

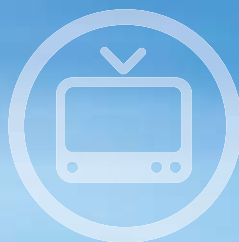


*for a living planet*

 **SEI** STOCKHOLM  
ENVIRONMENT  
INSTITUTE

# The Right Climate for Change

**Using the Carbon Footprint to reduce  
CO<sub>2</sub> emissions – a guide for local authorities**



SEI is an independent, international research institute specialising in sustainable development and environment issues. It works at local, national, regional and global policy levels. SEI has been engaged in major environmental and development issues for a quarter of a century and has become established as a leading expert on the subject of Sustainable Consumption within Europe and especially the UK. Working closely with the European Environment Agency as well as national, regional and local governments has ensured that the research is applied, relevant and timely. The Sustainable Consumption (SC) Group contributes to the overall SEI mission statement by bridging the gap between science and the policy arena.



Many people associate WWF with wildlife and wild spaces. But there's a lot more behind the panda. Conserving species and protecting habitats are still on the agenda. But if we are to achieve our mission – a future in which people live in harmony with nature – we also need to address global threats, such as overconsumption and pollution. In the UK, WWF works with government, business and civil society to find long-term solutions to the environmental challenges we face. In the local government arena, WWF works on issues connected with footprint, sustainable communities and climate change. We work in partnership to make key data available to national and regional decision-makers. We design ways to help local workers measure the impact of their community engagement work in relation to sustainability; sharing the findings with practitioners and policy-makers. And we develop approaches to working with community groups in order to identify solutions that work, and bring about change that can be sustained. In all this work we strive to build understanding of the policy needed to set a framework for change, and what is needed at a community level to facilitate behavioural change: what helps or hinders 'best practice' becoming common practice; what structures and mechanisms facilitate change; and what types of governance best support action for change.

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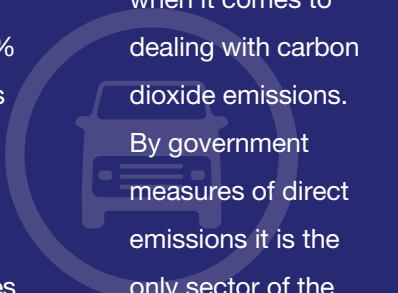
### **Housing**

Housing makes up over a third of the Carbon Footprint in the majority of local authority areas. Across the UK, 20% of local authorities have a Carbon Footprint for housing that exceeds four tonnes per capita.



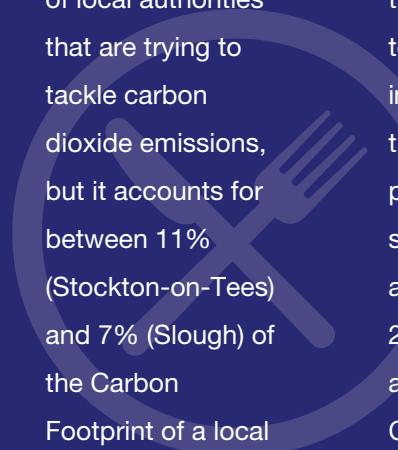
### **Transport**

Transport has been described as “the worst performing sector in the UK” when it comes to dealing with carbon dioxide emissions. By 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.



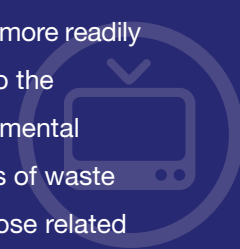
### **Food**

Food consumption in the local community is not usually on the radar of local authorities that are trying to tackle carbon dioxide emissions, but it accounts for between 11% (Stockton-on-Tees) and 7% (Slough) of the Carbon Footprint of a local authority area.



### **Consumables**

People more readily relate to the environmental impacts of waste than those related to buying a product in the first place, but 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.



# 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. This change needs to be about extending local authority action to include communities and behaviour change. It also needs to include a recognition of our global responsibility to act – not just on domestic emissions but also on indirect emissions.**

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 a year, an average local authority area has a Carbon Footprint totaling over 1.5 million tonnes. Taking action to mitigate climate change in the community is therefore vital.

Defra's proposed community emissions indicator provides an incentive for local authorities to engage with their communities. The Carbon Footprint is a complementary indicator that 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 creates an infrastructure of consumption – or how they influence people's everyday decisions and behaviour through their plans, policies and engagement with the community.

Typically people associate climate change with a narrow set of issues: food miles, cheap flights and leaving appliances on standby. Using the Carbon Footprint, we can look at the impact of our lifestyles as a whole, incorporating energy use, travel behaviour, food consumption and spending on goods and services. In each of these areas there are levers available to local government that can be used to create the right climate for change.



# 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) to analyse Carbon Footprint results<sup>1</sup>. REAP was originally developed by the Stockholm Environment Institute as part of WWF's Ecological Footprint Programme. 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**

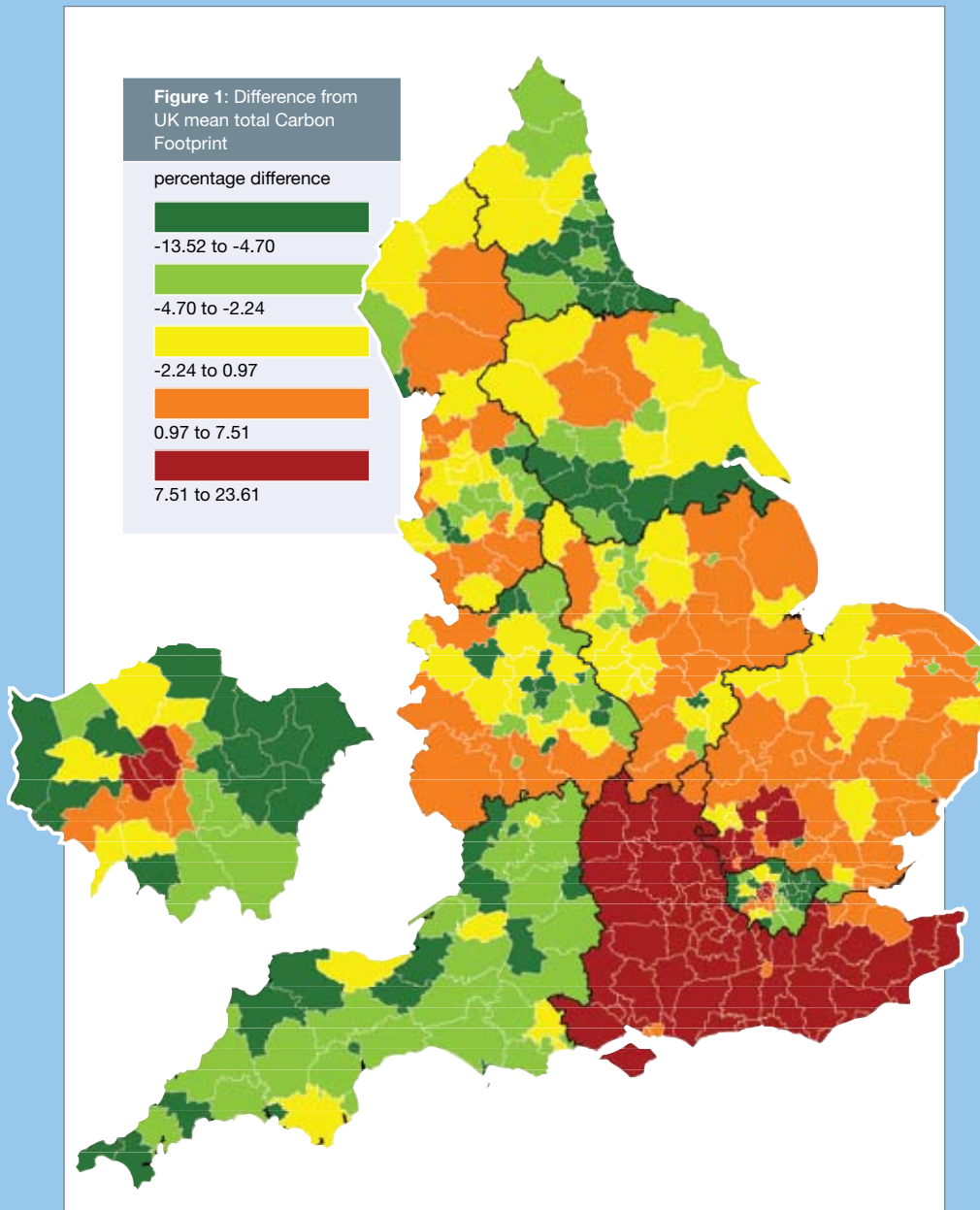
**authority action:** The Carbon Footprint results reflect the geography of local authority areas and the characteristics of the local population, as well as local and national level policies implemented at that time. REAP can be used to take account of trends and changes driven by local and national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



1. [www.sei.se/reap](http://www.sei.se/reap)

**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.

**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<sup>2</sup>.

**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<sup>3</sup>.

**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 local authority areas in England

**Figure 2:** Difference from UK mean consumables Carbon Footprint

percentage difference

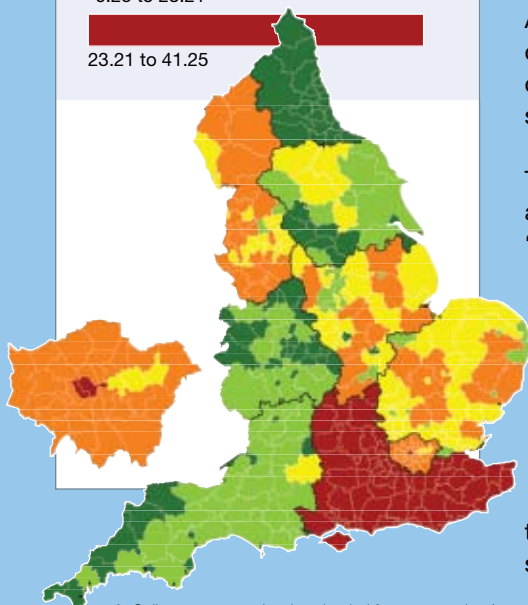
-28.40 to -10.90

-10.90 to -5.60

-5.60 to -0.25

-0.25 to 23.21

23.21 to 41.25



### Consumables

People more readily relate to the environmental impacts of waste than those related to buying a product in the first place, but 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.

People need to purchase products and services that generate less waste and reduce environmental impacts<sup>4</sup>. Consuming cleverly is central to waste prevention as well as climate change mitigation.

All the things that people buy have 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.

The Carbon Footprint for consumables increases in local authority areas with a higher proportion of large households, but single households also have a 'positive' (ie increasing) effect. Obesity has a stronger 'positive' relationship with the Carbon Footprint of consumables than it does with food.

In *The Environmental Contract: How to harness public action on climate change*, Ed Mayo, Chief Executive of the National Consumer Council, reflects the problems we all have as consumers: "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."<sup>5</sup> Local government needs to help households make these decisions; it is best placed to coordinate local waste collection schemes, and now is the time to focus on household consumption.

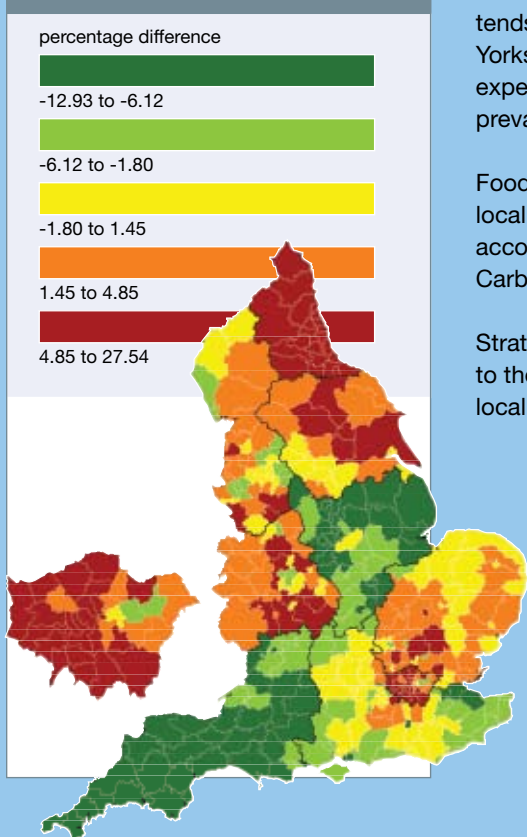
2. Online reports can be downloaded from [www.sei.se/reap](http://www.sei.se/reap)

3. Geodemographic information to understand UK spending behaviour. See [www.caci.co.uk/acorn/acornmap.asp](http://www.caci.co.uk/acorn/acornmap.asp)

4. Waste Strategy for England, 2007

5. National Consumer Council, 2007

**Figure 3: Difference from UK mean food Carbon Footprint**



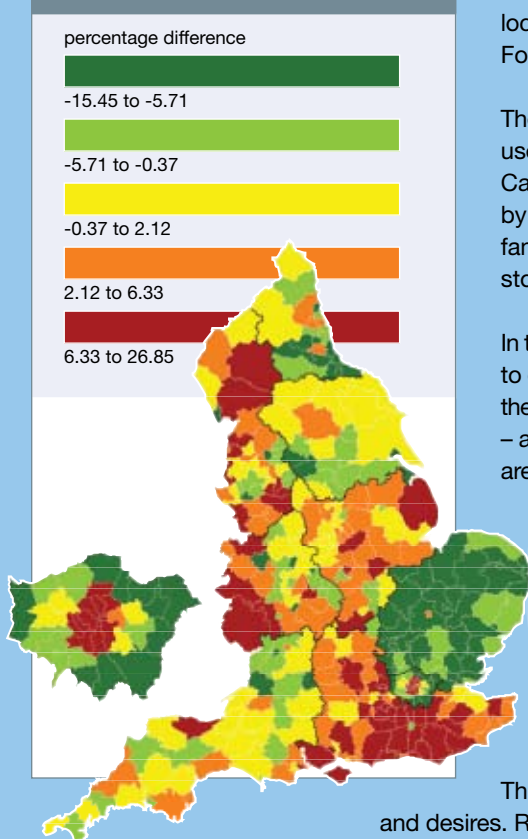
## Food

In contrast to other components of the Carbon Footprint, food consumption tends to have a higher Footprint in local authorities in the West Midlands, Yorkshire & Humberside and the North East, as well as London. High expenditure on restaurant meals, catered meals and takeaway meals is prevalent in local authority areas with a high Carbon Footprint for food.

Food consumption in the local community is not usually on the radar of local authorities that are trying to tackle carbon dioxide emissions, but it accounts for between 11% (Stockton-on-Tees) and 7% (Slough) of the Carbon Footprint of a local authority area.

Strategies to reduce the Carbon Footprint of food are most easily linked to those related to waste reduction and community health – areas where local and community action abounds in many forms.

**Figure 4: Difference from UK mean housing Carbon Footprint**



## Housing

Housing makes up over a third of the Carbon Footprint in the majority of local authority areas. Across the UK, 20% of local authorities have a Carbon Footprint for housing that exceeds four tonnes per capita.

The main focus in tackling the Carbon Footprint of housing should be energy use in the home, since 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: older people, low income families with children and the disabled. Equally it can be driven by dwelling stock that is large, old or hard to treat.

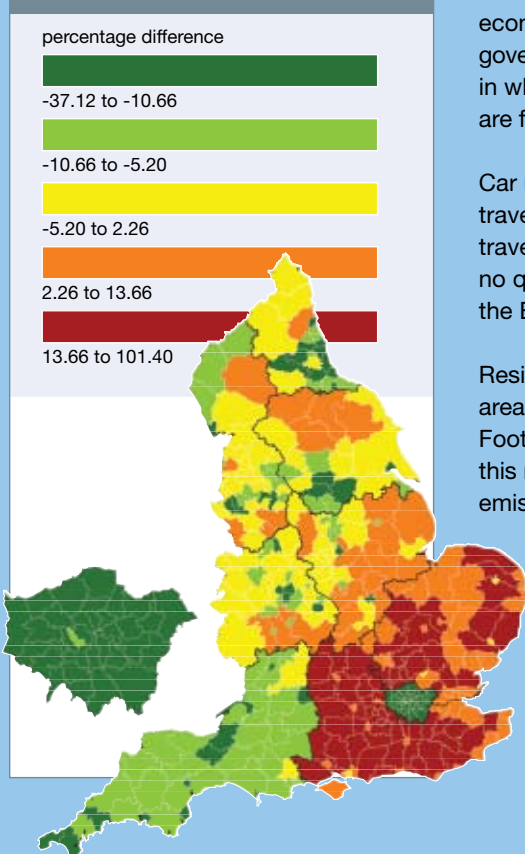
In tackling the housing component of the Carbon Footprint, it is just as important to encourage people to think more intelligently about how they use energy in the home as it is to improve the energy performance of the buildings themselves – and both require effective targeting at the local level. Most local authorities are providing some form of energy advice or guidance to homeowners, but specific measures are needed to tackle properties that are large, old or hard to treat, as well as rental properties. These must be a priority alongside, and contributing to, the eradication of fuel poverty.

The government's Housing Green Paper suggests house building targets of two million homes by 2016 and three million by 2020. This, together with rising trends in energy consumption, means there is a real danger that the total Carbon Footprint of housing will rise.

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. One of the major challenges is to make it more affordable and attractive for developers – and the public – to opt for houses built to the 'higher levels' of the new Code for Sustainable Homes.



**Figure 5:** Difference from UK mean transport Carbon Footprint



## Transport

Transport has been described as “the worst performing sector in the economy”<sup>6</sup> when it comes to dealing with carbon dioxide emissions. By 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.

Car use accounts for 30-40% of the Carbon Footprint associated with travel for all local authorities outside London. The proportion of distance travelled by car has remained stable over the last 10 years, but there is no question that car ownership, like home ownership, is seen as part of the British way of life

Resident travel behaviour can account for up to 39% of a local authority area’s Carbon Footprint: 10 local authorities in England have a Carbon Footprint for transport that exceeds that of housing, and trends suggest this number will increase. Government statistics show that carbon dioxide emissions from private cars increased by 6% between 1990 and 2005.

But the picture nationally is mixed: some local authority areas in London have a Carbon Footprint of less than two tonnes per capita. 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.

## Our agenda for change

All local authorities should be taking steps to reduce carbon dioxide emissions in their area. These steps should be taken based on evidence rather than a faith that local initiatives will make a difference. Local authorities that are serious about achieving measurable change need to adopt a community emissions indicator and effective ways of monitoring it and targeting action.

Further discussion is needed on the practical measures necessary to support local authorities on reducing the carbon dioxide emissions of their communities. Combined with the REAP (Resources and Energy Analysis Program) software tool the Carbon Footprint has real potential to support this process. It provides a lifestyle, lifecycle and area focus and can be used to help local authorities set meaningful local improvement targets.

The baseline Carbon Footprint provided by REAP is free and accessible in the form of an online report for every local authority area in England. At the moment REAP must be purchased under licence, but the Stockholm Environment Institute (SEI) and WWF-UK 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. Over the next 12 months we will be working to explore how REAP can be developed to increase its reach and accessibility. We welcome your suggestions.

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Telephone: 01483 426444 [www.wwf.org.uk](http://www.wwf.org.uk)

6. *Tipping Point or Turning Point*. Downing and Ballentyne, 2007. Ipsos Mori. [www.ipsos-mori.com/polls/2007/climatechange.shtml](http://www.ipsos-mori.com/polls/2007/climatechange.shtml)



An aerial photograph of a city at night, showing a dense grid of lights and a large body of water in the foreground. The city lights are reflected on the water's surface. The sky is dark, and the overall scene is illuminated by the city's lights.

# National overview

# 1. Providing the right climate for change



*“People, business and government each occupy a corner in a triangle 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.

Proposed targets in the UK government’s Climate Change Bill require a 60% reduction in carbon dioxide (CO<sub>2</sub>) emissions below 1990 levels by 2050. WWF, along with many other organisations, believes the Climate Change Bill must make a commitment to cut the UK’s CO<sub>2</sub> emissions by 80% by 2050, in accordance with the latest science<sup>7</sup>. This is a challenge that has been likened in scope to the industrial revolution<sup>8</sup>, but it also presents an opportunity for fresh ideas and new ways of thinking.

The Carbon Footprint of England totals 584 million tonnes per annum. An 80% reduction in CO<sub>2</sub> emissions by 2050 equates to a reduction in the Carbon Footprint of 9.5 million tonnes a year. This is greater than the combined annual carbon Footprint of the residents of Leeds. 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 and communities, and in the home.

There is a new impetus for action at the local level, driven in part by the local government White Paper *Strong and Prosperous Communities*<sup>9</sup>. This makes it clear that climate change is a national and international priority and that the new performance framework for local government will provide a stronger mechanism for ensuring that it becomes a local priority.

In addition, more than 200 UK local authorities have signed the Nottingham Declaration. Among other actions, this commits each signatory to develop plans that progressively address the causes and impacts of climate change.

Whether your local authority is taking its first steps in tackling climate change or actively delivering a climate change strategy, there is now an expectation that you will deliver carbon reduction outcomes. This report is designed to help you understand how using the Carbon Footprint can help you achieve this. [www.sei.se/reap](http://www.sei.se/reap)

7. [wwf.org.uk/news/n\\_0000004215.asp](http://wwf.org.uk/news/n_0000004215.asp)  
8. Climate Change Strategic Framework, Defra, March 2007.  
9. CLG, October 2006.



## 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.

As part of the research underpinning this report we commissioned 10 interviews with policy makers from across England who are tackling climate change at the local level. The quotes and short 'viewpoint' profiles included in the report are taken from these interviews. They are included to provide examples of what is already being done, as well as what people with direct experience of working on climate change think should be done.

Accompanying this document is an online individual Carbon Footprint report for every local authority in the UK and an online Footprint Comparison Tool – visit [www.sei.se/reap](http://www.sei.se/reap). Understanding the variation in carbon dioxide emissions for similar local authorities is important for identifying the potential to improve the situation in your area.

