LOCAL footprints

footprint support for local authorities

Right Climate for Change

Carbon Footprinting for Scottish local authorities

WWF

SEI STOCKHOLM ENVIRONMENT INSTITUTE

SSN SUSTAINABLE SCOTLAND NETWORK

Acknowledgements

This report is a product of the Local Footprints project, produced with the Stockholm Environment Institute. It is based on a similar report produced by WWF UK and Stockholm Environment Institute for English local authorities.

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Executive Summary

The transition towards a low carbon economy requires a fundamental change in the way we think about climate change at a local level. To date, most local authorities have focused on reducing the carbon dioxide emissions of their estate and related operations. Yet, whereas an average council produces at least 30,000 tonnes of carbon dioxide per annum, its community generates just over 1.8 million tonnes. Action on mitigating climate change therefore must address the consumption behaviour of local communities.

All 32 Scottish local authorities have signed Scotland's Climate Change Declaration[1]. Amongst other actions, the declaration commits signatories to producing a plan to reduce emissions from their own operations; to ensure that emission reduction measures are included in strategies and plans; and to measure and monitor progress in emissions reductions.

To meet these commitments, local authorities need to consider emissions from their communities. The UK Government through Defra has developed an experimental community emissions indicator that provides an incentive for local authorities to engage with their communities. The Carbon Footprint is a complementary indicator which can be used to provide in-depth information on local areas based on the consumption activities of households. It can be used to identify how service provision by local councils influences people's every-day decisions and behaviour through plans, policies and engagement with the community.

The **Local Footprints Project** works with local authorities to consider what levers are available to reduce the carbon footprint of our lifestyles, including our home energy use, travel behaviour, food, consumption and spending on goods and services. Together, these actions by local government can be used to create *the right climate for change*.

There is now a clear national ambition to reduce Scotland's carbon dioxide emissions by 80% by 2050. Local authorities need to play a key role in achieving this goal. The Government has signalled that delivering carbon-reduction outcomes in your organisation and your area will be a priority through any outcome agreements reached between central and local government. This report has been produced by the Local Footprints Project with the Stockholm Environment Institute (SEI) to help you understand how using the Carbon Footprint can help you fulfil this role.

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1. For more information on Scotland's Climate Change Declaration www.sustainable-scotland.net/climatechange.

Understanding the Carbon Footprint

The Carbon Footprint is a measure of the total amount of carbon dioxide emissions that are directly and indirectly caused by human activity. This report uses the Resource and Energy Analysis Programme (REAP) developed by the Stockholm Environment Institute to analyse carbon footprint results[2]. The Carbon Footprint is:

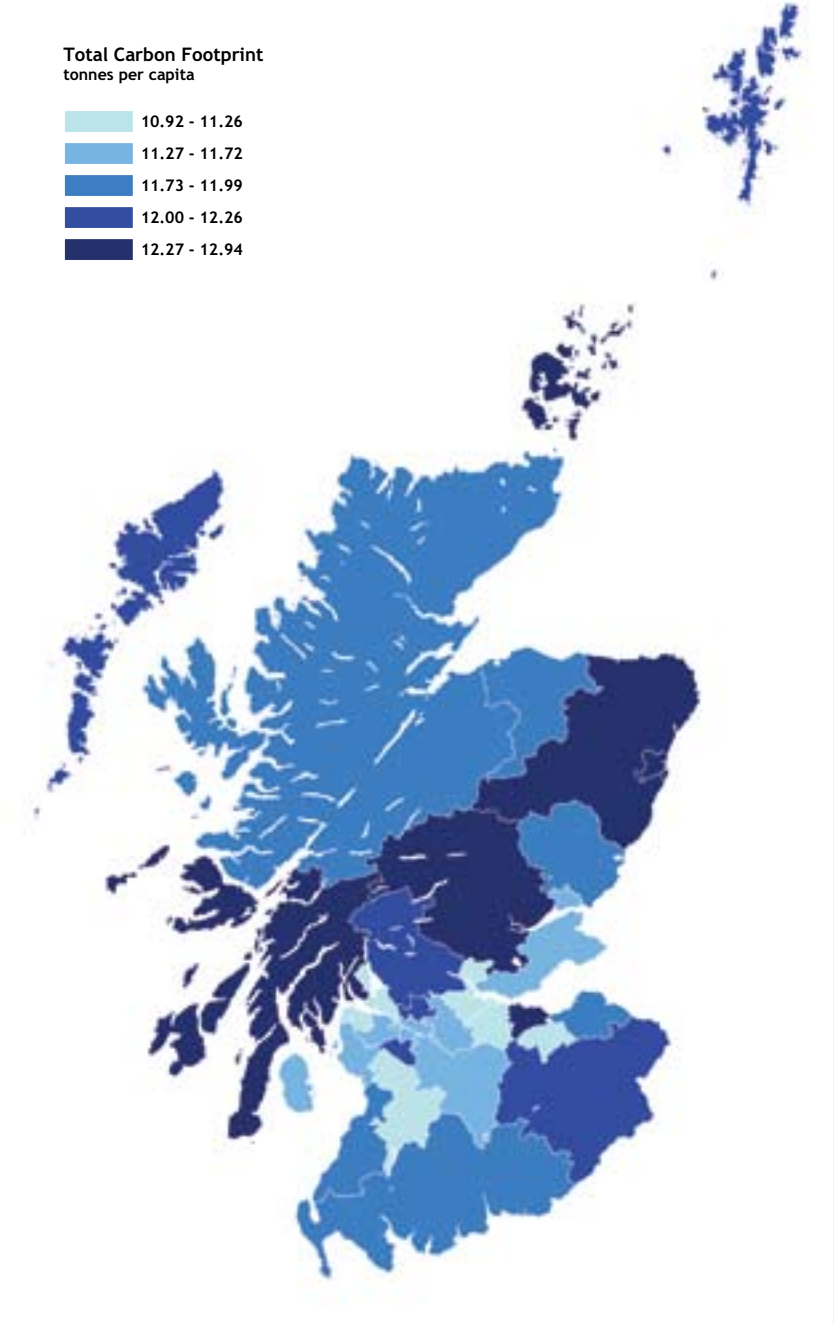
Outcome based: It helps local authorities decide how they wish to allocate resources and deliver against their targets. Through REAP, local authorities can test how different combinations of policies could deliver reductions in the Carbon Footprint as well as whether consumer trends may create risks.

Attributable to local authority action: The Carbon Footprint results reflect the geography of local authority areas and the characteristics of the local population, as well as local and national level policies implemented at that time. REAP can be used to take account of trends and changes driven by local and national government collectively or separately.

A driver of behaviour change: The Carbon Footprint can be directly related to behaviour change in all areas of people's lifestyle and at an individual, household and community level.

Aligned to other policy objectives and statutory duties: The scope of the Carbon Footprint makes it possible to link climate change to a number of other local agendas including access to services, planning decisions, health, fuel poverty, housing conditions and waste management.

Figure 1: Carbon Footprint of Housing



2. www.sei.se/reap

Measurable in a cost-effective fashion: The freely available online Carbon Footprint data creates no additional reporting requirement. However, investing in REAP gives local authorities flexibility to include locally sourced data and to monitor real change.

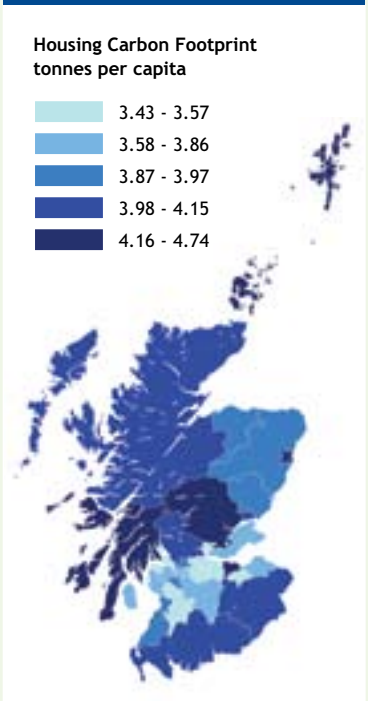
Comparable over time and between local authorities: The online Carbon Footprint data provides a sound comparison of carbon dioxide emissions between different local authority areas. The online data will be updated on an annual basis. REAP users can also update their baseline using locally specific information but this takes away the direct comparability at a national or regional level.

Auditable: The Carbon Footprint data available online requires no input from local authorities and data collection and analysis is carried out by SEI. REAP technical reports outline the methodological approach and all data sets are provided by government departments, the Office for National Statistics or CACI's Acorn socio-economic local authority profiles[3].

Collaborative: The range of issues the Carbon Footprint touches on encourages partnership working within and between local authorities and community partners.

Key components of the Carbon Footprint of Scottish local authority areas

Figure 2: Carbon Footprint of Housing



Housing

Housing makes up over a third of the Carbon Footprint in the majority of local authority areas. On average, energy use accounts for 75% of the Carbon Footprint associated with housing. High energy use can be driven by the high energy demands of the fuel poor, and equally it can be driven by large, old, hard-to-treat dwelling stock.

Tackling the housing component of the Carbon Footprint is as much about encouraging people to think cleverly about how they use energy as improving the energy performance of homes. Both require effective targeting at the local level. Most local authorities are providing some form of energy advice or guidance to homeowners but specific measures are needed to tackle large, older, hard-to-treat and rental properties. These must be a priority alongside contributing to the eradication of fuel poverty.

"Housing makes up over a third of the Carbon Footprint in the majority of local authority areas. On average, energy use accounts for 75% of the Carbon Footprint associated with housing."

The Scottish Government is committed to making houses and buildings in Scotland low carbon. It is also committed to eradicating fuel poverty by 2016. At the same time, the Government has concerns about affordability

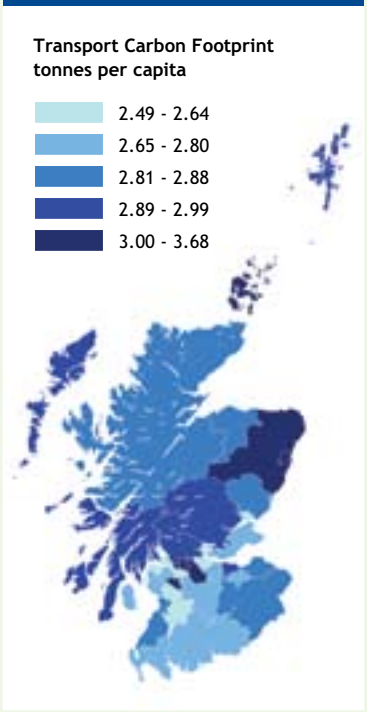
3. geodemographic information to understand UK spending behaviour, see http://www.caci.co.uk/acorn/acornmap.asp.

and accessibility of housing. All these policies must be taken together because, with rising trends in energy consumption, there is a real danger that the total Carbon Footprint of housing will grow.

This is one area where low carbon living clearly fits with people's aspirations and desires. Research suggests that people think sustainable homes are modern, attractive, hi-tech, fashionable and good value for money[4]. One of the major challenges is to make uptake of low carbon homes affordable and attractive for developers and the public alike.

"Car use accounts for between 30% and 40% of the Carbon Footprint associated with travel in all local authority areas outside of London."

Figure 3: Carbon Footprint of Transport

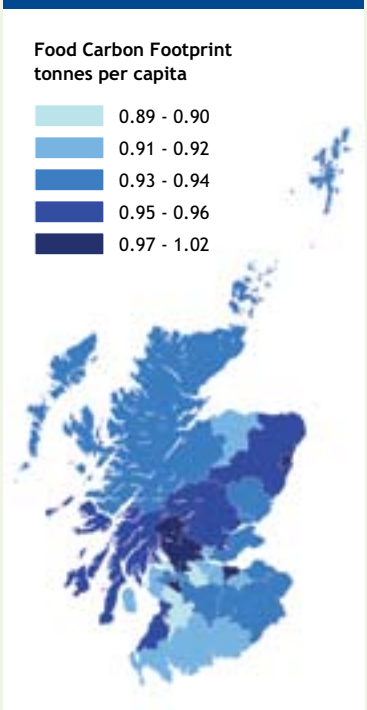


Transport

Transport is the only sector of the economy in which emissions have been rising consistently since 1990 and there are few indications that this is about to change. Car use accounts for between 30% and 40% of the Carbon Footprint associated with travel in all local authority areas outside of London. The average distance travelled per person per year in Scotland has risen by more than 75% in the last 30 years[5]. Thus, it should come as no surprise that carbon dioxide emissions from private cars is a serious and growing concern.

But the picture is mixed; local authority areas with good public transport have a considerably lower Carbon Footprint than those with heavy commuting pressures. Although the threat of growth in transport emissions is real, reductions are possible when public transport is flexible, regular and offers a viable alternative to car use.

Figure 4: Carbon Footprint of Food



Food

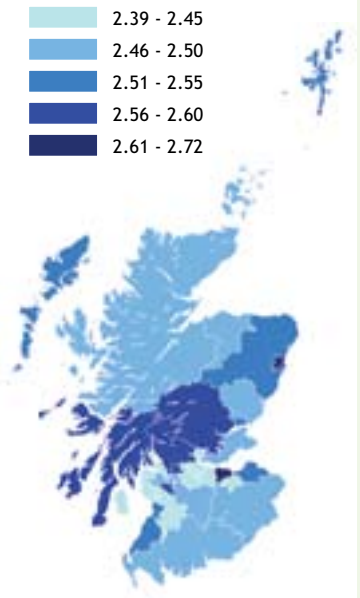
Food consumption in the local community is not usually on the radar of local authorities which are trying to tackle carbon dioxide emissions, but it still accounts for about 8% of the Carbon Footprint of a local authority area.

Strategies to reduce the Carbon Footprint of food are most easily linked to those relating to waste reduction and community health, where both council and community action need to link and reinforce one another.

"Food consumption in the local community is not usually on the radar of local authorities which are trying to tackle carbon dioxide emissions, but it still accounts for about 8% of the Carbon Footprint of a local authority area."

4. Tipping Point or Turning Point. Downing & Ballentyne, 2007. Ipsos Mori. http://www.ipsos-mori.com/polls/2007/climatechange.shtml.
5. Travel by Scottish residents, Scottish Executive, 2007.

Figure 5: Carbon Footprint of Consumables



Consumables

The consumption of products and services can account for up to 27% of a local authority area's Carbon Footprint. In some areas, this can be higher than the Carbon Footprint of transport or housing. All the things that people buy have a Carbon Footprint.

People need to purchase products and services that generate less waste and reduce environmental impacts. Well-informed consumption is central to waste prevention as well as climate change mitigation. But consuming cleverly is not always easy - 'the complexity of information required in order to make a judgement on products and climate change can leave even the most dedicated green consumer confused and disempowered'[6]. The Carbon Footprint can help inform local authority action designed to support better quality, lower-impact local consumption.

"The consumption of products and services can account for up to 27% of a local authority area's Carbon Footprint."

Local Footprints and our agenda for change

All local authorities can take steps to mitigate carbon dioxide emissions in their local communities. These steps should be based on evidence rather than a faith that local initiatives will make a difference; local authorities which are serious in bringing about measurable change need to adopt a community emissions indicator and effective ways of monitoring it and targeting action.

