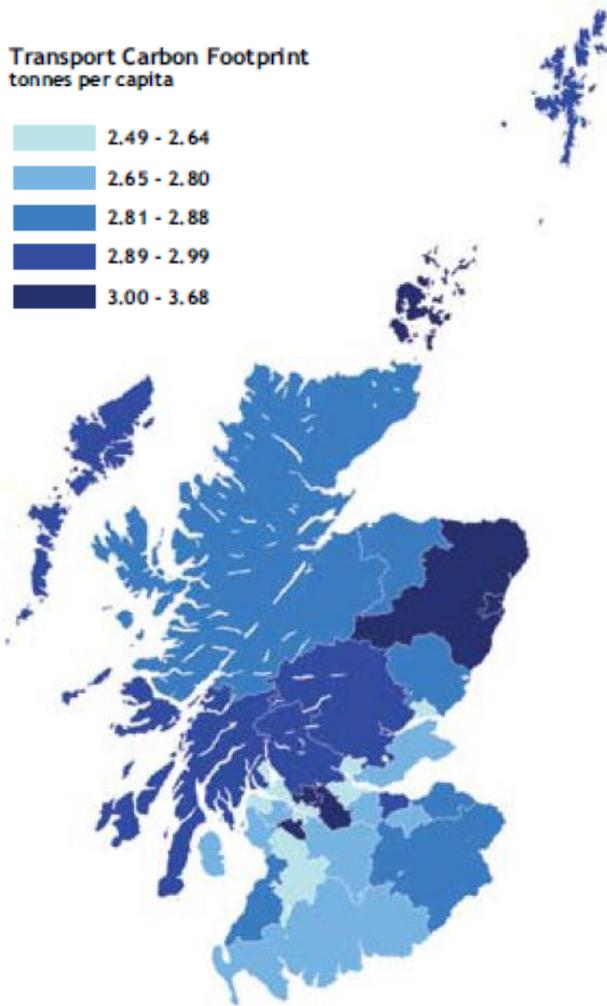


Figure 5: Average transport carbon footprint (tCO₂e per year) for Scottish local authority areas (Paul *et al.*, 2007).

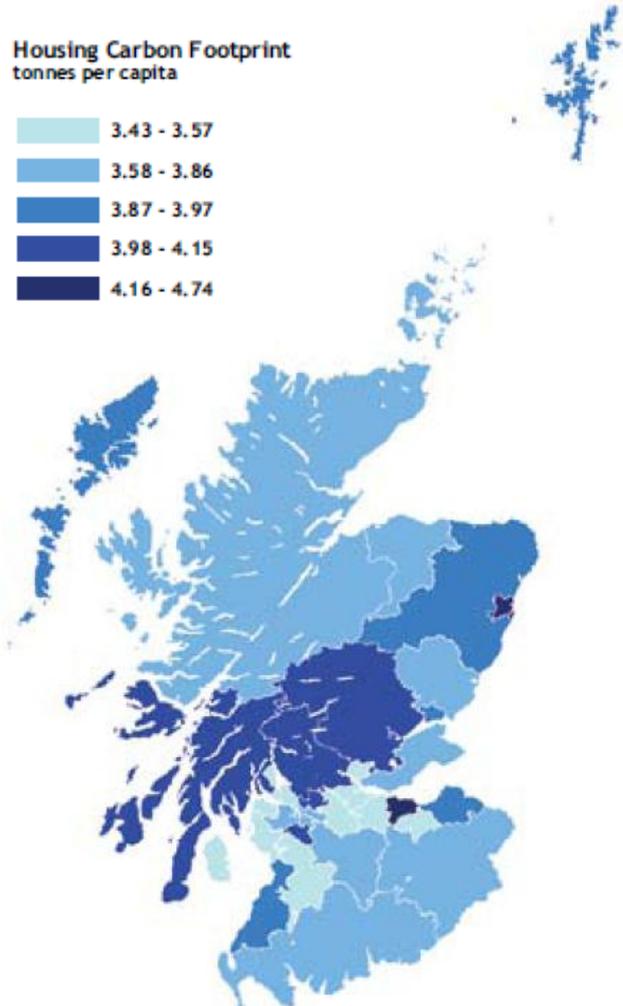


Figure 6: Average housing (home energy and water) carbon footprint (tCO₂e per year) for Scottish local authority areas (Paul *et al.*, 2007).