## 2. Introducing the Carbon Footprint

The Carbon Footprint is a measure of the total volume 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, 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, Food and Rural Affairs (Defra) has published an experimental baseline emissions inventory for every local authority area in the UK using this approach<sup>10</sup>. This is useful for sector-based analysis but in its present form does not provide a comprehensive way of monitoring the impact of local residents' activities on climate change.

For local authorities that want to encourage low carbon living among residents, a greater level of detail is required. Using the Resources and Energy Analysis Program (REAP) software tool developed as part of WWF's Ecological Footprint Programme, the Stockholm Environment Institute (SEI) has created Carbon Footprint profiles for every local authority in England. The Carbon Footprint includes four distinct elements that complement Defra's existing inventory, namely:

1. a lifestyle focus;
2. a collective focus;
3. an area focus; and
4. a lifecycle focus.

### What is the difference between the Carbon Footprint and 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 everybody on the planet consumed as much as an average person in the UK then we would need three planets – or three years – to produce all the resources consumed in one. The necessary changes to the way we live are much the same as those required for 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 the UK is 5.4 hectares. The Global Footprint Network has calculated that the amount of productive land available on Earth equates to 1.8 hectares per person. An Ecological Footprint report for every local authority in the UK is available at [www.sei.se/reap](http://www.sei.se/reap)

As defined in this report the Carbon Footprint is simply 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 component of the Ecological Footprint, and it is not expressed as a measurement of physical area.

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, but the Ecological Footprint conveys a message in relation to environmental sustainability.

Further confusion about the Carbon Footprint is caused by its increasing popularity and use in a number of different ways. The central debates revolve around whether it covers direct and indirect emissions and whether it describes all greenhouse gases or just carbon dioxide emissions. SEI and WWF are strongly in favour of the definition incorporating direct and indirect emissions but recognise arguments for and against the inclusion of all greenhouse gases.

As an interim measure 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: [www.isa-research.co.uk/reports.html](http://www.isa-research.co.uk/reports.html)

10. [www.defra.gov.uk/environment/statistics/globalatmos/globalcalghg.htm](http://www.defra.gov.uk/environment/statistics/globalatmos/globalcalghg.htm)

# 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 are not placed in the context of lifestyles as a whole. In Defra's 2007 public attitudes and behaviour survey, 50% of people polled did not believe that lifestyle contributed to climate change<sup>11</sup>.

The Defra emissions inventory 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 lifestyles.



Figure 6: UK Carbon Footprint broken down by theme and selected consumption activity<sup>12</sup>.



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 everyday 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. On average space and water heating, and car use and maintenance account for 32% of the Carbon Footprint by themselves. 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 air 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 other local agendas such as nutritional health and waste management.

Because of this, the lifestyle focus makes it possible to align climate change policy to other objectives and visa 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.

Defra's local authority inventory 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.

11. Defra, 2007

12. The food and consumables consumption activities listed here are translations of the COICOP consumption categories used in REAP. For instance 'watches and jewellery' 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.

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

14. Combines 2 COICOP categories.

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<sup>15</sup>. 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.

## The Carbon Footprint provides an area focus

*"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 creates an "infrastructure of consumption"; influencing people's everyday decisions and behaviour through planning, transport and housing policy."*

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.

Action on mitigating climate change in the community is less common but equally important, if not more so. An average council produces at least 30,000 tonnes of carbon per year; its local community can generate 10 million tonnes<sup>16</sup>.

The Defra emissions inventory provides an area focus that 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 creates an infrastructure of consumption; influencing people's everyday 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 through Local Strategic Partnerships. This supports the planned focus of new Comprehensive Area Assessments on areas rather than organisations.

### 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': 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, we have split these final demand categories into five themes that can be directly related to local government policy:

1. '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.
2. 'Transport' incorporates car use and maintenance, and extends to other private vehicles such as motorhomes and minibuses as well as public transport.
3. 'Food' covers all spending on food and drink, including catering, eating out and alcoholic beverages.
4. 'Consumables' covers expenditure on 30 categories of household consumption including clothing, household appliances, insurance, financial advice and private education.
5. '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.

15. Downing and Ballantyne, 2007.

16. LGA Climate Change Commission, 2007 (Strengthening local action on climate change).



# 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 goods or services to the final consumer, and 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 Defra inventory uses this approach for all emissions, with one exception. Emissions from electricity generation are allocated to the point of electricity consumption<sup>17</sup>.

In 2006, the Ecological Budget UK project<sup>18</sup> analysed the CO<sub>2</sub> emissions from consumption and production for the UK. The research found that CO<sub>2</sub> emissions from consumption are 11% higher than CO<sub>2</sub> emissions from production<sup>19</sup> 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 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.

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

The 2005 experimental CO<sub>2</sub> 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<sup>20</sup> gas and electricity consumption data because of concerns that some energy use by small business is actually allocated to households. We recognise however 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<sup>21</sup>. 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<sub>2</sub> 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<sub>2</sub> 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 emissions can be found here: [www.defra.gov.uk/environment/statistics/globalatmos/globalatmos.htm](http://www.defra.gov.uk/environment/statistics/globalatmos/globalatmos.htm)

17. [www.defra.gov.uk/environment/statistics/globalatmos/download/regionalrpt/laregionalco2rpt20061127.pdf](http://www.defra.gov.uk/environment/statistics/globalatmos/download/regionalrpt/laregionalco2rpt20061127.pdf)

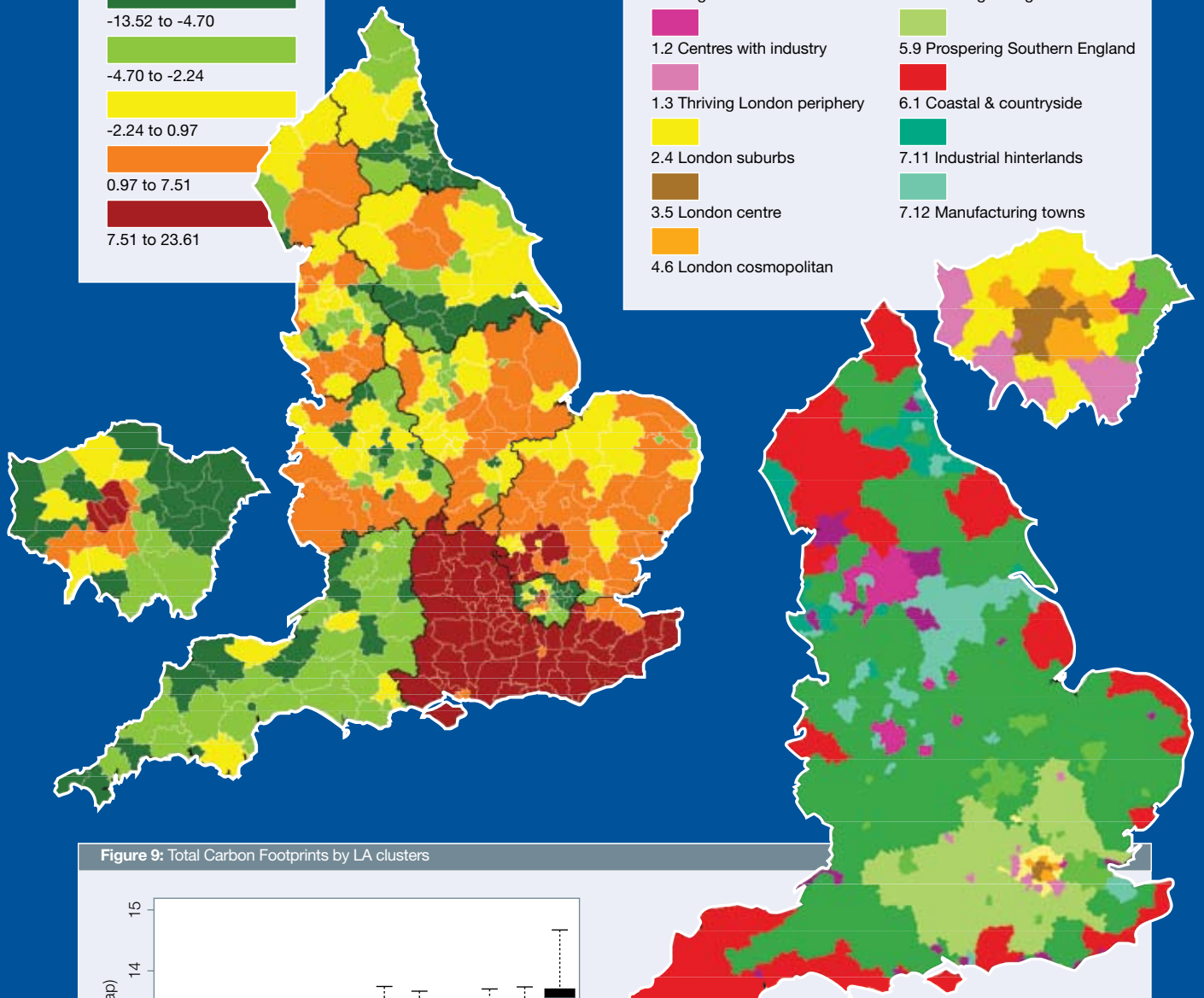
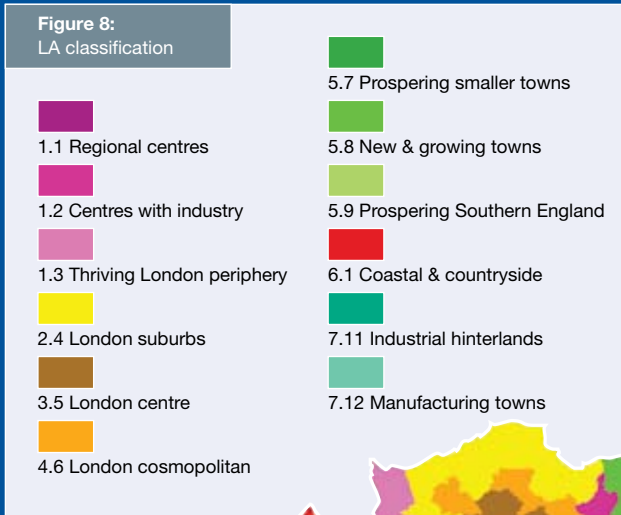
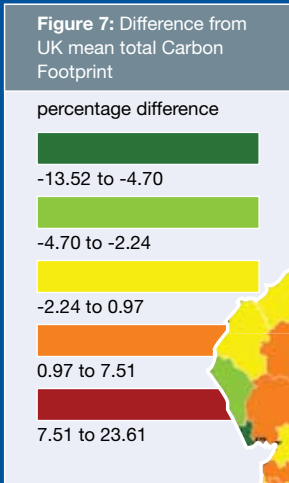
18. A WWF-UK/SEI/CURE project funded by Biffaward.

19. WWF-UK/SEI/CURE/Biffaward, 2006. *Counting Consumption*.

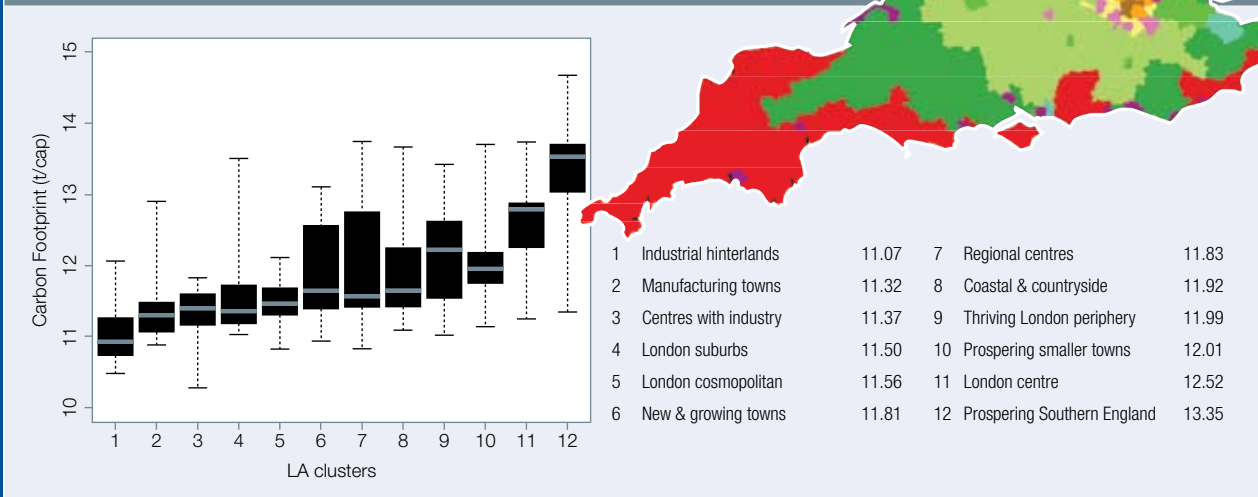
20. Formerly the National Environmental Technology Centre.

21. [www.caci.co.uk/acorn](http://www.caci.co.uk/acorn)

# 3. What the Carbon Footprint can tell us: the national picture



**Figure 9: Total Carbon Footprints by LA clusters**



# Overview

So what does the Carbon Footprint tell us about community emissions in England 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 population and area characteristics that may need to be tackled if the Carbon Footprint is to be reduced.

1. An average local authority area in England has a Carbon Footprint totalling over 1.5 million tonnes. Overall the need for action applies to each local authority area and is not confined on a geographical basis. Action on mitigating climate change in the community is vital.
2. The size of a local authority area's Carbon Footprint is 'positively' related to population income – that is, high incomes increase Footprint. 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. (See **Figure 12** on page 13.)

## The baseline results

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

3. In 2001, eight local authority areas had a Carbon Footprint totalling more than 4 million tonnes. These were all local authorities outside London – mainly cities in the north of England and the Midlands with populations of over 380,000.
4. 14% of local authorities in England have a Carbon Footprint higher than 13 tonnes per capita. These are almost exclusively local authorities in the South East.

Only three local authorities outside the South East have a per capita Footprint higher than the average for the South East, but the general picture is that the Carbon Footprint is high across the board. Added together the South East and London make up 31% of the population of England and account for 33% of its total Carbon Footprint. Overall, the need for action is clear for each local authority area and is not confined on a geographical basis.

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<sup>22</sup>. Six years ago the average Carbon Footprint for the UK was 11.87 tonnes per person. Based on the assumption that we need to cut emissions by 1.6% of the baseline figure each year, that figure should be down to 10.73 tonnes per person in 2007. 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.

Defra's reporting on national carbon dioxide emissions shows that they have risen over the last 10 years, and latest figures suggest the government may not meet its target of a 20% reduction on 1990 CO<sub>2</sub> emissions by 2010.

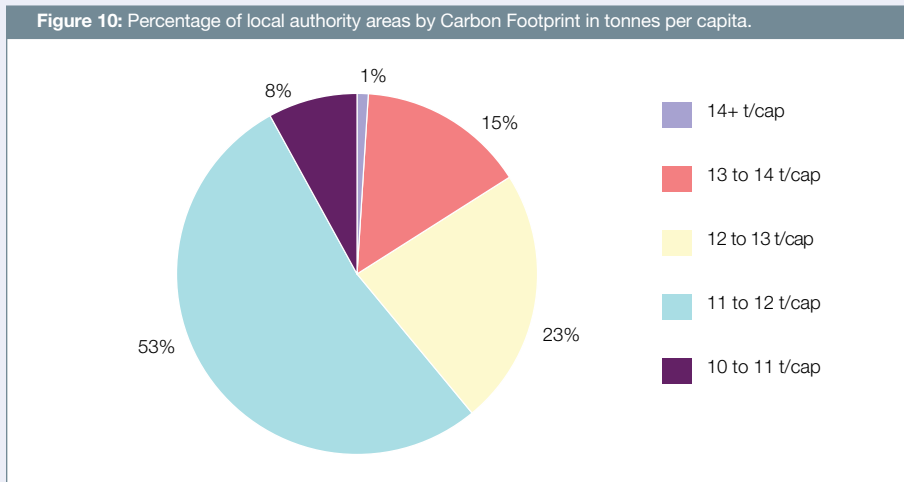
On the basis of recent action, a 60% cut in carbon dioxide emissions by 2050 seems challenging; the more radical reductions suggested by the likes of the Tyndall Centre and WWF seem more problematic still. The Tyndall Centre has suggested that to reduce carbon dioxide emissions by 70% by 2030, all climate change reduction mechanisms need to be in place by 2010<sup>23</sup>.

However, the challenge they are sending is the right one. For even 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. For example, houses built with minimum energy performance standards may have a lifespan of 60 years, but may require further energy efficiency measures before then. Infrastructure planning that accentuates the distances between where people live

22. National Statistics Press Release, January 2007. [www.statistics.gov.uk/pdfdir/efs0107.pdf](http://www.statistics.gov.uk/pdfdir/efs0107.pdf)  
23. [www.tyndall.ac.uk/publications/briefing\\_notes/Livingwithacarbonbudget.pdf](http://www.tyndall.ac.uk/publications/briefing_notes/Livingwithacarbonbudget.pdf)

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 stop-start travel conditions by 2025<sup>24</sup>. Climate change is not the only reason that there is a need for a rethink.

## National and regional variation



The Carbon Footprint can be used to look at national and regional variation between local authorities. The highest per capita Carbon Footprint in England is in East Hertfordshire (14.68t/cap); at the other end of the table Barking and Dagenham's Carbon Footprint is 30% lower (10.27t/cap). The majority of local authority areas have a Carbon Footprint of between 11 and 12 tonnes per capita (see **Figure 10**).

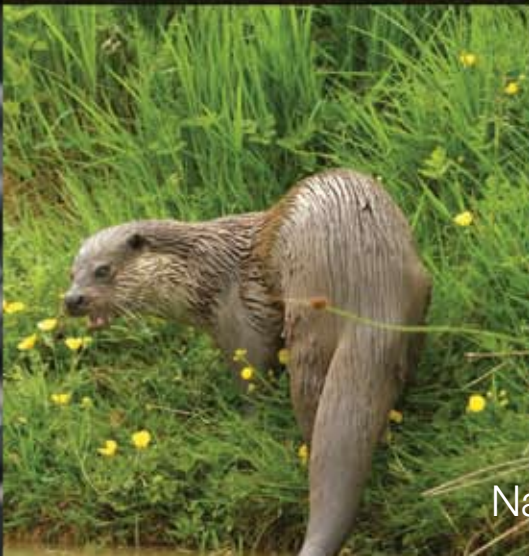
At present, the baseline Carbon Footprint results are adjusted regionally. This limits the scope for national comparisons, but further analysis is possible by looking at variations within regions and between themes.

London has the greatest variation in Carbon Footprint between local authority areas – this is driven by variations in the Carbon Footprint of housing. At a regional level, different parts of England have a high Carbon Footprint for food in comparison to their Carbon Footprint for transport and other themes. This is subjected to further analysis in the thematic chapters of this report.

24. The Eddington Report, 2006. [www.dft.gov.uk/about/strategy/eddingttonstudy/](http://www.dft.gov.uk/about/strategy/eddingttonstudy/)

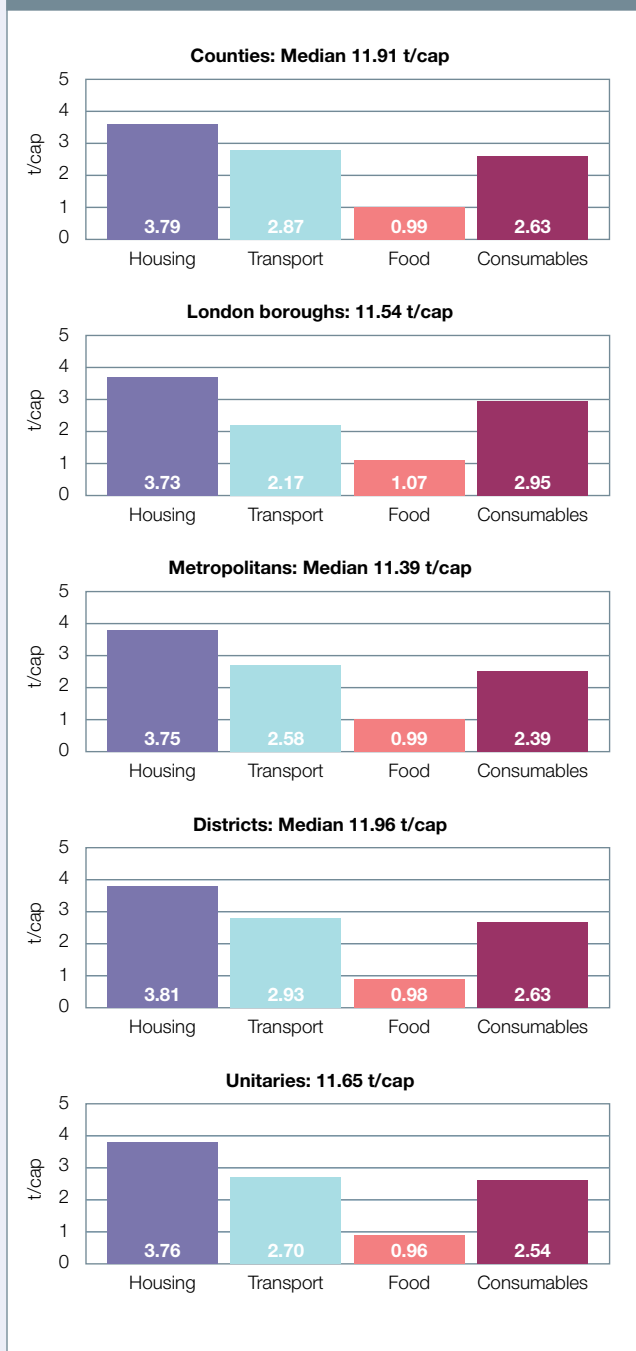


*“So what does the Carbon Footprint tell us about community emissions in England today? The top line message is that there is a lot of work to do and very little time in which to do it. An initial statistical analysis points to local population and area characteristics that may need to be tackled if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



## Variation by local authority type

**Figure 11: Food footprint broken down by category for selected local authority areas**



Carbon Footprint data can be cut by local authority type so that it is possible to compare areas controlled by single and two-tier councils across the country. You can compare your local authority to those of the same type using the online Footprint comparison tool available at [www.sei.se/reap](http://www.sei.se/reap).