Local Footprints is working with local authorities to explore the practical measures that need to be taken to support local authorities in reducing the carbon dioxide emissions of their communities' consumption patterns. Combined with the REAP software tool the Carbon Footprint has real potential to support this process. It provides a lifestyle, life-cycle and area focus and can be used to help local authorities set meaningful local performance targets. This complements work already underway in many local authorities to manage the carbon emissions of their operations.

The baseline Carbon Footprint provided by REAP is free and accessible in the form of an online report for every local authority area in Scotland. At the moment, REAP must be purchased under licence but SEI and Local Footprints believe that it is important that tools such as REAP are further developed to make monitoring, controlling and reporting community emissions easier and more affordable.

Local Footprints will be working with local authorities throughout Scotland to explore how REAP can be developed to increase its reach and accessibility. We welcome your suggestions.

"Local Footprints is working with local authorities to explore the practical measures that need to be taken to support local authorities in reducing the carbon dioxide emissions of their communities' consumption patterns. Combined with the REAP software tool the Carbon Footprint has real potential to support this process."

6. The Environmental Contract, Mayo, 2007.

National Overview

Providing the right climate for change

"People, business and government each occupy a corner in a traingle of change. No one, or even two groups, can lead on sustainable consumption alone. Different corners lead at different times by doing what they can do best. Until now this has often been accidental. The change might be profound if it were coordinated."

I will if you will, Sustainable Consumption Roundtable, 2006

Local government has a pivotal role to play in tackling climate change. It has the power to deliver better homes and an improved transport infrastructure. And it has the influence to lead local partnerships and engage with people and local business. In short, it holds the key to creating the conditions necessary for low-carbon living in our communities.

The proposed target for Scotland's Climate Change Bill will be an 80% reduction in emissions by 2050. This is a challenge that has been likened in scope to the first industrial revolution[7], but it also presents an opportunity for fresh ideas and new ways of thinking. Scotland was a true inventor and entrepreneur at this time, and can apply the same enthusiasm and brilliance today to take us to a low-carbon society.

The Carbon Footprint of the people of Scotland is 59 million tonnes a year. An 80% reduction in carbon dioxide emissions by 2050 equates to a reduction of 3% year on year. In 2050 the average Scot should have a Carbon Footprint of only 2.34 tonnes per capita (t/cap), in 2001 it was 11.71 tonnes[8]. To bring about this transition towards low-carbon living requires a fundamental change in the way we think about climate change at a local level. Changes need to be made by businesses, communities, and in the home.

There is a new impetus for action at the local level driven by the Scottish Government's five strategic objectives: Wealthier & Fairer, Safer & Stronger, Smarter, Healthier and Greener and related outcome-focused programmes including: climate change, consumption and production, and sustainable places. Local authorities, as with all public services, are expected to help deliver this agenda[9].

7.Stern Review on the Economics of Climate Change, HM Treasury, 2006
8.assuming a stable population and an 80% reduction taken from 2001 rather than 1990 figures
9.http://www.scotland.gov.uk/Topics/Government/legislative-programme

How to use this report

The focus of this report is on climate change mitigation. It provides data and analysis of the Carbon Footprint associated with the way people live in your local area; the energy people use in the home and the way they travel; and the food and products they consume.

This information is placed in the context of particular population and area characteristics including income, qualifications, work hours and housing conditions. This can help to gain an understanding of those characteristics associated with an area that may encourage or discourage low-carbon lifestyles in the community.

Accompanying this Scottish report is a Carbon Footprint report covering every local authority in the UK and an online Footprint Comparison Tool. Taken together, these reports provide a benchmark measure against which you can measure progress in the future. Understanding the variation in carbon dioxide emissions for similar local authorities is important for identifying the potential to improve the situation in your area.

Recent legislation such as the Local Government in Scotland Act 2003, and Planning etc (Scotland) Act 2006, place duties and responsibilities on local authorities in relation to sustainability[10]. The body of guidance and policy on climate change also grows – taking in planning and micro-renewables, transport, and education. Sustainable development and climate change are clearly national and international priorities and the audit process for local government now provides a stronger mechanism for ensuring that it is a local priority.

On top of this all 32 Scottish local authorities have signed Scotland's Climate Change Declaration[11]. Amongst other actions this commits each signatory to:

- *Produce and publicly declare a plan, with targets and time-scales, to achieve a significant reduction in greenhouse gas emissions from our own operations. This will include our energy use and sourcing, travel and transportation, waste production and disposal, estate management, procurement of goods and services, and improved staff awareness.*
- *Ensure that greenhouse gas reduction and climate change adaptation measures are clearly incorporated into our new and existing strategies, plans and programmes, in line with sustainable development principles.*
- *Publish an annual statement on the monitoring and progress of our climate change response, detailing targets set, actions taken, outcomes achieved and further actions required.*

Whether your local authority is taking its first steps in tackling climate change or actively delivering a climate change strategy, the government has signalled that delivering carbon reduction outcomes in your organisation and your area will be a priority through any single outcome agreements which are finalised. This report is designed to help you understand how using the Carbon Footprint can contribute to this effort.

10. http://sustainable-scotland.net
11. For more information on Scotland's Climate Change Declaration www.sustainable-scotland.net/climatechange

Introducing the Carbon Footprint

The Carbon Footprint is a measure of the total amount of carbon dioxide emissions that are directly and indirectly caused by human activity. In this report we use the Carbon Footprint to look at the consumption activities of individuals and households within local authority areas. This provides us with a connection between the way people live and the policy levers available to local government and climate change.

Traditionally, carbon dioxide emissions are measured across four main sectors in the UK: industry, transport, domestic energy use, and land management. The Department for Environment and Rural Affairs (Defra) has published an experimental baseline emissions inventory for every local authority area in the UK using this approach[12]. This is useful for sector-based analysis but not for comprehensive monitoring of the impact on local residents' activities on climate change.

Local authorities have also used the Carbon Trust Local Authority Carbon Management Plan (LACMP) to get to grips with their own estates' direct emissions. This is a useful start, but is a much narrower focus than is required when considering community-wide carbon baselines and measures to reduce emissions. The Carbon Footprint complements the LACMP, enabling local authorities to realise their full potential for engaging effectively with their communities and constituents.

The Scottish Government is supporting research to determine the best tools for local authorities to use to mitigate and adapt to climate change, including emissions inventories. The research evaluates a selection of these tools and has produced a climate change tool database linked to Scotland's Climate Change Declaration[13]. The REAP[14] software tool used to produce the carbon footprint results for this report was evaluated in the research.

What is the difference between the Carbon Footprint and the Ecological Footprint?

The Ecological Footprint has already become popular as a measure of the impacts associated with resource consumption. The message it provides is similar to that of the Carbon Footprint. Both indicators have a lifestyle and a lifecycle focus as described in this report. The headline message associated with the Ecological Footprint is that if everyone in the world consumed as much as an average person in Scotland we would need three planets to support our lifestyles. The changes to the way we live that are needed to reduce that figure to one planet are much the same as those required by a low-carbon society.

The Ecological Footprint measures the amount of energy and material resources used by our consumption activities and expresses this demand as an area of land. The average Ecological Footprint of a person in Scotland is 5.37 hectares – or 'global hectares' per person. The Global Footprint Network[15] has calculated that the amount of resources available on earth equates to 1.8 global hectares per person. An Ecological Footprint report for every local authority in the UK is available at www.sei.se/reap.

As defined in this report, the Carbon Footprint is a measure of carbon dioxide emissions so the focus of this report is on climate change rather than general resource efficiency. It is not a direct component of the Ecological Footprint as it is not expressed as a measurement of physical area. However, it can be said that the energy land component of the Ecological Footprint (notional land required to absorb carbon dioxide emissions) makes up approximately two-thirds of the Ecological Footprint in the developed world.

To a large extent the two indicators are complementary; any action that reduces an area's Carbon Footprint will almost certainly reduce its Ecological Footprint too. The Carbon Footprint has a strong policy relevance because it can be directly related to the Government's agenda on climate change whilst the Ecological Footprint conveys a message in relation to environmental sustainability.

Confusion about the Carbon Footprint is caused by its increasing popularity and usage in a number of different ways. The central debate revolves around whether it covers direct and indirect emissions and whether it describes all greenhouse gases or just carbon dioxide emissions. SEI is strongly in favour of the definition incorporating direct and indirect emissions but recognises arguments for and against the inclusion of all greenhouse gases.

In this report, we are using a scientific definition for the Carbon Footprint based on commonly accepted accounting principles and modelling approaches for carbon dioxide emissions only. For further information we recommend reading the short discussion note published by ISA-UK: http://www.isa-research.co.uk/reports.html

12. http://www.defra.gov.uk/environment/statistics/globatmos/galocalghg.htm
13. To be published on SSN website
14. Resource Energy Analysis Programme www.sei.se/reap
15. Global Footprint Network www.footprintnetwork.org

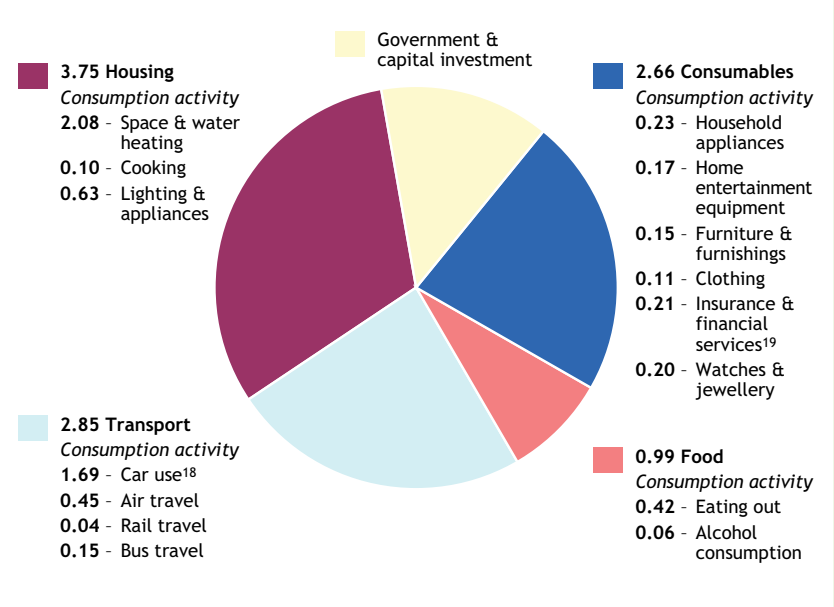
This report explores how the Carbon Footprint can help local authorities that want to encourage low-carbon living amongst residents. Using the REAP software tool, the Stockholm Environment Institute (SEI) has created Carbon Footprint profiles for every local authority in Scotland. The Carbon Footprint has four distinct characteristics that complement the existing inventory data published by Defra, namely that it provides:

- a lifestyle focus;
- a collective focus;
- an area focus; and
- a lifecycle focus.

The Carbon Footprint provides a lifestyle focus

Typically people associate climate change with a narrow set of issues: food miles, cheap flights, and leaving appliances on standby. Often these are treated as isolated aspects of behaviour and not placed in the context of lifestyles as a whole. Scottish Executive [as was] research in 2005 on public attitudes to climate change concluded that most people find it difficult to perceive a direct link between global issues and individual behaviour. Those who regard climate change as a pressing problem feel that it is too big for them to affect by their individual actions[16].

Figure 6: UK Carbon Footprint broken down by theme and selected consumption activity[17]



The emissions inventory published by Defra enables local authorities to look at the impact of domestic energy use but cannot be used to segment and measure the carbon dioxide emissions associated with other aspects of people's lifestyle.

The Carbon Footprint shows the relationship between climate change and people's lifestyles as a whole. It measures the carbon dioxide emissions associated with the domestic energy we use and the way we travel as well as what we eat and what we buy and use. Because the Carbon Footprint focuses on people's every-day lives it helps relate climate change to local needs and priorities. This makes it relevant to local people and to communities.

Transport use and energy use in the home typically account for 56% of the total Footprint of a local authority area but the consumption of food and goods and services accounts for a further 31%. Aspects of our lifestyle that we commonly associate with climate change still dominate. However, it is clear that expenditure on consumables and durables has a substantial impact in its own right. The Carbon Footprint indicates that as well as thinking about travel we should also consider the impact related to fast food culture and spending on electrical gadgets and durable goods. These activities are less commonly linked to local authority action but they have a clear relationship with local agendas such as nutritional health and waste management.

"Scottish Executive research in 2005 on public attitudes to climate change concluded that most people find it difficult to perceive a direct link between global issues and individual behaviour".

16. Towards a low footprint Scotland, WWF Scotland 2007

17. The food and consumables consumption activities listed here are translations of the COICOP consumption categories used in REAP. For instance 'watches and jewelry' is a simplified translation of the COICOP category 'personal effects'. COICOP is a United Nations statistical methodology and stands for the Classification of Individual Consumption According to Purpose. For more information see: http://www.wwflearning.org.uk/data/files/reap-report-no-2-83.pdf.

18. Combines 3 COICOP categories related to private transport and car use

19. Combines 2 COICOP categories

The lifestyle focus makes it possible to align climate change policy to other objectives and vice versa. It makes it easier to identify whether individual policies are complementary and whether they are really making a difference to carbon dioxide emissions overall.

The Carbon Footprint provides a collective focus

Visible collective action reinforces sustainable behaviour. As an indicator, the Carbon Footprint can be applied to an individual, a household, a community or the population as a whole. This helps people understand the impact of an individual's actions and their role in bringing about wider change.

The local authority inventory published by Defra highlights important emissions sources within each sector and can be used to trace the impact of sector-based initiatives over time. It can be used to reflect the impact of collective action by the public in relation to domestic energy consumption and to a lesser extent in relation to transport.

Research by Ipsos Mori indicates that people tend to regard issues such as climate change as someone else's problem and responsibility. Ipsos Mori describes this as the "bystander effect; everyone looking on without anyone stepping in to act[20]". The same research shows significant public concern about fairness and the importance of knowing that others are taking action to reduce carbon dioxide emissions. The Carbon Footprint can be used to provide visible evidence of collective action on climate change. It also enables a focus on outcomes for communities rather than outputs and processes. Community footprinting work in the communities of Ellon and Huntly, Aberdeenshire has produced a benchmark against which to measure progress and identify priorities for action.

The components of the Carbon Footprint

The Carbon Footprint can be broken down into different levels of detail. At the top level it is split into three 'final demand categories[21]': these are called households, government and capital investment. The figures attributed to government and capital investment are the same for each local authority area. Using REAP, SEI has split these final household demand categories into five themes that can be directly related to local government policy:

i. 'Housing' covers gas, electricity and other fuel use in the home but also includes the impacts associated with the construction, rental and maintenance of dwellings

ii. 'Transport' incorporates car use and maintenance, and extends to other private vehicles such as motorhomes and minibuses as well as public transport

iii. 'Food' covers spending on food and drink including catering, eating out and alcoholic beverages.

iv. 'Consumables' covers expenditure on 30 categories of household consumption including clothing, household appliances, insurance, financial advice and private education.

v. 'Government and capital investment' covers the remainder of activities by government not addressed by the above themes. This includes spending on public administration, health and education.