Food Carbon Footprint
tonnes per capita

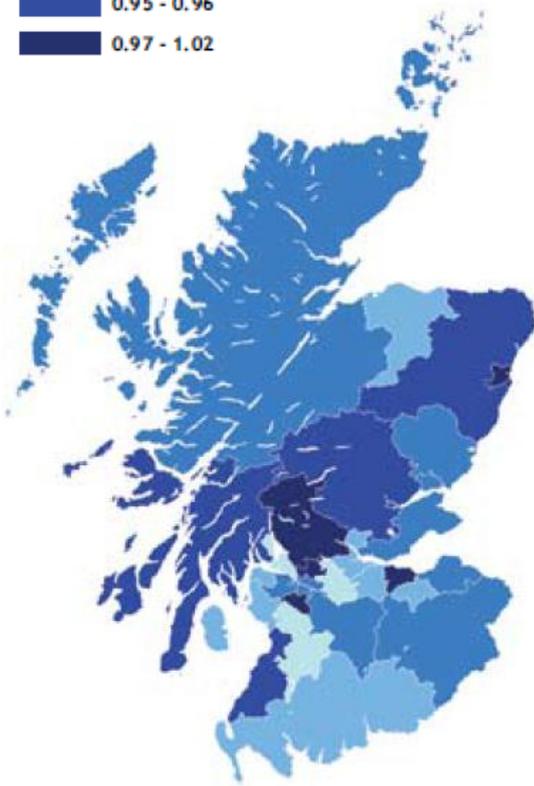
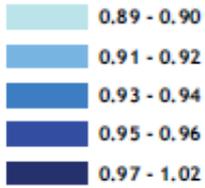


Figure 7: Average food and drink carbon footprint (tCO₂e per year) for Scottish local authority areas (Paul *et al.*, 2007).

Consumables and private services Carbon Footprint
tonnes per capita

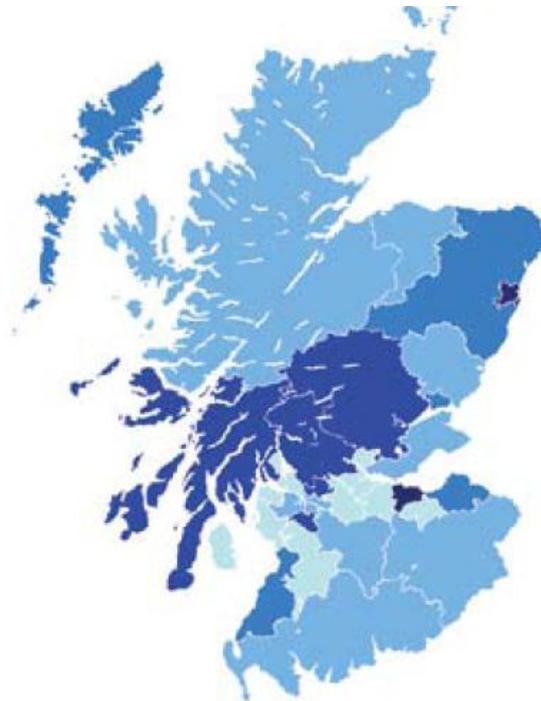
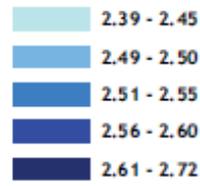


Figure 8: Average consumables and private services (shopping) carbon footprint (tCO₂e per year) for Scottish local authority areas. This includes household consumption which ranges from clothing and appliances to insurance, financial advice & private education (Paul *et al.*, 2007).

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