On a national level, the relatively higher per capita results for District and County Councils are likely to reflect local area characteristics and their predominance in the south of England. There is no evidence to suggest they reflect differences in service delivery responsibilities between local authority types.

## 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.

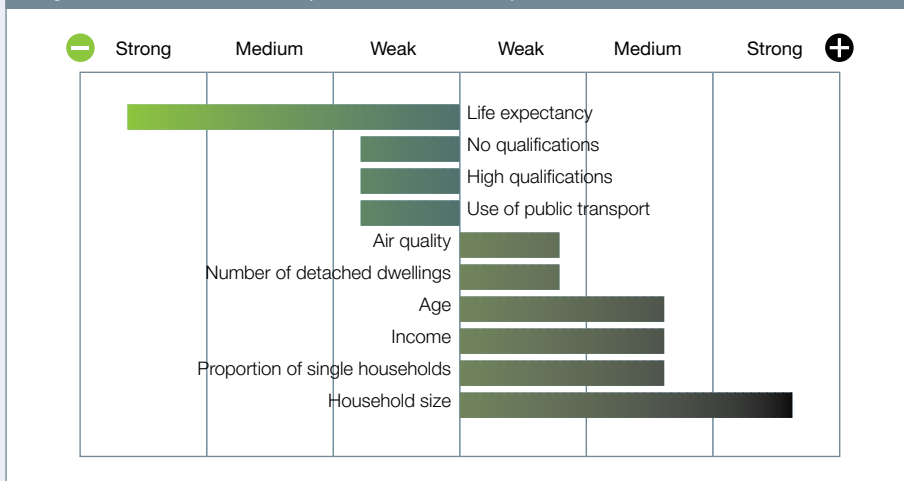
For this report we looked for conditional relationships between the Carbon Footprint of households by local authority area and selected neighbourhood statistics. A conditional relationship is a statistically proven relationship between an isolated characteristic and the Carbon Footprint. It takes a neighbourhood 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 12** 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 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 use.



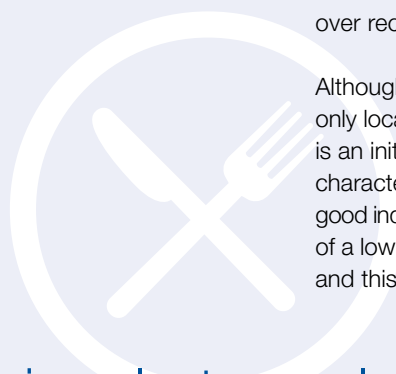
Life expectancy has a strong 'negative' relationship to the Carbon Footprint of households. This means the higher the life expectancy of the population of a local authority area, the lower its Carbon Footprint tends to be, all other factors being equal. Conditional relationships can be created for each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

Figure 12: Conditional relationships with the Carbon Footprint



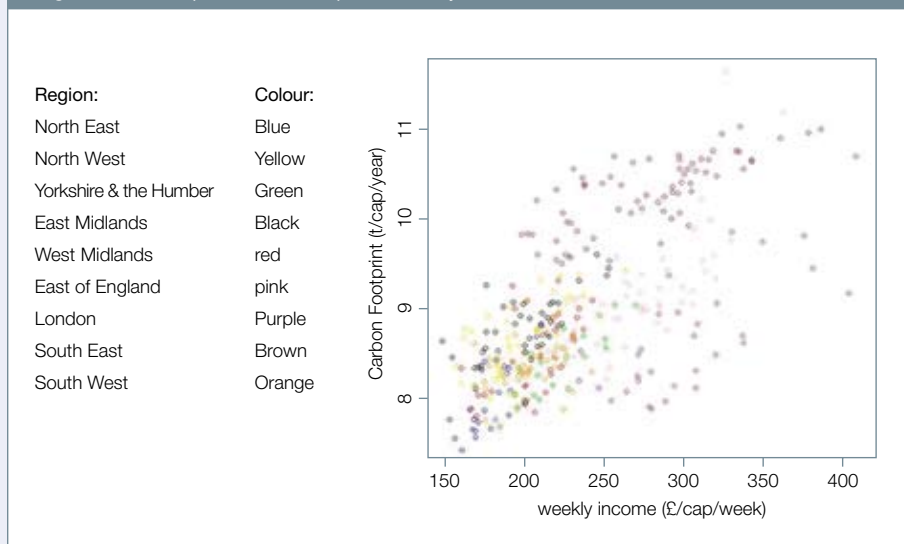
recreation and culture than on food or housing, and this is a pattern that has persisted over recent years.

Although income is important, **Figure 12** shows that it is by no means the strongest or only local characteristic that has a conditional relationship with the Carbon Footprint. This is an initial statistical analysis only, and we cannot 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.



## Using cluster analysis

Figure 13: Scatter plot, Carbon Footprint vs weekly income



Income is the population factor most commonly linked to the size of a local authority area's Carbon Footprint. As the scatter plot (see **Figure 13**) shows, 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,

Cluster analysis is another statistical approach that can be used to group or cluster local authorities together based on a shared set of local and population characteristics. These enable a comparison between local authority areas that are likely to face the same types of opportunities and challenges.

An advantage of using 2001 data for the Carbon Footprint baseline is that it can be compared directly to the Office of National Statistics classification of geographic areas according to population characteristics.

There are 12 clusters at the 'group level'<sup>25</sup> and these provide a way of comparing local authorities that partially overcomes the impact of regional adjustments. Local authorities classified as 'Prospering Southern England' and 'London Centre' have the highest average Carbon Footprint overall, but this is not always the case when the Footprint is broken down to its component parts as the thematic chapters will show.

25. Excluding the Northern Ireland group. Each group can be split into sub-groups or combined to form eight super-groups. For further information see [www.statistics.gov.uk/about/methodology\\_by\\_theme/area\\_classification/la/cluster\\_summaries.asp](http://www.statistics.gov.uk/about/methodology_by_theme/area_classification/la/cluster_summaries.asp)

The box plots in **Figure 13** show the distribution and range of Carbon Footprints in each local authority cluster. Regional Centres and New and Growing Towns have the greatest distribution of Carbon Footprint results, but their mean is close to the UK average.

The ONS classification of geographic areas is based on a large number of population characteristics but these do not necessarily have a proven relationship to the Carbon Footprint of an area. In future, SEI would like to create local authority clusters based on local area characteristics that have conditional relationships with the Carbon Footprint. This would provide a stronger basis for comparisons between local authority areas.

## Levers available to local government



*"I think the public look towards local authorities to take the lead, and there is a broad range of issues to consider, some of which the council have influence over and others they don't.*

*We recognised early on that we needed to work with Sheffield First (LSP) to set carbon reduction targets and to embed that into the city's agenda and the emerging strategies around neighbourhoods. By setting city-wide targets beyond the Council we can get others to sign up to the same targets. The strategy is in its final draft and once the targets are agreed we will be working to get everyone signed up."*

The proposed community emissions indicator provides a real incentive for local authorities to engage with their communities on carbon emissions reductions. In the following chapters we explore the type of measures that can be taken in relation to each component of the Carbon Footprint. We end this chapter with a selection of viewpoints on what is being done, what could be done and what needs to happen if local authorities are to effectively tackle community carbon emissions.

### **Environmental Sustainability Officer, London Borough**

*We have focused our efforts on our in-house activities to improve our own performance and to show leadership. To take the strategy forward in the wider community would require significant resources that we don't currently have, such as staff, time, specific skills and corporate commitment. What has been driving our strategy has mainly been cost saving and corporate reputation, before saving carbon emissions.*

*We need to prove it makes the Council look good and it is difficult for senior staff to get to grips with what climate change mitigation means to them. There is a degree of commitment but they don't necessarily know what it means to their work area and what they have to do. When it comes to reporting and spending, this is not what they are being monitored on and it isn't a mandatory activity that they have to undertake.*

### **Andy Nolan, Head of Environmental Strategy, Sheffield City Council**

*"I think the public look towards local authorities to take the lead, and there is a broad range of issues to consider, some of which the council have influence over and others they don't.*

*We recognised early on that we needed to work with Sheffield First (LSP) to set carbon reduction targets and to embed that into the city's agenda and the emerging strategies around neighbourhoods. By setting citywide targets beyond the Council we can get others to sign up to the same targets. The strategy is in its final draft and once the targets are agreed we will be working to get everyone signed up. The three targets are 30% reduction by 2020, 60% by 2050 and that the city will be developed and will plan for climate change. The LAA has also got similar target translations.*

*A lot of work is underway which includes the local transport plan commitments to reduce carbon, working to increase the frequency of buses in Sheffield, Eco-Schools programme, school buildings improvements and also a lot of work underway around our neighbourhood strategy with a 10% renewables commitment. A number of community heating schemes are operating on biomass that have been particularly successful at providing heating and we have an energy from waste plant that provides heat to 130+ city buildings, reducing carbon emissions by 45-50% compared to gas."*

*A lot of climate change-related policy has been developed, but implementation will be more difficult due to budget constraints and pressures.*



**Planning Policy Officer, Borough Council, South East**

*No-one argues about the issue of climate change, the challenge is wider acceptance of the issue, breaking it down into manageable pieces and identifying how we tackle it.*

*Getting the politicians on board is really important, it is the people at the top that need to be thinking about it and nobody is leading this agenda within the authority. It's only a small part of my role and we do not have the expertise and understanding internally. Often it is the small voice of one person trying to influence change in a continuous struggle against the tide.*

*Typically resources are a key barrier and where we do have resources for climate change mitigation, knowing how best to spend them and what will give us the best return. What should we focus on and how do we prioritise?*

**Philippa Beardmore, Sustainability Officer, City of York**

*We are using the Footprint to help quantify and justify our activities and decisions, and provide quality evidence as we have to be auditable. This is where the Footprint comes in, but it is so dependent on consumption patterns which we have limited influence over that we do have to use it intelligently. From it we need to glean where we do have control and influence and where we can bring about the most change and, where we can't, how can we influence change and fill the gaps.*

*We want to break down each aspect of the Footprint to work with each policy area that we have control and influence over and actually identify clear targets. It is a really opportune moment with the Climate Change Bill and energy white paper coming in that will help us identify at the local level what is a reasonable target within the national framework. In order to set targets we have to be measuring in the first place, and that is the stage we are in at the moment; we are benchmarking our current performance.*

**Janet King, Lickey and Blackwell Parish Council, Worcestershire**

*It has been hard to get the Parish to take it on board as it is not as immediate as filling in a pot hole. Aesthetic improvements in the Parish are much easier to do and measure, like cleaning up dog poo and maintaining footpaths and we get praised for it. But getting this big issue across and to effect change with only a limited amount of money to spend is difficult. We need more support from the district; we need their paid officers to come and talk to us and tell us exactly what we can do in this area.*

**Energy Efficiency Consultant, Energy Advice Centre, Midlands**

*The biggest barrier is the lack of funding and resources to make things happen, this is a key problem. We need more people working on climate change mitigation at a senior enough level to implement change. Often it is a small percent of someone's role within local authorities.*

**Andy Nolan, Head of Environmental Strategy, Sheffield City Council**

*Crucial to all of this is the need for a standard and consistent methodology for reporting against. I fear that there will be inconsistency in Carbon Footprinting methodologies, with different approaches being used for different purposes. We need consistency within the city and nationally so we can compare, and the different targets that are being set locally and nationally through LAAs and CPA need to align and promote a consistent approach.*

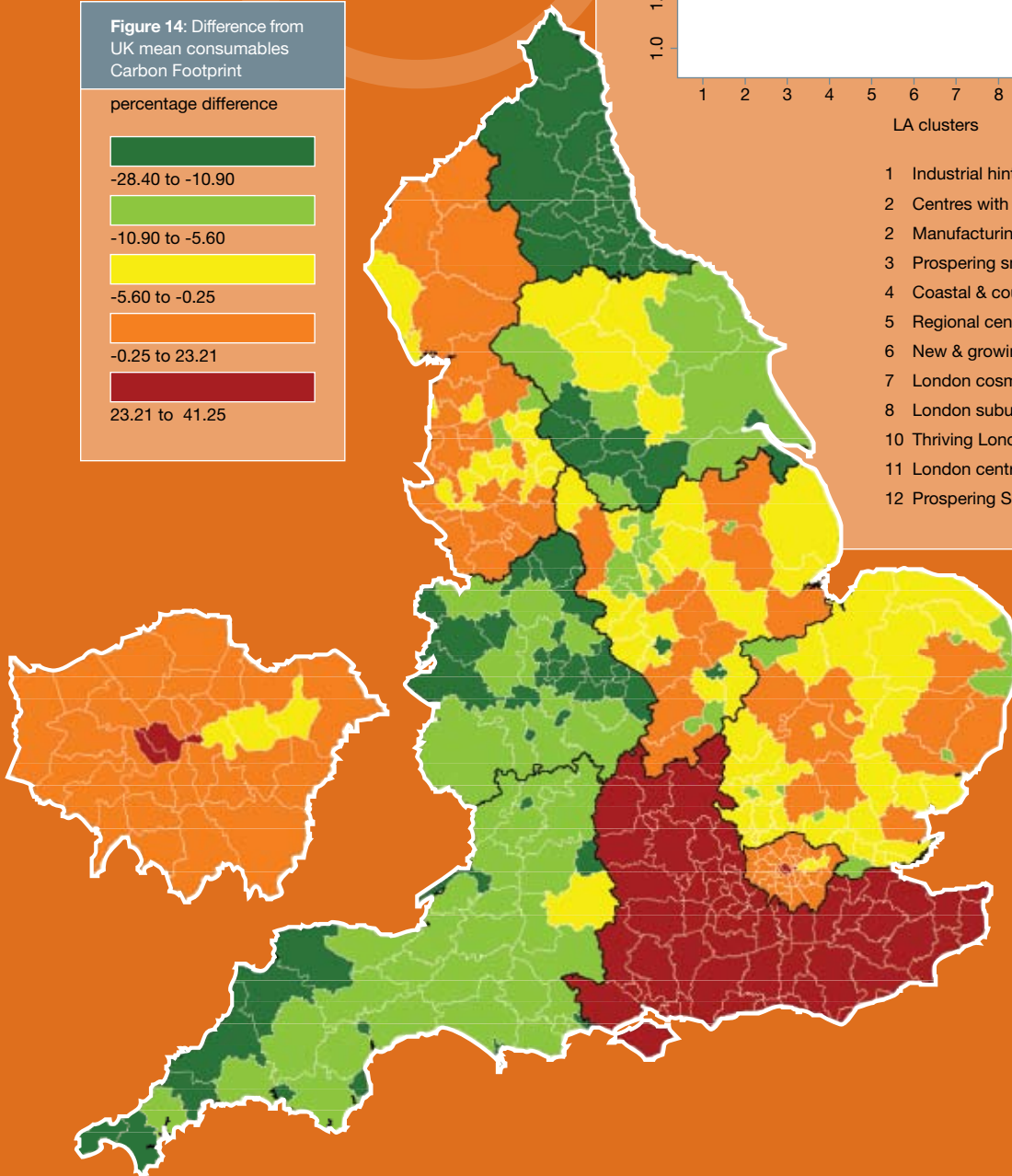
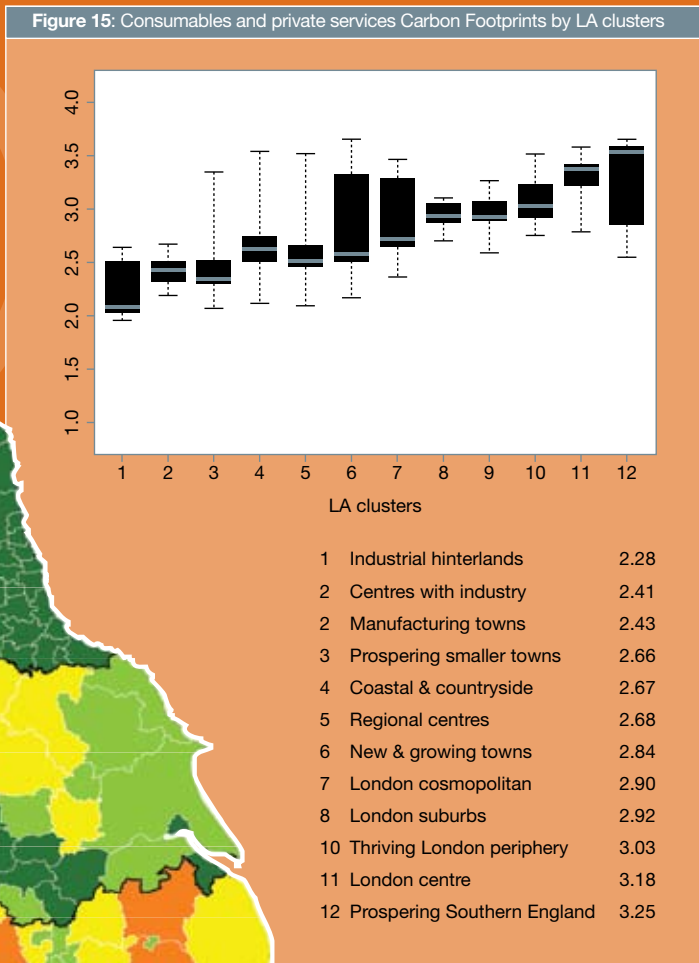
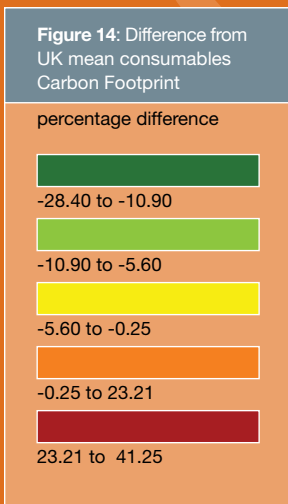






# The Carbon Footprint of **consumables**

# The Carbon Footprint of consumables

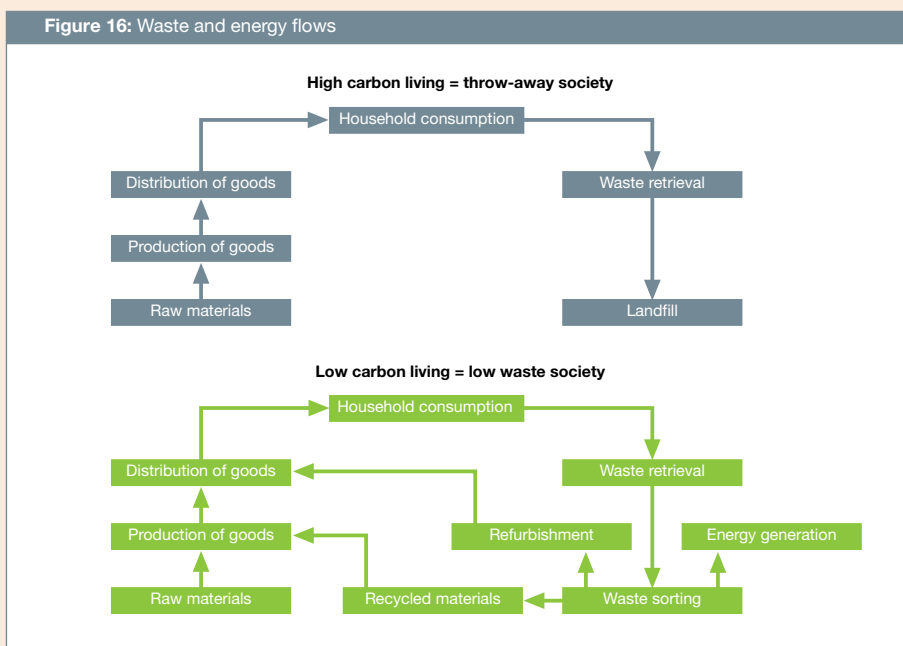


# Overview

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. This accounts for between 27%<sup>26</sup> and 19%<sup>27</sup> of the total Carbon Footprint of a local authority area.

- On a per capita basis consumables and services have a higher Carbon Footprint than food. The highest Footprint for consumables is 3.55 tonnes per capita (t/cap) (Mole Valley, Surrey), the lowest is 2.02 t/cap in Easington in the North East.
- Only local authorities in the South East of England and London have a Carbon Footprint higher than 3 t/cap. The average Carbon Footprint for local authorities in the South East is 3.39 t/cap.
- The 100 local authorities with the highest Carbon Footprint for consumables come from London, the South East and the East of England.

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 reuse are integral to reducing a local authority area's Carbon Footprint:



*“The 100 local authorities with the highest Carbon Footprint for consumables come from London, the South East and the East of England.”*

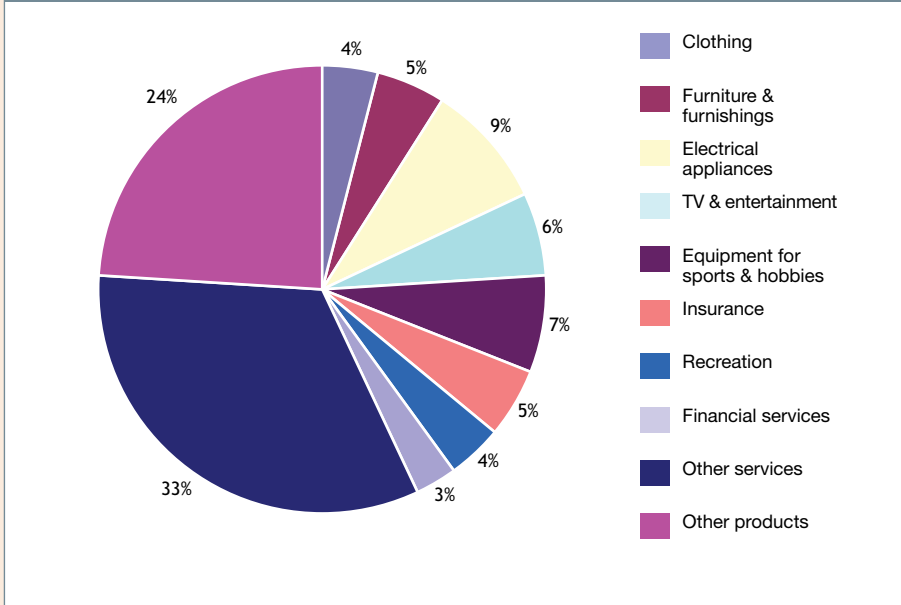
## Baseline analysis

People more readily relate to the environmental impacts of waste than to those related to buying a product in the first place. This is reflected by National Consumer Council research which shows that recycling is the most popular activity 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<sup>28</sup>.