The Carbon Footprint provides a area focus

Local authorities have a role to play in mitigating climate change through the management of their own estate, service provision and community leadership. To date, most local authorities have focused on reducing the carbon dioxide emissions of their estate and related operations, notably through engagement with the Carbon Trust Local Authority Carbon Management Programme and work on energy efficiency and renewable energy supported by the Energy Savings Trust, the Carbon Trust, and others.

20. Downing and Ballantyne. 2007
21. These categories describe the final users or consumers of goods and services. Consumption of goods and services by business and industrial sectors falls under a separate category called 'intermediate demand'. We are interested in final demand categories because they represent the end of the supply chain – the point of

Action on mitigating climate change in the community is less common but at least equally important. An average council in Scotland produces at least 30,000 tonnes of carbon per year, while its local community generates 1.8 million tonnes.

The local authority emissions inventory published by Defra provides an area focus which identifies the sources of emissions from local business, industry and the public sector. It can also be used to look at the impact of traffic and the road network.

The Carbon Footprint provides an area focus based on the consumption activities of households. It can be used to identify how service provision by local councils contributes to an infrastructure of consumption: influencing people's every-day decisions and behaviour through planning, transport and housing policy.

Because the Carbon Footprint also looks at issues that fall outside the direct control of local government, this places an emphasis on local authorities working in partnership with community groups and leading action, for example through Community Planning Partnerships. This can also add valuable input to eventual single outcome agreements.

Does the Carbon Footprint add up? REAP data sources and methodology

The 2005 experimental CO_2 emissions published by Defra and the 2001 Carbon Footprint created by SEI were developed to focus on carbon dioxide emissions from different perspectives. This has implications for the way they measure and monitor residents' behaviour.

1. Domestic energy use:
Both indicators allocate the impacts of energy generation to households but at the moment they use different approaches. REAP generated figures are not currently based on AEA Energy and Environment[22] gas and electricity consumption data because of concerns that some energy use by small business is actually allocated to households. SEI does however recognise that most local authorities will use AEA based figures and we are likely to use them to generate the next set of Carbon Footprint results published in 2008. Local authorities who prefer to use their own data can recalculate their emissions by entering it directly in REAP.

2. Transport:
For the experimental emissions published by Defra all road traffic emissions including those produced by through traffic are attributed to that local authority. In contrast REAP models the average distance travelled by mode of transport for residents only within each local authority area based on National Travel Survey and ACORN data[23]. It is not possible to use traffic figures to model the Carbon Footprint because of the risk of misallocation and double counting.

3. Food and consumer spending:
The 2005 experimental CO_2 emissions published by Defra focus on the emissions of industrial sectors, the Carbon Footprint takes an alternative perspective based on the consumption habits of households. To do this REAP combines data from the household expenditure survey with Acorn data at the local authority level. Acorn data helps us to distinguish the consumption habits of different groups in society but does not adequately reflect local conditions. This makes it important for local authorities to monitor the impact of initiatives targeted at households so that local data can be used in REAP.

Both the experimental CO_2 emissions and the Carbon Footprint will be updated shortly. Methodological and data improvements may mean that they are not directly comparable with previous years. SEI will overcome this wherever possible by providing data for previous years using the same methodology and documenting the changes. Further information on the Defra emissisons can be found here: http://www.defra.gov.uk/environment/statistics/globatmos/galocalghg.htm

The Carbon Footprint provides a lifecycle focus

The Carbon Footprint measures the carbon dioxide emissions associated with what people buy and use, all the way through the supply chain. It allocates all the emissions associated with creating a good or service to the final consumer; it is an indicator of carbon dioxide emissions from consumption.

Normally, carbon dioxide emissions are measured where they are physically emitted - these are described as territorial emissions or emissions from production. The local authority inventory published by Defra uses this approach for all emissions with one exception. Emissions from electricity generation are allocated to point of electricity consumption[24].

22. Formerly the National Environmental Technology Centre
23. http://www.caci.co.uk/acorn
24. http://www.defra.gov.uk/environment/statistics/globatmos/download/regionalrpt/laregionalco2rpt20061127.pdf

In 2006, the Ecological Budget UK project analysed the CO_2 emissions from consumption and from production for the UK. The research found that CO_2 emissions from consumption are 11% higher than CO_2 emissions from production[25] in the UK. This difference reflects the trade balance of the UK economy. As a nation of consumers, an ever-increasing proportion of what we buy and use is manufactured outside of the UK.

By providing a lifecycle focus the Carbon Footprint shows how changes in people's behaviour in the UK have a worldwide impact on carbon dioxide emissions.

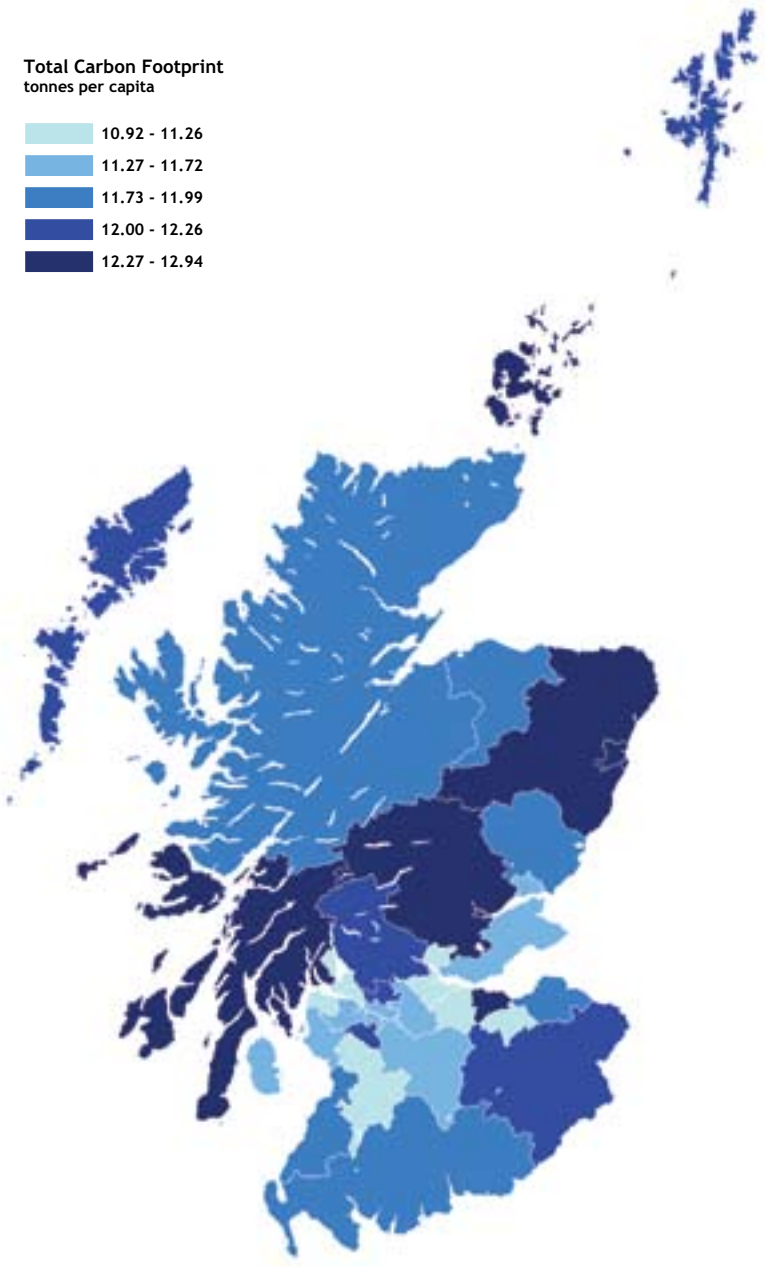
What the Carbon Footprint can tell us: the national picture

Overview

So what does the Carbon Footprint tell us about community emissions in Scotland today? The top line message is that there is a lot of work to do and very little time in which to do it. An initial statistical analysis points to local characteristics that may need to be tackled if the Carbon Footprint is to be reduced.

- An average local authority area in Scotland has a Carbon Footprint totalling over one and half million tonnes. Overall, the need for action applies to all local authorities and is not confined to a geographical basis.
- The size of a local authority area's Carbon Footprint is positively related to population and income but other factors have an equally strong relationship in their own right. Life expectancy, public transport use and educational qualifications are all negatively related to the Carbon Footprint.

Figure 7: Total Carbon Footprint



25. Counting Consumption, 2006

The baseline results

The Carbon Footprint can be used in its per capita (per person) or total form.

- In 2001, three local authority areas had Carbon Footprints of more than four million tonnes: Glasgow, Edinburgh and Fife[26]. A further five local authority areas had Carbon Footprints totalling more than two million tonnes. Each of these had a population of over 200,000.

- Scottish local authorities have a lower Carbon Footprint on average than the UK as a whole. Just over a third have a Carbon Footprint of over 12 tonnes per capita.

- The highest per capita Footprint is for the Orkney Islands (12.94t/cap). The lowest is for West Dunbartonshire (10.92t/cap).

Although the 2001 baseline used for the Carbon Footprint seems a long time ago, household consumption levels have remained relatively stable over the last 10 years[27]. Six years ago the average Carbon Footprint for Scotland was 11.71 tonnes per person. Based on the assumption that this figure has changed little since 1990, we need to be cutting emissions 3% year on year from this baseline to make an 80% reduction by 2050. Despite outstanding work by some local authorities, it is unlikely that we will be able to say that this has been the case when the data is available. Government reporting on national carbon dioxide emissions shows that they have risen over the last 10 years and latest figures suggest the UK government will not meet its target of a 20% reduction on 1990 climate emissions by 2010[28].

On the basis of recent action, an 80% cut in emissions by 2050 is challenging. The Tyndall Centre suggests that to reduce carbon dioxide emissions as they are traditionally measured by 70% by 2030, all climate change reduction mechanisms need to be in place by 2010[29]. That is just three years away.

The message they are sending is the right one. If we allow ourselves more time to put the right mechanisms in place at the local level the danger is that we lock ourselves into a high carbon infrastructure. Houses built with minimum energy performance standards may have a lifespan of 60 years. How long before they will require further energy efficiency measures? Infrastructure planning that accentuates the distances between where people live and work increases our reliance on the car and our demand for new and improved roads. These developments have implications for other areas of our lives as well. If current transport trends are left unchecked 13% of traffic will be subject to congestion by 2025[30]. Climate change is not the only reason that there is a need for a rethink.

"Six years ago the average Carbon Footprint for Scotland was 11.71 tonnes per person. Based on the assumption that this figure has changed little since 1990, we need to be cutting emissions 3% year on year from this baseline to make an 80% reduction by 2050."

National and regional variation

The Carbon Footprint can be used to look at national and regional variation between local authorities. At the moment the Carbon Footprint baseline results are adjusted regionally and by devolved country. Local authorities can compare themselves to other local authorities, the Scottish national average, and other parts of the UK. The variation in components of Scotland's Carbon Footprint are subjected to further analysis in the thematic sections.

26. Glasgow, Edinburgh have total Carbon Footprints of 6.5 million tonnes and 5.7 million tonnes respectively. Fife has a Carbon Footprint of 4 million tonnes.
27. National Statistics Press Release, January 2007. http://www.statistics.gov.uk/pdfdir/efs0107.pdf
28. http://www.defra.gov.uk/news/2007/070329a.htm
29. http://www.tyndall.ac.uk/publications/briefing_notes/Livingwithacarbonbudget.pdf
30. The Eddington Report, 2006. http://www.dft.gov.uk/about/strategy/eddingtonstudy/

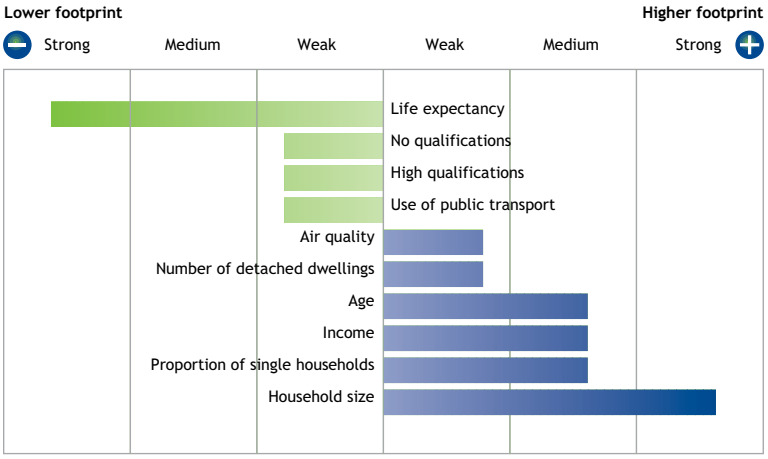
Understanding the impact of local area characteristics

Using statistical analysis, it is possible to identify the local area and population characteristics that have the greatest individual influence on the Carbon Footprint of a local authority area.

For this report, we looked for conditional relationships between the Carbon Footprint of households by local authority area and selected neighbourhood statistics. A conditional relationship is a statistically proven relationship between an isolated characteristic and the Carbon Footprint. It takes a neighbourhood characteristic such as 'average income' and compares it to the Carbon Footprint while all other indicators are controlled so that they stay the same.

Figure three shows those population and local area characteristics that have a positive or negative relationship with the size of an area's Carbon Footprint per household. This is an initial analysis based on English data and further research is needed but it provides an indication of the relative influence of population characteristics, such as income or household size. This can be compared to the influence of infrastructure or area characteristics such as dwelling size and public transport usage.

Figure 8: Conditional relationships

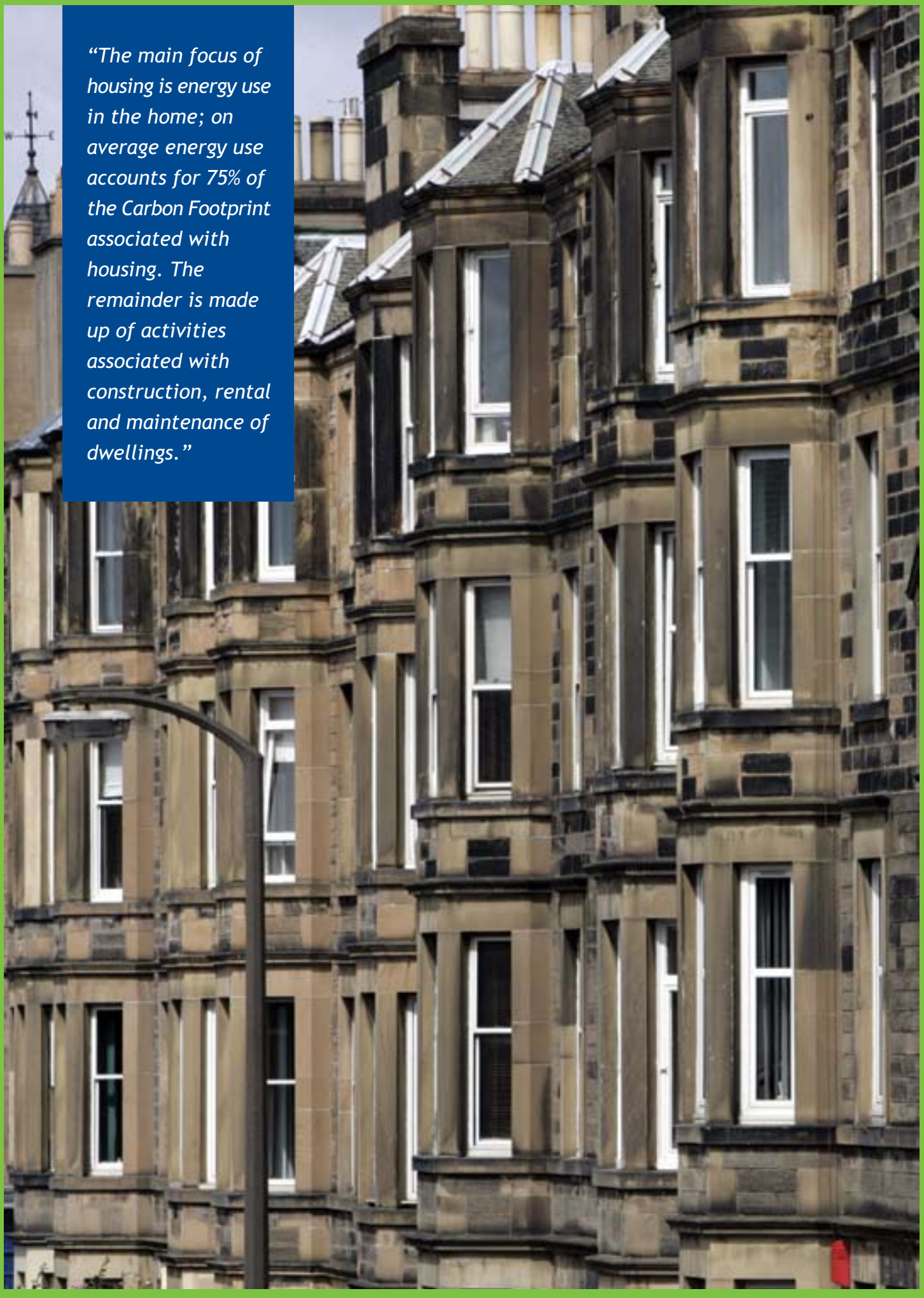


Life expectancy has a strong negative relationship to the Carbon Footprint of households. This means the higher the life expectancy of the population of a local authority area, the lower its Carbon Footprint tends to be, all other factors being equal. Conditional relationships can be created for each component of the Carbon Footprint (housing, food etc) and are detailed further in the thematic sections in the report.

Income is the population factor most commonly linked to the size of a local authority area's Carbon Footprint. The higher the average income of a local authority's population, the higher the Carbon Footprint tends to be. Generally the more people earn, the more they spend, but, as income rises, patterns of expenditure change and this can also affect the size of a population's Footprint. In 2001 higher income earners spent more on transport and on recreation and culture than on food or housing, and this is a pattern that has remained over recent years.

Although income is important, figure three shows that it is by no means the strongest or only local characteristic with a conditional relationship with the Carbon Footprint. This is an initial statistical analysis only and we cannot with confidence state for certain why particular local characteristics have these relationships with the Carbon Footprint. They are however a good indicator of the type of local issues that may create barriers or support the development of a low-carbon society. These may vary for different components of the Carbon Footprint and this is an area where SEI would like to carry out further research.

Analysing the Carbon Footprint in this way can help local authorities to engage with their communities on carbon emissions reductions. In the following sections we explore the type of measures that can be taken in relation to each component of the Carbon Footprint.



"The main focus of housing is energy use in the home; on average energy use accounts for 75% of the Carbon Footprint associated with housing. The remainder is made up of activities associated with construction, rental and maintenance of dwellings."

The Carbon Footprint of Housing

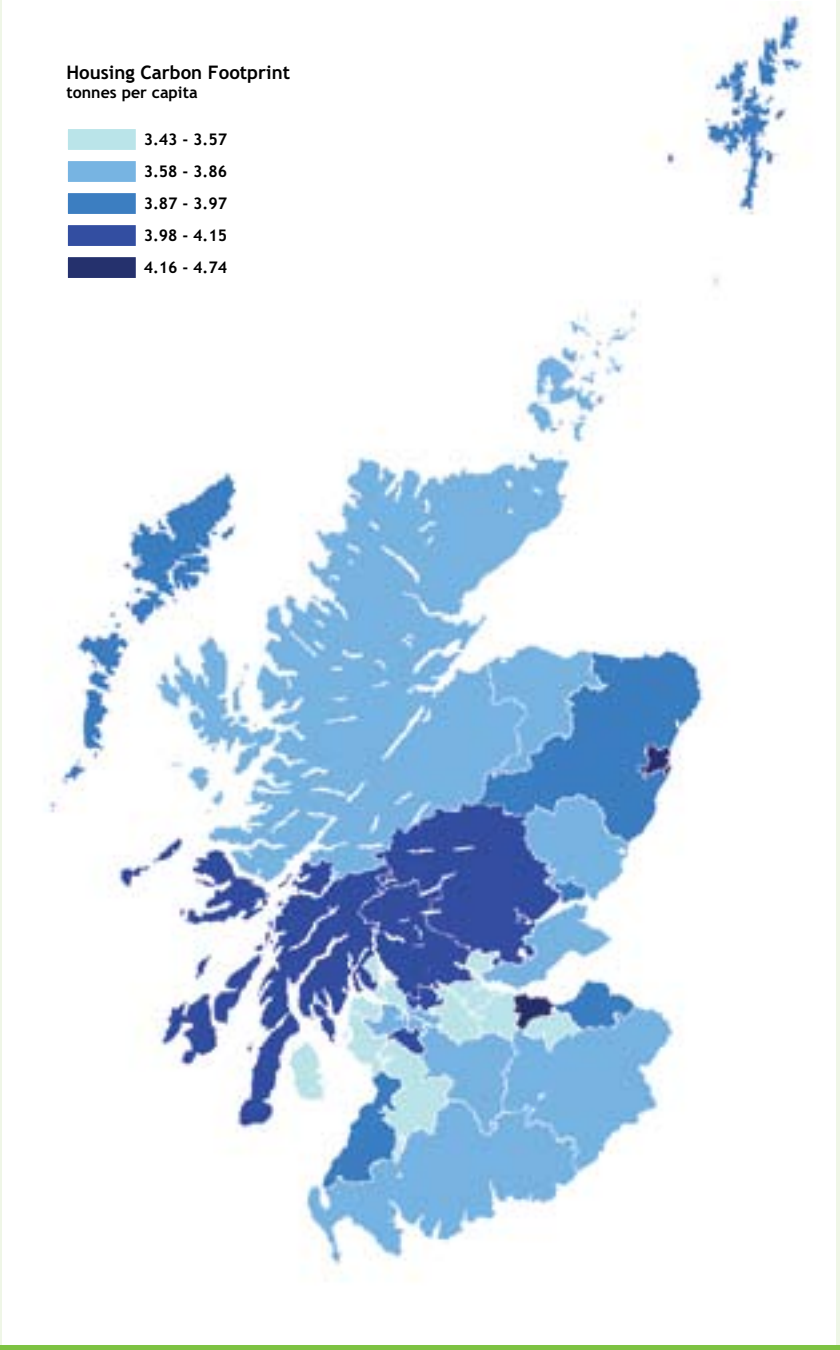
Overview

Housing is a big hitter when it comes to climate change. In Scotland, it accounts for between 36.64% (Orkney Islands) and 29.71% (North Lanarkshire) of the Carbon Footprint of a local authority area

- On a per capita basis, the Carbon Footprint of housing ranges from 3.43t/cap 4.74t/cap (North Lanarkshire and Orkney respectively)

- 12 out of 32 local authorities have a Carbon Footprint of housing of over 4.00t/cap. Only the South East of England and Northern Ireland have a higher per capita Footprint for housing than Scotland

Figure 9: Carbon Footprint of Housing



The main focus of housing is energy use in the home; on average energy use accounts for 75% of the Carbon Footprint associated with housing. The remainder is made up of activities associated with construction, rental and maintenance of dwellings.

The National Consumer Council describes energy as a 'lifeline service', essential to the provision of lighting, heating and cooking facilities[31]. But energy use is also driven by the luxuries of life: bigger, better, flashier widescreen TVs, computer consoles and hi-fi equipment.

Tackling the housing component of the Carbon Footprint is as much about encouraging people to think cleverly about how they use energy as improving the energy performance of homes. Both require effective targeting at the local level. All local authorities provide some form of energy advice or guidance to homeowners but specific measures are needed to tackle large, older,

31. Klein, 2003 (Life Lines NCC)

hard-to-treat and rental properties. These must be a priority alongside, and contributing to, the eradication of fuel poverty.

The demand for new and affordable housing creates another demand on local authorities which has an impact on a local area's Carbon Footprint. This is one area where low-carbon living clearly fits with people's aspirations and desires. Research suggests that people think sustainable homes are modern, attractive, hi-tech, fashionable and good value for money[32]. The challenge is to make the Scottish government's commitment to very high energy efficiency in new buildings, and to low-carbon housing across the board, a reality in the very near future, while still making these homes affordable and attractive for developers and the public alike[33].

Baseline analysis

High energy use may be driven by the high energy demands of the fuel poor: older people, low income families with children, and the disabled. Equally, it can be driven by large, old, hard-to-treat dwelling stock. These may have a higher property value and occupied by households with higher incomes but they may also be rented or owned by people with high value homes and low incomes. The Carbon Footprint may also vary from area to area because of the fuel mix being used. Electricity has a higher impact per pound spent than gas on the Carbon Footprint of a household.

Based on SEI's initial statistical analysis, housing is the only component of the Carbon Footprint in which the lower the income, the higher the Carbon Footprint on a household level. Further work on this is needed, but the National Consumer Council argues that the poor pay more per unit of fuel consumed because of disadvantageous payment methods and because they gain less from competition[34].

However, characteristics which are often associated with comfortable or higher income lifestyles do have a positive relationship with the Carbon Footprint of housing. These include area characteristics - high numbers of large and detached dwellings - as well as population characteristics such as high qualifications.

It is clear that no single population or area characteristic directs the size of the Carbon Footprint of housing. High energy use is driven by the energy efficiency or performance of housing stock and the energy demands of households. It is a problem for low income households with poor insulation and for hard-to-treat dwellings owned by higher income groups. This means that local government must utilise the full range of levers to tackle housing stock and behaviour change.

"It is clear that no single population or area characteristic directs the size of the Carbon Footprint of housing. High energy use is driven by the energy efficiency or performance of housing stock and the energy demands of households."

Scottish housing characteristics

According to a Scottish Executive report in 2006[35], the energy efficiency of the Scottish housing stock improved considerably from 2002 to 2003–04, with 40% of dwellings rated 'good' on the National Home Energy Rating (NHER) scale in 2003–04, compared to 31% in 2002. While this demonstrates a significant improvement, it still leaves 60% below the 'good' benchmark.

Scotland faces particular problems in this area, namely a colder and damper climate, a large number of homes not connected to the mains gas grid, and a significant number of 'hard-to-treat' dwellings, such as old granite tenements[36].

32. Downing & Ballentyne, 2007
33. http://www.scotland.gov.uk/News/Releases/2007/08/20080754
34. NCC Lifelines
35. Scottish House Condition Survey: Energy Efficiency and Estimated Emissions from the Scottish Housing Stock - 2003/4, Scottish Executive December 2006
36. Energy Action Scotland

Social-rented accommodation has a better average rating than owner-occupied or private-rented accommodation due to government efforts to improve performance in the public sector. New buildings which must meet higher standards fare better too - 71% of dwellings built since 1982 achieved a 'good' rating. Many parts of Scotland are not accessible for mains gas, which is an important way to achieve lower carbon emissions. Almost half of dwellings with gas central heating achieved a 'good' rating, compared to just over a quarter with electric central heating. Detached dwellings and older dwellings emit much higher quantities of carbon dioxide. Flats produce on average less than half the emissions of detached houses.

Levers available to local government

Strong levers do exist at the local level to improve the energy performance and efficiency of both new and existing homes. The challenge for local government is how to make the most of them.

New homes

- Currently new homes account for only 1% of housing but, by 2050, houses built under the existing programme will account for around 25% of the housing stock[37].

A policy framework for the energy performance of new developments can be based around three main policy levers:

- The planning system: the location, siting and design of new developments can contribute to the reduction of the Carbon Footprint of a local area. There are opportunities to take this forward through Regional Development Plans as required under the new Planning (Scotland) 2006 Act
- Building standards and regulations: building regulations provide mandatory baseline national standards for energy use in buildings. The regulations progressively raise the energy efficiency standards of new homes over time. The Scottish Government is committed to introducing rigorous new standards that will make houses much more energy efficient.
- Voluntary standards: in Scotland, design is a material consideration in determining planning applications. To encourage better design, several local authorities have introduced sustainable planning guidelines which go beyond baseline building standards. These guidelines are supported by government planning guidance and the local authority duty to contribute to sustainable development.

Local government needs to prepare itself to ensure developers can build all new houses to these higher standards in the very near future. It is expected that Scotland will require all new homes to be zero-carbon homes by 2016. It is possible to make the case for moving more quickly than this in your local area where there are demonstrable opportunities. Local authorities can already set local standards beyond current building regulations, under the guidance on low and zero carbon equipment in Scottish Planning Policy 6 Renewable Energy.

37. Stock Take – Delivering improvements in existing housing, SDC 2006

Existing homes

Energy efficiency varies widely across housing stock but energy performance has the greatest correlation with property age, type and size for existing homes[38]. Large, older, detached homes tend to have the poorest energy standards. Energy performance is also driven by the amount of insulation and efficiency of heating systems as well as the demands and awareness of the user.

Fuel poverty
Households with poor energy efficiency are ten times more likely to be in extreme fuel poverty than those with a good rating[39]. *The Scottish House Condition Report - Key Findings for 2004/5* found that 419,000 households (18.2%) in Scotland live in fuel poverty. However, Communities Scotland has also calculated that for every 5% increase in fuel price, a further 30,000 households would become fuel poor. Since 2003, there have been steep price rises for gas, electricity, coal and oil, bringing the actual figure for the number of Scottish households in fuel poverty in 2007 to around 650,000[40].

The Scottish Government has a commitment to: "ensure that by November 2016, so far as is reasonably practicable, people are not living in fuel poverty in Scotland"[41]. The Government is working to achieve this target through grants and incentives to put in place energy efficiency measures and central heating. A pilot scheme is looking at the scope for including renewables in the fuel poverty programme during 2006 – 08.

"Scotland faces particular problems in this area, namely a colder and damper climate, a large number of homes not connected to the mains gas grid, and a significant number of 'hard-to-treat' dwellings, such as old granite tenement."

Local housing strategies
Local authorities are obliged under legislation to produce a Local Housing Strategy to show how they are helping to eradicate fuel poverty. Local authorities are accountable for reaching energy efficiency targets in their housing stock through the Housing and Energy Conservation Act 1995 (HECA).

Energy Efficiency Advice Centres cover the whole of Scotland, offering advice on energy efficiency. Aside from the programmes to address fuel poverty such as the Warm Deal, energy efficiency programmes are presently driven by the Energy Efficiency Commitment (EEC).