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 that people buy on an occasional basis. These include fridges, TVs, computers and furniture.

26. City of London.  
27. Berwick-upon-Tweed, North East of England.  
28. Mayo, 2007.

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



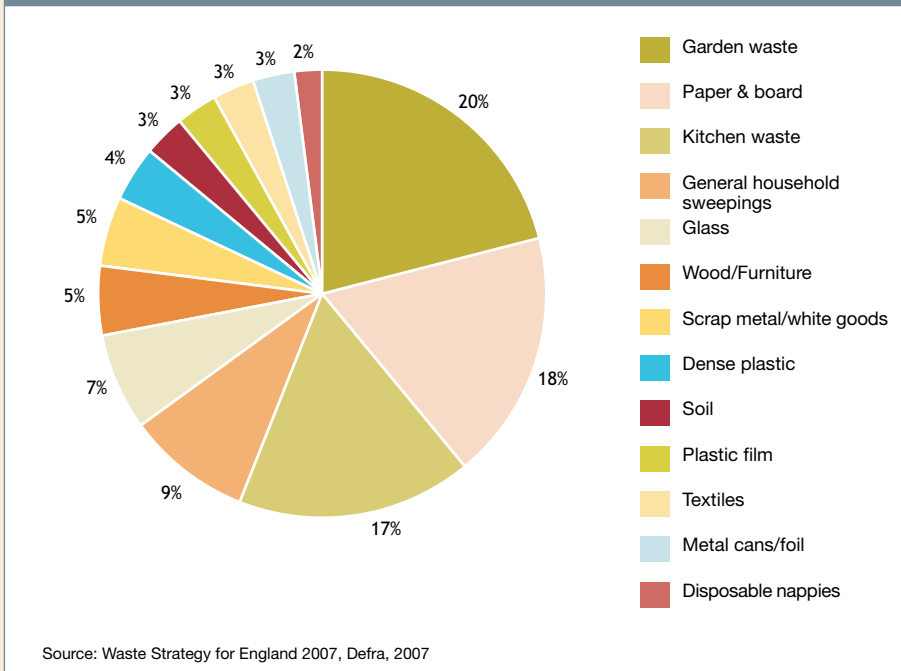
Ownership of durable goods rises with income; this is reflected in the concentration of local authorities with a high Carbon Footprint for consumables in the South East and in the 'Prospering Southern England' local cluster.

Patterns of expenditure vary 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 in high income groups<sup>29</sup>.

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. Obesity has a stronger 'positive' relationship with the Carbon Footprint of consumables than it does with the Footprint of food.

The durable goods that contribute to a local authority area's Carbon Footprint at the beginning of their use phase also contribute to its municipal waste at their end of use stage. Encouraging people to buy less, to swap and share, and to use things more cleverly can reduce a local area's Carbon Footprint as well as the amount of waste sent to landfill.

Figure 18: Household waste consumption, England (2000/01)



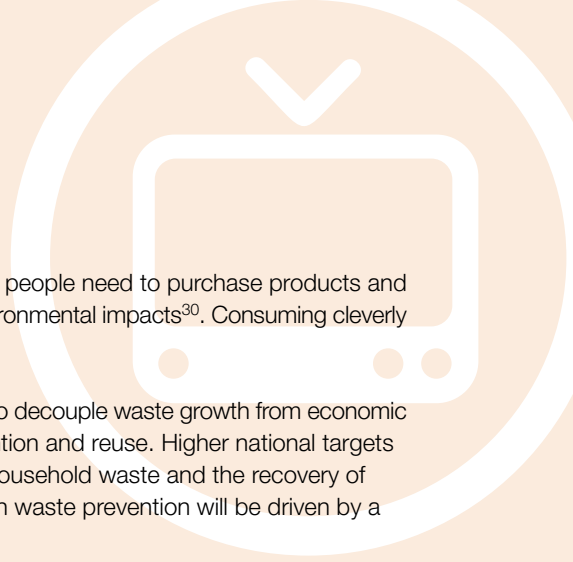
Source: Waste Strategy for England 2007, Defra, 2007

*"The durable goods that contribute to a local authority area's Carbon Footprint at the beginning of their use phase also contribute to its municipal waste at their end of use stage. Encouraging people to buy less, to swap and share, and to use things more cleverly can reduce a local area's Carbon Footprint as well as the amount of waste sent to landfill."*

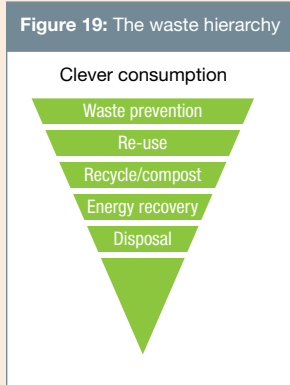


29. ONS 2001 data. See [www.statistics.gov.uk/StatBase/Product.asp?vlnk=361](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=361)

# Levers available to local government



The government recognises that, as consumers, people need to purchase products and services that generate less waste and reduce environmental impacts<sup>30</sup>. Consuming cleverly is central to waste prevention.



One of the government's key waste objectives is to decouple waste growth from economic growth and put more emphasis on waste prevention and reuse. Higher national targets have been set for recycling and composting of household waste and the recovery of municipal waste. In addition, the greater focus on waste prevention will be driven by a new national target to:

- reduce the amount of household waste not reused, recycled or composted by 29% by 2010 and 45% by 2020. This is equivalent to a 50% reduction per person by 2020<sup>31</sup>.

The government has stated that it is heavily dependent on local government to meet these national targets and is currently considering whether mandatory minimum levels for these targets should be set<sup>32</sup>. Either way, the national target will provide a focus for local improvement targets; measurement of progress has been proposed as one of the local authority waste performance indicators. This would measure an authority's achievements in reducing waste and in increasing reuse, recycling and composting.

As the aim of the government's 2007 Waste Strategy is to create incentives that reflect the waste hierarchy, local government can and should consider the potential for targeting household purchasing and reuse as well as disposal. Legislative change may soon allow local authorities to introduce revenue neutral financial incentives for waste reduction and recycling. The government has also announced its intention to develop best practice in 'zero-waste places'.

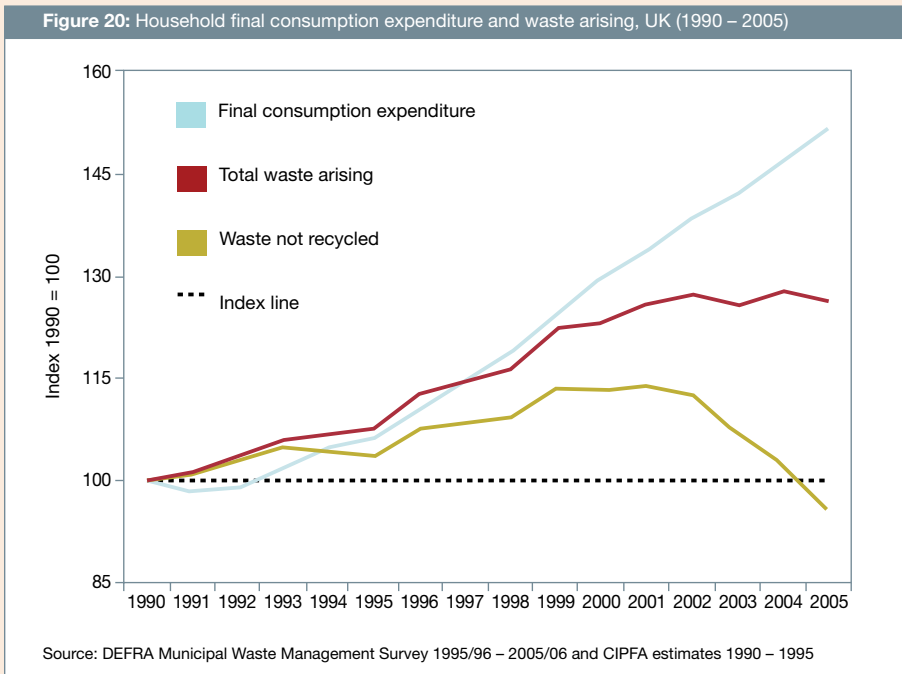
There is room here to be inventive and extend campaigns on recycling to awareness of the Carbon Footprint of new products. WWF's online Ecological Footprint calculator – [www.footprint.wwf.org.uk](http://www.footprint.wwf.org.uk) – provides a focus on consumables and recycling and can be used to encourage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

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

30. Waste Strategy for England 2007, Defra.  
 31. Ibid.  
 32. [www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/Waste.pdf](http://www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/Waste.pdf)

# The opportunities for change

Over the last five years municipal waste has grown at 0.5% a year but package waste recycling has doubled from 27% in 1998 to 56% in 2006<sup>33</sup>. 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 *The Environmental Contract: How to harness public action on climate change*<sup>34</sup> Ed Mayo, Chief Executive of the National Consumer Council, reflects the problems we all have as consumers: "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." Local government needs to help households make these

*"Local government needs to help households make these decisions, as it is best placed to coordinate local waste collection schemes. Now is the time to focus on household consumption."*

decisions, as it is best placed to coordinate local waste collection schemes. Now is the time to focus on household consumption.



33. Waste Strategy for England 2007, Defra.  
34. National Consumer Council, 2007.



## Case study: Phil Keynes, Sustainability Team, Nottinghamshire County Council

### ***Please describe your experience of working towards climate change mitigation***

We have a community magazine that started in 2002 called *Living for Tomorrow*, and this works to inspire people to take action and is produced three times a year. Each issue generates approximately 300 public responses to articles, competitions and following up on ideas. It is partnership badged, which has really helped. I don't think the Council image alone would have had the same success. And the way it is presented and written people can identify with.

We have a strong Local Authority Energy Partnership, which has 19 local authorities involved from Nottinghamshire and Derbyshire. They have all signed up to the Nottingham Declaration on climate change and are working on a climate change programme across the two counties.

We successfully sought £380,000 funding from the Defra Climate Challenge Fund for a campaign called 'Everybody's talking about climate change'. The purpose is to shift attitudes and it is match funded from a range of partner agencies. The campaign has just got going and we have a website, pledges and a campaign vehicle which is going around engaging people in talking about climate change. The messages are that it is a 'here and now issue' and that 'small actions do make a difference'.

It is proving slow to build up the pledge numbers and we are trying to change behaviour of the sceptics. However it's hard to know if we are really reaching those people as we could be attracting those that are already interested.

A Local Food directory has been produced but I don't think people are connecting this to reduced emissions.

### ***What are your specific successes and challenges?***

Success has been down to key people driving these issues, the Nottingham Declaration, the good things happening in the community for example Sherwood Energy Village, universities working on the academic side and the fact that work has been underway on this for a long time.

The challenge is to bring all of this together. We do have a lot going on and a wide range of partnerships linked to the county, and at times this can prove quite complicated, drawing them all together and working towards common goals. We need to understand and agree how to achieve a low-carbon economy together, and we could bring our Science City status into this debate.

Another challenge we face is the community. People are interested in wind turbines because of the technology, it is exciting and about buying something new; but using their car less and turning things off is harder to engage change. It seems actions for consuming less are often harder to bring about than consumption of something new.

It is proving very hard to engage people in using less energy against the background of consumerism and buying the latest gadgets.

I am concerned about the scale and speed at which we need to be changing; it feels like we are just trying to hold things where they are at. We almost need to go round and just do the changes that need doing, not waiting for people to want them, for example make houses more energy efficient.

### ***What needs to happen for local authorities to contribute towards the development of a low-carbon economy?***

It takes a long time to get from plans to getting things off on the ground and a lot of what we do around these issues is not statutory, which doesn't send out a strong message to anyone. If government want change and want us to work more on climate change, they need to require us to do it and resource the work.

We need bolder programmes, policies and investments in alternative energy and travel, and these issues need tackling nationally to drive better practice. We need disincentives for people using their cars, not incentives. We should also encourage more community owned local renewable projects, for example CHP plants and wind turbines. Not just waiting for change through planning but being more proactive.

One key message we should all be focusing on is the benefit of good actions. It is all positive good stuff we are proposing, wouldn't we like to do this anyway and reap the benefits; feel good, be healthier, save money?

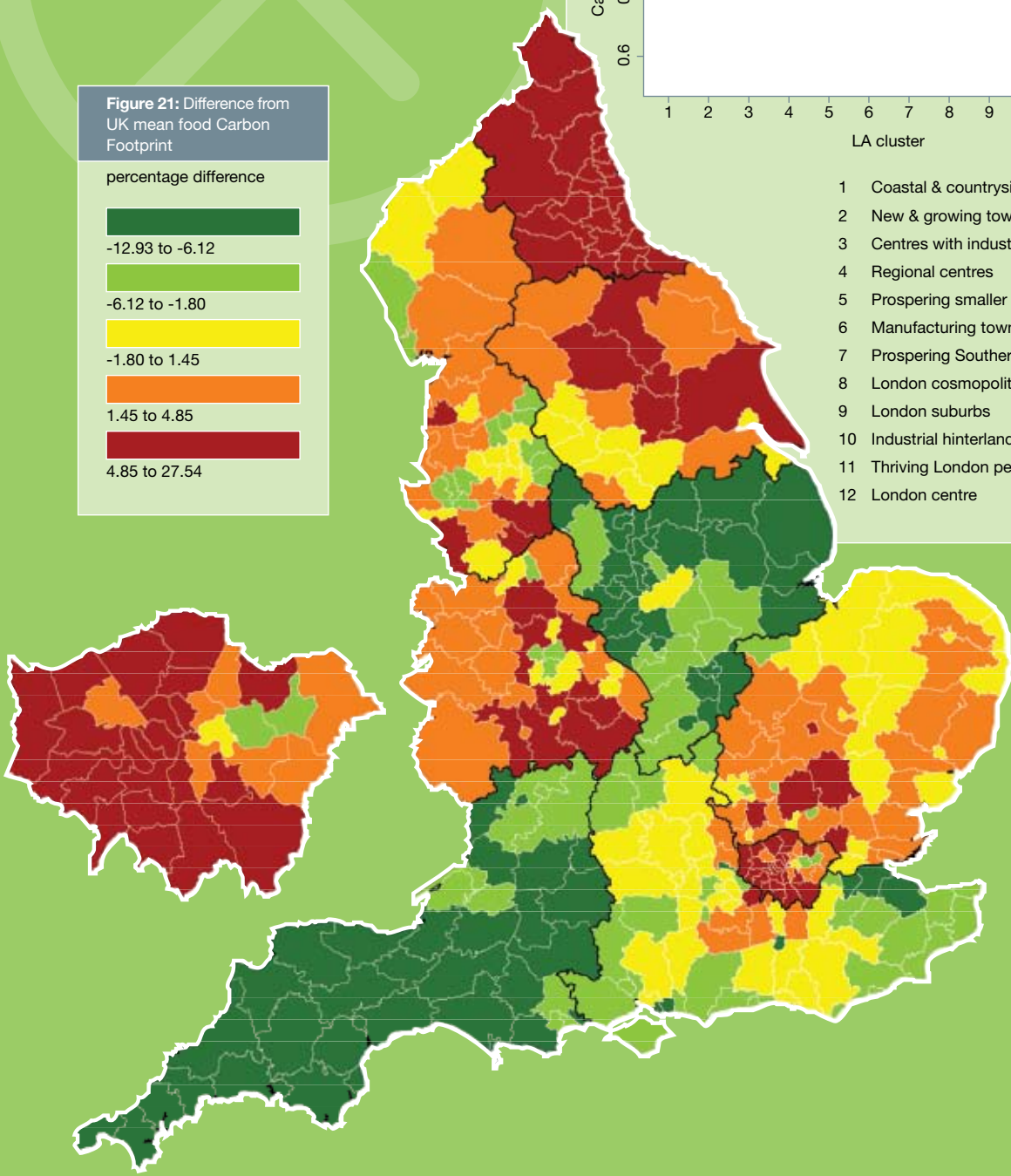
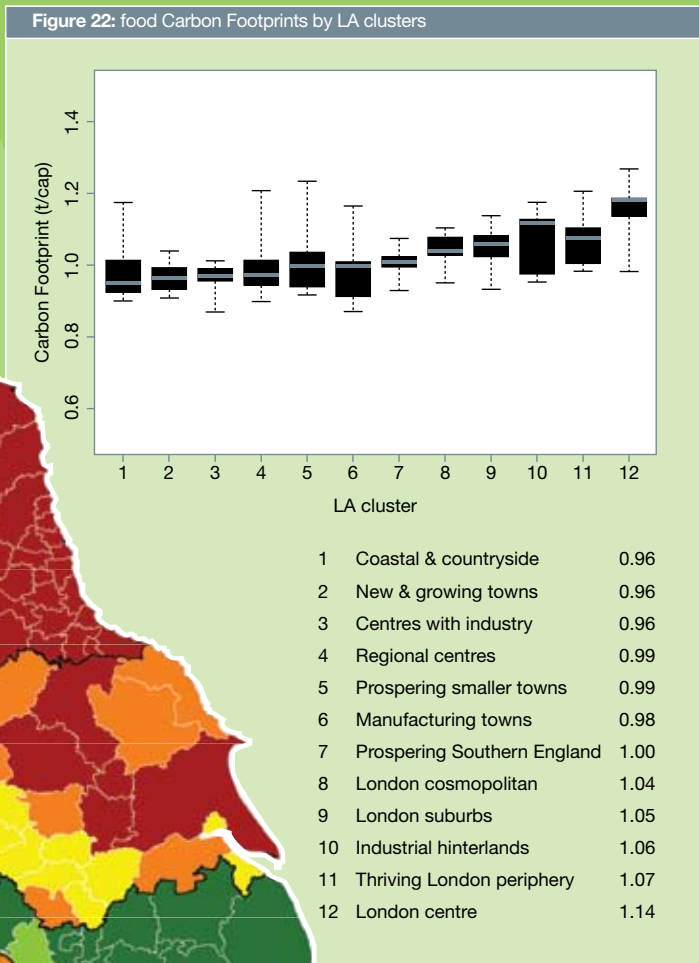
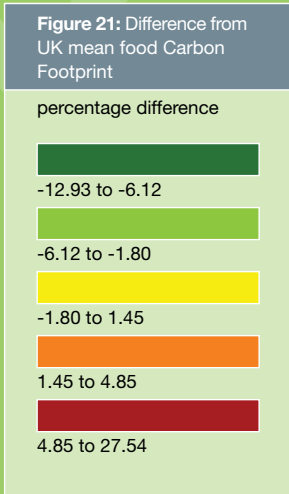




# The Carbon Footprint of **food**



# The Carbon Footprint of food



## Overview

Food consumption in the local community is not usually on the radar of local authorities that are trying to tackle carbon dioxide emissions, but it accounts for between 11% (Stockton-on-Tees) and 7% (Slough) of the Carbon Footprint of a local authority area.

- The highest Carbon Footprint for food is 1.26 tonnes per capita (t/cap)<sup>35</sup>; the lowest is 0.86 t/cap<sup>36</sup>.
- The 25 local authorities with the highest Carbon Footprint for food in England can all be found in London or the North East.
- High expenditure on restaurant meals, catered meals and takeaway meals is prevalent in local authorities with a high Carbon Footprint for food.

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 takeaway 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 comprise only one stage of this process.

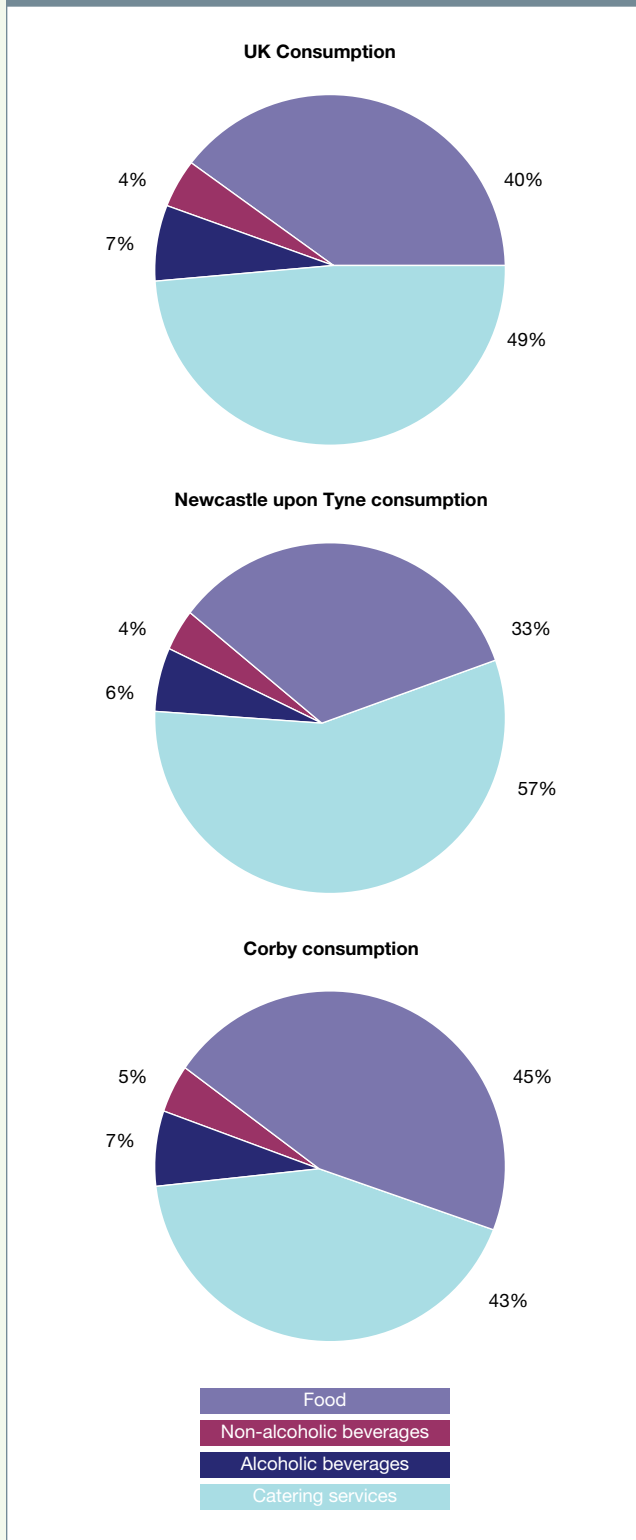


*“The food component of the Carbon Footprint incorporates the consumption of food and drink in the home as well as the consumption of alcoholic beverages, restaurant meals, catered meals and takeaway meals outside the home. It measures all the carbon dioxide emissions associated with food consumption from ‘farm to fork’, including processing, packaging and distribution.”*

35. Kensington and Chelsea.  
36. Leicester.

# Baseline analysis

**Figure 23: Food footprint broken down by category for selected local authority areas**



The food component of the Carbon Footprint is characterised by limited variation between local authorities and clusters, and there are few consistent differences in the proportion and quantity of food consumed in the home by region.