The Energy Efficiency Commitment places an obligation on energy suppliers to promote energy efficiency measures for householders and is in the middle of its second phase. The third phase (2008-11), now known as CERT[42], is intended to be more ambitious and support double the level of activity. At the moment, 50% of savings associated with the EEC must be from low-income households, but CERT is likely to have an expanded scope including microgeneration and other measures to reduce the consumption of supplied energy[43]. Local authorities typically work closely with energy suppliers when tackling their own housing stock but such coordination appears to be less common for private homes.

Rental property
Those renting property that is public sector owned, are much less likely to live in fuel poverty. Higher sustainability standards and newer buildings mean social housing is on average more efficient than private housing[44]. The private rented sector is a particular challenge as the tenant, rather than the landlord, directly benefits from any financial savings.

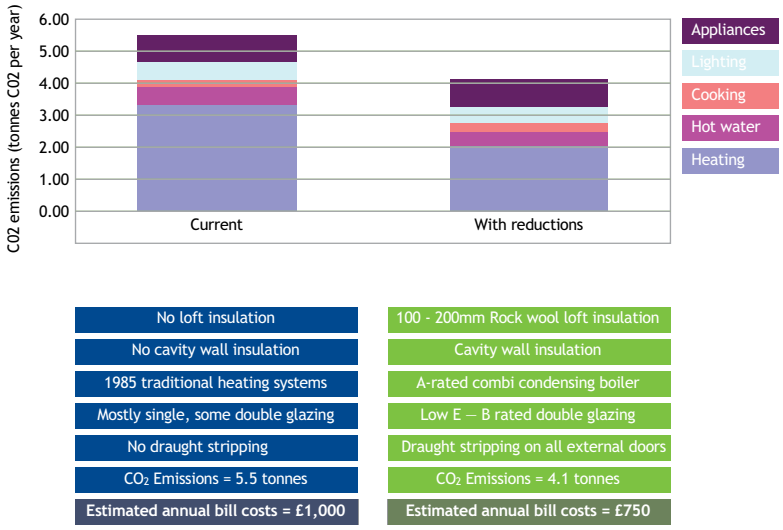
38. DCLG, 2006
39. Scottish House Condition, Survey Key Findings for 2004/5
40. Energy Action Scotland
41. Scottish Fuel Poverty Statement, 2002
42. the Carbon Emissions Reduction Target (CERT)
43. www.defra.gov.uk/environment/climatechange/uk/household/eec
44. DCLG 2006

Demolish or Refurbish?

Regeneration is as important a driver of energy performance improvements in the housing stock as fuel poverty. Regeneration measures can include both refurbishment of existing housing and demolition and replacement.

Oxford University's *40% House* report advocates a four-fold increase in national demolition rates by 2016 in order to achieve a 60% reduction in emissions from the housing sector by 2050[45]. However, the Sustainable Development Commission has voiced concerns about demolition, pointing out that it can be between three and ten times more costly to fund demolition and replacement than to refurbish[46]. The aim should be to retrofit where possible before resorting to demolition, which is disruptive and expensive[47].

Figure 10: The table below shows typical savings in carbon dioxide emissions that can be made under a number of retrofit options.

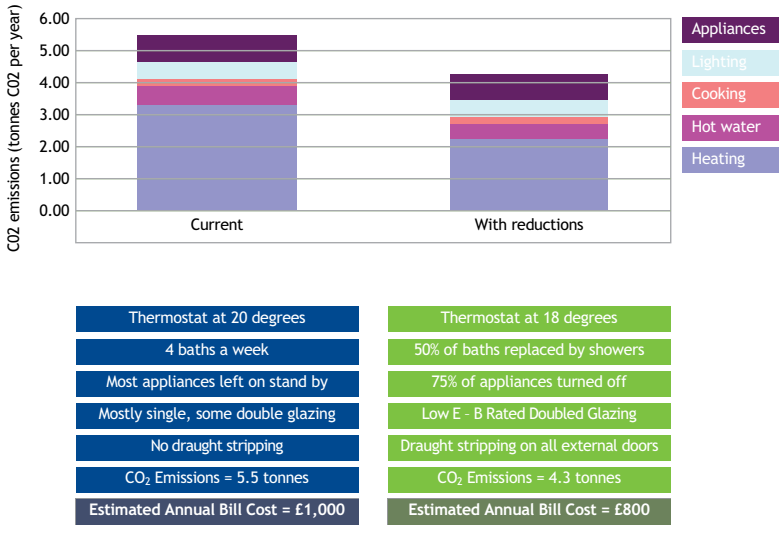


Energy use and behaviour

Residential energy efficiency has doubled since the 1970s[48] and yet absolute energy use in the home still increases by an average of 1% a year[49]. Providing efficient new homes, or even retrofitting old ones, can only work to reduce emissions if the occupier knows how to use the technology. A triple glazed window left open is no better than a single glazed window. There are numerous choices that the occupier has that will have a considerable impact on carbon dioxide emissions.

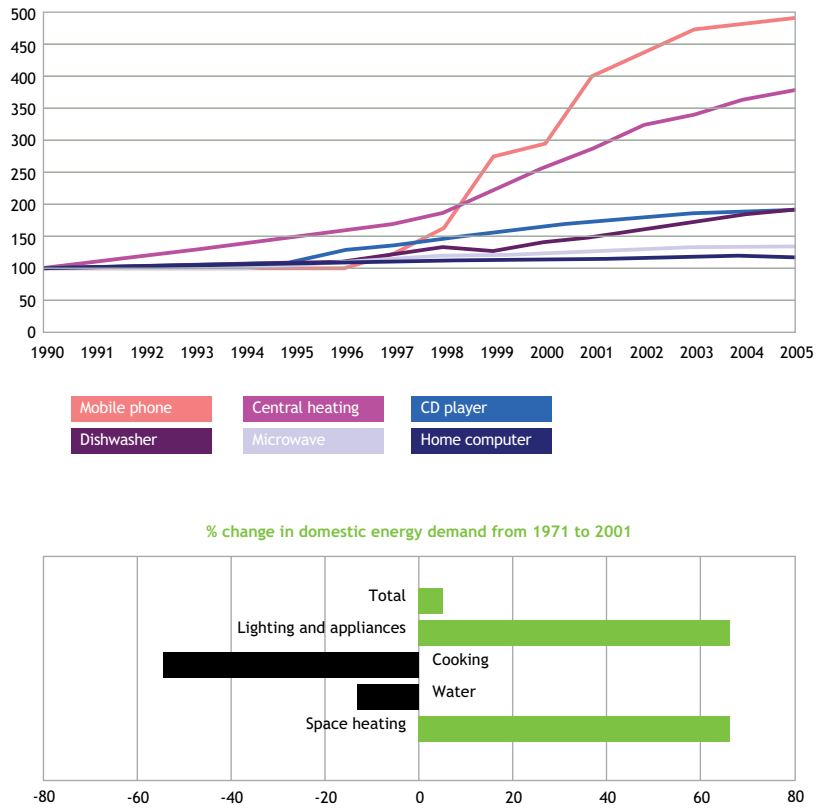
The Energy Saving Trust leads the way in targeting households, and over 100,000 have pledged through it to reduce their energy use by 20%. Over half of people surveyed report that they never leave the TV on standby overnight, their mobile phone chargers plugged in nor lights on in rooms when empty[50]. The benefits associated with these small changes in behaviour are considerable: (in figure 11: Comparing high and low energy living) the saving in carbon dioxide emissions associated with low energy living is 22%, the costs of implementation are relatively low.

Figure 11: Comparing high and low energy living



45. 40% House, Oxford University
46. SDC, Sustainable Communities Review
47. 40% House, Environmental Change Institute, University of Oxford, February 2005
48. Mayo, 2007
49. energy consumption increased by 15% between 1990 and 2005 http://www.sustainable-development.gov.uk/progress/data-resources/documents/sdiyp2007_a6.pdf
50. Defra attitudes survey 2007

Figure 12: How we use energy in our homes



Space and water heating account for two thirds of energy use in the home but over the long term, increases in energy demand are highest from household appliances[51]. There are links between energy use and household spending; increases in energy use are also mirrored by increases in the percentage of households owning durable goods. This is an area where further action is needed. A recent shopping study found that of 350 consumer electronic items researched, only 1 had an energy label sticker on it[52].

The possibilities of change

Between 2004 and 2024, the number of households in Scotland is projected to increase by 13% to 2.5 million[53]. This, together with rising trends in energy consumption, means that there is a real danger that the total Carbon Footprint of housing will rise even if it should fall on a per capita basis. To respond to this concern, the Scottish Government has established an expert panel to recommend measures to make houses and buildings more energy efficient. Local government must take the initiative to champion zero and low-carbon homes now to prepare the way for new building regulations.

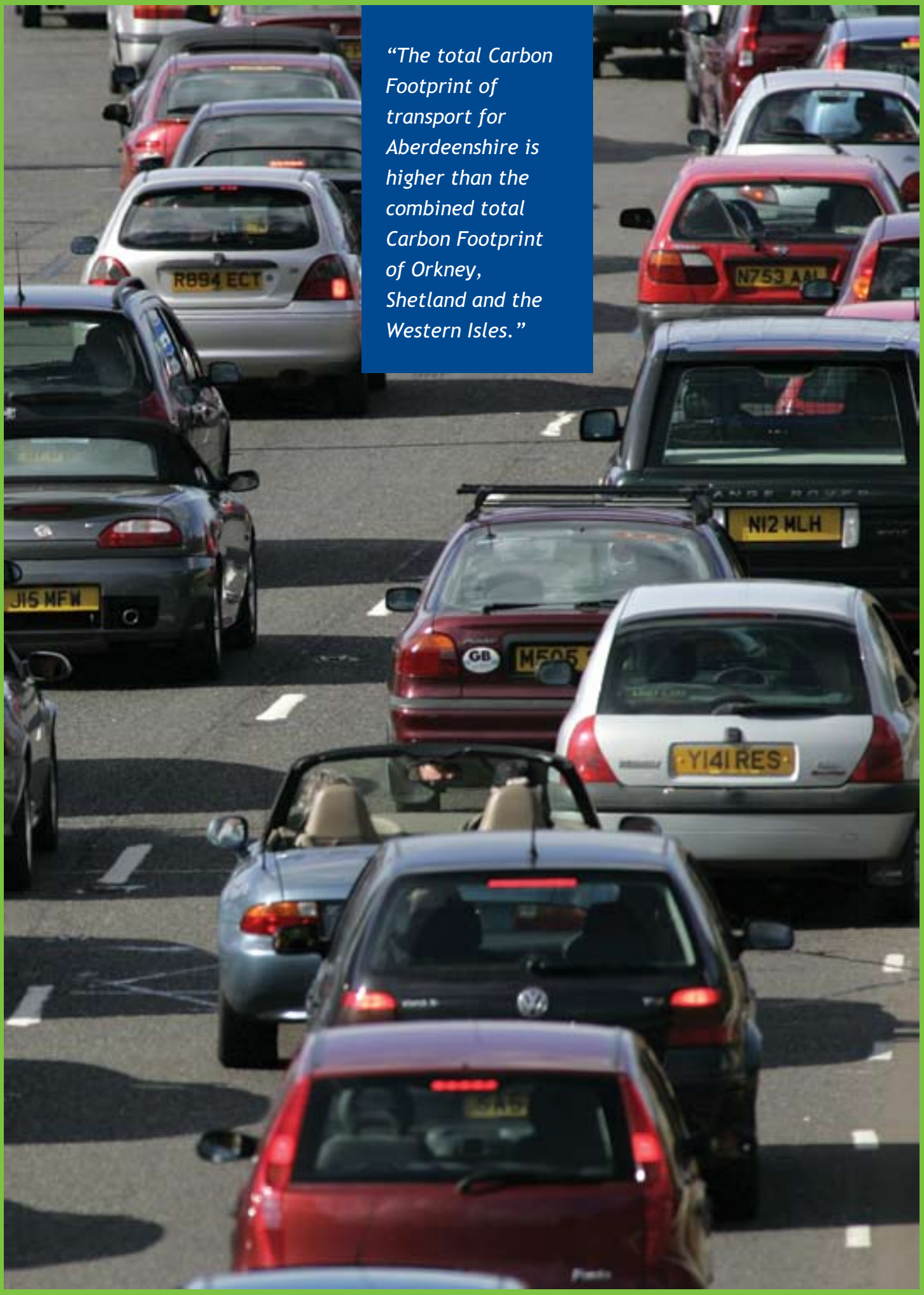
For existing housing, it is a familiar message; it is essential that local initiatives are targeted at both social and privately owned housing stock. A report for the Joseph Rowntree Foundation describes existing measures by local government as imaginative and wide-ranging but concludes that it is difficult to identify genuinely effective energy efficiency initiatives aimed at the private sector. It also finds that there is a serious lack of capacity and resources within local authorities to deliver effective local private sector housing renewal strategies[54].

51. DCLG, 2006
52. NCC
53. Household Estimates and Projections, Scottish Government, 2007
54. Groves & Sankey

This points to a need for stronger coordination and perhaps leverage of funding for local authorities to work more closely with energy companies delivering the Energy Efficiency Commitment.

Local monitoring needs to be used to identify both the housing stock (inefficient, hard-to-treat), and the local residents (fuel poor), that should be targeted by energy efficiency measures. The data produced on local area characteristics indicates that these groups may not be one and the same and are likely to have specific and different requirements. Every local authority should adopt robust rolling stock surveys for as wide a cross section of households as possible.

In all cases, widespread coverage is important, targeting 5% of the population won't bring about real change. This highlights the importance of wider behaviour change initiatives targeted at the population as a whole.



"The total Carbon Footprint of transport for Aberdeenshire is higher than the combined total Carbon Footprint of Orkney, Shetland and the Western Isles."

The Carbon Footprint of Transport

Overview

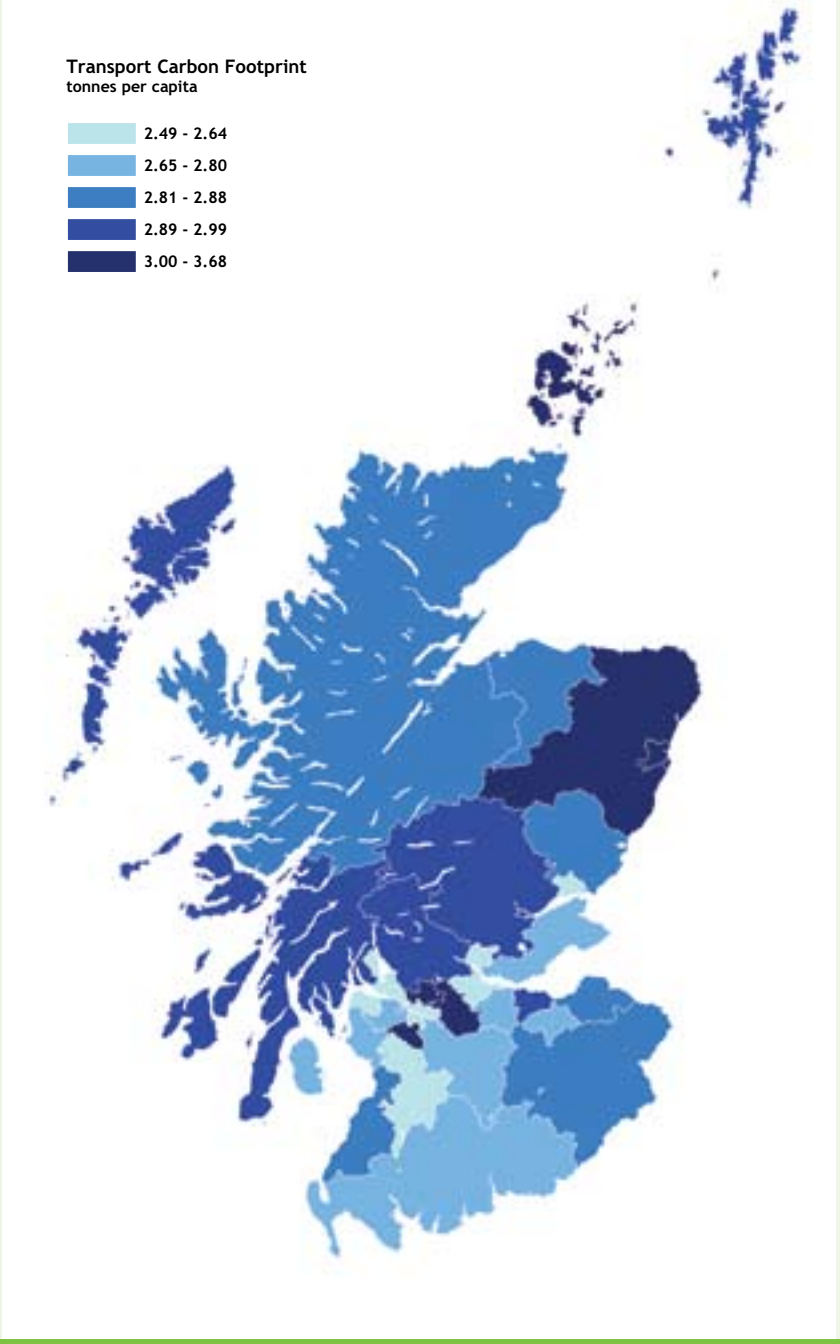
Responsibility for transport is split across a number of organisations but local authorities have considerable potential to influence public and private transport use and should be supported and encouraged to do so. In some local authority areas transport can have a greater impact than housing but there is considerable variation between Scottish local authorities. In Scotland, transport accounts for between 28.90% (Aberdeenshire 3.68 tonnes per capita (t/cap)) and 21.85% (Glasgow 2.49t/cap) of the Carbon Footprint of a local authority area.

- The total Carbon Footprint of transport for Aberdeenshire[55] is higher than the combined total Carbon Footprint of Orkney, Shetland and the Western Isles[56].
- Six local authorities have a Carbon Footprint for transport of over 3.00t/cap

The Carbon Footprint of transport measures the carbon dioxide emissions associated with residents' travel behaviour. It incorporates car and public transport use as well as residents' domestic and international flights. Travel behaviour is measured using the average distance travelled by mode by residents in each local authority area rather than traffic flow[57].

Transport is considered the 'worst performing sector in the economy'[58] when it comes to dealing with carbon dioxide emissions. According to government measures of direct emissions it is the only sector of the economy in which emissions have been rising consistently since 1990 and there are few indications that this is about to change.

Figure 13: Carbon Footprint of



55. Transport Footprint of Aberdeen = 830,652 tonnes
56. Total Footprint of Shetland, Orkney and Western Isles = 740,794 tonnes
57. This overcomes the problem of double counting when people travel between local authorities
58. House of Commons Environmental Audit Committee. Ninth Report of Sessions 2005-06 Vol 1.

Baseline analysis

Car use accounts for between 30% and 40% of the Carbon Footprint associated with travel for all local authorities outside London. There is no question that car ownership, like home ownership, is seen as part of our way of life. The Scottish Household Survey found that in 2006, 68% of households had at least one car available for private use - up from 63% in 1999 – and the numbers of households with two or more cars is fast approaching those of non car-owning households[59]. At the same time, both the number and percentage of total trips made by foot or bicycle have declined[60].

The average distance travelled per person per year in Scotland has risen by more than 3,000 miles (75%) since 1975-6. Not only has the average number of trips per person per year risen by 15%, the average length of a trip has risen by 53%[61]. Thus, it should come as no surprise that carbon dioxide emissions from private cars is a serious and growing concern.

Income has a strong positive relationship with the Carbon Footprint of transport for local authority areas. This reflects patterns of household expenditure and car use; although car travel accounts for the greatest proportion of trips and distance travelled in every income group, it increases with income[62]. The pattern of spending on travel changes with income: higher income groups spend a smaller proportion of transport expenditure on bus and coach fares (7%), compared to lower income groups (23%)[63].

Income is a less important factor when the public transport is flexible, regular and offers a viable alternative to car use. This is demonstrated by Glasgow's considerably lower Carbon Footprint for transport.

Levers available to local government

To most effectively reduce the carbon dioxide emissions associated with residents' travel behaviour, local authorities need to be able to implement a combination of 'hard' and 'soft' measures. Soft measures aim to influence people's travel behaviour toward more sustainable options such as walking, cycling, travelling by public transport and car sharing. They should be seen as a set of techniques because no single initiative will have a significant impact on local carbon dioxide emissions by itself. Similarly, soft measures will be more effective if they are 'locked in' by hard infrastructure measures which make single occupancy car use in particular less attractive. Examples of hard measures include high occupancy car lanes, bus priority measures and parking controls.

The National Transport Strategy aims to: improve journey times and connections; reduce emissions; and improve the quality, accessibility and affordability of public transport[64]. The strategy includes a host of measures, both soft and hard, to achieve these objectives. Some of the measures specifically rely on local authority responsibilities, such as land use planning, to promote more sustainable transport.

59. Main Transport Trends, Scottish Executive, 2007
60. Ibid.
61. Travel by Scottish residents, Scottish Executive, 2007
62. Headline Results from Scottish Expenditure Survey 2006
63. Ibid.
64. Scotland's National Transport Strategy, December 2006

The strategy emphasises the need for evidence-based decision making. It is easy to become sidelined in to promoting measures that are easy to implement but trivial in terms of reductions in carbon dioxide emissions. For example, promoting public transport through the local media may effectively target a small proportion of the resident population, but it will have no net benefit if the remainder of the population continues to travel further and more often.

The possibilities of change

Tackling the Carbon Footprint associated with residents' travel behaviour requires more visible action at the local, regional and national levels of government. In particular further work is needed to:

Make climate change a priority - Climate change mitigation needs to be made an explicit transport priority for local authorities. Local transport policy focuses on congestion, road safety, accessibility and air quality. If these are not significant local issues then local transport in itself is not always a high priority for local authorities. Although there is widespread recognition of the role transport policy can play in achieving local objectives, links are not always made with wider council responsibilities such as health and education let alone climate change.

Make the most of available powers and incentives - Local government does not have the full range of powers and incentives to reduce carbon dioxide emissions from transport. However, they can work with others, for example through Community Planning Partnerships, to ensure budgets are used imaginatively to reduce emissions from transport.

Get serious about tackling car use - The car is central to many people's way of life, providing 'unrivalled flexibility in choice of route, time of travel and destination'[65]. In the near future, road charging and parking charges linked to the emissions standards of vehicles may start to influence the type of car people use and the distance we travel. Councillors and senior managers however, will take a lot of persuading. At present, plenty of Local Transport Strategies set out how local government will encourage more sustainable modes of transport but very few, if any, seriously set out ways of discouraging people from using their cars.

65. The Eddington Transport Study, Department for Transport, December 2006

"The Food component of the Carbon Footprint incorporates the consumption of food and drink in the home as well as the consumption of alcoholic beverages, restaurant meals, catered meals and take-away meals outside the home. It measures all the carbon dioxide emissions associated with food consumption from 'farm to fork', including processing, packaging and distribution. Food miles take up only one stage of this process."

The Carbon Footprint of Food

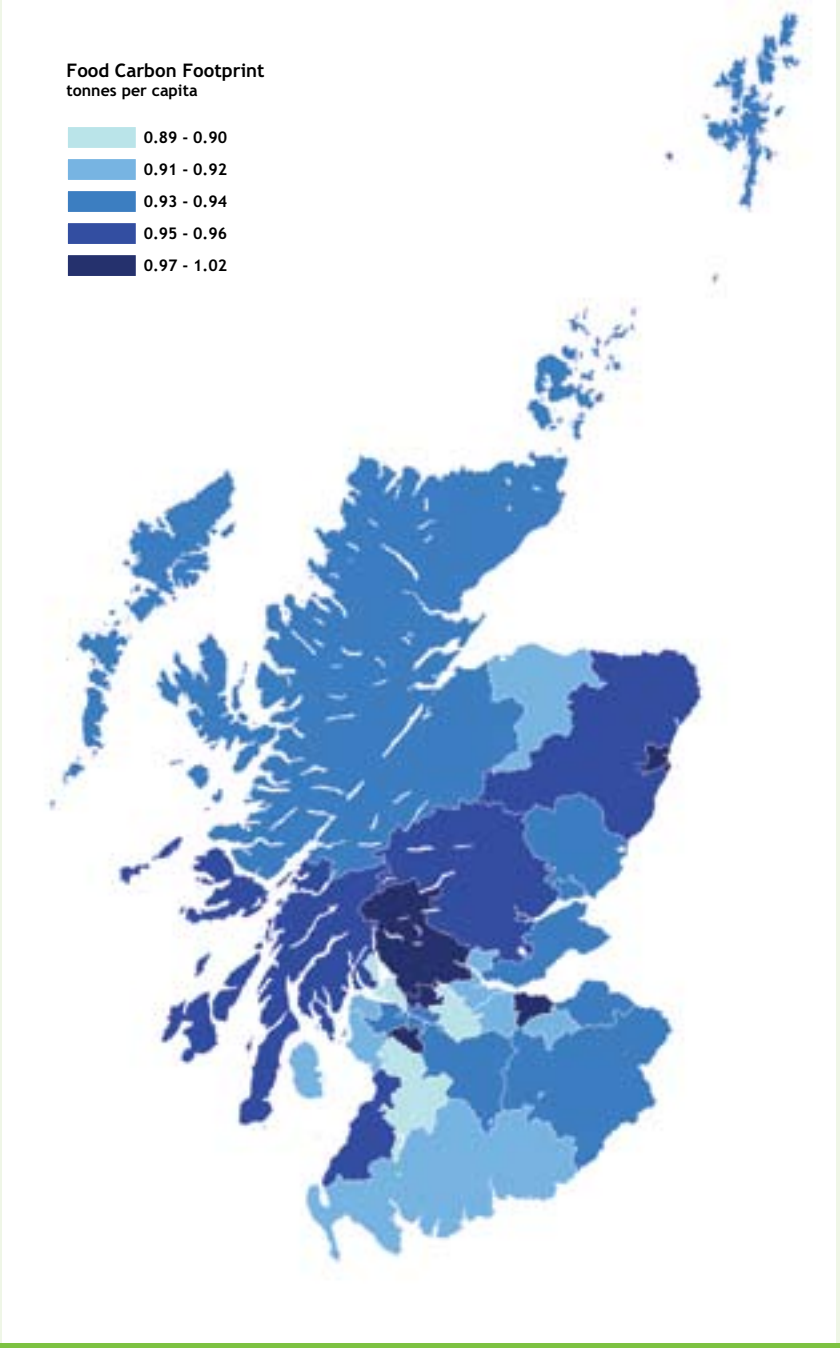
Overview

Food consumption in the local community is not usually on the radar of local authorities which are trying to tackle carbon dioxide emissions but it still accounts for between 8.26% (West Dunbartonshire) and 7.28% (Orkney) of the Carbon Footprint of a local authority area.

- Every local authority area in Scotland has a Carbon Footprint for food lower than the UK average and under one tonne per capita.
- Edinburgh has the highest Carbon Footprint for food, followed closely by East Renfrewshire.

The Food component of the Carbon Footprint incorporates the consumption of food and drink in the home as well as the consumption of alcoholic beverages, restaurant meals, catered meals and take-away meals outside the home. It measures all the carbon dioxide emissions associated with food consumption from 'farm to fork', including processing, packaging and distribution. Food miles take up only one stage of this process.

Figure 14: Carbon Footprint of Food



Baseline analysis

The Food component of the Carbon Footprint is characterised by limited variation between local authorities and there are few consistent differences in the proportion and quantity of food consumed in the home by region. The variations in Footprint are partly driven by the amount of food bought outside the home.

The size of a local authority's Food Footprint has a weak positive relationship with income compared to the transport and consumables footprints. This is perhaps surprising, as people often assume that lower income groups have a high footprint caused by nutritionally poorer diets than higher income groups. This is reflected by fruit and vegetable consumption statistics which show a 'clear and marked social class gradient' with the 'most deprived' consuming approximately two portions of fruit and vegetables a day[66].

However, according to recent government research, people on low incomes have similar diets to the rest of the population. This may be a side-effect of our 'supermarket society'; the same study found that 80% of surveyed people on low incomes said they shopped mainly at a large supermarket. Most also had good cooking and food storage facilities at home[67].

Food is the only component of the Carbon Footprint for which population health is related to Footprint size. The healthier the population of a local authority the lower its Carbon Footprint tends to be.

Our statistical analysis also shows that the higher obesity levels in a local authority area, the higher the Carbon Footprint for food tends to be. It is possible that prevailing trends in obesity at a national level may be reflected by an increase in the Carbon Footprint of food. A recent report from the NHS puts Scotland second bottom in a list of the developed world's most obese nations, with only the United States faring worse. Since 1995, obesity in the Scottish adult population has increased by 46%[68].

Levers available to local government

Strategies to reduce the Carbon Footprint of food are most easily linked to those related to waste reduction and community health. These are areas where local and community action is already present, providing opportunities to make links to the climate change agenda.

Households have an influence over five main factors that shape the size of the Carbon Footprint for Food. Local authorities have the potential to take action in each of these areas:

How much food we buy **-** In general, the more we spend on food, the higher our Carbon Footprint. As a nation, we tend to buy more food than we need. This brings with it environmental and economic costs. WRAP estimates that the wasting of food costs each person between £250 and £400 a year. The amount of food we buy is itself influenced by shopping behaviour and in-shop advertising, as well as storage and food preparation in the home[69].

66. 2003 Scottish Health Survey Statistics taken from Wrieden et al 2006. Food Standards Agency http:/www.food.gov.uk/multimedia/pdfs/scotdietrytarg.pdf
67. Low Income Diet and Nutrition Survey 2007. Food Standards Agency
68. ISD Scotland, September 2007
69. WRAP Food waste report

Our choice of products - The figures used in this report assume the average impact associated with different food items wherever they come from and however they are produced (though consumption of organic food is taken into account). This extra level of detail is lost in a methodology designed to produce a national analysis. However, these factors do influence the Carbon Footprint of food. Similar food items can have very different footprints depending on their source and the production, process and distribution methods used to bring them to market.

Our diets - Footprint analysis of Scottish diets suggests that healthier diets can have a lower impact on the environment. A 'best diet' has been described as one that is healthy, vegetable based, locally sourced and organic[70].