In contrast to other components of the Carbon Footprint, food consumption tends to have a higher Footprint in local authorities in the West Midlands, Yorkshire and the Humber and the North East, as well as London.

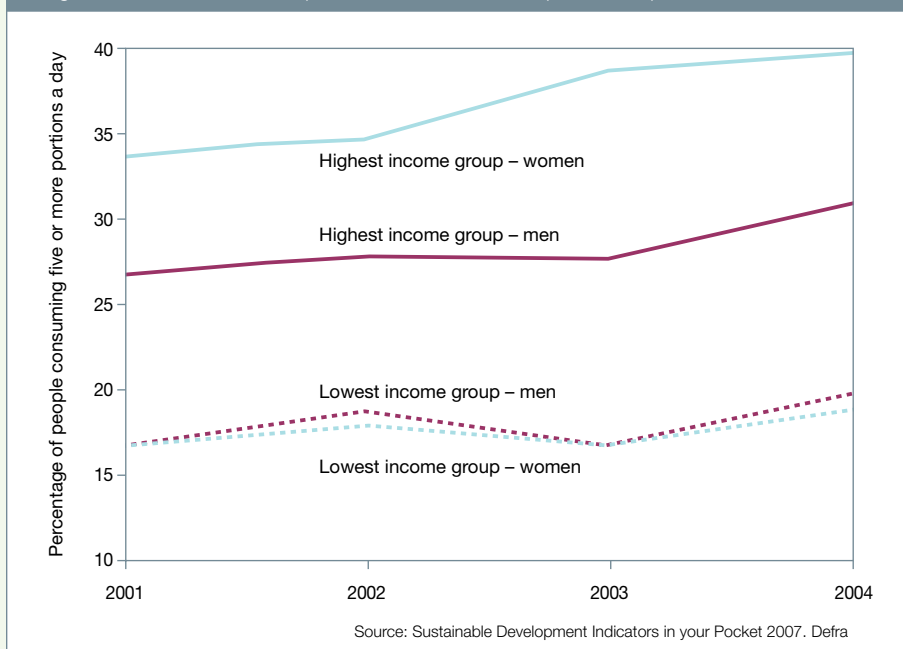
The variations in Footprint are partly driven by the amount of food bought outside the home. **Figure 23** breaks down the components of the Carbon Footprint for food for Corby in the East Midlands (second lowest Carbon Footprint for food in the country) and Newcastle (fourth highest in the country) in comparison to the UK average.

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 – people often assume that lower income groups have a high Footprint caused by nutritionally poorer diets than higher income groups. This is supported by 'five a day' comparisons which show that in 2004, 20% of men and 19% of women in the lowest income groups consumed five or more portions of fruit or vegetables a day. This is below the 31% of men and 40% of women consuming five a day or more in the highest income group (see **Figure 24**).

*"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 – people often assume that lower income groups have a high Footprint caused by nutritionally poorer diets than higher income groups."*

According to recent government research, however, 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<sup>37</sup>.

**Figure 24:** Proportion of people consuming five or more portions of fruit and vegetables per day a) in high income households, and b) in low income households, (2001 – 2004)



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, though food consumption for the population as a whole is not as healthy as experts think it should be<sup>38</sup>.

Our statistical analysis also shows that the higher the 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. In England, the percentage of adults aged 16-64 who were

obese increased by over 50% between 1993 and 2003. High levels of overweight and obese children are likely to exacerbate this trend<sup>39</sup>.

## Levers available to local government

Strategies to reduce the Carbon Footprint of food are most easily linked to waste reduction and community health – areas where local and community action abounds in many forms.

The Waste and Resources Action Programme (WRAP) has committed itself to working with local authorities and other partners to reduce consumer food waste by 100,000 tonnes by March 2008. This is the tip of the iceberg: households produce 6.7 million tonnes of food waste a year, almost half of which could have been eaten<sup>40</sup>.

Households have an influence over five main factors that influence 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<sup>41</sup>.

37. Low Income Diet and Nutrition Survey 2007. Food Standards Agency

38. Low Income Diet and Nutrition Survey 2007. Food Standards Agency

39. [www.heartstats.org/datapage.asp?id=1011](http://www.heartstats.org/datapage.asp?id=1011)

40. WRAP analysis based on Defra municipal statistics, 2004/05.

41. *Understanding Food Waste*. WRAP Research Summary, March 2007.

Available at: [www.wrap.org.uk/wrap\\_corporate/news/food\\_waste\\_is.html](http://www.wrap.org.uk/wrap_corporate/news/food_waste_is.html)



*“We are also a nation of gardeners. Own-grown food comes without processing, packaging or distribution costs. The more we grow, the less we should need to buy, and the lower our Carbon Footprint is likely to be.”*

#### **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. Identical food items can have very different Footprints depending on their source and the production, processing 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<sup>42</sup>.

#### **How much food we produce ourselves**

We have been called a nation of shop-keepers, but we are also a nation of gardeners. Own-grown food comes without processing, packaging or distribution costs. The more we grow, the less we should need to buy, and 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 takeaways in the evening. When each coffee comes in a Styrofoam cup and every sandwich in plastic packaging the additional impacts associated with greater everyday food consumption outside the home become apparent.

## The opportunities for 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 in changes in food consumption habits.

42. Published by SEI. Available at: [www.scotlandsfingerprint.org/pdfs/Fingerprint\\_Scotland\\_Diet.pdf](http://www.scotlandsfingerprint.org/pdfs/Fingerprint_Scotland_Diet.pdf)



## Case study: Andrew Moore, Director, Somerset Food Links (SFL)

When the project was set up in 1999, climate change wasn't a primary issue – the drive for the project was agricultural disasters like foot and mouth. The project was set up by the local authority to stimulate an economic boost for the agricultural community in Somerset and linked to other issues like access to local produce for consumers and health. However 'food miles', and the proximity of where your food comes from, have become increasingly important and have moved rapidly up the agenda. I would say it's pretty much at the top now.

In 2003, SFL became a not-for-profit organisation and recognised the links to wider sustainable development issues and the need to limit travel. In terms of outputs we are now also looking at the implications for climate change and emissions, but I do think we should be focusing as much on the consumers (driving to the shops) as the producers.

In terms of climate change mitigation we have a lot of indirect impacts, as we help and advise small businesses in the food and drink sector. The aim is to help them develop their businesses, primarily in the context of the local economy. As part of this we encourage business good practice, and encourage local sourcing and food brokering to promote local suppliers.

We also work with schools to link farms and their produce with the children and healthy eating. Schools want to be able to offer a local menu and demonstrate to children where the food comes from, bringing in the concepts of the wider environment and climate change. Unfortunately, all of this activity within schools is voluntary and they are not required to do it.



*"The current unpredictable weather is also affecting farmers directly, for example the price of milling wheat is 50% higher than it was 12 months ago because of all the rain we have had so far this summer and the associated crop damage."*

The project was involved in setting up Somerset Local Food Direct Ltd, which is a local delivery service for food which has reduced food miles. We also helped set up Somerset Farmers Markets. The overall impact of Food Links and the associated initiatives is likely to have had a significant reduction in food miles, but it is difficult to quantify in terms of actual numbers.

### ***What are other people's attitudes and responses?***

The biggest change I have observed is that consumers are becoming increasingly aware of climate change (in a short period of time). It is also very much in people's minds especially at the

agricultural level and farmers are changing practices, approaches and crops. We know of farmers considering planting olives and grapes. The current unpredictable weather is also affecting farmers directly, for example the price of milling wheat is 50% higher than it was 12 months ago because of all the rain we have had so far this summer and the associated crop damage.

### ***What needs to happen for local authorities to contribute to a low-carbon economy?***

In the context of the food sector the largest problem for small food producers is distribution. If we could master food distribution (logistically it is very difficult for small scale production) and have a coordinated approach of bio-fuelled collection and distribution, we could have a real impact. They also need to be aware that if we grow crops for fuel there is a cost of not being able to grow crops to eat.

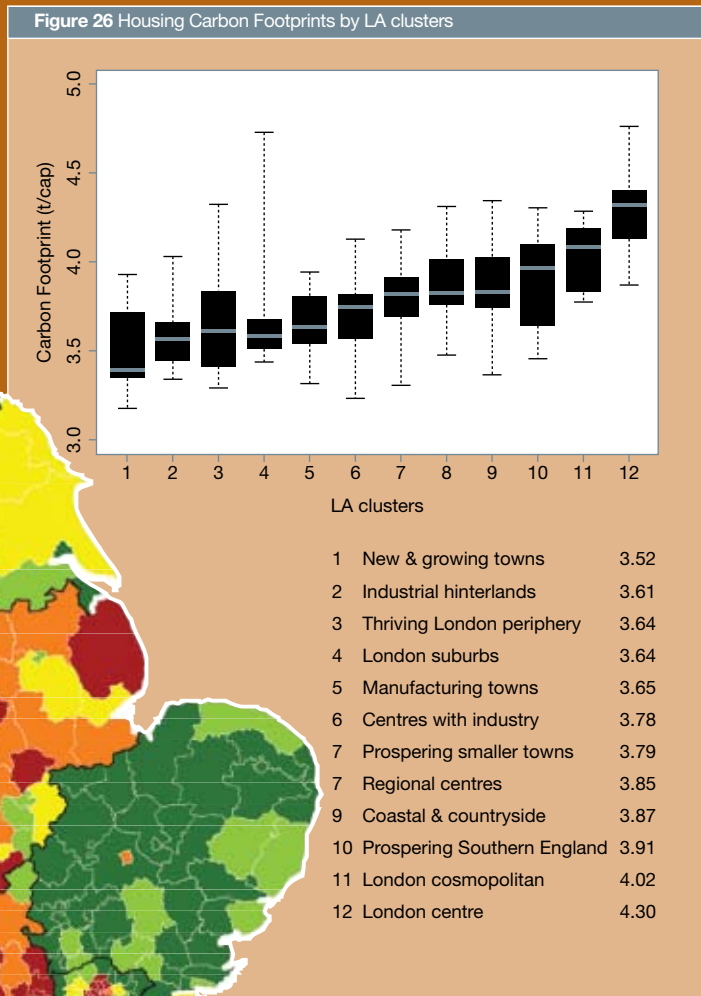
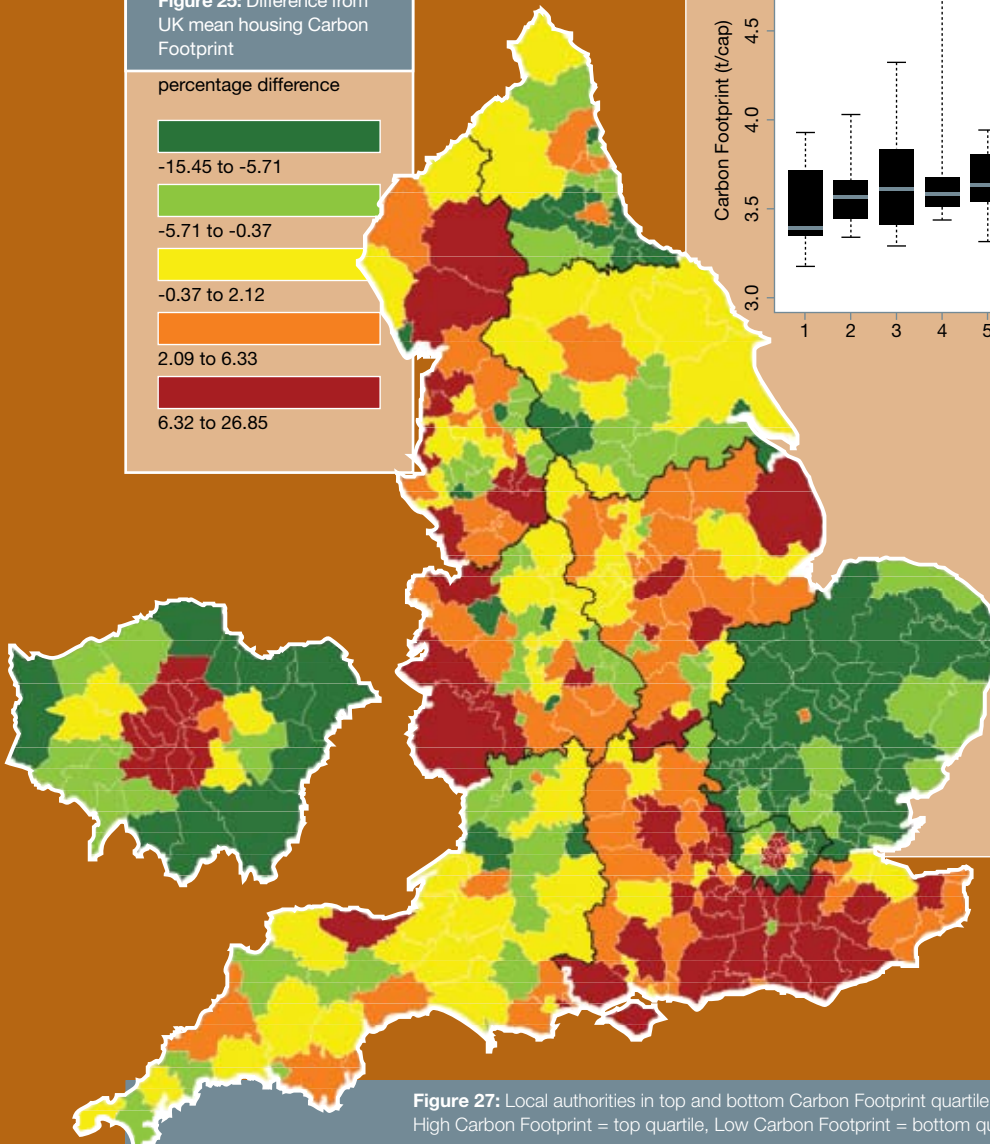
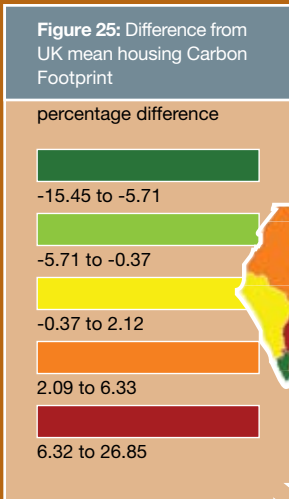




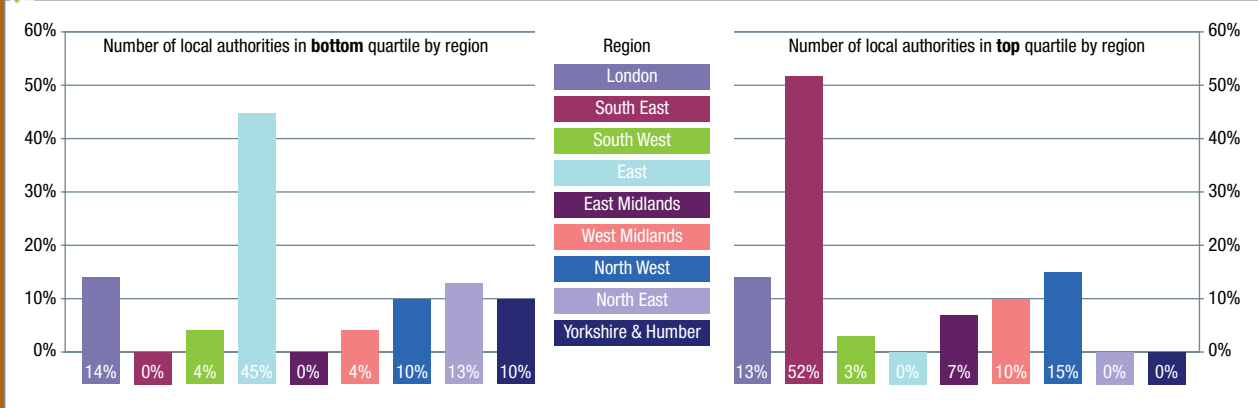
# The Carbon Footprint of housing



# The Carbon Footprint of housing



**Figure 27: Local authorities in top and bottom Carbon Footprint quartile by region.**  
High Carbon Footprint = top quartile, Low Carbon Footprint = bottom quartile.



## Overview

*“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.”*

Housing is a big hitter when it comes to climate change. In England it accounts for between 36.79%<sup>43</sup> and 23.76%<sup>44</sup> of the Carbon Footprint of a local authority area.

- The Carbon Footprint of housing ranges from 3.17 tonnes per capita (t/cap) (Stevenage), to 4.76 t/cap (Kensington & Chelsea).
- 20% of local authorities in the UK have a Carbon Footprint for housing that exceeds 4.00 t/cap.
- Local authorities in the east of England have a particularly low Carbon Footprint for housing; local authorities in London display the greatest variation.

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<sup>45</sup>. But energy use is also driven by the luxuries of life: bigger, better, flashier widescreen TVs, computer consoles and hi-fi equipment.

In tackling the housing component of the Carbon Footprint, it is just as important to encourage people to think more intelligently about how they use energy in the home as it is to improve the energy performance of the buildings themselves – and both require effective targeting at the local level. Most local authorities provide some form of energy advice or guidance to homeowners but specific measures are needed to tackle large, older properties that are 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 a further 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<sup>46</sup>. One of the major challenges is to make it more affordable and attractive for developers – and the public – to opt for houses built to the ‘higher levels’ of the new Code for Sustainable Homes.

## Baseline analysis

High energy use can be driven by the energy demands of the fuel poor: older people, low income families with children, and the disabled. Equally it can be driven by large, old dwelling stock that is hard to treat. These may have a higher property value and be occupied by households with higher incomes, or they may 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.

Housing is the only component of the Carbon Footprint in which the higher the income, the lower the Carbon Footprint is on a household level. The National Consumer Council argues that the poor pay more because of disadvantageous payment methods and

43. Hackney, London

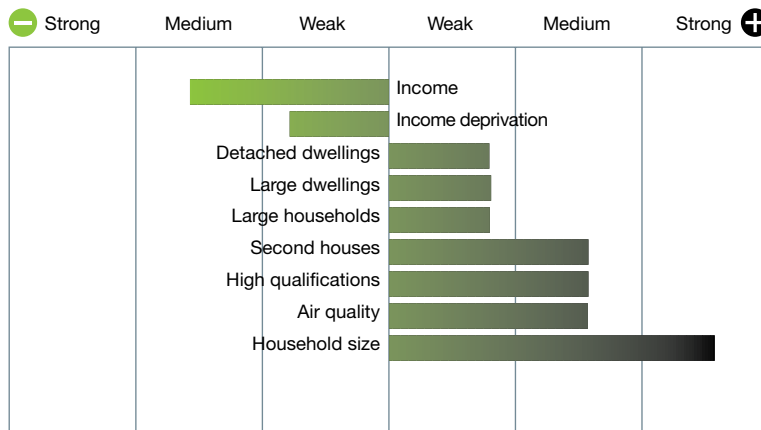
44. East Hertfordshire, East of England

45. *Life Lines*. Klein, 2003. NCC. [www.ncc.org.uk/nccpdf/poldocs/NCC043\\_lifelines.pdf](http://www.ncc.org.uk/nccpdf/poldocs/NCC043_lifelines.pdf)

46. *Tipping Point or Turning Point*. Downing and Ballentyne, 2007. Ipsos Mori. [www.ipsos-mori.com/polls/2007/climatechange.shtml](http://www.ipsos-mori.com/polls/2007/climatechange.shtml)

because they gain less from competition<sup>47</sup>. That the poor pay more is certainly true as a proportion of total expenditure: households with the lowest 20% of incomes spent 21% of weekly expenditure on heating fuel and power in 2001, households with the highest 20% of incomes spent 7%<sup>48</sup>.

**Figure 28:** Conditional relationships between the Carbon Footprint of housing and selected neighbourhood statistics (2001)



The lower the average income of a local authority area, the higher the Carbon Footprint tends to be.

However, characteristics that are often associated with comfortable or higher income lifestyles do have a 'positive' relationship (ie increase the impact associated) 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.

Housing is one of two areas of the Carbon Footprint in which the Prospering Southern England cluster of local authorities does not have the

highest emissions (3.91 t/cap). The seven local authorities that make up the London Centre have the highest Carbon Footprint for housing overall (4.30 t/cap), followed by the seven classed as 'London cosmopolitan' (4.02 t/cap). Local authorities in these clusters have a proportion far above the national average of rented property in the public and private sectors, as well as single households, people who are unemployed and students<sup>49</sup>.