How much food we produce ourselves - Home-grown food often comes without processing, packaging or distribution costs. The more we grow, the less we should need to buy, the lower our Carbon Footprint is likely to be.

How often we eat out - This isn't limited to restaurant meals. 'Catering services' or eating out includes coffee breaks at the local coffee house, sandwiches bought for lunch and take-aways in the evening. When each coffee cup is a disposable one and every sandwich is wrapped in plastic packaging, the additional impacts associated with more everyday food consumption outside of the home become apparent.

The Local Government in Scotland Act 2003 gives local authorities 'the power to advance well-being' in their areas by joining up policy initiatives through community planning partnerships. There are several ways that local authorities and their community partners could use this power to improve health and reduce their food Carbon Footprints.

Support fresh, locally produced, and organic produce - Local authorities can support fresh and organic food produce in a variety of ways, through their own purchasing practices, through economic development policies and investment, and through promotion of farmers' markets, local food cooperatives and allotments.

Promote Healthy Eating - Since 2003, the Scottish Government has promoted healthy eating in schools through the *Hungry for Success* initiative. This initiative encourages a whole school approach to improved nutrition in school meals ranging from reducing salt and sugar content in foods to promoting healthy eating via the curriculum. This could be extended to other services.

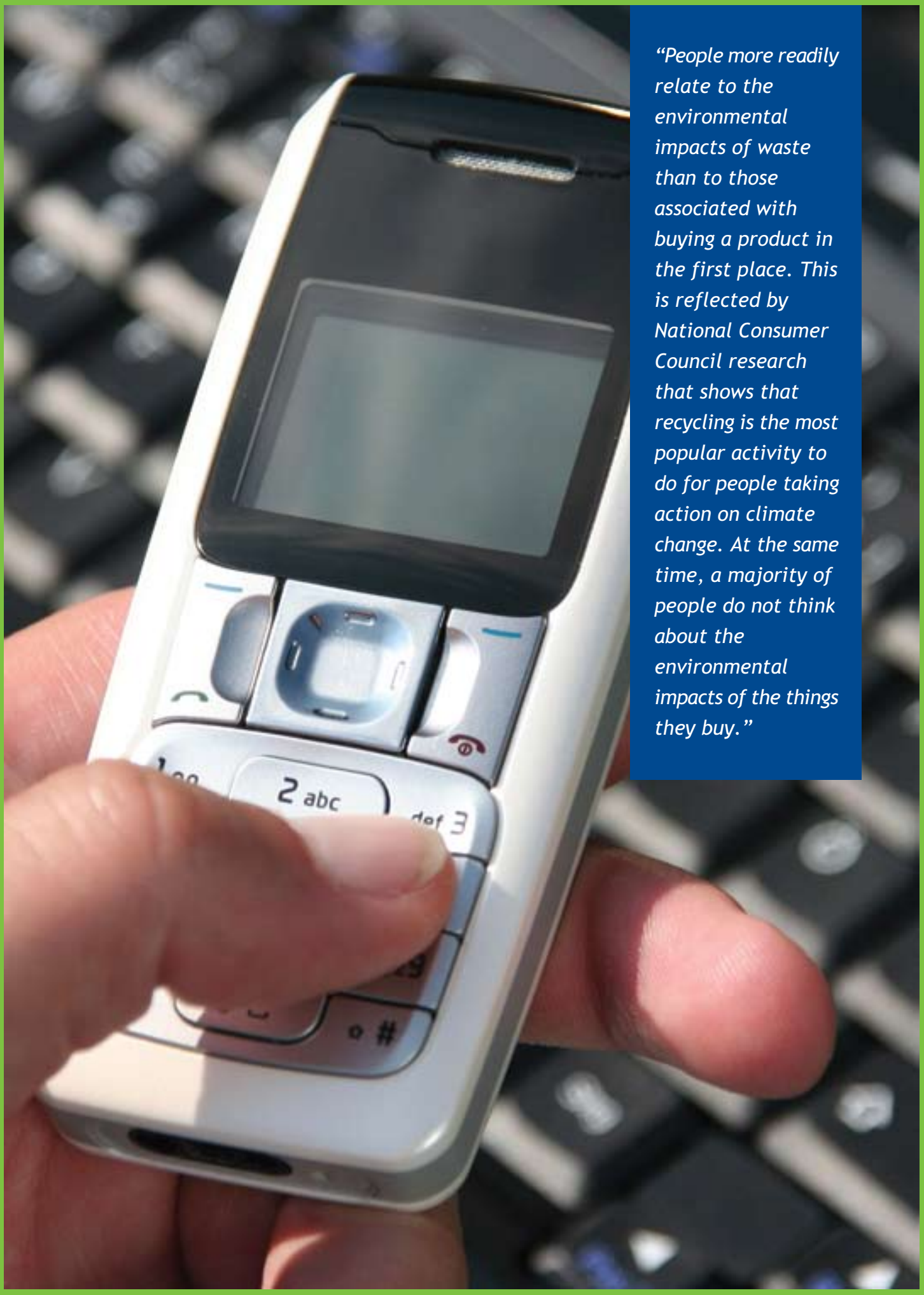
Waste Management - Local authorities are well placed to lead on waste prevention as the contract managers for waste collection and disposal. Recycling rates have improved dramatically in Scotland, but food waste provides a new challenge for local authorities. There is evidence that green waste and home composting schemes can be successful in Scotland, in particular the composting of green waste[71]. There are plans to run trials on the collection of food waste and composting facilities which can take food waste. These trials need to evolve into composting on a large scale.

70. The footprint of Scotland's diet: the environmental burden of what we eat, Frey & Barrett, 2006
71. For information on a very successful waste prevention project Ross-shire Waste Action Network (RoWAN)www.rowanweb.org.uk

The possibilities of change

Food consumption has received little action in the context of climate change and yet relatively small changes could bring about important reductions in the Carbon Footprint. Engaging households in action on food consumption and climate change makes sense because of the links with local health and waste reduction agendas.

Because such a large proportion of the impact associated with food comes from eating out, a lot of the potential for improvements will be linked to improvements in the efficiency of the food and drinks sector as much as changes in food consumption habits.



"People more readily relate to the environmental impacts of waste than to those associated with buying a product in the first place. This is reflected by National Consumer Council research that shows that recycling is the most popular activity to do for people taking action on climate change. At the same time, a majority of people do not think about the environmental impacts of the things they buy."

The Carbon Footprint of Consumables

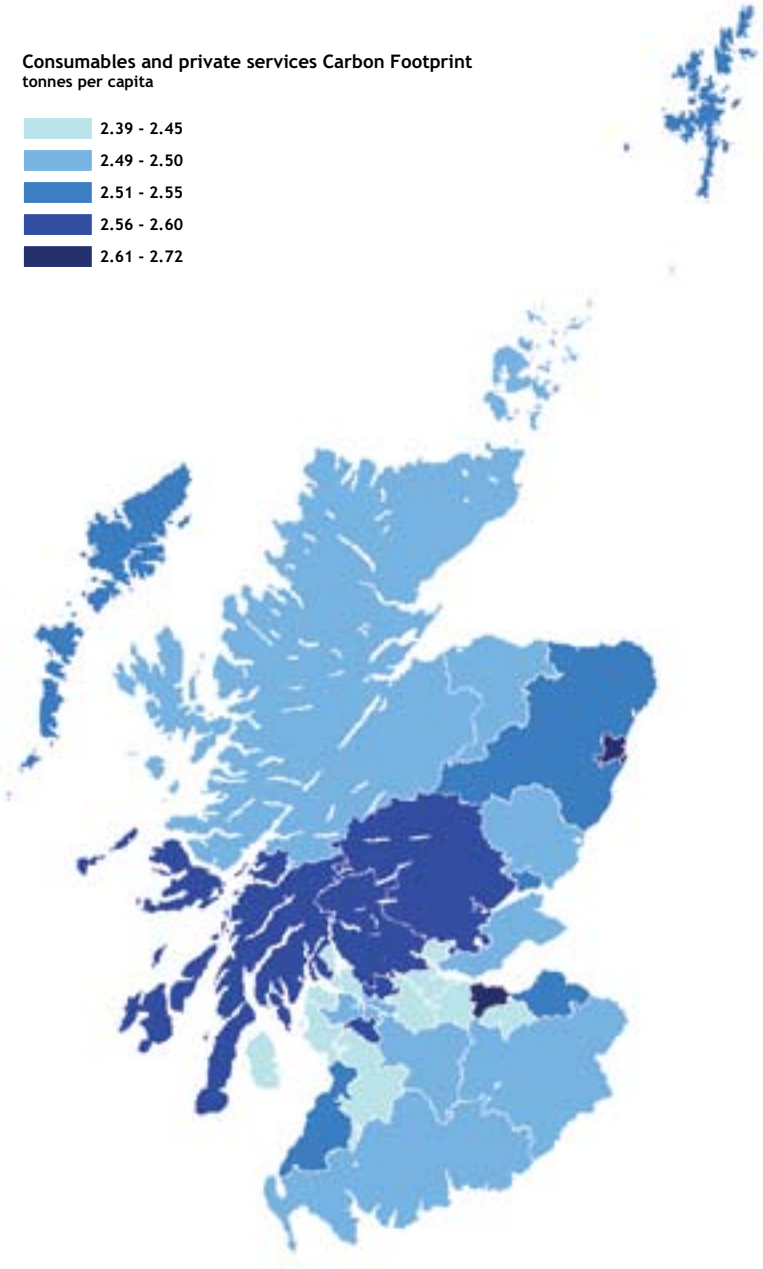
Overview

Every item that people buy has a Carbon Footprint. The consumables component of the Carbon Footprint covers household spending on 30 categories of goods and services from clothing to insurance, from financial services to electrical goods. In Scotland, consumables accounts for between 22.05% (West Dunbartonshire) and 19.31% (Orkney) of the Carbon Footprint of a local authority area.

- The highest Carbon Footprint for consumables in Scotland is in Edinburgh (2.72t/cap). This is 23% lower than the highest Carbon Footprint for consumables in the UK (Mole Valley 3.55t/cap).
- Only Edinburgh and Aberdeen City's Carbon Footprint for consumables is higher than the UK average.

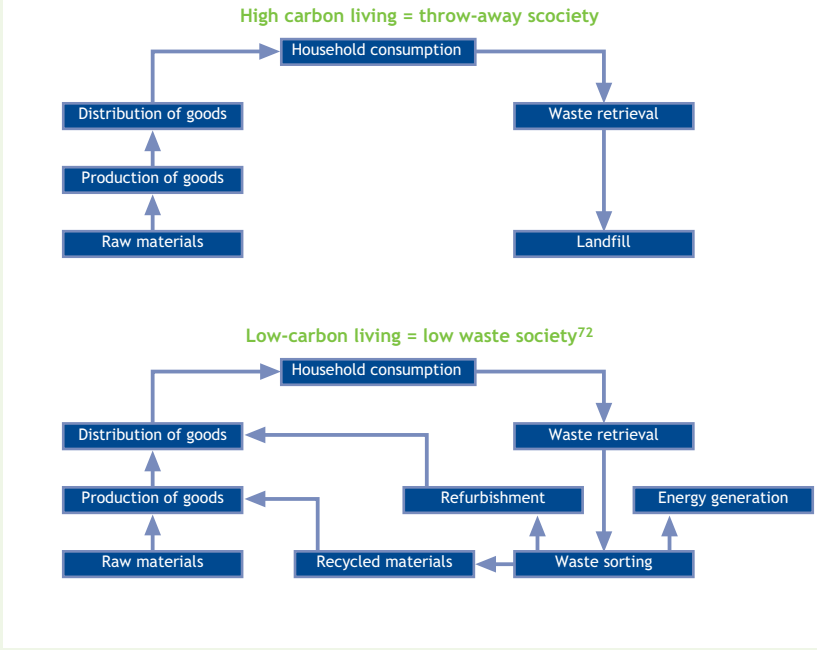
"Every item that people buy has a Carbon Footprint. The consumables component of the Carbon Footprint covers household spending on 30 categories of goods and services from clothing to insurance, from financial services to electrical goods."

Figure 15: Carbon Footprint of Consumables



There is a clear relationship between the products people buy, waste management and climate change. Disposal only accounts for one stage of the lifecycle impacts of a product but waste prevention and re-use is integral to reducing a local authority area's Carbon Footprint.

Figure 16: High and low-carbon living



Baseline analysis

People more readily relate to the environmental impacts of waste than to those associated with buying a product in the first place. This is reflected by National Consumer Council research that shows that recycling is the most popular activity to do for people taking action on climate change. At the same time, a majority of people do not think about the environmental impacts of the things they buy[73].

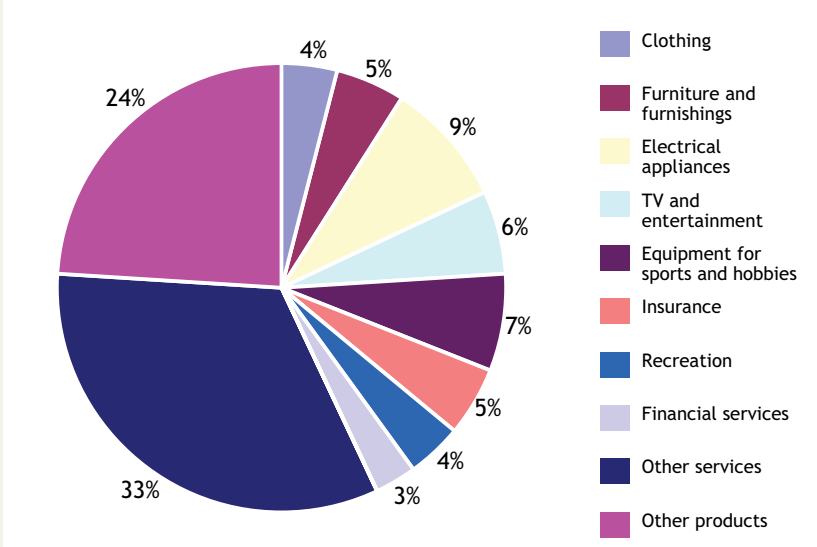
Household expenditure on goods accounts for 55% of the Carbon Footprint of consumables; the remainder is associated with expenditure on services. A large proportion of the Carbon Footprint of consumables is associated with durable goods which people buy on an occasional basis. These include fridges, TVs, computers and furniture.

Ownership of durable goods rises with income. Patterns of expenditure are different between different socio-economic groups; low income groups tend to spend a greater proportion of their recreational expenditure on televisions and other electronic equipment. Expenditure on sport and cinemas increases for high income groups[74].

As would be expected, the Carbon Footprint for consumables increases in local authority areas with a higher proportion of large households but single households also have a positive effect.

The durable goods which contribute to a local authority area's Carbon Footprint at the beginning of their use also contribute to the area's municipal waste at the end of their use. Encouraging people to buy less, to swap and share and to use things more cleverly can reduce your local area's Carbon Footprint as well as meeting waste diversion targets.