According to the department for Communities and Local Government (CLG) review of existing buildings, the least efficient stock in the UK has a higher property value, and is more likely to be occupied by households on higher incomes and to be made up of larger, private detached homes. Eighty-four per cent of 'hard to treat' housing – stock that contains features that make refurbishment measures difficult – is in the private sector. Again, these tend to be older and larger properties<sup>50</sup>.

Local authorities in 'New & growing towns' have the lowest Carbon Footprint (3.52 t/cap), almost 20% lower than in the 'London centre'. Almost half of the 'New & growing towns' can be found in the east of England which is the region with the lowest average Carbon Footprint<sup>51</sup>. Most 'New & growing towns' have population variables that are very close to the UK average, but a clue to their smaller Carbon Footprint lies in their name. The age of housing stock may also be why the 'London periphery' has a lower Carbon Footprint (3.67 t/cap). **Figure 29** shows the profile of energy performance by age of existing dwelling stock.

47. *Life Lines*. Klein, 2003. NCC. [www.ncc.org.uk/nccpdf/poldocs/NCC043\\_lifelines.pdf](http://www.ncc.org.uk/nccpdf/poldocs/NCC043_lifelines.pdf)

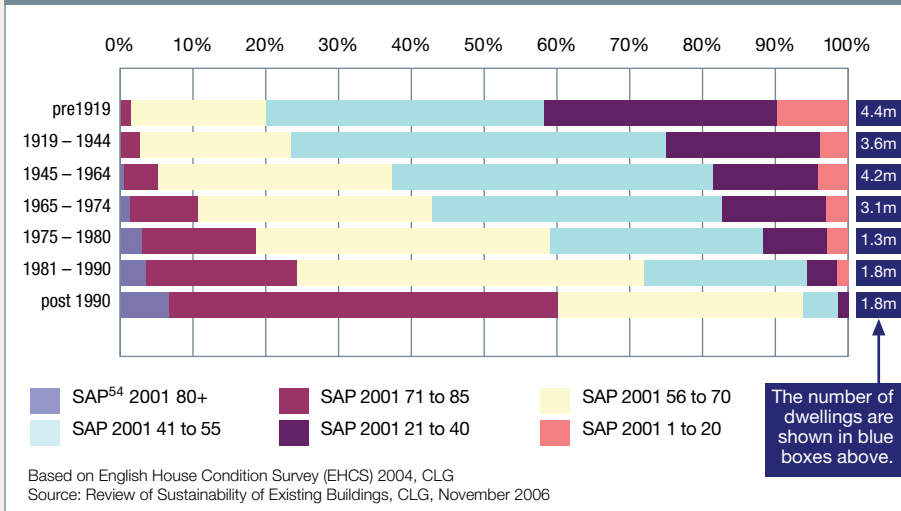
48. *2001/02 Expenditure and Food Survey*. 2003. ONS. [www.statistics.gov.uk/StatBase/Product.asp?vlnk=361](http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=361)

49. *National Statistics 2001 Area Classification for local authorities user guide*. [www.statistics.gov.uk/about/methodology\\_by\\_theme/area\\_classification/downloads/User\\_Guide.pdf](http://www.statistics.gov.uk/about/methodology_by_theme/area_classification/downloads/User_Guide.pdf)

50. *Review of Sustainability of Existing Buildings*. 2006. CLG. [www.propertylogbook.co.uk/eco/dwellings.pdf](http://www.propertylogbook.co.uk/eco/dwellings.pdf)

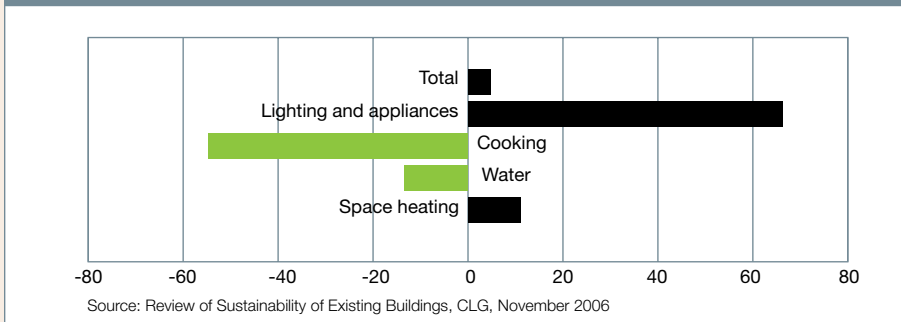
51. On average the Carbon Footprint of housing takes up 29% of the Carbon Footprint of the east of England. It makes up the largest proportion of the Carbon Footprint in the West Midlands (33%).

Figure 29: Profile of energy performance in existing dwelling stock, (2004)



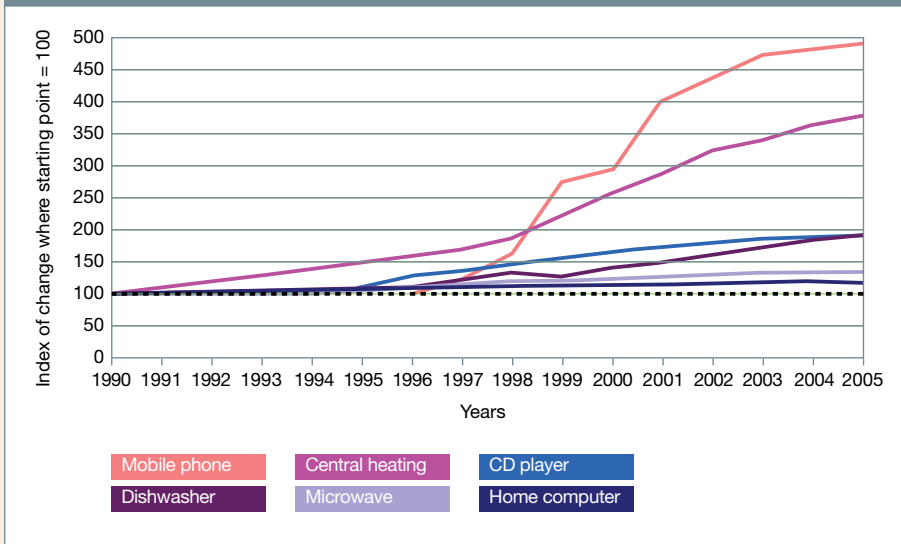
To add a further level of complexity, higher levels of income deprivation are also associated with a lower Carbon Footprint. The inverse relationship between income deprivation and the Carbon Footprint may be attributed to the large proportion of the UK population (12.2%) living in local authorities classed as 'Industrial hinterlands'. Local authorities in the cluster have a proportion far above the national average of people of working age suffering from long-term limiting illness. They also have the second lowest average Carbon Footprint for housing (3.6 t/cap).

Figure 30: Everyday activities contributing to climate change. 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 have been highest from household appliances<sup>52</sup>. 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 one had an energy label sticker on it<sup>53</sup>.

Figure 31: Households owning durable electric goods against 1990 baseline<sup>55</sup>



52. Review of Sustainability of Existing Buildings. 2006. CLG. [www.propertylogbook.co.uk/eco/dwellings.pdf](http://www.propertylogbook.co.uk/eco/dwellings.pdf)  
53. Information Blackout. Yates, 2007. NCC [www.ncc.org.uk/nccpdf/poldocs/NCC151a\\_rr\\_information\\_blackout.pdf](http://www.ncc.org.uk/nccpdf/poldocs/NCC151a_rr_information_blackout.pdf)  
54. SAP is the Government's Standard Assessment Procedure for Energy Rating of Dwellings.  
55. Based on figures from ONS Family Spending Survey 2005/06.

# Levers available to local government

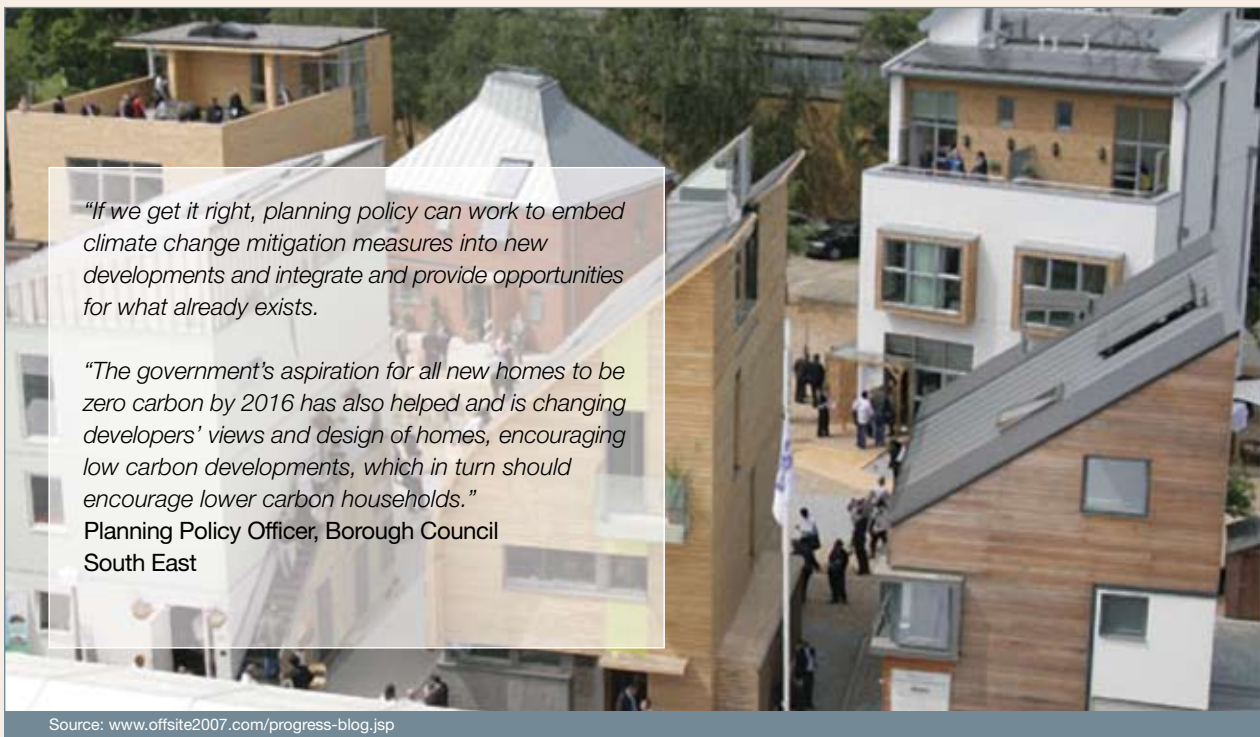
Strong levers do exist at the local level to improve the energy performance and efficiency of both new and existing homes. The challenge for local government is how to make the most of them.



## 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<sup>56</sup>. CLG's proposed policy framework for the energy performance of new developments is based around three main policy levers<sup>57</sup>.

- The planning system: CLG's draft planning policy statement Planning and Climate Change sets out how the location, siting and design of new developments can contribute to the reduction of a local area's Carbon Footprint.
- The Code for Sustainable Homes is a voluntary standard with six levels of energy performance complemented by wider measures to increase the environmental sustainability of homes. All government-funded housing will be built to level three of the Code.
- Building regulations provide mandatory baseline national standards for the energy performance of buildings. The regulations progressively raise the energy efficiency standards of new homes over time. Standards in 2006 are 40% higher than for properties built in 2002<sup>58</sup>.



Local government needs to prepare itself over the next three years to ensure developers can build all new houses to progressively higher energy requirements as set out in the Code for Sustainable Homes. The Code will signpost where future rounds of building regulations will set the minimum standards for energy performance as follows:

- 2010: all homes built to Code Level 3 – 25% more efficient than 2006 building regulations;
- 2013: all homes built to Code Level 4 – 44% more efficient than 2006 building regulations;
- 2016: all homes built to Code Level 6 – 'zero carbon homes'<sup>59</sup>.

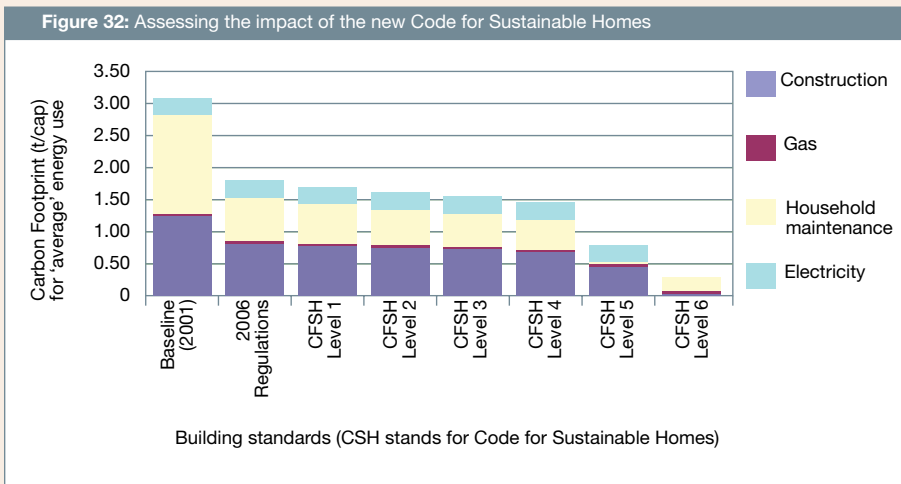
56. *Building Houses or Creating Communities*. SDC Sustainable Communities review. 2007. SDC. [www.sd-commission.org.uk/publications.php?id=558](http://www.sd-commission.org.uk/publications.php?id=558)  
57. *Building a Greener Future*. Consultation Paper. 2006. CLG. [www.communities.gov.uk/archived/publications/planningandbuilding/buildinggreener](http://www.communities.gov.uk/archived/publications/planningandbuilding/buildinggreener)  
58. *Review of Sustainability of Existing Buildings*. 2006. CLG. [www.propertylogbook.co.uk/eco/dwellings.pdf](http://www.propertylogbook.co.uk/eco/dwellings.pdf)  
59. Defined as zero net emissions of carbon dioxide (CO<sub>2</sub>) from all energy use in the home.



It is possible to make the case for moving more quickly than this in your local area where there are demonstrable opportunities. If your local authority wants to set local standards beyond current building regulations it will need to demonstrate that it can meet house building targets, but this should not be treated as an obstruction to engagement with developers.

The newly published Planning Policy Statement on Climate Change, which builds on the Merton Rule<sup>60</sup>, will be important here. National government needs to be supportive where local government thinks it is appropriate to ensure that a significant proportion of the energy supply of substantial new development is gained on-site and renewably and/or from a

decentralised renewable of low carbon supply.



The Carbon Footprint of an average person's energy use would almost halve if they moved to a house built to 2006 regulations from an average 2001 home, without changing their behaviour

Levels 1 to 4 of the Code for Sustainable Homes show an incremental improvement, with Level 4 delivering 44% saving from the 2006 regulations. After this the

improvements are even more substantial. Level 6 is described as “zero carbon” – this means that over a year there are no net carbon emissions resulting from all energy use in the home. This can be achieved by actions at a dwelling level or at the site or development level. In the graph the remaining Footprint for zero carbon homes reflects the impact of the construction of the home along with the switch to renewable energy, which does have some carbon output.

*“Lots of work is being done in Lewes on energy, such as a renewable grants scheme, energy efficiency advice, free solar panels for those in fuel poverty, and low carbon household projects using energy monitors and advice.”*

**Matthew Bird,**  
Sustainability and Energy Officer,  
Lewes District Council

### Energy efficiency in 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<sup>61</sup>. Large, older, detached homes tend to have the poorest energy standards. Energy performance is also driven by the amount of insulation and type and efficiency of heating systems, as well as the demands and awareness of the user.

Almost four million households in the UK struggle to afford an adequate energy supply and suffer from fuel poverty<sup>62</sup>. Poor energy efficiency is one of the three main causes of fuel poverty and 80% of people in fuel poverty live in homes of below average energy efficiency<sup>63</sup>.

The government has set two national targets related to fuel poverty:

- eradicate fuel poverty from vulnerable households by 2010; and
- end fuel poverty in all households by 2016.

Defra has proposed a fuel poverty indicator for the new Local Government Performance Framework. This means that local government will be expected to measure progress in tackling fuel poverty annually through the improved energy efficiency of targeted households.

60. In October 2003 Merton became the first local authority in the UK to include a policy in its Unitary Development Plan that requires new non-residential developments to generate at least 10% of their energy needs from renewable energy equipment such as solar panels and wind turbines. Visit [www.merton.gov.uk/living/planning/plansandprojects/10percentpolicy.htm](http://www.merton.gov.uk/living/planning/plansandprojects/10percentpolicy.htm)  
 61. Review of Sustainability of Existing Buildings. 2006 CLG. [www.propertylogbook.co.uk/eco/dwellings.pdf](http://www.propertylogbook.co.uk/eco/dwellings.pdf)  
 62. Fuel poverty occurs when people spend more than 10% of income on fuel in order to be able to heat their home to an adequate level of warmth (*Life Lines*, Klein, 2003: NCC).  
 63. *Ibid.*

Surveys by the Centre for Urban and Regional Studies at Birmingham University have shown that almost all local authorities (93%) have entered into partnership arrangements with other agencies to tackle problems of energy efficiency in their local area. A majority (84%) provide advice and guidance on energy efficiency but the nature of service varies enormously<sup>64</sup>. Energy efficiency programmes are currently driven by two main strains of funding:

- The Energy Efficiency Commitment (EEC) 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<sup>65</sup>, 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 micro-generation and other measures to reduce the consumption of supplied energy<sup>66</sup>. 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.
- Warm Front is the government's main grant-funded scheme for tackling fuel poverty. Grants of up to £2,700 are offered for families and the disabled to install measures such as insulation and heating systems<sup>67</sup>. Just under half of local authorities provide grants themselves and with other partners. A similar number provide some form of top-up grants for certain groups; this is most likely to happen in metropolitan authorities<sup>68</sup>.



*“Oxford University’s 40% house report advocates a four-fold increase in national demolition rates by 2016. This is one of the measures suggested for the UK to reduce the carbon dioxide emissions of housing stock by 60% by 2050.*

*But the Sustainable Development Commission has voiced concerns about demolition, pointing out that it can be between three and 10 times more costly to fund demolition and replacement than to refurbish”.*

According to the National Consumer Council around 20% of those in fuel poverty live in social housing<sup>69</sup>; the Decent Homes Standard<sup>70</sup> does not primarily focus on energy efficiency or affordable heating but it does include thermal comfort criteria. This is partly why social housing is on average more efficient than private housing<sup>71</sup> but 80% of housing stock in England and Wales is privately owned<sup>72</sup>. The private rented sector has been highlighted as presenting a particular challenge both in terms of house condition and energy efficiency<sup>73</sup>.

### **Demolish or refurbish?**

In some areas, housing market renewal is as important a driver of energy performance improvements in the housing stock as fuel poverty. Housing market renewal 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. This is one of the measures suggested for the UK to reduce the carbon dioxide emissions of housing stock by 60% by 2050.

But the Sustainable Development Commission (SDC) has voiced concerns about demolition, pointing out that it can be between three and 10 times more costly to fund demolition and replacement than to refurbish<sup>74</sup>.

Research by the SDC suggests that refurbishment can appear less attractive because it does not enable and attract private sector funding in the same way as demolition under housing market renewal funding<sup>75</sup>. And the question of funding is key because technologies to improve energy efficiency in existing housing are well known, widely available and can provide considerable savings.

64. *Implementing new powers for private sector housing renewal*. Groves and Sankey, 2005. JRF and University of Birmingham. [www.jrf.org.uk/bookshop/eBooks/1859354289.pdf](http://www.jrf.org.uk/bookshop/eBooks/1859354289.pdf)

65. The Carbon Emissions Reduction Target.

66. Taken from: [www.defra.gov.uk/environment/climatechange/uk/household/eec/](http://www.defra.gov.uk/environment/climatechange/uk/household/eec/)

67. *Review of Sustainability of Existing Buildings*. DCLG, 2006. [www.propertylogbook.co.uk/eco/dwellings.pdf](http://www.propertylogbook.co.uk/eco/dwellings.pdf)

68. Groves & Sankey, 2005.

69. *Energy Shouldn’t Cost the Earth. Blueprint for Action*. 2007. NCC.

[www.ncc.org.uk/nccpdf/poldocs/NCC151b\\_energy\\_shouldnt\\_cost\\_earth.pdf](http://www.ncc.org.uk/nccpdf/poldocs/NCC151b_energy_shouldnt_cost_earth.pdf)

70. The government adopted a Public Services Agreement (PSA) target to ensure that all social housing meets set standards of decency by 2012. A decent home can be defined as one that meets the current statutory minimum standard for housing; is in a reasonable state of repair; has reasonably modern facilities and services; and provides a reasonable degree of thermal comfort.

71. *Review of Sustainability of Existing Buildings*. 2006. DCLG. [www.propertylogbook.co.uk/eco/dwellings.pdf](http://www.propertylogbook.co.uk/eco/dwellings.pdf)

72. Groves and Sankey, 2005.

73. *Ibid.*

74. *Building Houses or Creating Communities*. SDC Sustainable Communities review. 2007.