Figure 17: Carbon Footprint for consumables broken down by consumer goods and services



72. Diagram adapted 'Zero Waste UK' ippr and Green Alliance, November 2006
73. Mayo, 2007
74. ONS 2001 data

Levers available to local government

As consumers, people need to purchase products and services that generate less waste and reduce environmental impacts. Consuming cleverly is central to waste prevention:

The Scottish Government's objectives set out in the last Spending Review are:

- 30% recycling and composting by 2008
- 55% recycling and composting by 2020
- stop the growth in municipal waste by 2010

The Scottish Government is committed to move towards a zero waste society. (See the Waste Prevention Plan http:/www.scotland.gov.uk). In order to achieve this, we must decouple waste growth from economic growth and put more emphasis on waste prevention and re-use.

These national targets continue to provide a focus for local improvement measures. And as the focus broadens to go beyond recycling to cover reduce and re-use, local government can and should consider the potential for targeting household purchasing and re-use as well as disposal. Debates are already underway about how local authorities could introduce revenue neutral financial incentives for waste reduction and recycling.

There is room here to be inventive and extend campaigns on recycling to awareness of the Carbon Footprint of products. WWF's online Footprint calculator – www.footprint.wwf.org.uk – provides a focus on consumables and recycling and can be used to encourage both individual and community action.

Figure 18: Clever consumption

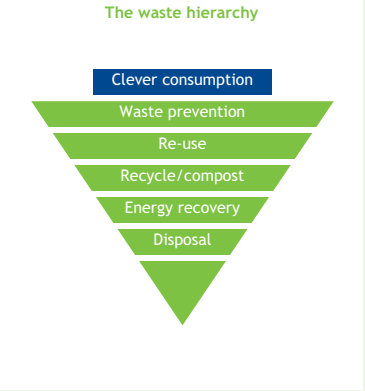


Figure 19: WWF calculator

The possibilities of change

Over the period 2000 to 2006, municipal waste arisings rose from 3.21 million tonnes to 3.42 million tonnes in 2005/06, an increase of 6% - just over 1% a year[75]. Over the same period, the percentage of municipal waste recycled or composted rose from 4.5% to 24.4%. This reflects an increase in the amount of material recycled of more than 450%.

Progress is being made in waste management and disposal but people are still buying more stuff than ever before. To minimise waste to the greatest extent practicable, local government needs to play its part in influencing people's purchasing decisions as well as managing the rest of the waste hierarchy.

In his report, *The Environmental Contract: how to harness public support on climate change*, Ed Mayo, Chief Executive of the National Consumer Council, reflects the problems we all have as consumers when he states that 'the complexity of information required in order to make a judgement on products and climate change can leave even the most dedicated green consumer confused and disempowered'[76]. Local government needs to help households make these decisions where it can – on waste minimisation, energy efficiency, and healthy eating.

75. Key Scottish Environmental Statistics 2007
76. *The Environmental Contract: how to harness public action on climate change*, Mayo, National Consumer Council, 2007

"All local authorities should be taking steps to mitigate carbon dioxide emissions in their local communities. These steps should be taken based on evidence rather than a faith that local initiatives and policy interventions will make a difference; local authorities that are serious about achieving measurable change need to adopt a community emissions indicator."

Next steps Using the Carbon Footprint as an indicator of community emissions

All local authorities should be taking steps to mitigate carbon dioxide emissions in their local communities. These steps should be taken based on evidence rather than a faith that local initiatives and policy interventions will make a difference; local authorities that are serious about achieving measurable change need to adopt a community emissions indicator.

The way the community emissions indicator is defined and measured has implications for its effectiveness in challenging local government to bring about change. For local improvement targets to be meaningful they have to be based on an understanding of the relationship between carbon dioxide emissions and local conditions. For local policies to be effective they need to be targeted, monitored and adjusted over time. Local authorities that commit to using a community emissions indicator must be willing to monitor local trends in consumption behaviour as well as the impacts of policy.

At the time of writing, a central reporting approach in England is suggested for the community emissions indicator based on experimental local authority emissions data published by Defra[77]. The rationale for this approach is that it reduces the local authority reporting burden. The drawback of this approach is that it does not directly link local policies or individual behaviour to changes in carbon dioxide emissions. Neither does it provide a strong focus on lifestyles. This makes it difficult for a local authority to set meaningful local improvement targets and devise an approach to meeting them.

Creating a linked hierarchy of climate change indicators

At a top level the community emissions indicator will simply be used to measure progress in reducing emissions. At a more direct level local authorities and partners need to be able to identify opportunities for improvement and ways of attributing changes in community emissions to specific local initiatives. This is true for both the Carbon Footprint and the experimental emissions inventory published by Defra.

The community emissions indicator may also be regarded as problematic because changes occur slowly and are unlikely to be reflected well within quarterly or annual reporting periods.

Both these challenges point towards the importance of developing a linked hierarchy[78] of local service and management indicators with shorter reporting periods. These should relate local interventions that promote changes in targeted areas of household consumption to changes in the Carbon Footprint.

Because REAP is set up to use locally collected information, it should be possible to use this as a basis for setting up a linked monitoring infrastructure for priority climate change mitigation issues in local areas. Previous research has suggested that it is difficult to put such a framework together in one go and there are justified concerns about data quality and resource requirements associated with improving it. In this light, the development of guidance on linked hierarchies or 'scorecards' for the community emissions indicator would be particularly useful. SEI and WWF-UK will be investigating the potential for this in future.

For further information see: Acting on Facts: using performance measurement to improve local authority services[79].

77. http://www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/CO2.pdf
78. This was an issue for Best Value indicators as it is now for Local Area Agreements. See for example: http://www.local.odpm.gov.uk/research/bestvalue/indicators/regime/report/03.htm
79. Report by IDeA & Audit Commission. See http://www.audit-commission.gov.uk/Products/NATIONAL-REPORT/7B3F2404-29C1-4655-AF5A-956109391D72/actingonfacts.pdf

REAP generated Carbon Footprint data provides one viable alternative for local authorities that want to use a community emissions indicator and focus on influencing the behaviour of local residents. Although REAP generated Carbon Footprint data is not included amongst the 200 indicators in the proposed Local Government Performance Framework for England and Wales, there is a window of opportunity for Scotland to adopt a Carbon Footprint indicator. This could help Scottish local authorities to agree meaningful local priority targets.

The Carbon Footprint data provided by REAP is generated in two formats:

1. Carbon Footprint profiles are available online for every local authority in the UK. Currently, the profiles use 2001 data but the data set will be updated annually with 2003 data in the first quarter of 2008 and annually updated thereafter. The updated 2003 figures will be based on improved data and methodology. These will be backcasted to make them consistent and comparable with 2001 figures. This report summarises the data currently available and subjects it to a national overview. To see your local authority area profile go to www.sei.se/reap.

2. More detailed Carbon Footprint profiles are available in the REAP software tool. REAP breaks down the Footprint into detailed consumption activities and provides over 150 ways for a user to investigate how consumption behaviour can change the Footprint of a population. Within REAP the baseline data can be updated using local information and scenarios can be created to inform the development of local priority targets

"A proportion of the Carbon Footprint is taken up by aspects of people's lifestyles, such as eating and shopping, that we don't usually associate with local government action. Local authorities which want to target these areas of people's lifestyles will require support to monitor the impact of their initiatives in a way that can be used to consistently update their Carbon Footprint".

At present, the online data is available for free. The REAP software tool comes with a public sector licence charge and users require training[80]. To help local authorities understand how the Carbon Footprint can contribute to measuring and monitoring the area's carbon dioxide emissions, the section below looks at how well it satisfies important indicator requirements. For comparison we have used the same criteria for a good indicator as that provided by Defra for its consultation on a community emissions indicator[81].

A community emissions indicator should be[82]:

- ***Outcome based:*** The Carbon Footprint is an outcome based indicator, it allows local authorities to make decisions about how they wish to allocate resources and deliver against their targets.

  Local authorities that use REAP can test how different combinations of policies could deliver on outcomes. North Lanarkshire Council is using Footprint analysis to explore the risks and opportunities associated with the new Ravenscraig development – one of the largest brownfield developments in Western Europe.

- ***Attributable to local authority action:*** The 2001 Carbon Footprint results reflect the geography of local authority areas and the characteristics of the local population as well as local and national level policies implemented at that time. To understand this further, we have broken down the Carbon Footprint of local authority areas by activity, and local authority type in this report.

  REAP can be used to take account of trends and changes driven by local and national government collectively or separately. The expected and actual impact of individual policy measures can be measured in isolation to other changes and to create best and worst case scenarios. SEI has used REAP to create transport projections for Aberdeen City and Aberdeenshire Councils, based on local policies, national trends in travel behavior and projected improvements in the fuel efficiency of vehicles.

80. Further information on REAP can be found at www.sei.se/reap
81. http://www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/CO2.pdf
82. The criteria used here are based on those used for Defra's own community emissions indicator, see: http://www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/CO2.pdf

A proportion of the Carbon Footprint is taken up by aspects of people's lifestyles, such as eating and shopping, that we don't usually associate with local government action. Local authorities which want to target these areas of people's lifestyles will require support to monitor the impact of their initiatives in a way that can be used to consistently update their Carbon Footprint.

- ***A driver of behaviour change:*** The Carbon Footprint can be directly related to behaviour change in all areas of people's lifestyles and on an individual, household and community basis. Aberdeenshire Council is using REAP to create Footprint profiles of local communities. Independent of government action, community groups are already forming to monitor their Carbon Footprint and are attaching carbon budgets to their lifestyles. Carbon Neutral Biggar and Carbon Neutral Riverside (Stirling) are just two examples in Scotland. Twenty Carbon Rationing Action Groups now exist in the UK using a number of approaches to measure their Carbon Footprint[83].

- ***Aligned to other policy objectives:*** The scope of the Carbon Footprint makes it possible to link climate change to a number of other local agendas including access to services, planning decisions, health, fuel poverty, housing conditions and waste management.

- ***Measurable in a cost-effective fashion:*** The online Carbon Footprint data creates no additional reporting requirement. However, to update this data and monitor changes in residents' behaviour using REAP requires dedicated resource within your local authority area. North Lanarkshire, Aberdeen City and Aberdeenshire Councils all have dedicated footprint officers who champion Footprint Analysis and build expertise within their local authorities. The Local Footprints Project provides support and training to Scottish local authorities using REAP and the Footprint approach at no financial cost to the councils, however staff time must be allocated to the project[84].

- ***Comparable over time and between local authorities:*** The online Carbon Footprint data provides a sound comparison of carbon dioxide emissions between different local authority areas. The online data will be updated on an annual basis, REAP users can also update their baseline using locally specific information but this takes away the direct comparability at a national or regional level.

- ***Auditable:*** The Carbon Footprint data available online requires no input from local authorities and data collection and analysis is carried out by SEI. REAP technical reports outline the methodological approach and all data sets are provided by government departments, the Office for National Statistics or CACI's Acorn socio-economic local authority profiles. SEI is in the process of developing support material and recommended data sources for local authorities that want to update their Carbon Footprint using REAP. The Local Footprints Project can also assist local authorities in identifying data sources.

  As a top-level indicator, the Carbon Footprint can be directly linked to changes in service level and performance indicators which may be reported on a more regular basis.

- ***Collaborative:*** The range of issues the Carbon Footprint touches on encourages partnership working within and between local authorities and community partners. SEI is investigating the potential for an online forum for users of the Carbon Footprint data to share best practice and lessons learned.

83. www.carbonrationing.org.uk
84. For more information www.localfootprints.org

Conclusion

It is of course easy to say that all local authorities should take steps to mitigate carbon dioxide emissions in their local communities. For any local authority, adopting an appropriate community emissions indicator and effective ways of monitoring and targeting action will be a challenge.

Further discussion is needed on practical measures that can be taken to support local authorities in this effort. Scotland is fortunate to have the Local Footprints Project which is working with local authorities and schools in Scotland to reduce their area's footprint. The project shares best practice throughout the Sustainable Scotland Network and through the Local Authority Climate Change Programme. Local Footprints is working with local authorities[85] who will receive direct support and training to use the footprint approach. Through regional footprint training workshops, the project will empower authorities to work in partnership, as well as encourage each individual authority to work with their community planning partners to develop targets and actions to reduce their Carbon and Ecological Footprints.

Together with SEI, the Local Footprints Project will continue to explore how REAP can be developed to increase its application, reach and accessibility. It will promote best practice case studies and example applications of local authority action.

There is no doubt that local authorities will have a huge influence on Scotland's bid to be a leader in combating climate emissions. There is also little doubt that local authorities will be expected to deliver on emissions reductions in their operations and their communities by national government. The Carbon Footprint offers an important way to understand the emissions of the local authority area, and the lifestyle patterns which drive these emissions. Through this evidence-based approach, local authorities can target their efforts to achieve real reductions in their community. Given the pace of change required, there is little time to waste and local authorities need to take steps now towards a low-carbon future.

85. Dundee, Edinburgh, Fife, South Lanarkshire, Stirling, West Dunbartonshire, West Lothian Councils

Further reading and support for local authorities

Local Footprints Project

This is a joint project between WWF Scotland and the Sustainable Scotland Network (SSN) to provide a free service of support, advice and training to help local authorities and schools measure and reduce their area-wide footprints. This project complements work in many councils to manage the emissions of their own estates. For more information please visit www.localfootprints.org

The project has funding and support from Eco Schools Scotland, the Improvement Service, the Scottish Government and ScottishPower.

Scotland's Climate Change Declaration

Local Authorities in Scotland are a principal agent for delivering carbon savings. Local planning, transport, estate management and procurement all have implications for Scotland's greenhouse gas emissions. All of Scotland's 32 local authorities have acknowledged this and demonstrated leadership, addressing the issue through collective commitment.

For information on the Declaration and the Scottish Local Authority Climate Change Programme, visit www.sustainable-scotland.net/climatechange

Best Value and Sustainable Development

The Local Government in Scotland Act (2003) established Sustainable Development as a statutory duty within the Best Value regime. The Best Value regime requires all local authorities to continuously improve their performance and secure services of the highest quality at a cost that is acceptable to their local communities. Sustainable development is an integral part of local authorities' efforts to deliver Best Value.

The SSN's Best Value & Sustainable Development Toolkit assists local authority officers to interpret the ways their work can deliver sustainable development outcomes and to bring sustainable development to the heart of Council business. To use the toolkit, please visit www.sustainable-scotland.net/bestvalue

Procurement for Sustainability

Local authorities across the UK have a collective £15bn spending power. SSN supports local authorities to procure responsibly and in a way that delivers community well-being, minimises resource use and prevents environmental degradation. Visit www.sustainable-scotland.net for information on innovative projects that are being led by local authorities in Scotland.

I will if you will: Towards sustainable consumption, Sustainable Development Commission, 2006

This report outlines a framework for policies that encourage cooperation between individuals, businesses and governments to improve quality of life within environmental limits. Download the full report at sd-commission.org.uk.

Eco Schools

improvement service

natural scotland
SCOTTISH GOVERNMENT

ScottishPower
gas and electricity

SEI Contact:
vist: www.sei.se/reap
or contact: Alistair Paul
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LOCAL footprints

footprint support for local authorities

Local Footprints is a joint project between WWF Scotland and the Sustainable Scotland Network (SSN), with funding and support from Eco Schools Scotland, the Improvement Service, the Scottish Government and ScottishPower. For more details, visit www.localfootprints.org

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