[www.sd-commission.org.uk/publications.php?id=558](http://www.sd-commission.org.uk/publications.php?id=558)

75. *Ibid.*

Figure 33: Retrofitting an existing house – indicative savings

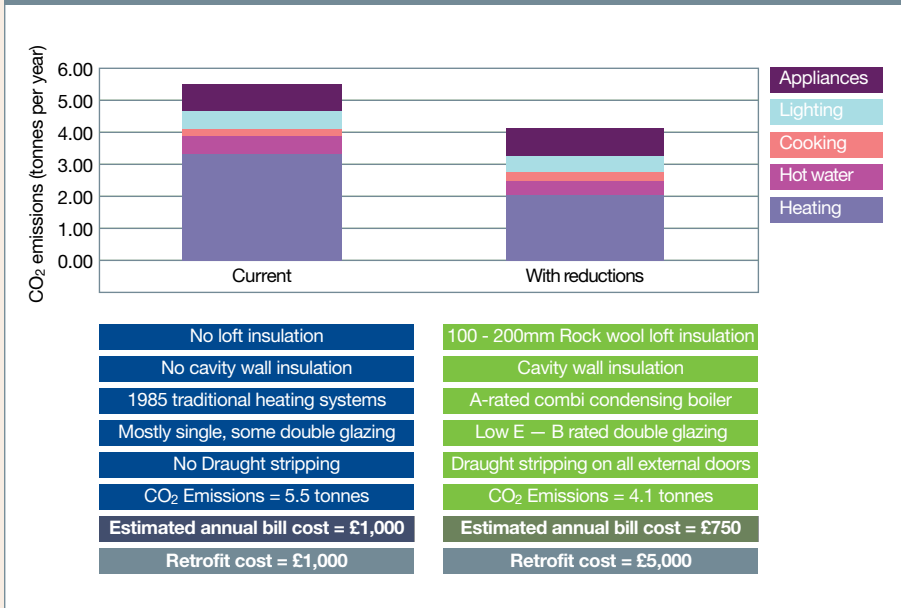
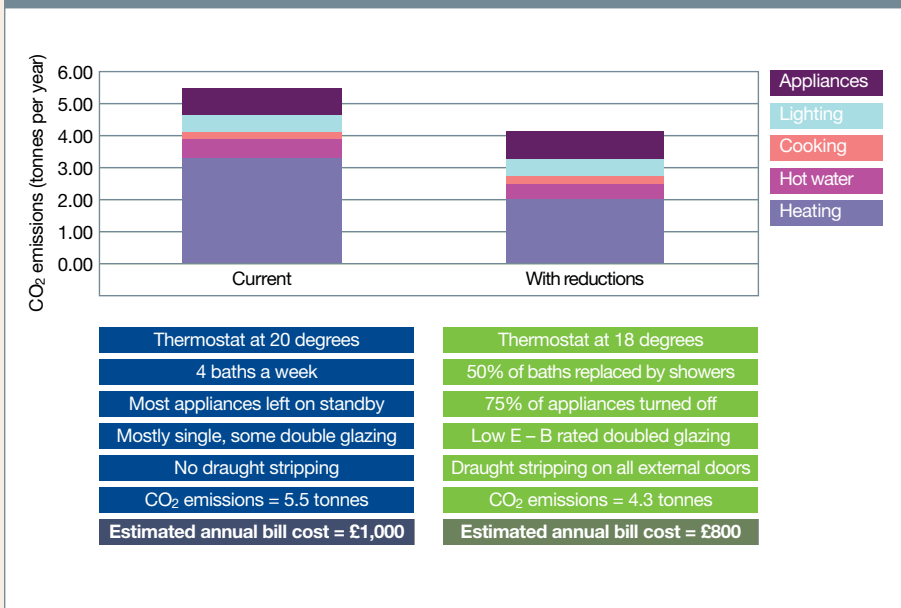


Figure 33 shows typical savings in carbon dioxide emissions that can be made under a number of retrofit options.

### Energy use and behaviour

Residential energy efficiency has doubled since the 1970s<sup>76</sup> but household energy consumption is increasing on average by 1% a year<sup>77</sup>. 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 behavioural choices that the occupier has that will have a considerable impact on carbon dioxide emissions.

Figure 34: Comparing high and low energy living



The Energy Savings Trust leads the way in targeting households, and over 100,000 have pledged through them to reduce their energy use by 20%. Over half of people report that they never leave the TV on standby overnight, their mobile phone chargers plugged in, nor lights on in rooms when not in them<sup>78</sup>. The benefits associated with these small changes in behaviour are considerable: in our worked example the saving in carbon dioxide emissions associated with low energy living is 22%, the costs of implementation are near zero.

*“Our successful Switch It Off campaign relies on utilities, central networks, town centre shopping areas, householders, businesses, local authorities and other partner agencies all working together and taking responsibility to deliver the campaign and the results.*

*“The outcome illustrates the impact we can all make as individuals, through everyone switching off at one time and measuring the impact on the grid. In Warwickshire there was a 6% dip in energy consumption on the Friday (3 November 2006) evening (4.30-6.30 pm) which is normally a time where the consumption actually increases compared to the rest of the week.”*

Energy Efficiency Consultant, Energy Advice Centre, Midlands

76. The Environmental Contract. Mayo, 2007. NCC [www.ncc.org.uk/nccpdf/poldocs/NCC166pb\\_environmental\\_contract.pdf](http://www.ncc.org.uk/nccpdf/poldocs/NCC166pb_environmental_contract.pdf)  
 77. Energy consumption increased by 15% between 1990 and 2005. Sustainable Development Indicators in Your Pocket 2007. Defra. See [www.sustainable-development.gov.uk/progress/data-resources/documents/sdiyp2007\\_a6.pdf](http://www.sustainable-development.gov.uk/progress/data-resources/documents/sdiyp2007_a6.pdf)  
 78. 2007 survey of public attitudes and behaviours toward the environment. Defra. [www.defra.gov.uk/news/2007/070814a.htm](http://www.defra.gov.uk/news/2007/070814a.htm)

## The opportunities for change

The number of households in England is projected to grow by 209,000 a year up to 2026 (of which 72% will be single person households), and additional housing provision is



needed to meet this demand. The Housing Green Paper suggests house building targets of two million homes by 2016 and three million by 2020. 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.

CLG has calculated that under current conditions it is not possible to reduce the carbon dioxide emissions associated with housing by 60% by 2050<sup>79</sup>, but a strong framework is being put in place that promises real results.

*“CLG has calculated that under current conditions it is not possible to reduce the carbon dioxide emissions associated with housing by 60% by 2050, but a strong framework is being put in place that promises real results. Within this framework local government must take the initiative to champion the new Code for Sustainable Homes; wherever practically possible developers should be encouraged to build an increasing proportion of their homes to higher Code standards.”*

Within this framework local government must take the initiative to champion the new Code for Sustainable Homes; wherever practically possible developers should be encouraged to build an increasing proportion of their homes to higher Code standards.

For existing housing there 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 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<sup>80</sup>. 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 the proposed Defra fuel poverty indicator as a Local Authority Area ‘improvement target’ and 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 that are targeted at the population as a whole.

79. Review of Sustainability of Existing Buildings. 2006. DCLG [www.propertylogbook.co.uk/eco/dwellings.pdf](http://www.propertylogbook.co.uk/eco/dwellings.pdf)  
80. *Implementing new powers for private sector housing renewal*. Groves & Sankey, 2005. JRF & University of Birmingham. [www.jrf.org.uk/bookshop/eBooks/1859354289.pdf](http://www.jrf.org.uk/bookshop/eBooks/1859354289.pdf)

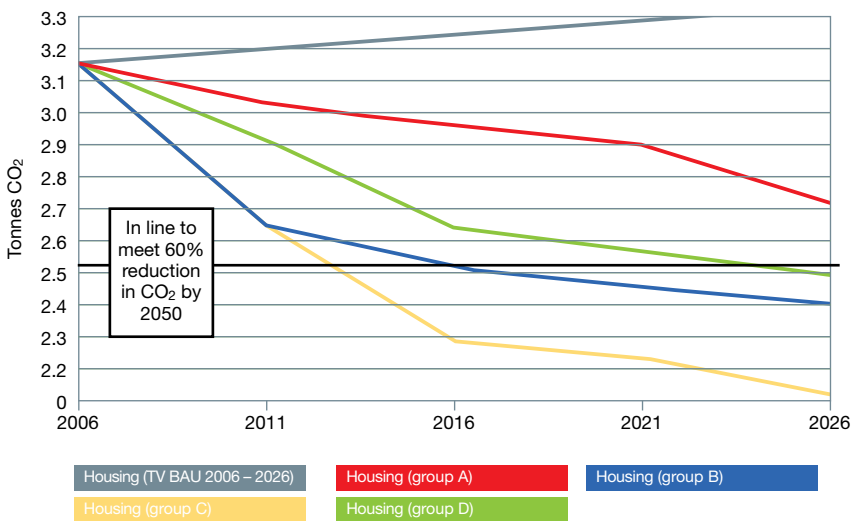
## Case study: Creating housing scenarios in the Tees Valley

In late 2006 the Environment Agency approached SEI to explore how to provide an environmental perspective to regeneration issues in the Tees Valley. It was agreed that over two days, staff from the Environment Agency, NERIP (North East Regional Information Partnership), the Tees Valley Joint Strategy Unit and each of the Tees Valley Unitary Authorities would use REAP to test out a range of alternative futures for housing and transport in the Tees Valley. The results demonstrate how REAP can be used in workshops to inform policy development on a range of issues.

Housing in the Tees Valley has a low Carbon Footprint relative to the rest of the UK, but the generation of electricity for households and fuel use in the home still account for almost a third of emissions. To create a housing 'business as usual' scenario for the Tees Valley, SEI took figures from existing plans and targets in the Tees Valley and the North East and entered them into REAP. The results suggested a possible 1.8% increase in carbon dioxide emissions from housing over the next 20 years. Because of projected population decline, this worked out as a 5.5% increase per person over the same period.

Provided with the 'business as usual' results, workshop participants were asked to create alternative scenarios for housing in the Tees Valley. Split into four groups they first had to agree a way to develop policies that they thought would be politically acceptable, would meet the aspirations of the public, and would meet national carbon dioxide emission targets – or manage a combination of the three.

**Figure 35:** Summary of group scenarios for housing. Annual and overall change shown in per capita figures. Tees Valley (2006 – 2026)



The workshop participants then chose and agreed the effectiveness of a range of policy interventions. These included housing market renewal through demolition and refurbishment, different rates and energy performance standards for new build, and changes to the renewable energy mix. The results are summarised below.

The alternative scenarios created by workshop participants showed that there were opportunities for introducing further

practical measures to reduce the Carbon Footprint associated with housing by at least 10% over the next 20 years. These scenarios were created before the new Code for Sustainable Homes was proposed. They also indicated that it was possible to bring about significant reductions in the Carbon Footprint associated with housing without changing demolition rates or reducing build projections for the Tees Valley.

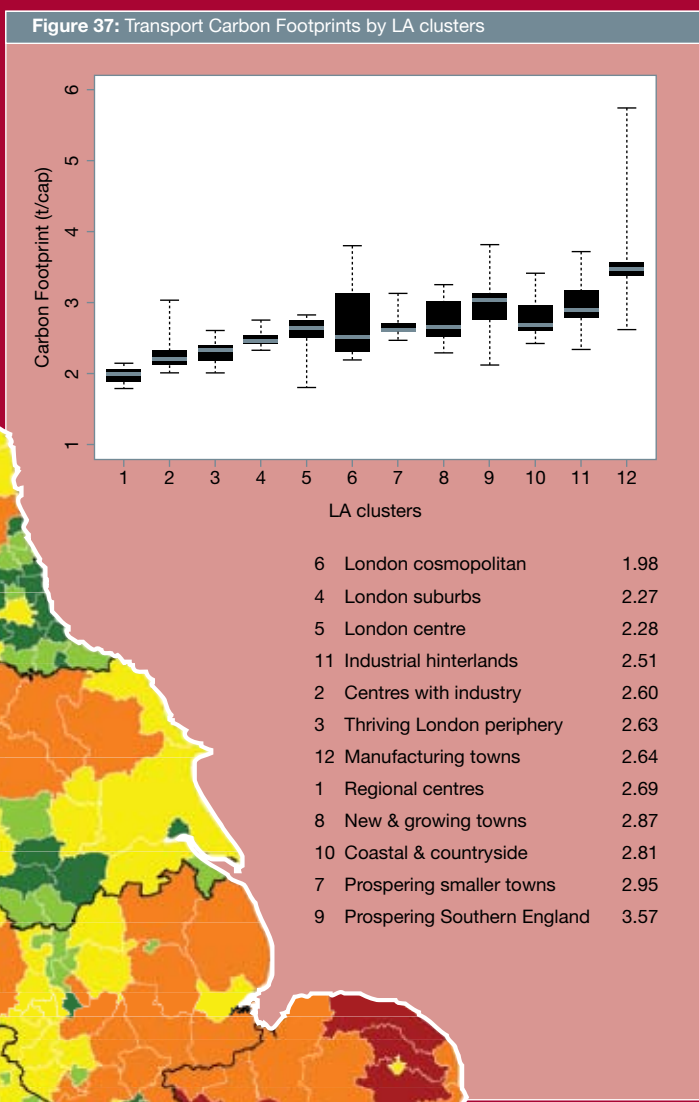
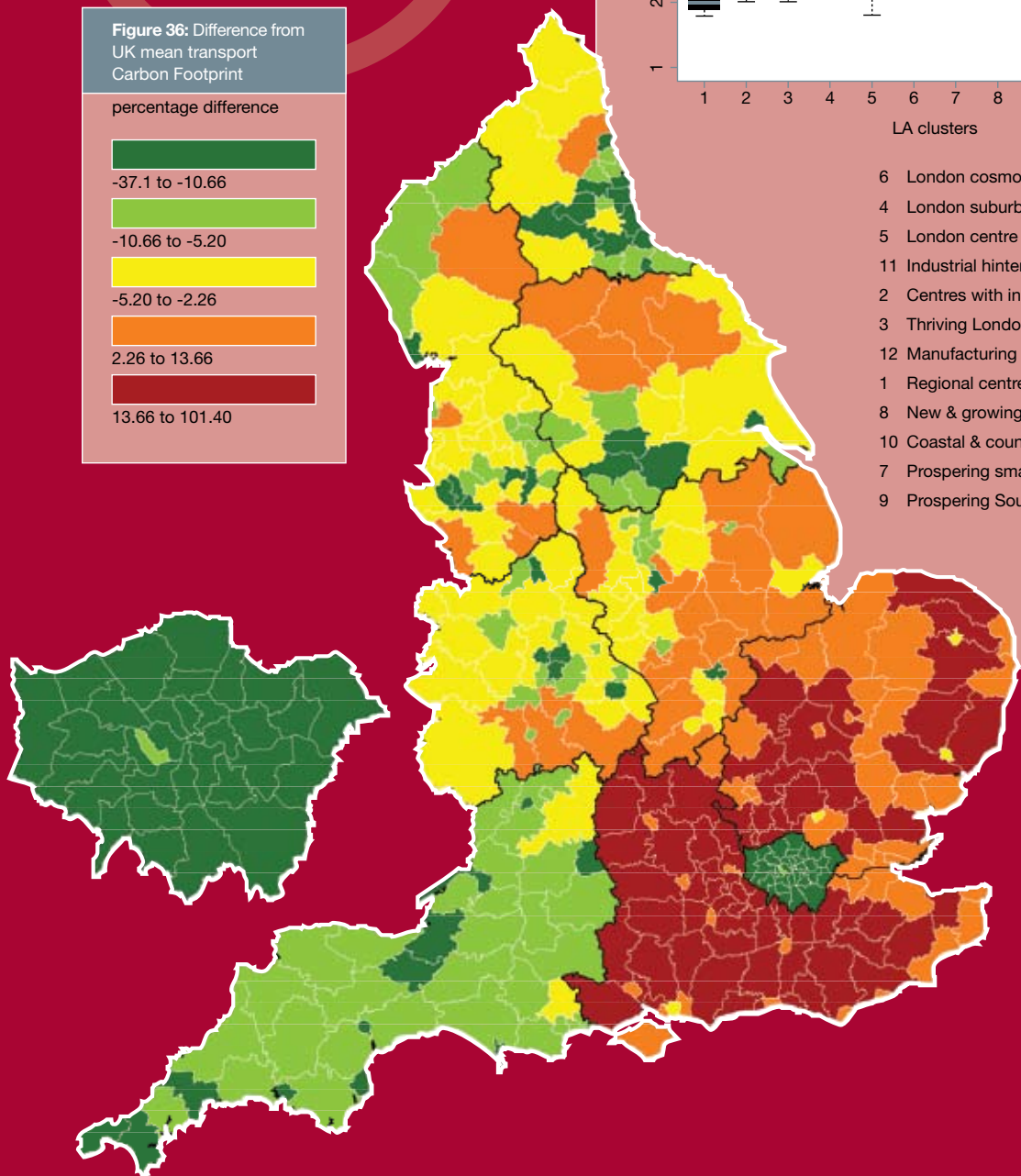
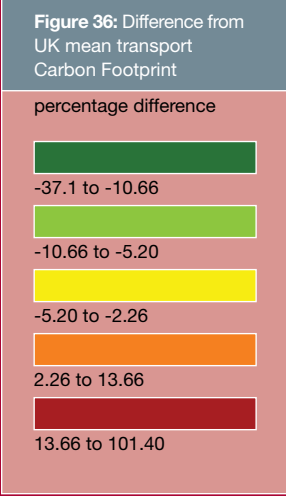
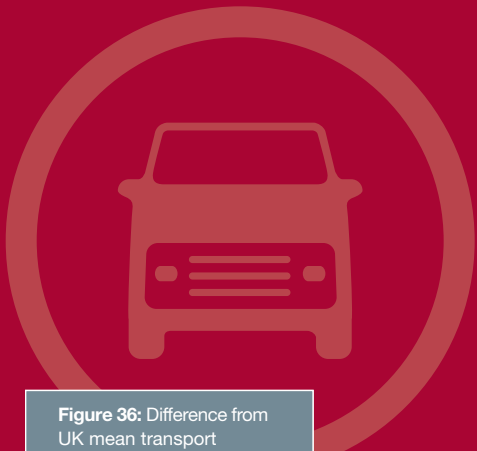
The most effective scenarios combined measures to increase renewable energy, roll out energy efficiency measures in existing homes, and improve the energy performance requirements of new homes. This was not a surprise in itself but the process of using REAP allowed workshop attendees to apply numbers to their policies and quantify the extent to which improvements are possible based on different levels of intervention.





# The Carbon Footprint of **transport**

# The Carbon Footprint of transport





# Overview

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<sup>81</sup>.

*“Transport has been described as ‘the worst performing sector in the UK’ when it comes to dealing with carbon dioxide emissions.”*

Transport has been described as “the worst performing sector in the UK” when it comes to dealing with carbon dioxide emissions. By 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.

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 English Regions. In England it accounts for between 39%<sup>82</sup> and 16%<sup>83</sup> of the Carbon Footprint of a local authority area.

- Five local authorities in England have a Carbon Footprint for transport that exceeds 4.00 tonnes per capita (t/cap)<sup>84</sup>; a further five have a Carbon Footprint for transport under 2.00 t/cap<sup>85</sup>.
- The ‘Prospering Southern towns’ cluster of local authorities has the highest Carbon Footprint for transport (3.57 t/cap on average). On average, this is 18% higher than the cluster with the second highest Carbon Footprint for transport, ‘Prospering smaller towns’.
- Local authorities in London and the ‘London cosmopolitan’ cluster have a particularly low-carbon Footprint for transport, almost half that of local authorities in the wider London commuter belt.

## Baseline analysis

Car use accounts for 30-40% of the Carbon Footprint associated with travel for all local authorities outside London. The proportion of distance travelled by car has remained stable over the last 10 years, but there is no question that car ownership, like home ownership, is seen as part of the British way of life.

According to the Department for Transport, members of car owning households travel over two-and-a-half times as far in a year than those in non-car owning households<sup>86</sup>. There are now “far more households with at least two cars than households with no cars”<sup>87</sup>. At the same time both the number and percentage of total trips made by foot or bicycle have declined<sup>88</sup>. It should come as no surprise that carbon dioxide emissions from private cars increased by 6% between 1990 and 2005<sup>89</sup>.

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

81. This overcomes the problem of double counting when people travel between local authorities.

82. East Hertfordshire.

83. Hackney.

84. East Hertfordshire, St Albans, Hertsmere, Dacorum, North Hertfordshire – all in the East of England.

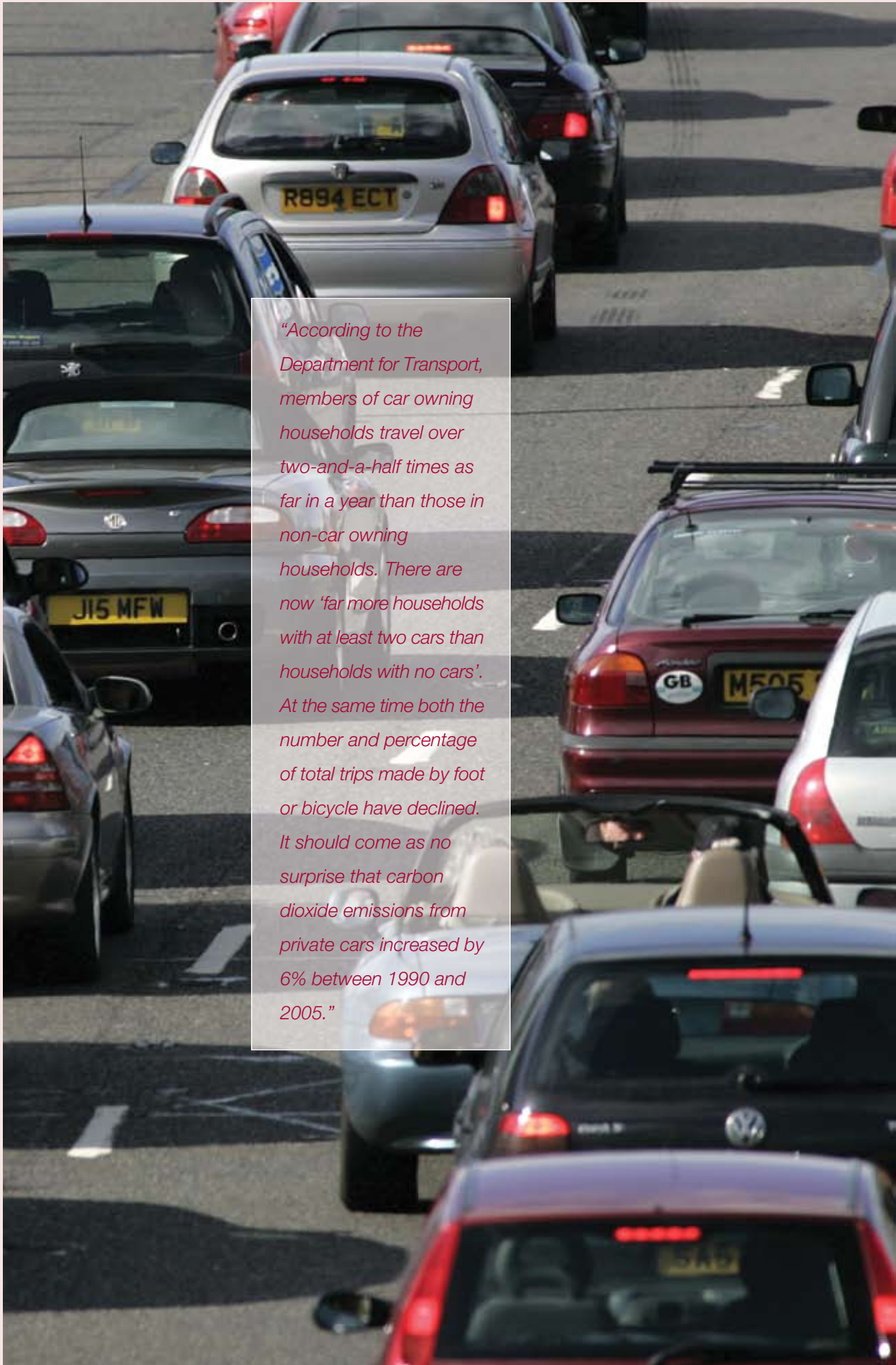
85. Newham, Barking & Dagenham, Hackney, Southwark, Brent – all in London.

86. National Travel Survey 2005. Department for Transport.

87. Ibid, p.8.

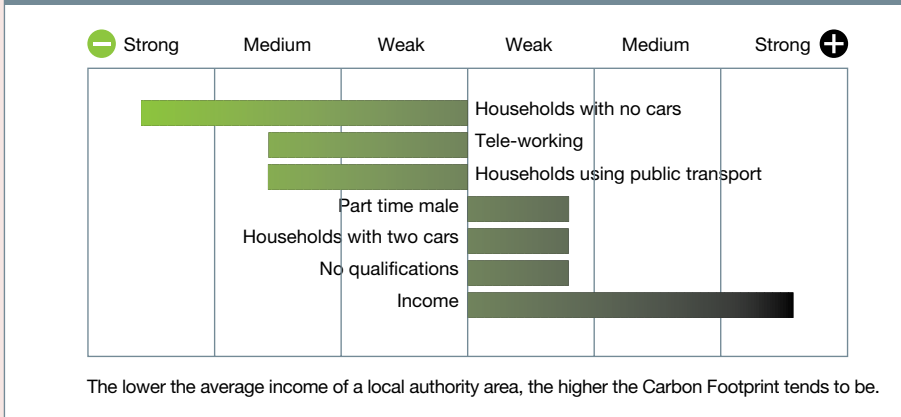
88. By 4% between 1995 and 2005. *Sustainable Development Indicators in Your Pocket 2007*. Defra.

89. *Sustainable Development Indicators in Your Pocket 2007*. Defra.



*“According to the Department for Transport, members of car owning households travel over two-and-a-half times as far in a year than those in non-car owning households. There are now ‘far more households with at least two cars than households with no cars’. At the same time both the number and percentage of total trips made by foot or bicycle have declined. It should come as no surprise that carbon dioxide emissions from private cars increased by 6% between 1990 and 2005.”*

Figure 38: Conditional relationships with the Carbon Footprint of transport



income group, it increases with income<sup>90</sup>. Higher income groups also spend a greater proportion of expenditure on purchasing vehicles as well as travel in general<sup>91</sup>. The pattern of spending on travel changes with income: higher income groups spend a smaller proportion of transport expenditure on bus and coach fares (2%), compared to lower income groups (9%).

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 London's considerably lower Carbon Footprint for transport. Urban areas still have access to better, more frequent public transport, while in 2005 only 54% of residents in rural areas were within a 13-minute walk of an hourly or better bus service<sup>92</sup>.

## 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 are a set of techniques for influencing people's travel behaviour toward more sustainable options such as walking, cycling, travelling by public transport and car sharing."*

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 are a set of "techniques for influencing people's travel behaviour toward more sustainable options such as walking, cycling, travelling by public transport and car sharing"<sup>93</sup>. 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 that 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 Department for Transport describes soft measures as 'Smarter Choices' and has actively promoted these measures as "a vital part of the government's strategy for local transport"<sup>94</sup>. It sees local authorities as key to delivering Smarter Choices and recently asked the Government Operation Research Service (GORS) to carry out a review of the extent to which 10 Smarter Choices measures are embedded in Local Transport Plans.

Local Transport Plans do not necessarily reflect the full range of sustainable transport measures being carried out by local authorities, but GORS found that "the extent to which Smarter Choices are embedded in local transport planning varies considerably between authorities"<sup>95</sup>. Although 80.5% of all local authorities made "reasonable or significant reference" to Smarter Choices measures as a whole, only 26.8% appeared to have implemented a wide range of Smarter Choices measures. The report also suggested that a number of local authorities are referencing Smarter Choices as a 'tick box' exercise and may not recognise the potential benefits of 'softer' transport measures.

90. ONS Family Spending Survey.

91. Ibid.

92. National Travel Survey 2005. Department for Transport.

93. *Making Smarter Choices Work*. 2003. Department for Transport.

94. Ibid.

95. Review of the take-up of Smarter Choices. 2007 OSU/DFT.

# The opportunities for change



A key concern highlighted by the study is that “in most cases there appears to be a lack of evidence-based decision making”. It is all too easy for soft transport measures to become sidelined to the point where those promoted are the ones that are easy to implement but trivial in terms of reductions in carbon dioxide emissions. 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 continue to travel further and more often.

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:



*“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.”*

### *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<sup>96</sup>.

### *Provide local government with appropriate powers and incentives*

Local government does not have the full range of powers and incentives necessary to reduce carbon dioxide emissions from transport. This is partly because “not all modes or interventions are within their gift”, since they are split across a number of public and private organisations. But it is also because transport budgets often bring with them “implicit incentives to pursue capital-intensive options”<sup>97</sup>. For ‘capital-intensive options’ read building, expanding and improving our roads.

### *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”<sup>98</sup>. In the near future, road charging and parking charges linked to the carbon emissions standards of vehicles may start to influence the type of car people use and the distance we travel. However, councillors and senior managers will take a lot of persuading. At present, plenty of Local Transport Plans 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.

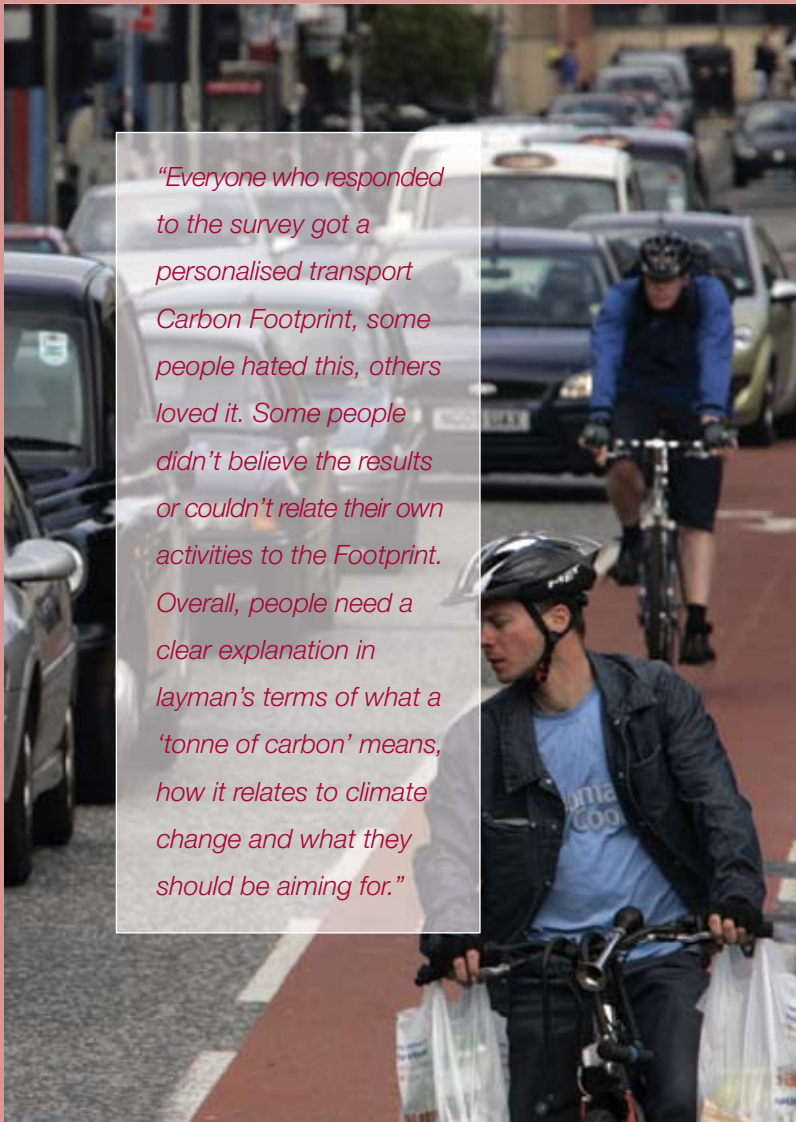
96. Review of the take-up of Smarter Choices. 2007 OSU/DFT.  
97. The Eddington Report, 2006. [www.dft.gov.uk/about/strategy/eddingtongstudy](http://www.dft.gov.uk/about/strategy/eddingtongstudy)  
98. Ibid.

## Case study: Senior officer, car club scheme, north England

We have been working with a council that has established a successful local car club and through community travel behaviour surveys we have been monitoring its impact.

The car club and the travel behaviour survey have encouraged people to think about how they travel, and people have begun to modify their travel behaviour and think about their own transport use.

People here are very aware and there is lots of cycling in the city but we do get quite a few negative responses back; some people feel they are being told what to do and they don't like that, and you are dealing with people who love to drive. Some people think it's a gimmick, older people think it's nothing to do with them, and for some it just doesn't fit in with their lifestyle.



*"Everyone who responded to the survey got a personalised transport Carbon Footprint, some people hated this, others loved it. Some people didn't believe the results or couldn't relate their own activities to the Footprint. Overall, people need a clear explanation in layman's terms of what a 'tonne of carbon' means, how it relates to climate change and what they should be aiming for."*

Everyone who responded to the survey got a personalised transport Carbon Footprint, some people hated this, others loved it. Some people didn't believe the results or couldn't relate their own activities to the Footprint. Overall, people need a clear explanation in layman's terms of what a 'tonne of carbon' means, how it relates to climate change and what they should be aiming for.

A major barrier and frustration in getting the project off the ground was the internal bureaucratic processes and getting political endorsement. There was a lot of time invested doing presentations and lobbying. Luckily the local press has been interested but it is hard work keeping them on board and getting positive publicity.

Getting match funding for the project has also been very difficult. Major employers have not been interested, which is a shame as it's a very local and beneficial scheme, but their Corporate Social Responsibility commitments tend to be focused on children or on national projects. You need key advocates who are enthusiastic.





# Next steps



# Practical measures: what to consider

Tackling climate change at the local level requires local authorities to have the tools to measure and monitor change and the capacity to use them. This concluding section provides an overview of some of the key issues to consider.

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 which are serious in bringing about 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 also be willing to monitor local trends in consumption behaviour as well as the impacts of policy.

*“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 which commit to using a community emissions indicator must also be willing to monitor local trends in consumption behaviour as well as the impacts of policy.”*

The proposed Local Government Performance Framework includes climate change indicators to encourage local authority action through the management of their estate and through engagement with the community. Included in the new indicator set is a community emissions indicator. At the time of writing, a central reporting approach is suggested by government for the community emissions indicator based on experimental local authority emissions data published by Defra<sup>99</sup>. The rationale for this approach is that it reduces the local authority reporting burden. The drawback is that it does not directly link the 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. One way of doing this is through the REAP software tool. The Carbon Footprint data generated by REAP provides in-depth information for local authorities that want to use a communities emissions indicator and focus on influencing the consumption patterns and behaviour of residents. Although REAP generated Carbon Footprint data is not included amongst the 200 indicators in the proposed Local Government Performance Framework it may be used to agree 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 available from the beginning of 2008. To see your local authority area profile go to [www.sei.se/reap](http://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.

The following ‘report card’ is designed to help you understand some of the issues related to adopting a community emissions indicator and the role that REAP could play in addressing them.

99. [www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/CO2.pdf](http://www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/CO2.pdf)





*“At the time of writing, a central reporting approach is suggested by government for the community emissions indicator, based on Defra’s experimental local authority emissions data. This approach reduces the reporting burden on a local authority. But local authorities will need support in setting meaningful local improvement targets and devising an approach to meeting them. One way of doing this is through the REAP software tool. The Carbon Footprint data generated by REAP provides in-depth information for local authorities that want to focus on influencing the consumption patterns and behaviour of residents.”*



# A community emissions indicator should be<sup>100</sup>:

## Outcome based



At a top level a 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. At the same time, changes occur slowly and are unlikely to show up well within quarterly or annual reporting periods for Local Area Agreements.

Both these challenges point towards the importance of developing a linked hierarchy of local service and management indicators with shorter reporting periods. These should relate local interventions in targeted areas of household consumption to changes in the community emissions indicator or Carbon Footprint.

The REAP software tool provides a starting point for linking the Carbon Footprint as a top level indicator to local monitoring. Within REAP it is straightforward to model the impact of changes in the way people travel or the amount of energy they consume. The challenge is to monitor and collect this information locally in a cost effective fashion.

Previous research has suggested that it is difficult to put a monitoring framework together in one go and there are justified concerns about data quality and resource requirements associated with it. In this light the development of guidance on linked hierarchies or 'scorecards' for the community emissions indicator would be particularly useful. SEI are developing a tool that can be used for collecting and sorting information on residents' consumption in local authority areas and communities. We will be piloting this with partners in 2008.

For further information see: *Acting on Facts: using performance measurement to improve local authority services*<sup>101</sup>.

## Attributable to local authority action



A community emissions indicator needs to be sensitive to 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. Monitoring of resident behavior at the local level is limited. The most useful statistics at a local authority level are for household energy consumption. There are few examples of comprehensive monitoring of personal travel (rather than traffic flows), family spending or diet at a local level.

The baseline Carbon Footprint data provided by REAP and documented in this report is partly based on Acorn socio-economic profiles. This reflects the make-up of local populations but does not adequately reflect the impact of local policies or conditions. Only locally collected information can improve on this and local authorities need support in deciding how best to do this in a consistent fashion.

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 have used REAP to create transport projections for Hertfordshire County Council and Greater Nottingham based on local policies, national trends in travel behavior and projected improvements in the fuel efficiency of vehicles.

A proportion of the Carbon Footprint is taken up by aspects of people's lifestyles that we don't usually associate with local government action, spending on products and food stands out here. Reporting on these areas supports the risk based approach to local authority action because it shows that a local authority is considering the impact of resident's behavior on climate change in the widest possible fashion even if it holds a limited number of levers to bring about change.

100. The criteria used here are based on those used for Defra's own community emissions indicator, see: [www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/CO2.pdf](http://www.defra.gov.uk/environment/localgovindicators/pdf/Indicators/CO2.pdf)  
101. IDeA & Audit Commission, 2002

### A driver of behaviour change



A community emissions indicator needs to engage communities and councilors. They need to be able to understand what it means and how it applies to them. The environment, and climate change in particular, are 'back in fashion' but public understanding of the links to individual behavior are limited.

The Carbon Footprint can be directly related to behavior change in all areas of people's lifestyle and on an individual, household and community basis. Aberdeenshire County Council are using REAP to create Footprint profiles of local communities. Independent of government action, community groups are already forming to monitor their Carbon Footprint and attaching Carbon Budgets to their lifestyles. Twenty Carbon Rationing Action Groups now exist in the UK using a number of approaches to measure their Carbon Footprint<sup>102</sup>.

### Aligned to other policy objectives



The environment in general still comes second in many local policy decisions. Sustainable development issues may get a mention in the community plan but often lose out when it comes to implementation and day-to-day operations. Climate change needs to be aligned with other policy objectives but it works both ways. If your local transport plan sets out work for the next ten years and climate change is not on the agenda then what good will a climate change strategy do?

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. The challenge is to set objectives or targets in each of these areas that complement your community emissions indicator. Local authorities require stronger incentives to do this otherwise climate change, like other environmental issues, will be missed out.

### Measurable in a cost-effective fashion



A strong argument can be made for the benefits of effective monitoring outweighing the initial costs. Monitoring makes it possible to target and tailor local policies and allocate resources effectively. From our experience the collection of better information on travel behavior is an absolute priority. Traffic flow data is often available but information on personal travel is limited.

In itself the online Carbon Footprint data creates no additional reporting requirement but to update this data and monitor changes in residents' behavior using REAP requires dedicated resource within your local authority area. York, North Lanarkshire and Aberdeen all have dedicated Footprint Officers who champion Footprint Analysis and build expertise within their local authorities.

### Comparable over time and between local authorities



A standardised approach to measuring and monitoring community emissions is vital but methodologies are still improving and, initially, data for successive years may not be directly comparable. This is the case for the community emissions indicator as it is measured by government and for the Carbon Footprint.

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 we need to develop standard guidelines for doing so to enable direct comparability at a national or regional level.

102. [www.carbonrationing.org.uk](http://www.carbonrationing.org.uk)

### Auditable



Technical notes on how the community emissions indicator and the Carbon Footprint are created are available on the Defra and SEI website respectively.

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 are in the process of developing support material and recommended data sources for local authorities that want to update their Carbon Footprint using REAP.

### Collaborative



Partnership working in the local area is essential for tackling a community's Carbon Footprint. From our experience the capacity to tackle climate change in some local authorities is severely limited. Dedicated time and expertise is required but there are competing resources for any sustainable development or environment officer's time. In many cases a strong argument can be made for greater collaborative working at a sub-regional level and with regional organisations as well as within communities.

The range of issues the Carbon Footprint touches on encourages partnership working within and between local authorities and community partners. SEI has set up an online Forum for users of the Carbon Footprint data to share best practice and lessons learned. 50 members from across local, regional and national government joined in the first week. You can find out more by logging on to [www.sei.se/reap/forum](http://www.sei.se/reap/forum)

# What next?

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 the practical measures that can be taken to support local authorities on reducing the carbon dioxide emissions of their communities. For our part, both SEI and WWF-UK intend to contribute to this discussion by working with local, regional and national government and partners.

SEI's mission is to translate the best available science into tools and evidence that can be used in policy. We believe REAP has the potential to be an essential component of the policy making toolkit but further work is needed to improve the model and to support people's capacity to use it. As a not-for-profit institute our objective is to make REAP as low cost and accessible to users as possible. Over the next two years SEI will be working with partners – including WWF – to ensure REAP is:

## **A trusted source of evidence at all levels of government**

To ensure that REAP remains relevant and up to date we can never stand still in terms of improving the methodology. This provides a constant dilemma, if we switch data sets or develop a more detailed model of the economy, the estimates for successive years may not be exactly comparable though they should provide more detail and greater robustness. Wherever possible we will maximise consistency between years and use an indexing system to show changes from the baseline year.

## **A 'stand alone' tool – usable without external support**

From the outset we have sought to build capacity in government organisations so that expertise does not have to be brought in from outside. Policy makers need to be able to know how to use the evidence base and be supported by technical users at the local and regional level. SEI will work on developing a REAP scenario manual so that standardised assumptions and data sources can be used across applications and projects. SEI also needs to work with partners to build expertise in regional and local government for the long term.

## **Relevant and applicable to policy makers needs**

REAP was designed to be a flexible tool, hundreds of variables can be changed to create scenarios but these variables need to be linked into the issue the user is considering and this can take some time and effort. Work needs to be done to identify the extent REAP can be used in a standard format for Local Development Plans and Regional Integrated Frameworks in particular.

WWF will continue to work with partners to encourage, exemplify, engage and enable change. By convening stakeholders, facilitating dialogue, challenging thinking, and helping to build and share learning, we hope to push forward policy and practice in relation to climate change solutions. In particular, over the next few years WWF will:

- work with government departments and regional authorities to ensure that local authorities have the remit and capacity to deliver a reduction in the Carbon Footprint of their areas;
- support the development of data analysis and tools (such as REAP) to provide the evidence base and mechanisms to facilitate action;
- work in partnership with a number of local authorities to build and share learning, demonstrating what can be done;
- work with partners and community development workers to build and share learning on how to engage with communities on sustainability related issues;
- liaise with support bodies and government agencies to push the climate change agenda with local authorities, encourage leadership at regional and local authority level, and help mainstream good practice.

There is no doubt that local authorities will have a huge influence on the UK'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.

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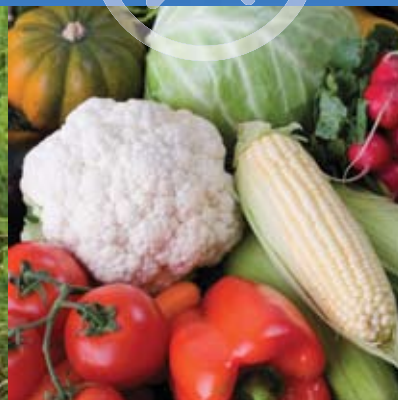
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The mission of WWF – the global environment network – is to stop the degradation of the planet’s natural environment, and to build a future in which humans live in harmony with nature, by:

- conserving the world’s biological diversity;
- ensuring that the use of renewable natural resources is sustainable; and
- reducing pollution and wasteful consumption.



*for a living planet*

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